COMPARATIVE EVALUATION OF THE ENVIRONMENTAL IMPACT ASSESSMENT'S SIGNIFICANCE IN ZAMBIA, SOUTH AFRICA AND ZIMBABWE'S ECONOMIC DEVELOPMENT

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Abstract

COMPARATIVE EVALUATION OF THE ENVIRONMENTAL IMPACT ASSESSMENT'S SIGNIFICANCE IN ZAMBIA, SOUTH AFRICA AND ZIMBABWE'S ECONOMIC DEVELOPMENT

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The study on the comparative evaluation of the environmental impacts assessment's signficance in Zambia, South Africa and Zimbabwe's economic development was conducted in order to demystify mixed insights among Zimbabwean Environmental Impact Assessment (EIA) interested parties regarding its importance and to develop an EIA cost estimation model. This study had significant impact on EIA interested parties in terms of reshaping their EIA perceptions. All these stakeholders had varying concerns regarding EIA costs, delays in projects implementation and the impact on economic growth. The motive for this investigation was to explore the association amid environmental impact assessment and economic growth in Zimbabwe using mixed research method since multinational financiers now requires environmental social safeguards in their project financing criteria. The researcher used stratified random sampling to choose Zambia and South Africa from (Southern African Development Community) SADC which took part in the study with snowball sampling used to select actual participants. Zimbabwe was purposively sampled since it was the epicentre of the study and participants were chosen randomly. Mixed methods were adopted in the study. A case study plan was then applied making use of interviews, focus group deliberations and an electronic questionnaire supported by Kobo toolbox survey platform to collect primary data in the face of Covid – 19 lockdown restrictions. SPSS, Microsoft Excel and Framework Analysis Method were used for data

analysis with One – Sample Chi Square testing conducted at 95% significance level. The study established that EIA costs in Zimbabwe were the cheapest in all five economic sectors under investigation and the EIA review periods were the shortest. As such in was concluded that the EIA process in Zimbabwe had no effect on FDI inflows and economic development. Furthermore, the researcher developed the Sunny's EIA Cost Estimation Model which can be used by EIA practioners for EIA costing though there is need for further studies to refine it.

Declaration

I declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where stated otherwise by reference or acknowledgment, the work presented is entirely my own.

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Acronyms and Abbreviations

AfDB	African Development Bank
BEES	Battelle's Environmental Evaluation System
EAPASA	Environmental Assessment Practitioners Association of South Africa
EIA	Environmental Impact Assessment
EMA	Environmental Management Agency
EPA	Environmental Protection Agency
EPCOZ	Environmental Professionals Council of Zimbabwe
ESAP	Environmental and Social Action Plan
ESMP	Environmental and Social Management Plan
FAM	Framework Analysis Method
FDI	Foreign Direct Investment
FMO	Financierings-Maatschappij voor Ontwikkelingslanden
IAIA	International Association of Impact Assessors
NEPA	National Environmental Policy Act
OECD	Organization for Economic Cooperation and Development
SADC	Southern African Development Community
SEA	Strategic Environmental Assessment
SECEMO	Sunny's EIA Cost Estimation Model
UAI	Uncertainty Avoidance Index
UNCE	United Nations Conference on the Environment
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Program
WBCSD	World Business Council for Sustainable Development
ZEMA	Zambia Environmental Management Agency

Chapter 1: Introduction

1.1 Research Background

Rapid urban development and industrial growth prior to the First World War in the developed countries particularly western nations resulted in upsurge in environmental degradation and depletion of natural resources at alarming rates as vowed by (Moni *et al*, 2020). The problem remained unabated until the end of the Second World War resulting in concerns over environmental quality being raised by some communities. The magnitude of pollution, environmental stress and rampant exploitation of natural environmental capital caused the decrease in environmental quality. The rapid degradation of the environmental quality degenerated into environmental conflict between investors and communities. During the early 1960's, investors and communities later on realised that developmental projects they were implementing were impacting negatively on the ecological, social and economic environment as coined by Rich (2014). As a consequence of this realisation, pressure clusters or groups emerged with the mandate of developing a tool or strategy that the world could adopt for use so as to safeguard the earth from undesirable impacts of developmental projects as well articulated by Rebelo and Guerreiro (2017). These pressure groups forced governments to respond to the environmental challenges which were now being faced by many countries. The United States of America (USA) responded to this crisis by enacting the National Environmental Policy Act in 1970 for the purposes of addressing environmental challenges which were being caused by economic development at national level. As such, the USA is therefore the pioneering country to enact a law for Environmental Impact Assessments (EIA) as echoed by Glasson & Therivel (2019). This marked the origin of the use of EIA as an environmental protection and management tool. The United Nations Conference on the Environment (UNCE) of 1772 held in Stockholm prescribed EIA as a tool for use whenever major projects are being evaluated for implementation. Rebelo and Guerreiro (2017), claims that currently, all developed nations established environmental legislations while developing nations are still fine turning their legislations. However, the EIA concept has been adopted at international level as a tool for sustainable development. Environmental Impact Assessment requirements are now being considered by multilateral and bilateral financial organisations such as International Finance Corporation, African Development Bank and World Bank in their project suitability standards for financing as summarized by Organization for Economic Cooperation and Development (OECD) (1996). On the other hand, Greta Thunberg and George Monbiot reported in The Guardian (2019) that natural climate solutions receive only 2% funding which is not

enough to incentivise adoption of such initiatives in promoting green buildings. These could fix some carbon dioxide and reduce greenhouse emissions hence helping significantly in combating effects of climate change and environmental pollution. As such there is need for consideration of natural systems in green financing in order to stimulate sustainable economic development at local levels. EIA is therefore a tool that can be used in promoting green development such that climate change impacts triggered by economic development can be minimised through the implementation of appropriate pollution mitigation technologies.

The United Nations Environment Program (UNEP) defined Environmental Impact Assessment as a system for decision making that is used to predict and assess anticipated socio-economic and environmental impacts prior to proposed project execution, evaluating its alternatives and designing necessary enhancement or mitigation measures as explained by World Business Council for Sustainable Development (WBCSD) (2005). The overall aim of conducting an EIA is to determine the environmental impacts earlier in the project planning stage in order to design it in a way which makes it fit into the existing environment without additional or cumulative negative impacts. EIA therefore prescribes to the precautionary principle. The project redesigning considers project alternatives which can reduce the magnitude and severity of the anticipated environmental impacts. The use of EIA in planning and decision making allows for both economic and environmental benefits to be synergised as explained by Rebelo and Guerreiro (2017). The benefits derived from this synergy include expedition in project implementation as a result of a reduction in costs and delays in decision making. The rationale behind EIAs is to ensure that there must be harmony between the proposed development and the surrounding environment in order to develop sustainable infrastructure in our countries. It sanctions the amalgamation of environmental and socio-economic perspectives in development. The WBCSD (2005) further established that the adoption of the EIA in decision making helps to embrace both the precautionary and subsidiarity principles thereby giving communities at the grassroots level an opportunity to equally participate in decision making on issues that concern their wellbeing.

The Rio Declaration on Environment and Development's Principle 17 demands the application of EIA in decision making at national level when evaluating whether proposed developmental projects have the possibility to cause major adverse impacts on the surrounding area as echoed by Bond *et al.* (2020). The declaration further stressed the role of the experienced national authority in making decisions in the EIA stages. Principle 15 of the Rio Declaration is also applicable to EIA training since it is premised on the precautionary principle. As such, most

countries have developed legislations to buttress their EIA systems in a bid to protect the environment from pollution, biodiversity loss and environmental degradation induced by development projects. The international acceptance of EIA is directly or indirectly founded on the supposition that the paybacks derived from it offset its costs. Nevertheless, there have been remarkably minute empirical investigations done regarding the "cost" of EIA as claimed by Retief and Chabalala (2009). The former has been mainly because of the demanding methodological problems including the challenges related to clarifying terminology and defining the meaning of "cost". Bond *et al.* (2020), claims that South Africa is a prominent emerging African nation pertaining to the introduction of EIA in planning and decision making. Despite nearly twenty years of compulsory EIA practice in South Africa, sombre concerns on unwarranted and pointless delays, financial expenses and a frantic need for enhanced proficiency have been raised by Retief and Chabalala (2009). In view of the former it becomes imperative to have an in-depth appreciation of the "cost" of EIA. It is therefore apparent that the EIA is a central process of economic development which has a significant impact on the national culture of conducting business in the current technological revolution. As such, the EIA tool has grown from project level EIA to strategic environmental impact assessments where policies, plans and programmes are now also subjected to the EIA process in order to inform sustainable decision making on development. Nevertheless, the establishment of the EIA concept and promulgation of supportive legislations has resulted in some unethical business practices especially in countries where corruption is rife as complained by Bond *et al.* (2020). The widening of the gap between the rich and the power results in exploitation of the poor nations such that their EIA systems may end up being mere compliance documents where there will be no thorough monitoring of investments at the expense of the environment and the most marginalised communities who will tend not to benefit from their environmental capital.

Inglehart (2018) argues that economic and technological developments have a tendency of bringing comprehensible and predictable political and social vicissitudes to national culture. However, these social modifications are essentially propelled by the belief that transformation conveys value modifications that cause nationals of economically radical nations to possess different inspirations and behaviour from those of emerging nations as noted by Hofstede (2019). As a result, inequality has significant consequences on ecological sustainability of modern nations. Inglehart (2018) argues that contemporary writings on the discourse of ecological disparity dwells on green trade and inequality, supremacy and disparity associated with environmental challenges, differential impacts of tight environmental legal frameworks and uneven sharing of environmental

risks as is the case in Zimbabwe. Since environmental legislations from developed nations have evolved over time and became more stringent than in developing nations, investors from developing countries have been investing in developing countries where environmental legislations are still developing and a bit relaxed. This has been happening at the expense of the general populace which are forced to leave with negative externalities of such investments due to their lower bargaining power coupled with inequalities which constitute a virtuous cycle of poverty as well explained by Hofstede (2019).

The Parliament of Zimbabwe received numerous reports of unprofessional practices within the environmental management business. Newsday (2014) reported that in March of 2014, there were reports of unauthentic EIA licences which triggered the then Minister of Environment, Water and Climate to institute an inquiry into such claims by the media. Some investors particularly from the east come to Zimbabwe and implement their projects without undergoing through the EIA process resulting in massive pollution and environmental degradation for example Marange Mining Company which discharged raw wastewater resulting in the death of local livestock as claimed by Daily News (2015) and Angel Hills Mining Company which operated without an EIA licence along Angwa River of Makonde District as reported by the Herald (2016). These investors are taking advantage of the government's dire need for foreign direct investment due to its collapsing economy. This is altering the power distance index of Zimbabwe causing a domino effect of societal changes in culture of the nation in terms of environmental management. As such, the need for a research to establish explanations why venture capitalists are not willing to internalise their externalities in production processes and projects is inevitable. The perceptions around the significance of EIA in economic development in Zimbabwe have raised mixed feelings amongst investors, government and the EIA practitioners in Zimbabwe which prompted the researcher to undertake this investigation. However, Zimbabwe has developed her EIA system anchored on the Environmental Management Act (CAP 20:27) as noted by Machaka *et al*. (2016). This Act provided for the EIA process which is conducted in Zimbabwe and the enactment of this Act in 2002 and establishment of the Environmental Management Agency as the competent authority triggered the development of many environmental science and management degree programmes to be offered by many academic institutions such as universities.

1.2 Research Problem

Zimbabwe is a landlocked country which is well endowed with natural resources. Despite all these natural resources, its economy is one of the worst performing one in the SADC region with history of very high inflation during the year 2008 where it slashed 12 zeros from its currency due to the supersonic hyperinflation which was fast eroding its currency as reported by Kavila and Le Roux (2017). This meant that the currency was now worthless a situation which improved during the inclusive government formed between the Zimbabwe African National Unity Patriotic Front (ZANU PF) and the then main opposition party Movement for Democratic Change (MDC). This global political agreement mediated by South Africa lasted up to 2013. The economy further took a nosedive with the resurgence of hyperinflation a few years after the lapsing of the global political agreement and increased instability of the macroeconomic policies that guides investments as explained by Raftopoulos (2013). The Environmental Management Agency barred registration of EIA consultants in January 2015 citing reasons of poor EIA reports with the ban later being lifted the same year after the intervention of the Environmental Professionals Council of Zimbabwe (EPCOZ) engaged EMA in order to ease the moratorium. However, this resulted in mixed perceptions among Zimbabwean EIA stakeholders with regards to the importance of the EIA process in economic development if EMA could consider such a decision to go solo in the EIA process. The EIA process in Zimbabwe is alleged to be delaying economic growth and limiting lines of credit and foreign direct investment (FDI) in Zimbabwe as stated by World Bank (2015). Such insights are grounded on the Attribution Theory whereby EIA interested parties have a tendency to correlate the decreasing ventures in economic facets to EIA costs. As a result of the hyperinflation characterising the economic landscape in Zimbabwe, investors are considering austerity measures in order to cut down on investment costs and also avoid escalation commitment. This is mainly caused by uncertainty regarding the possibility of deriving return on investment in the face of ever-changing macro-economic environment in Zimbabwe. EIA as a decision making tool, requires robust and inclusive stakeholder consultation process prior to decision making therefore takes more time before a decision can be made as established by Rebelo and Guerreiro (2017). The process of ensuring that all input from stakeholders is solicited has its own time constraints which results in delays in project approvals and subsequent implementation. Furthermore, EIA consultants argue that the input solicited from some of the EIA stakeholders comes at a cost despite the data collected being of insignificant technical relevance to the projects under consideration. Complaints have been raised that some EIA stakeholders lack a clear

understanding of their roles in the EIA process which results in delays in providing such input to the EIA process.

The Herald (2018) and The Financial Gazette (2018), both recounted that the economic state in Zimbabwe was aggravated by the World Bank's 2017 Report that hierarchically positioned Zimbabwe at position 161 out of 190 states with respect to ease of doing business index. The World Bank report therefore resulted in negative publicity on the EIA industry as many investors were attributing the results of the ease of doing business to the stringent regulatory requirements of which the EIA system in Zimbabwe was not immune. Conversely, a thorough comparison of EIA structures in Africa and Europe conducted by Rebelo and Guerreiro (2017) revealed that EIA costs are a computation of the project recipient state's economic conditions and are not constant. However, the Herald believes that the economic turbulence and the volatile political environment characterised by polarisation resulted in an unstable economic landscape making doing business in Zimbabwe more costly as claimed by many investors. Such stochastic disparities in costs are a consequence of variances in EIA structures adopted by several states notwithstanding the general principle that these costs should be incurred by project proponents. As a result of such variations, start-up expenses on comparable projects differ across nations and regions within the same country. The mixed insights on the effect of EIA costs on investments in Zimbabwe have frustrated the initiatives implemented by the central administration to re-establish the economy in a viable course as reported by ZIA (2015). Conversely, the Environmental Professionals Council of Zimbabwe (EPCOZ), Environmental Management Agency (EMA) and environmental consultants recognise Zimbabwe's EIA costs as inexpensive when compared with other nations in the Southern African Development Community (SADC). Due to these diverse opinions, it is imperative to examine the implication of the EIA progression on venture creation and economic growth in Zimbabwe. This study is expected to help in Zimbabwe's policy improvement

Zimbabweans exhibits strong Uncertainty Avoidance Index (UAI) since they uphold rigid codes of behaviour and beliefs as explained by the Hofstede Model of National Culture (Hofstede, 2019). As such they are not readily prepared to accept investments which they are not sure of what they hold in the future. Furthermore, the absence of a universally agreed EIA cost estimation model in the EIA industry is the biggest problem which makes EIA cost standardisation ideal in Zimbabwe and beyond. This has resulted in bid with higher variances making investors to query the relevance of the EIA process in their investments as noted by Machaka *et al.* (2016). However,

in 2011 Zimbabwe recorded her worst ease of doing business index where it was ranked on position 171 as shown in Figure 1.1

Figure 1.1: Zimbabwe's Ease of Doing Business Index adopted from The Financial Gazette (2018)

1.3 Purpose Statement

The motive of this investigation was to explore the association between the environmental impact assessment and economic growth in the Republic of Zimbabwe using mixed research method approach. EIA is a globally accepted tool for decision making which has been adopted by many countries and Zimbabwe is one of such countries. Additionally, multinational financiers such as World Bank and African Development Bank just to mention a few have developed interest in environmental social safeguards and environmental and social due diligence in their project financing criteria as echoed by Buntaine (2016) and Hillsamer (2016) in pursuit of greening the world. These safeguards are well articulated in environmental and social impact assessments and are meant to ensure that projects risks are identified and mitigation measures put in place prior to project implementation stage. This is done during the planning phase in order to explore the best alternative for implementation in terms of project design and technology that have the least impact to the environment as suggested by Rebelo & Guerreiro (2017). In the same context, the need to scrutinise the intricate connection between EIAs and economic growth with the view of demystifying EIA stakeholder delusions and perceptions existing in Zimbabwe is inevitable. This will help in building a robust EIA industry which promotes economic development in a

sustainable manner which has minimum ecological footprint. These EIA perceptions by different EIA stakeholders have created anarchy in the EIA Industry as noted by Machaka *et al.* (2016). Furthermore, the research upshots will supplement the current body of academic information interrogating in detail the association of these parameters from an integrated viewpoint. This will therefore help provide satisfactory empirical substantiation of the connection that occurs between these aspects and their significance to the current dialogue on greening the industrial sector. A universal EIA cost valuation model will be established as a consequence of this research project that can be of use when determining EIA costs within the environmental management industry. The EIA cost estimation model will be a technical tool that will be used to help standardise EIA costing in Zimbabwe thereby sanitising EIA cost issues. Garcia (2014) suggested that these cost valuation models are either parametric equations or mathematical computations used in estimation of EIA budgets of a project, product or service within some tolerable level of correctness. The outcomes of these simulations are usually necessary when obtaining approval to continue with projects and are a function of business budgets and other financial tracking and planning tools. The study is anticipated to assist policy makers in Zimbabwe as it implements both the Zim.Asset blue print, Look East Policy and other economic blue prints within SADC. The EIA consultancy industry will benefit immensely from the EIA cost estimation model since it will provide a clue on EIA projects costing which will be competitive even at regional and international level. The study further opens new doors for research to academia and industry thereby creating a platform for research collaboration and development of contemporary academic curriculum. This will help students gain a deeper understanding of the significance of EIA in economic development. The study therefore focuses on project level EIAs in five economic sectors of Zimbabwe which are compared with two SADC countries selected randomly as suggested by Saunders *et al.* (2009).

1.4 Research Aims

- To analyse the EIA processes in five major economic sectors in Zimbabwe comparing them with South African and Zambian processes and developing a Zimbabwean EIA cost estimation model.
- To conduct an in – depth literature review on the Environmental Impact Assessment processes and international best practices.

1.5 Specific Objectives

- To evaluate EIA costs for prescribed projects in Zimbabwe comparing them with Zambia and South Africa.
- To examine EIA Appraisal Timelines in Zambia, South Africa and Zimbabwe.
- To establish EIA stakeholders insights on EIA costs in the Republic of Zimbabwe
- To develop an Environmental Impact Assessment cost estimation model that can be adopted in the EIA consultancy industry.

1.6 Nature of study

The investigator made use of qualitative data in-corporation with quantitative data gathered from both primary and secondary data sources embracing an integrated research paradigm because the nature of the research mandate is multidisciplinary. It covers a wide spectrum of the environmental facets ranging from socio-economic to biophysical perspectives. Daniel (2016) identified mixed research methods as a key component in the enhancement of social studies and environmental investigations with research fortified by the usage of triangulation. The investigator used the case study strategy concentrating on EIA interested parties in Zimbabwe with regards to collecting primary data. A case-study strategy in qualitative investigations is defined by Kumar, (2011) as a comprehensive investigation of a small group of individuals sharing the same norms and beliefs which could be a community for example. The rationale of using a case study plan for this particular investigation was be to gather both qualitative and quantitative data from main EIA interested parties in the quest of defining the complex set of insights which could explain the observed social conduct towards the EIA process in Zimbabwe. Daniel (2016) further supports usage of case study strategies on qualitative study components since it affords room for thorough cross-examination and narrative of a societal phenomenon. However, the researcher was mindful of the understanding that simplification of the study conclusions of case study strategy is problematic as a result of the restriction in the usage of larger trials as claimed by Kumar, (2011). To neutralise this effect, the researcher ensured that the focus group discussions were thought provoking and exhaustive. In –depth interviews also augmented these exhaustive focus group deliberations in order to solicit for more data. Furthermore, the case - study plan enabled the investigator to execute data examination at optimal expenses in the face of the scarce financial funding and the Covid – 19 lockdowns which characterised the research epoch. The idea of using case study design is also supported by Leedy and Ormrod (2010), since it allows for the gathering

of qualitative and quantitative data in a unique way that would be difficult to use when other designs where to be adopted under limited financial resources.

SADC is a regional body comprising of fourteen member states as shown in Figure 1.2. This therefore means that the sampling frame for this study will comprise of these 14 nations. Nevertheless, purposive sampling will be done to select Zimbabwe as the focal research area while two the other nations will be chosen based on stratified random sampling from the sampling frame. Within Zimbabwe, the researcher will use simple random sampling to select thirty consultants out of the sixty presently permitted to operate in Zimbabwe by the Environmental Management Agency and the Environmental Professionals Council of Zimbabwe (EPCOZ). SADC shall be divided into two strata whereby there will be the Northern and Southern parts from which one country will be selected from each strata using stratified random sampling. Snowball sampling shall then be done in the selected two SADC nations to locate ten consultants in each country which will partake in an online questionnaire survey using cloud-based computer software for online investigations called survey monkey.

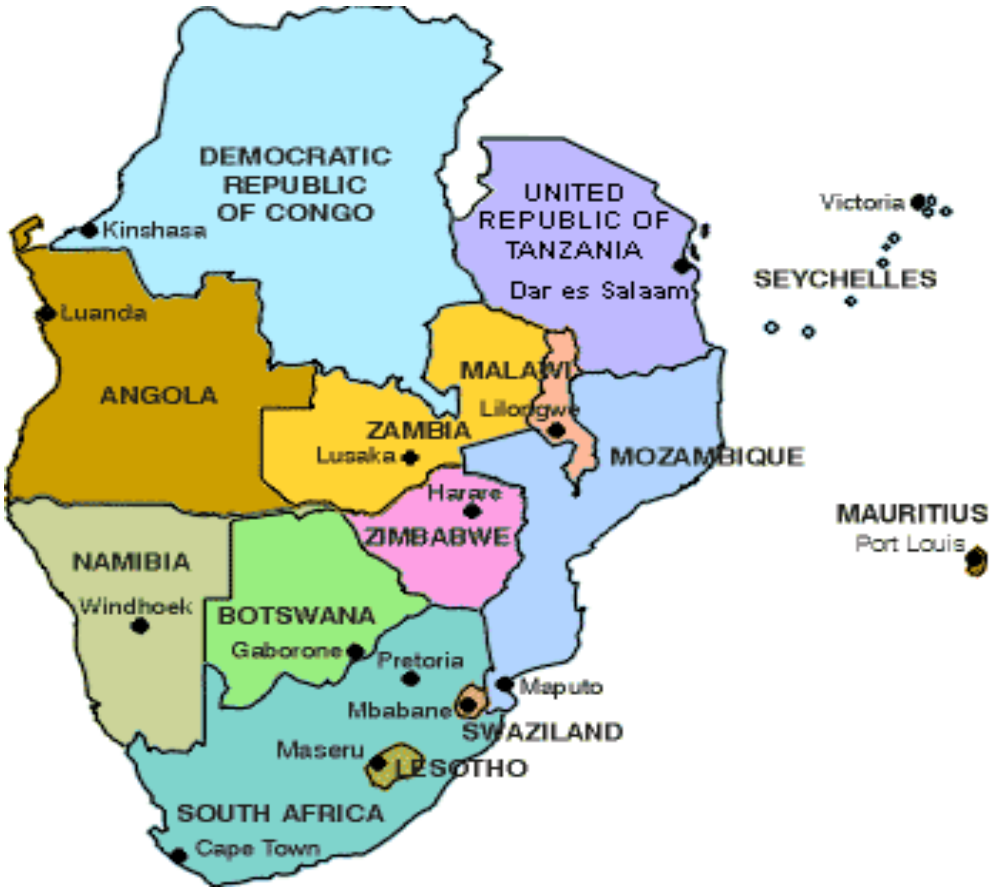

Figure 1.2: Map Showing SADC Member States Rebelo & Guerreiro (2017).

Quantitative data examination includes a critical analysis and explanation of mathematical data in order to establish the cause of the manifestation of major study results as explained by Kumar, (2011). Evaluations of primary research conclusions, verdicts of archival studies and literature appraisal are critically important for quantitative research as claimed by Saunders *et al.* (2009). The researcher therefore analysed data using SPSS version 25 so as to make inferential figures and One – Sample Chi Square Test was done at 0.05% significance level. This test was used to determine the importance of Zimbabwe's EIA procedure on economic growth. Leedy and Ormrod (2010) further affirm that the heart of the One – Sample Chi Square Test is to examine the degree at which fluctuations in one parameter are related to variations in other parameters.

The researcher made use of the framework analysis technique to analyse qualitative data due to its systematic nature in tactic. The investigator preferred to scrutinise data in a methodical style which is reproducible as recommended by Barnett-Page and Thomas (2009). Additionally, framework analysis technique was user friendly since it allowed the investigator to scientifically examine data and uphold a transparent and audit record, complementing the meticulousness of the investigative process. The researcher therefore processed qualitative data based on main categories and apprehensions in 5 stages as coined by Nelson *et al.* (2021)

1.7 Significance of study

The research is of paramount importance since it will illuminate on the misapprehensions that the EIA process in Zimbabwe is expensive and derails economic development. The five economic sectors which the researcher focused on are the engines which drives Zimbabwe's economy and have all projects undertaken prescribed for an EIA by the Environmental Management Act (CAP 20:27). Furthermore, study conclusions will amplify the current pool of academic information and cross-examine in detail the association between economic development and EIA from a holistic point of view. This will help in proffering tolerable empirical substantiation of the relationship that occurs and its significance to the current dialogue of green growth. The investigation is expected to develop generic model for EIA cost estimation which can be adopted when determining EIA costs and pricing by the environmental consultants in Zimbabwe and beyond. This will assist in EIA pricing standardisation across different sectors of the economy in Zimbabwe. Furthermore, the EIA cost estimation formula will boost investor's confidence with the EIA process. Cost estimation formulae are either a parametric calculation of mathematical algorithms used for estimation of budgets of an artefact, project or service with

some tolerable level of exactness as observed by Garcia (2014). In the absence of this project, Zimbabwe will continue to experience high variations in EIA costs and amongst tenderers leading development of inadequate mitigation measures on prescribed projects since project developers or investor will opt for cheaper alternatives. This will have a domino effect on the economy since the environment will be the recipient of negative externalities which would have been internalised if a robust environmental management plan had been implemented (Plater *et al.* 2016). Such a narrative will jeopardise policy direction as has happened in Zimbabwe where a simplified version of an EIA has been adopted for use by small scale miners however with unprecedented negative effects to the environment which impacts negatively on economic development as noted by Spiegel (2017).

1.8 Research Questions

i. What are the expenses and cost drivers when conducting EIAs for prescribed projects in Zambia, South Africa and Zimbabwe?

ii. How much time is required to review EIAs in Zambia, South Africa and Zimbabwe?

iii. What are the EIA interested party's perceptions concerning the EIA Procedure in Zimbabwe?

iv. What EIA cost estimation framework can be employed to promote investment and sustainable ease of doing business in Zimbabwe?

1.9 Research Hypotheses

H_0 There is no need for EIA pricing regulation by an environmental professional body in Zimbabwe.

H_1 There is need for EIA pricing regulation by an environmental professional body in Zimbabwe.

H_0 EIA costs in Zimbabwe do not affect Foreign Direct Investment inflows in Zimbabwe.

H_1 EIA costs in Zimbabwe affect Foreign Direct Investment inflows in Zimbabwe.

1.10 Overview of Dissertation Structure

The dissertation is structured in 5 chapters with the first chapter being the introduction having been explored. This chapter will be followed by the literature review which explores the theoretical framework and six sections covering the EIA system which establishes the origin of the EIA system and its significance to economic development. The EIA stakeholder involvement which focuses on the inclusivity nature of EIA in decision making is also explored under literature review making the reader gain full understanding of the EIA process. The cost involved in the EIA process are further elucidated in order to demystify and bring clarity on what the EIA cost entails in order to bring clarity on the research objectives. In a dipper analysis, the cost estimation techniques applicable to the service industry are further explored providing the basis of how the EIA cost estimation model will be developed. The nexus between EIA and sustainable development is further discussed giving rise to the explanation on how EIA is a tool for decision making in the contemporary economic development discourse. The EIA regulatory framework is the last section to be explored under literature review which gives impetus to policy formulation buttressing the EIA as a legal instrument for decision making. After literature review, chapter 3 is the section which outlines the research method used focusing of sampling, sample size and the research instruments used in achieving the research objectives and answering the research questions of this study. Chapter 4 focuses of the presentation and discussion of research findings, data trustworthiness, reliability, validity and hypotheses testing. Various data presentation styles are used. The last chapter of the dissertation is chapter 5 which provides for the implications of the study, recommendations for future studies and establishment of the EIA Cost Estimation Model to be used by EIA professionals in the EIA industry.

Chapter 2: Literature Review

2.1 Introduction

This literature review and this research are motivated by the need to investigate the relationship between Environmental Impact Assessments (EIA) and economic development in Zimbabwe with the main focus on the causes of behaviour of investors and political decision made. An important output of this literature review concerns the need to develop a model that can be used for EIA cost estimation. This will help decision-making processes by both EIA consultants and tender adjudication teams in EIA contract awards. As such, this chapter will therefore focus on the EIA system, EIA stakeholder involvement, EIA implementation costs, cost estimation techniques, sustainable development and the EIA regulatory framework. The researcher used Science Direct, e - books, Research Gate, and INFORMS Pubs Online just to mention a few. The following search terms were used: Environmental Impact Assessment, Sustainable Development, Cost Estimation Models, Stakeholder Involvement and EIA Costs.

2.2 Theoretical Framework

A theoretical framework is an arrangement which can sustain or buttress a theory of a research inquiry as defined by Weiner (2010) and Jackson (2016). It provides the description of the philosophy that explains why the research problem under investigation exists. Kruglanski (2015) further explains that the theory's selection requires a deep comprehension of the problem under investigation, the purpose and significance of the study and the research questions that need answers. In this study, the researcher adopted the Attribution Theory.

2.1.1 Attribution Theory

The attribution theory is apprehensive of the relationship between how persons deduce meaning of actions and their perceptions which determines their behaviour as explained by Efrat (2003), Oghojafor *et al.* (2012) and Su *et al.* (2020). The theory focuses on how a social perceiver utilises information in order to arrive at causal accounts of events. It scrutinizes the information that is collected and how it is aggregated to constitute a causal verdict. It further endeavours to describe the world and to determine what could cause certain behaviour or events. Timmermans *et al.* (2016) vowed that an attribute constitute a three tier process which include the following:

- An individual ought to observe or perceive behaviour (Perception).
- The individual ought to believe that observed behaviour was performed intentionally (Judgement).
- The individual ought to determine if observed behaviour is attributed to external or internal causes (Attribute).

However, Weiner further advanced a theoretical framework that is now the main research paradigm in societal psychology as explained by Weiner *et al.* (2014). He narrowed his attribution theory on achievement. Ability, task difficulty, effort and luck were identified as the most significant factors that affect attributions for achievement. Attributions were categorised into three underlying dimensions which are; locus of control, controllability and stability. The locus of control aspect has two ends which are either internal (dispositional attribution) or external (situational attribution) as expounded by Kovac (2016). Controllability contrasts are causes which one has control over, such as efficacy or skill and causes which one does not have control over, such as gift, others' actions, mood and luck. The stability aspect captures changes in causes over time for example, ability may be categorised as a stable internal cause and effort categorised as unstable and internal. In as much as the attribution theory is mainly used in the psychology domain, the researcher adopted it in this study because the research problem emanated from psychological aspects of EIA perceptions. These EIA perceptions were attributed to investors and EIA stakeholders' behaviour with regards to ease of doing business, FDI inflows and the overall effect on investment in various economic sectors of Zimbabwe. Weiner *et al.* (2014) believes that perceptions motivations, beliefs and attitudes are psychological by nature and this buttressed the researcher's view point.

2.1.2 Background of Attribution Theory

The learning of attributions originated from the discipline of social psychology. Fritz Heider is the "father" of attribution theory, who initially suggested that human beings are naive scientists who try to establish the causes of events for themselves and other individuals (Berghel, 2017). Nevertheless, attributions are not constantly truthful and unprejudiced (Grossman, 2015). As such there is a solid need in persons to appreciate transient occurrences by attributing them to steady characteristics of the environment or the performer's disposition as coined by Berghel, (2017) and Pacovská (2018). Although Heider was the first theorist to develop a psychological theory of attribution in 1958, Weiner and colleagues such as Jones and others in 1972 and Weiner

in 1974 and 1986 developed a theoretical framework which has turned out to be the main research paradigm of societal psychology as narrated by Nwankwo (2017) and Berghel (2017). The other determination behind building attributions is to accomplish intellectual control over one's environment by comprehending the causes underlying behaviours and environmental incidences. This offers predictability and order to human lives in order to cope with change.

2.1.3 Principles and Assumptions of Attribution Theory

The theory assumes that individuals attempt to determine the causes of why people behave in a certain manner thereby attributing causes to behaviour as highlighted by Martinko (2018). If an individual seeks to comprehend the reason why another individual did something he is likely to attribute either one or more causes to the observed behaviour. Weiner (2018) reaffirms that according to this theory it is quite normal for persons to scout for causes that could be attributed to their individual failure or success. Another postulation of the theory is that human beings construe their environment in a manner which will preserve a positive self-image as alluded to by Kruglanski (2015). As such the behaviour noticed may not be necessarily caused by the attributed cause. However, human behaviour is mainly determined by four principal factors which are; biological influences such as sex and age, biosocial dynamics which involves interactions amongst people, cultural aspects of background and the situational elements such as environmental challenges faced by people as concluded by Kovac (2016).

2.1.4 Controversies of Attribution Theory in Research

Attribution theory has been attacked as being automatic and simplistic in assuming that individuals are rational, methodical and logical intellectuals. The ultimate attribution blunder, conversely, reveals that people are motivated strategist and misers as alluded to by Abramowitz *et al.* (2019). The theory likewise fails to deal with the traditional, social and historic dynamics that form attributions of cause. Furthermore, the theory snatches away from individuals the obligation of owning up to their pronouncements. Chambers (2017) claims that if attribution theory is taken at face value, the point of people’s own efforts is missed in mitigating the dire circumstances they find ourselves in. Research by psychologists has revealed that most people are biased in their judgement of what is responsible for an event as explained by Banaji & Greenwald (2016). Individuals tend to attribute the successes of others and their own failures to external factors. Conversely people tend to attribute their successes and failures of others to internal factors. McLarty & Whitman (2016) argue that it is vital to be cognisant of the fact that the relationship

between the attribution simulations and practical research is not always straightforward. There are three justifications for this situation as explained by Schafer (2020). To start with, attribution principles for instance the covariance principle is so universal such that it is no longer connected to a specific model and may remain inherent in analyses of practical problems. Furthermore, Abramowitz *et al.* (2019) concurs with Schafer (2020) that findings obtained from a basic attribution investigation can't simply be inferred to practical setting without supplementary examination. Lastly, practical work produced philosophies that aren't found in the literature of attribution theory. This has resulted in observed slight differences in viewpoints on some current attribution thoughts as mentioned by Harvey (2014). However, despite these controversies the theory is the most appropriate one to use in this study since EIA perceptions by stakeholders can be well understood from the regulator's perspectives and be able to inform policy direction.

2.1.5 Application of Attribution Theory to Environmental Management

Ehrlich and Ross (2015) recognised that attribution theory is significant for environmental organizations since it can assist environmental managers appreciate some causes of stakeholders' perceptions when it comes to adoption of environmental impact assessment (EIA) prior to projects development and subsequent post EIA monitoring. The theory can be applied to environmental management decision making especially on EIA project costing (Biernacki, 2018). Environmental professionals can utilise attributions to justify the causes of the environmental consultant's financial bid. Attribution theory can also assist stakeholders to comprehend their behaviours on the same. Since the theory attempts to explain some of the causes of human behaviour, it becomes significant in aiding decision making which is the rationale of EIA in economic development as buttressed by Leonidou & Skarmeas (2017). As such, the use of attribution theory in environmental management studies offers numerous inferences for business and public policy makers with great potential to present prolific research directions.

2.1.6 Rationale of Adopting Attribution Theory

The researcher adopted the attribution theory because it provides the means of understanding how people perceive situations and respond as argued by Weiner (2018). As such, the researcher intends to have an understanding of why EIA stakeholders share different insights regarding the EIA costs in various economic sectors of the country, importance of the EIA process in Zimbabwe and EIA appraisal timelines with regards to ease of doing business and its impact on

economic growth. Weiner *et al.* (2014), vow that causal locus is central to attribution theory and hence the identified causes of behaviour will help the researcher understand the perceptions of different EIA stakeholders. This will also assist in developing an EIA costing model that can be adopted by the sector in an effort to promote standardisation in EIA costing as suggested by Gumley (2015). It is vital to adopt attribution theory as the theoretical framework for this study since attributions have implications on the nexus between EIA and economic development perceptions. Weiner *et al.* (2014) confirm that attribution theory begins from anxiety with casual justifications and suggests means by which evidence ought to be evaluated in a manner which makes such explanations conceivable thereby reflecting on the practicality of attribution theory in this research.

2.2 Field Description

Rebelo and Guerreiro (2017), views EIA as a system of decision making which should to be fused into economic planning process with the view of integrating environmental and social aspects in developmental dialogue and projects execution. Notwithstanding the international recognition as a sustainable development instrument, not all republics have incorporated and ratified the EIA system in their local environmental laws. Among those nations that have adopted the EIA system, Zimbabwe has passed the Environmental Management Act Chapter 20: 27 with the aim of addressing environmental and social concerns prior to implementation of prescribed developmental projects in pursuit of encouraging sustainable development as renowned by ZIA (2015). As such EIA is a discipline which seeks to foster sustainable development through informed decision making anchored on the precautionary principle and scientific fundamentals.

2.3 Environmental Impact Assessment – EIA System

When Seitz *et al.* (2011) described an Environmental Impact Assessment (EIA) system in terms of its temporal and spatial jurisdictions, Barde and Pearce (2013) discovered that it is further bounded and moulded by its environment, pronounced through its purpose, structure and articulated in its operation. Morrison-Saunders & Fischer (2010) admits that EIA system is the main decision making approach aimed at ensuring that economic development is environmentally sound and socially acceptable, a sentiment echoed by White and Noble (2013) as well. Toro *et al.* (2010) and Glasson & Therivel (2019) concur that the EIA report is a technical instrument that is used for identification, prediction, and analysis of impacts on the biophysical environment,

cultural, social and health impacts. Furthermore, Rybaczewska-Blażejowska (2018) believes that a successful EIA process must identify project alternatives and mitigation measures which reduce the anticipated environmental impacts of the proposed project. Possibly the most shared notion of EIA system is as a planning technology for development. EIA systems varies from one country to another but they all strive to achieve the same objectives of ensuring inclusivity in decision making on proposed developmental projects.

Hasan *et al.* (2018) and Partidario & Monteiro (2019) both agree that environmental assessments are conducted in order to predict and appraise the environmental impacts of a proposed development including its alternatives. Agbazue & Ehiemobi (2016) perceive the notion of EIA system being viewed as a planning instrument as the 'technocratic paradigm,' due to EIA being mainly conducted by scientists and engineers. Mehdic (2019) further elucidates that this technocratic paradigm, views EIA as a component of the 'rational model' of forecasting and decision making. However, the rational model allows for identification of standards for evaluating alternative developments prior to project implementation as buttressed by Bryant (2019) and Ibadov & Kulejewski (2019). Glasson and Therivel (2019) once mentioned that EIA serves principally to enlighten interested parties on the anticipated environmental impacts of a suggested development including its alternatives. Nevertheless, Boyco (2010) argues that the technocratic paradigm on EIA has been critiqued for its oversight on political interference and influences decision making in an impractical way. Boer *et al.* (2015) further laments that decisions on major private or public developments are generally not done following a logic sequence of a rational model. This line of thought is also supported by Chifos *et al.* (2019) who declared that decisions are predisposed by 'non-scientific' influences, such as corporate supremacy and political securities.

The course of action is mostly determined by the project underwriter's tapered goals, inter-organisational conflicts and intra-organizational political influences than by technical environmental impact studies as acknowledged by Antonson (2011). Moreover, the main shortcoming of the technocratic opinion of the EIA system is that it can overshadow those apprehensive of the political realisms of the EIA process as underscored by Boer *et al.* (2015). Wathern (2013) claims that in as much as EIAs continue to be undertaken, they become decreasingly correlated to final decisions that are made pertaining to proposed developments. Smith (2017) discovered that the more convincing idea of decision making process embraces political certainties and acknowledges that the definitive aim of EIA is to enhance the superiority of decisions in view of the anticipated environmental impacts of a proposed development. As

result of Smith's discovery, Carter (2018) was convinced that EIA is positioned in a political framework whereby requirements to undertake EIAs can stimulate the attitudes of top government officials, tactics of project rivals and the normal operating standards of organizations proposing projects. Ozawa (2019) further reiterated that when using this wider notion of EIA system, the emphasis will not just be on scientific research or environmental impacts but rather on refining decisions. Therefore a robust EIA system is one which embraces all facets of the technocratic paradigm and political conception in enhancing long lasting decision making considering all players involved in the EIA system as resolved by Sala *et al.* (2013), Aledo-Tur & Domínguez-Gómez (2017) and Reid and Rout (2020).

The thought by O'Faircheallaigh (2010) is perhaps more important but less extensively deliberated on than the EIA influence on project developers within the EIA system. Likewise, Morrison-Saunders & Retief (2012) vows that while several project developers are marginally impacted, others are fundamentally affected. Additionally, these effects emanate from proponents engaging environmental consultants in pursuit of meeting EIA legal requirements and ad hoc response to funding requirements of multilateral financial institutions as pinpointed by Sánchez & Mitchell (2017). Gjuzi (2018) and Hearn (2018) contend that although various competent EIA regulatory authorities have an initial propensity to meet EIA legal requirements, this sometimes degenerates into a position where EIA process is embraced as a standard business operating system. In essence, project developers tend to benefit from the EIA system in the long run as concluded by Warner & Sullivan (2017).

2.3.1 The Beginning of EIA

The roots of EIA have been well narrated by others such that merely a brief reminder on the topic is presented here. Although extrapolations on the impacts of anthropogenic activities on the environment are as ancient as chronicled in history, the modern usage of environmental impact assessment originated in the United States of America's National Environmental Policy Act (NEPA) of 1969 as narrated by Katsoulakos *et al.* (2016). Foreman (2011) believes that the motivation for NEPA was the extensive recognition during the late 1960s that significant environmental challenges in the United States of America (USA) emanated from industrial pollution and rapid environmental degradation as also suggested by Anderson (2012). As such, Cullingworth *et al.* (2013) in his research discovered that the application of EIA system was initiated in 1970 in USA and spread spontaneously throughout the world predominantly after the 1992 United Nations Earth Summit. Arts (2016) noted that it became essential to introduce an

organized process of undertaking an EIA in order to allow incorporation of environmental issues in decision making. On the same understanding Diaz-Balteiro *et al.* (2017) and Bolis *et al.* (2017) give accolades to the US government on the enactment of NEPA which resulted in EIA being enforced as legislation in USA with the Environmental Protection Agency (EPA) established in 1970 to oversee the EIA system. As a consequence, Durden *et al.* (2018) testifies that to date, many countries in the world have over time developed and institutionalized country specific EIA systems.

The stimulus of NEPA from which the philosophy of EIA system has its foundation rooted was extended far beyond USA and triggered the introduction of EIA policies in numerous nations in Europe, Asia and Africa as chronicled by Yigitcanla (2016) and Wiessala (2016). According to Menon and Kohli (2019), over 40 nations had institutionalised EIA system by early 1990s in their local legislations. Sithole and Chikerema (2014), Riches and Stalker (2016) and O'Gorman (2017) allude to the perception that succeeding the USA's initiative, numerous countries for instance Australia in 1974, France in 1976, Israel in 1981, Angola in 1992, Zimbabwe in 2002 and Botswana in 2005 began to run EIA systems as a legal requirement for decision making and prior projects implementation. Perry-Kessaris (2016) vows that currently, the EIA requirements are somewhat imposed on nations which do not have formal EIA systems since multilateral projects financiers such as World Bank, African Development Bank and other financial aid institutions repeatedly call for EIAs on their project funding eligibility criteria. However, Abebe (2018) argues that although financial aid institutions have patterned records in employing their own EIA necessities, they have been pressurised to enhance the manner in which ElAs are done for developments they fund. Nevertheless, some aid institutions have fully embraced the EIA system in order to safeguard their investments in line with the sustainable development goals and national laws for host countries (Chang *et al.* 2018).

2.3.2 EIA Process

Much activity on the establishment of EIA procedures was witnessed in the early 1970s as EIA consultants and government competent authorities struggled to work out what instituted an EIA and the process that could be trailed (Katsoulakos *et al.* 2016 and Cullingworth *et al.* 2013). Noble and Press (2011) were worried that efforts to develop a single appropriate EIA process flow were ingenious and could not result in a generally agreed-upon system. However, Chesoh (2011) and Warburton (2014) realised that these endeavours produced supportive information in undertaking EIAs and their outcomes ended up in a sequential process characterised by

chronological stages. As a consequence, the EIA process is systematic with a set procedure which ought to be followed characterised by deliverables which can be evaluated at each stage. This methodological approach allows for tracking of the progress of any EIA project that will be under consideration. EIA process can therefore be described in seven stages as shown in Figure 2.1.

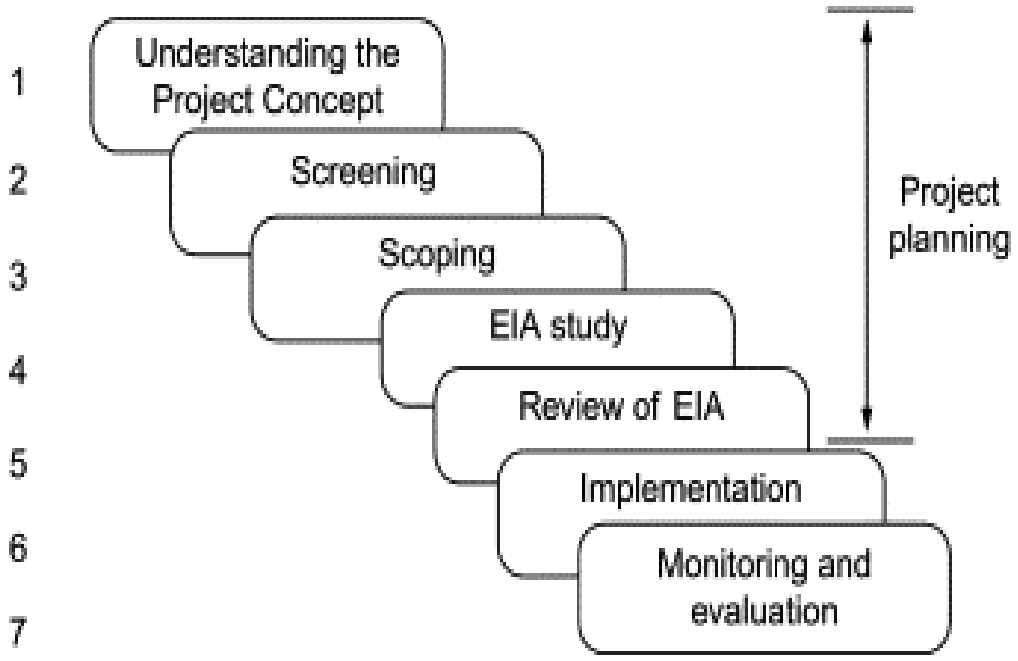

Figure 2.1: EIA Process Flow Diagram adopted from Yaqoob et al. (2019)

As explained by Chikohomero (2020), a prospectus defines the project concept which is usually submitted to the competent authority for the screening process to be done. This process is usually done using screening guidelines to determine whether a project is exempt from the EIA study or not as well articulated by Ganeshkumar *et al.* (2010) and Noble and Press (2011). Scoping is done in order to delineate boundaries of the EIA study. The EIA study usually follows a technocratic paradigm and involves a lot of specialist studies depending on the nature of the project (Mehdic, 2019). It is a stage in which project alternatives are evaluated and mitigation measures developed for adoption. Boyco (2010) hints that EIA review involves decision making and many at times it is influenced by corporate influence and political benefits as opposed to the technocratic philosophy. However, public participation and disclosure are important aspects within the EIA system which ought to be effectively implemented at every stage in order to integrate the technocratic paradigm and political interests in decision making as lamented by Boer *et al.* (2015) and Chifos *et al.* (2019). Nevertheless in practice, the timing of carrying out of public participation and disclosure differs within EIA systems adopted by each country (Glasson &

Therivel, 2019). After decision making, a project can then be implemented while its progress will be monitored and corrective measures being put in place should any issues that could not have been captured in the EIA study arise as proposed by Swangjang (2018). During implementation of a project, the environmental management plan becomes critical in which mitigation measures will be infused in the entire project cycle so that project impacts are managed sustainably.

2.3.3 EIA Implementation Benefits

The belief by De Vries (2012) on the on-going dialogue on several environmental assessment issues emanating from the presence of exhibits concerning ecological degradation as a consequence of economic growth is also supported by DeBardeleben (2019). Due to the present global economic calamity, supply chain relations and stringent environmental standards, organizations are compelled to implement environmental systems in order to benefit from such systems as claimed by Reed (2019). Since EIA in most countries is now a legal requirement, organisations ought to maximise its benefits in order to remain afloat in today's dynamic business environment (Smith *et al.* 2010). It is against this background that EIA benefits should not be limited to project proponents only but stretch beyond economic to social and ecological aspects as recommended by Palinkas *et al.* (2019). Fiorino (2011) and Daneke *et al.* (2019) postulates paybacks to local inhabitants from environmental assessment involvement to include the maintenance of a rich local pristine environment comprising of increased biodiversity, agricultural potential reliable clean water sources, improved aesthetic values, recreational potential and clean air. In essence, an EIA is anticipated to identify possible risks of a development to the environment, economy and human welfare with the intention of establishing measures to avoid, mitigate and compensate for these risks as once revealed by Noble & Press (2011). Swangjang (2018) believes that this anticipation can be achieved by modifying or substituting planned designs in order to minimise the environmental impacts of a proposed project. The EIA benefits can either be direct or indirect as summarised by Warner and Sullivan (2017). In a nutshell, a brief explanation of the direct and indirect benefits of EIA implementation is tabulated in Table 2.1.

Table 2. 1: Benefits of EIA Implementation Benefits

EIA Benefit	**EIA Benefit Explanation**
Improved environmental project design and planning	Fiorino (2011) believes that when undertaking an EIA project alternatives and onsite designs are evaluated. This results in the selection of an appropriate technology which is environmentally sound, economically viable and socially acceptable as well articulated

	by Palinkas *et al*. (2019). A well-thought project can curtail a project's environmental impacts and risks on the environment thereby avoiding associated costs of remediation or compensation (Glasson and Therivel, 2019).
Safeguarding environmental compliance with local and international laws	Weiss (2011) swore that compliance with environmental laws and standards minimises destruction of the environment and disturbance of communities while Miles (2013) further alludes to the fact that it reduces risks of environmental litigation which may delay project implementation.
Capital savings and operating expenses	Palinkas *et al*. (2019) realised that EIA can circumvent the undue expenses of unanticipated environmental impacts. Such costs can escalate if environmental impacts were not well-thought-out from the conception stages of the proposal and would need redress later. Kırılmaz & Erol (2017) maintains that a precautionary approach is therefore less expensive than a reactionary approach. As such EIA allows for inclusion of alterations at the preliminary stages of project planning.
Reduction in costs and delays on approvals of project implementation	When all environmental trepidations have been well considered before project submission for endorsement, then it's very unlikely that there will be delays due to decision-makers requesting for either supplementary evidence or adjustments on mitigation strategies as explained by Zewdu (2018).
Increased acceptance of the project	EIA acts as a nexus between the project proponent and communities. Nzeadibe *et al.* (2015) supports the notion that it provides for dialogue which ultimately shifts the project's ownership sorely from the proponent to the community. This helps in safeguarding the project from vandalism, and theft thereby resolving conflicts that may arise between the developer and the intended beneficiaries during the course of the project life cycle as established by Udofia *et al.* (2017).
Improved performance of the project	Nzeadibe *et al.* (2015) is certain that when an EIA is comprehensively undertaken with exhaustive stakeholder participation, indigenous knowledge will be factored in the project design thereby enhancing the development of a project. EIA will allow for full harmonisation of the

	proposed project with the environment. Benard (2016) further indicates that indigenous people have a wealth of knowledge about their environment which have acquired since time immemorial and when such knowledge is fused in a project through an EIA, it can result in better project performance.
Aids robust decision making	Zewdu (2018) and Sijtsma *et al.* (2013) concur that EIA is multidisciplinary in nature and when religiously done, it helps decision makers in making sound decisions from an informed position where considerations from a wide range of perspectives would have been brainstormed. This makes decision making more holistic and robust in nature.

2.3.4 EIA Challenges

For the purposes of this discussion, the impact assessment methods focus on impact identification, impact prediction, and impact evaluation. Studies done by Dixon *et al*. (2013) revealed that techniques used when predicting environmental impacts by technical specialists heavily depend on professional judgment. Smith (2017) then argues that such projections are mostly so vague and difficult to validate. In some instances, mathematical models are used when making impact predictions as suggested by Mandal *et al.* (2011). However, this approach is criticized by Weston (2010) and Marchuk (2011) since models are often presented in a form of black boxes and the foundation for such predictions is unclear. Certainly, EIAs contain little information pertaining to simulations and their assumptions as highlighted by Weston (2010). As such inaccuracies intrinsic to this method aren't readily noticeable resulting in outcomes being not subjected to through scrutiny. Possibly the most challenging aspect of EIA involves appraising predicted environmental impacts as queried by Dixon *et al*. (2013). There have been frantic attempts by Deng *et al.* (2014) to advance algorithms which conglomerate projections and subjective values of impacted parties to develop an inclusive index to rate specific projects. While such algorithms are occasionally employed in formulating EIAs, they seem not commonly embraced and their usage is controversial as argued by Wathern (2013). For instance, Amer *et al.* (2013) recites the main political combat over the rationality of using Battelle's Environmental Evaluation System (BEES) to evaluate a suggested dam on the Taiwan's Liwu River. This suggested project would have damaged an attractive scenic reserve in Taiwan and the usage of the BEES attempted to weigh up the loss of visual environmental capital applying numerical rating

approach. This approach received intense public criticism and project challengers ridiculed that determination as further chronicled by Kuo & Brierley (2014). It was only after another independent EIA which factored in economic benefits of the dam was done when the project site was developed into a national park. Like any other system of decision making, EIA has its own challenges which will also need continual improvement especially in integrating scientific and social data in the decision making process balancing all facets of development.

Complains by Dixon *et al*. (2013) that some consultants formulating EIAs are addressing impact evaluation by providing impact predictions with no evaluative rankings or judgments have been noted. Irrespective of whether impact evaluation is attempted, the volume of material presented in EIA reports can at times overwhelm the most dedicated reader as also criticised by Eccleston (2011). This has triggered Wathern (2013) to search for flawless formats of presenting EIA outcomes for instance matrices and network diagrams in comparing the impacts of proposed project alternatives. Conversely, Koivurova (2017) provides other formats which present qualitative descriptions of environmental effects or ordinal scaled rankings and some other formats which show outcomes as quantitative weighted - impact totals. In a nutshell, Hearn (2018) summed up the discussion by revealing that EIA specialists utilise a variety of techniques in identifying, predicting, evaluating environmental impacts and presenting EIA findings in reports. Projects are unique and each proposed project requires a mix of techniques custom-made to suite the local environment, budget and time constrains as summarised by Wathern (2013) and Eccleston (2011). As such, the greatest EIA challenge is that there is no one, universally appropriate EIA methodology since the situation at hand determines the applicable method for adoption.

Observations by Guerra *et al.* (2015) that there are two distinct types EIA limitations with the leading set of limitations originating from a systemic challenge are intriguing. EIA is characteristically undertaken as a one-time task, whereas the project design process is iterative and cyclical as witnessed by Larsen *et al.* (2017). Furthermore, the EIA study is often undertaken late in the planning, usually after project advocates have become devoted to a certain design model. Lawrence and Larsen (2017) insists that under such circumstances, it becomes mind boggling to anticipate that an EIA could influence ultimate decisions concerning the varieties of alternative designs that can be considered. The other set of limitations is less essential and hence more amenable to solution. Hasan *et al.* (2018) affirms that this set concerns beneficial studies and undertakings that could be regularly conducted such as strategic EIAs, risk assessments, cumulative environmental impact studies, social impact analyses, meaningful stakeholder

participation and post EIA monitoring in order to warrant implementation of suggested mitigation measures. While these challenges have been difficult to manage in practice, Nsiah (2019) vows that there are several cases in the literature indicating that improvements are being made to address them. It must be noted that EIA studies need to be done during the planning stages so that its outputs feeds into the overall project plan. It should not be conducted for compliance purposes only but as part of the project planning and financing.

2.3.5 EIA Opportunities

EIA recommendations may compel redesign of certain project components which may generate new business opportunities for both the proponent and EIA consultants through further studies as asserted to by Englund & Graham (2019). In order to maximise EIA opportunities and benefits, it is crucial for it to be undertaken earlier in the project planning so that recommendations can be fused in the design earlier. Howard *et al.* (2019) accepts that this will enable cost-benefit analysis to be done well in advance without incurring unnecessary delays or escalated design expenses due to projected modifications in response to unanticipated environmental impacts. Menon (2020) also acknowledges that post EIA monitoring provides further EIA opportunities for improvement since there is room for incorporation of new technologies to manage negative impacts of the project. While Clark *et al.* (2020) believes that an imperative output of the EIA process ought to be the delineation of an enabling framework for continual improvement in environmental performance of a project, Howard *et al.* (2019) is confident that the application of the EIA process has been receiving growing momentum in a variety of projects in recent years.

Furushima *et al.* (2019) detected that in modern years, the possible applications of EIA process have been amplified, predominantly in the angle of global environmental challenges. As such attempts by Englund & Graham (2019) to apply EIA on current topical problems such as biodiversity loss and anthropogenic induced climate change are on-going. Furthermore, several development support institutions view EIA as the honcho in their determinations in facilitating sustainable development as advocated by Howard (2019). Intrinsically there has been a lot of funding for the EIA process as evidenced by the adoption of the EIA system as a decision making technology when multilateral financial institutions considers projects for funding (Ortiz & Climent-Gil, 2020). Lastly, there are substantial opportunities for the EIA to guarantee attention of environmental concerns on trade agreements. The impetus for free trade is growing and the sum total of global agreements that will involve trade and environment will possibly rise in the near future as anticipated by Dung (2019). The notion that EIA is the foundation of environmental consultancy work provides for more opportunities that can generate new business opportunities for

the EIA consultants and also provides for more alternatives to the project proposal. Implementing an environmental management plan provides for more monitoring and audit services which can generate revenue for the consultants and increased contributions to government through taxes which all builds to economic development of a country. Furthermore, EIA provides opportunities for continual improvements and adaptation to new policies which may affect the business operations in the future.

2.3.6 Types of EIAs

The history of environmental impact assessments was triggered by unprecedented environmental degradation and conflicts due to rapid environmental degradation in the early 1960s as echoed by Rich (2014) and Moni *et al.* (2020). Chronicling the environmental management narrative from its genesis in the early 1960s to date comes into view as a fitting backdrop upon which to entwine the evolution of the EIA processes. Intrinsically it appears that as the comprehension of the immediate environment and its multidisciplinary interdependent nature developed, so did the scope and depth of environmental laws which were enacted globally as observed by Rebelo and Guerreiro (2017). However, the philosophical origin of the environmental stewardship movement in the late 1960s has developed into the existing regulations and laws of the 1990s. These statutes have encompassed both the developing and developed world as noted by Rich (2014). Glasson & Therivel (2019) argues that the definition of the "commons" and “our common future” is becoming apparent, as is the comprehension that the evaluation of impacts of developmental projects needs to be undertaken from the policy tier down to the project rank. Additionally, the impact of development on socio - economic safeguards as well as on peoples’ health and safety is being deliberated as a fundamental field of inquiry with stakeholder participation sturdily emerging as a vital force in influencing the decision-making process as observed by Rebelo and Guerreiro (2017). As a consequence, EIA has become the most important, proactive decision-making practice available for environmental management of singular developments. It is a tool for sustainability which is used to assess the impacts of a proposed development to the environment and proffer mitigation or enhancement measures in order to harmonize development with nature. However Life Cycle Assessment (LCA) is emerging as the fifth type of EIA though it is mostly likely used as the basis of ecological labelling. As such, life cycle assessment is a technique for evaluating environmental impacts coupled with all the phases of the life cycle of an industrial product, activity or service. It focuses on identification of impacts of a product or service or activity from cradle to grave and develop improvement mechanism aimed at reducing the ecological footprint of such as suggested by Moni *et al.* (2020). Issues of

circular economy and development are being considered under LCA and need to be captured right from strategic environmental assessment level to project level EIA. However, there are four types of EIAs which the researcher interrogated further shown in Figure 2.2.

Figure 2. 2: Types of EIAs

Strategic Environmental Assessment (SEA) is a high level process that is undertaken to warrant identification and assessment of significant environmental impacts emanating from plans, policies and programmes as established by Scott (2021). This helps in the development of mitigation measures which will have to be communicated to decision-makers. Noble & Nwanekezie (2017) argues that SEA provides for monitoring of significant environmental impacts and opportunities for public involvement in decision making at plans, policies and programmes (PPP) levels. It may be viewed as a structured, participative, rigorous, transparent and open EIA based procedure applied predominantly to PPP prepared by public planning powers that be and at times private entities. As such, SEA is undertaken way before a project level EIA is considered as suggested by Scott (2021). This ultimately means that the information on the environmental impact of a plan contained in the SEA can cascade down through the levels of decision making for use in project level EIA at a later stage. However, the methodology of conducting SEA is not yet well developed though it follows the project level EIA methodology with greater emphasis on stakeholder engagement as observed by Noble & Nwanekezie (2017). SEA therefore makes an inquest into likely positive and negative environmental changes emanating from the development triggered by either existing or new developmental plans, policies and programmes. Cape *et al.*

(2018) noted that SEA can be applied at both wider policy initiatives and to more tangible plans and programmes that have physical spatial reference from this perspective. As such SEA is a decision making tool for sustainability that can be used at strategic planning level.

Regional Environmental Assessment (REA) in the perspective of regional planning incorporates environmental issues into growth plans for a geographic region, usually at the sub- nation echelon as explained by Blakley *et al.* (2020). Such a strategy is referred to as the economic – cum - environmental development planning. REA has proved to be effectual in supporting regional sustainable development process. Selected environmental evaluation techniques have been utilised to ameliorate the REA process and provide trustworthy data for decision-making not only to correct environmental challenges caused by past unsound socio - economic developments but also to assist governments to execute Agenda 21 projects and plans as buttressed by Scott (2021). This takes into account the concept of regional integration where there is need to manage negative externalities of development making use of consorted effort at regional level. There are some environmental impacts such as air pollution which has triggered anthropogenic induced climate change which knows no boundaries as noted by The Guardian (2019). As such there is need for REA to arrest such environmental externalities in order to be able to make decisions which are ecologically friendly, economically viable and socially acceptable in a bid to attain sustainable development.

There has been a significant shift of events during the late 1970s due to the emergence of a multidisciplinary character in project level EIAs. This was caused by the need to include the social aspect to the EIA process. Social impact analysis (SIA) and risk analysis were engraved into the EIA process which was predominantly focusing on ecological aspects of the environment as noted by Baraibar-Diez *et al.* (2020). This was presumably as a result of the improved recognition and comprehension of the interdependence of a variety of apparatus of the environment. It was further realised at that point, the impacts of environmental pollution did not know state boundaries and jurisdictions anymore as explained by The Guardian (2019). As such, the level and scope of EIA needed to be stretched further when regional developments and plans were being considered. An EIA can thus be undertaken at various tiers depending on the scope of the development action as suggested by Calvo *et al.* (2020). In a large industrial domain, for instance, while the singular industrial emissions may be within acceptable ranges, the cumulative impacts of the emissions can result in significant deterioration of the regional environmental quality. As a consequence, planning authorities involved in the establishment of satellite urban projects ought to tackle environmental impacts on a cumulative or regional basis and not restricted to individual projects

as reaffirmed by Blakley *et al.* (2020). This means that the cumulative effects of alterations in land use due to actions such as transportation, housing, waste disposal and water supply can results in significant regional environmental effects which need to be managed by considering the effects on a region - wide scale.

According to Barannik & Goodland (2017), the World Bank guidance on sectoral EIA was initiated in 1989 and resulted in the adoption of Operational Directive 4.00. This was later amended in 1991 as Operational Directive 4.01 - Environmental Assessment. This helped the World Bank and its borrowers in introducing sectoral EIA in project groundwork notwithstanding the absence of a tested method of conducting it. Sectoral EIA evades the intrinsic restrictions of project specific EIAs in managing issues associated with policy, planning and institutional framework as suggested by Scott (2021). However, by traversing upstream in the planning course to a level where main strategic decisions have not yet been considered, sector EIA provides better alternatives not only for evaluating existing plans, institutions, and policies with regards to environmental aspects, but also for buttressing environmentally friendly sector broader investment strategies as explained by Noble & Nwanekezie (2017). The Specific EIA should evaluate sector-specific laws, regulations and policies that bear environmental implications. It should further identify how environmental roles and responsibilities are allocated among private and public sector institutions through assessing their competence to govern these tasks. The sectoral development planning procedure should be vigilantly reviewed in terms of methodology, procedures and approval of projects plans. The nexus between timing of development project assessment, issuance of permits and licenses and sectoral planning method should be undoubtedly indicated as explained by Baraibar-Diez *et al.* (2020). The sector EIA ought to establish whether social and environmental concerns are satisfactorily covered by current methods.

Sectoral EIA focuses on a specific sector for instance mining or tourism. Noble & Nwanekezie (2017) observed that the scope of sectoral EIA is broader within a specific sector I which the EIA will be conducted. This can be done at a large scale to identify the environmental impacts of the entire sector to the environment. Project level EIAs can then be done but the overall environmental impacts of a specific sector can be used when conducting project level EIAs. However, the sectoral EIA is very important in zoning and establishment of special economic zones since projects of developments with similar impacts identified by sectoral EIA can be implemented in the same area as expounded by Scott (2021). This becomes significant especially in countries which uses tradable permits to manage emissions to the environment. Sectoral EIA

further assists in managing specific environmental challenges that planning authorities may come across in the planning and implementation of sectoral development projects. It further promotes and facilitates the thoughtfulness of synergistic effects of impacts within a sector for planning purposes. Baraibar-Diez *et al.* (2020) believes that sectoral EIA allows more useful reflection on secondary and ancillary effects and programmes, plans and policies to the environment. Burdett & Cameron (2021) discovered that a sectoral EIA is usually more costly to conduct than project-specific EIA. As a consequence, some borrowers may be unenthusiastic to select the sector EIA alternative unless if the sector EIA is expected to augment the superiority of sector plans.

Enríquez-de-Salamanca (2021) identified project level EIA as an EIA undertaken in isolation from other projects and its environmental impacts are considered independent of its surroundings. This is the most common EIA conducted in many countries including Zimbabwe. Nevertheless, it has evolved over time and it is backed by legislations in many countries as a tool for sustainability. In several nations in the world where project level EIA is in place, prescribed projects such as mining undergo an environmental assessment at project level prior to being granted EIA clearance to implement and operate such projects as noted by Cape *et al*. (2018). The project level EIA study recommends suitable mitigation strategies for management and monitoring plans for adoption in order to ameliorate environmental impacts likely to be caused by proposed developments. At the project level EIA, the project proponents make further innovations in the project design, size, operation and technology if it is found to be appropriate based on EIA recommendations as suggested by Calvo *et al.* (2020).

2.3.7 EIA Systems Case Studies

According to Dubois & Gadde (2014), case studies allow the researcher to get detailed understanding of a multifaceted situation. These studies are wide-ranging and enable a complete review of a phenomenon within a realistic context. Since 1970, many other countries apart from USA enacted EIA laws in their countries in response to environmental challenges they were facing (Katsoulakos *et al.* 2016). Dubois and Gadde (2014) reported that developing nations were very responsive in appreciating the role of EIA in decision-making as they also developed their own systems. For the purposes of this discussion Canada, People's Republic of China, United Kingdom (UK), Rwanda, Zambia and Zimbabwe were considered based on their location in different continents so as to gain a wider understanding of different EIA systems that are used for decision making purposes. The universal rationale of using a case study is to depict an individual position

and identify the focal concerns of the assignment in question or under investigation. This should tell the researcher what to focus on in order to evaluate the case using applicable theoretical concepts as explained by Morrison-Saunders (2018) and Thomas (2021).

- **Canada**

In divergence with the U.S. EIA administration of 1969, the Canadian administration developed a non – legally binding policy-based federal EIA system (Gachechiladze, 2010). This system presented a lot of challenges since it was basically voluntary. Chongatera (2012) realised that as a consequence the Canadian EIAs were inconsistently undertaken since the system was heavily criticised. This criticism resulted in the EIA system being incrementally fortified with the legal one being officially pronounced in 1973 through the federal Environmental Assessment and Review Process (EARP) as narrated by Udofia *et al.* (2016). The Canadian Environmental Assessment Act (CEAA) replaced EARP in 1995 in an effort to further reinforce the Canadian EIA system (Chongatera, 2012). However, due to economic recession in recent years, there was pressure by the administration to rekindle economic development and employment creation as claimed by Gachechiladze (2010). This resulted in the review of CEAA in 2012 streamlining the existing federal EIA system. Currently two forms of assessments are undertaken within the EIA system under CEAA of 2012 according to Sadler (2011). The environmental assessment is conducted by the Canadian Environmental Assessment Agency while the environmental assessment review is done by the review board (Boyco, 2010). The Minister of Environment appoints specialist individuals to constitute the review board as claimed by Chongatera (2012). The Minister of Environment ought to issue an EIA decision with 24 months. Notwithstanding Canada's positive standing in global circles concerning best environmental safeguards, the warranty has since diminished since the 2012 amendments to CEAA clearly presented government's plans to concentrate on stimulating economic development through hasty resource use at the cost of environmental degradation (Fasina, 2016).

- **People's Republic of China**

The 1979's Environmental Protection Law of the People's Republic of China triggered the introduction of the EIA system in projects decision making as pronounced by Zhang and Crooks (2012). Initially the EIA system which was only administrative had no legal mandate and was applied mainly in construction developments. The EIA system was then advanced into a statutory system grounded on continuous improvement principles as explained by Wu *et al.* (2011).

Presently, the law of the People's Republic of China on EIA which was promulgated in 2002 is the one which governs EIAs. The EIA process in China consists of four stages which include; EIA design, baseline studies, environmental impacts prediction and environmental impact analysis as articulated by Zhang and Crooks (2012). Numerous approaches are used to predict and analyse environmental impacts stretching from impromptu techniques to sophisticated scientific simulations as outlined by Glasson and Therivel (2019). The EIA results are presented in an Environmental Impact Statement (EIS) which will be used as the foundation for decision making by the Department of Environmental Impact Assessment under the current Ministry of Ecology and Environment (Stalley, 2010). The EIA decision will be made within 60 days after the EIA review. However, the EIA system in China doesn't have mandatory requirements for civilian involvement or consultation and hence decision making does not fully embrace grass root levels of the society in conformity with the subsidiarity principle as expounded by Zhang *et al*. (2012).

- **United Kingdom**

Based on Glasson & Therivel (2019), the initial Town and Country Planning Act of 1947 empowered the local authorities to consider environmental aspects in authorising development applications. However, there was no prescribed mechanism to follow since it was left open to the authorities' discretion to make such decisions as noted by Gachechiladze (2010). The EIA was then officially introduced in UK in 1988 through the Environmental Assessment Regulations for Northern Ireland and Scotland and the Town and Country Planning Regulations for Wales and England (Diaz-Balteiro *et al.* 2017). The EIA system has considerably progressed from the time it was legally introduced and various stakeholders were involved in this development as insisted by Arts *et al*. (2016). This incremental review of regulations since 1988 resulted in the enactment of the Environment Act of 1995 which established the Environment Agency, Scottish Environment Protection Agency (SEPA) and the national parks authorities (Glasson & Therivel, 2019). Currently EIA in England is governed by the Town and Country Planning (EIA) Regulations of 2017 which excludes Scotland, Wales and Northern Ireland which are governed by regulations 60, 61 and 62 respectively as noted by Jha-Thakur & Fischer (2016). EIA is required for schedule 1 and 2 projects which are referred as EIA developments according to these regulations. Glasson and Therivel (2019) asserts that the EIA system in UK involves the preparation of an environmental statement, public consultation and examination of the environmental statement by the planning authority or the Secretary of State in order for the planning permission to be granted which is usually done within 4 months.

- **Rwanda**

Rwanda is one of the fastest growing economies in the world creating new business opportunities and uplifting people out of extreme poverty as discovered by Jauhari (2018). However, the environmental problems in Rwanda can be dated back quite a lot of years. These environmental struggles manifest in the milieu of poverty and socio - economic growth endeavours meant to ameliorate human welfare. However, the Government of Rwanda (GoR) committed to understand its contemporary and upcoming environmental problems as an essential step in its quest for sustainable development as observed by Mann & Berry (2016). The current Rwanda's environmental struggles are aggravated by low levels of environmental consciousness, low and insufficient technical human capital intra-sectoral synchronization on environmental issue. However, a myriad of initiatives to address such struggles have been initiated since during the colonial epoch as noted by Kabera (2017). Conservation and institution of protected reserves and areas was commenced during the colonial administration. In order to effectively deal with environmental adversaries such as deforestation, land degradation, wetland loss, anthropogenic induced climate change, water pollution and biodiversity loss, GoR has instituted the Rwanda Environmental Management Authority (REMA), operated under Organic Law No.04/2005 of 08/04/2005 Article 64 as established by Mann & Berry (2016). REMA's mandate is to oversee and coordinate all environmental management aspects in order to ensure sustainable development in Rwanda. It therefore presides over the EIA process and its decision making process as noted by Kabera (2017). Above all, Republic of Rwanda's supreme law which was adopted in June 2003, provides for rational utilisation of natural resources, environmental protection and sustainability as expounded by Ankut (2019). The EIA process in Rwanda intends to attain benchmarks and clinch commitments to international environmental protocols agreed on in Vienna (1985), Ramsar (1971), Montreal (1990), Rio (1992), Kyoto (1998) and Stockholm (2001) which Rwanda is a signatory to. The EIA system in Rwanda further provides a framework for encouragement of efficient decision-making and is an important tool for environmental management in a trans-boundary situation where there is critical need for information propagation between Rwanda and neighbours as argued by Kabera (2017). This helps in widening the span of comprehending environmental impacts beyond its borders. The Rwanda's EIA process is so robust such that it has provision basis for future global collaboration and conflict resolution at a regional level regarding environmental impacts. Mann & Berry (2016) believes that the EIA system in Rwanda modernizes business customs to conform to the Organic Law's requests of improvement and environmental

safeguard while ensuring that developmental projects considers appropriate preventative, mitigation and surveillance steps to cushion them from the exorbitant costs of environmental restoration once there is environmental damage.

The EIA process in Rwanda can be summarized in four stages according to McCullough (2017). The first step involves the environmental impact initiation stage similar to the prospectus stage in Zimbabwe where screening and scoping is undertaken. Subsequent to this step is the impact study phase (ISP), which involves environmental impact identification, mitigation measures development and reporting by EIA experts registered with REMA. The third stage will involves decision-making and EIA project approval or disapproval after thorough review by REMA. The last stage will entail environmental monitoring of the project during implementation. As such, there are two formal submissions done to REMA and these are the Project Brief and an EIA Report whose groundwork and submission is done by the developer through registered EIA experts as noted by Kabera (2017). Furthermore in Rwanda, project level EIAs and Strategic Environmental Assessments (SEA) are done through project developers are only obliged to undertake project level EIAs. SEA is conducted by the government or lead agencies when considering plans, policies and programs for implementation. Article 69 of the Organic Law (N^{o}. 04/2005 of 08/04/2005) clarifies that the EIA shall be undertaken at the developer's expense. Additionally, upon the EIA project's approval, a proponent is obliged to pay an administrative charge to the environmental fund (FONERWA) which is calculated as a percentage of the estimated investment cost as explained by Jauhari (2018).

- **Zambia**

Ankut (2019) believes that ddevelopment is a growth process of enhancing people's welfare and livelihoods in a bid to achieve higher living standards. The conventional notion of development has since time immemorial been influenced by economic considerations. Exploitation of environmental capital for maximum profit has been the custom and miniature attention was given to the environmental externalities of such development initiatives as bemoaned by Ayamena *et al.* (2016). This led to unprecedented relapse of the environmental carrying capacity coupled with unanticipated environmental cost building up in Zambia as explained by Unceta (2021). Proposed projects, which appeared clean on paper, had significant environmental impacts post implementation and the communities were bearing the costs of the environmental externalities. A wide range of negative impacts manifested in ecological

turbulence, biodiversity loss, habitat fragmentation, desertification, land degradation and unrelenting floods became more prevalent as once complained by Cerutti *et al*. (2018). Industrial and commercial expansion in Zambia, mostly large-scale mining, manufacturing activities and the corresponding spontaneous explosion in population increase has resulted in higher risk of environmental harm by exerting unmitigated strain on the environment. In an attempt to warrant that environmental concerns are mainstreamed into economic development by avoiding, mitigating and or compensating for undesirable environmental impacts, the Zambian Government initiated the EIA practice in decision making as established by Mubanga & Kwarteng (2020). This was legally instituted through the promulgation of the EIA Regulations through Statutory Instrument No.28 of 1997. Despite the establishment of the EIA practice being recent in Zambia, sufficient groundwork has been done by defining the policy and legal framework upon which the EIA practices rides on. Unceta (2021) believes that this commenced with the approval of the National Conservation Strategy as the pioneering environmental course of action framework in 1985. The subsequent enactment of the Environmental Protection and Pollution Control Act in 1990 (EPPCA) further fortified the EIA system through the established of the Environmental Council of Zambia (ECZ). The National Conservation Strategy was later reviewed into the National Environmental Action Plan (NEAP) which resulted in the enunciation of Statutory Instrument no. 28 which specifically provides for EIA matters as chronicled by Mubanga & Kwarteng (2020). This narrative gave birth and growth of the EIA system in Zambia which is now a legal and mandatory requirement for developmental projects. In 2011, the Government of Zambia repealed the EPPCA and substituted it with the Environmental Management Act as noted by Sambo (2019). This new environmental legislation created the legal basis for strategic environmental assessment (SEA) and renamed the Environmental Council of Zambia into the Zambia Environmental Management Agency (ZEMA). Unceta (2021) is of the view that since EIA is now a legislative requirement, it is expected that the practice will continue growing in order to become a model for other SADC countries and beyond bringing about the much - anticipated trade - offs between economic development and environmental security. However, currently more pressure is being applied on industry from legally and social perspectives to undertake new investments in a more environmentally friendly and accountable manner. Sambo (2019) observed that EIA in Zambia fall in two categories depending on the scope and nature of the proposed project. These are categories according to the Environmental Management Act:

- The first schedule is the Environmental Project Brief (EPB): This is an EIA report undertaken in respect of development projects which have low negative environmental

impacts to the communities. ZEMA issues a decision letter within forty working (40) days after receiving the EPB from the project developer.

- The second schedule is the Environmental Impact Statement (EIS): This is an EIA report undertaken in respect of development projects which are likely to cause significant negative environmental impacts to the community. ZEMA is mandated to communicate its decision within sixty five (65) working days after receiving an EIS from the project proponent for such proposed projects as established by Mubanga & Kwarteng (2020). This decision will be communicated after consideration of the public hearing meeting's input.

The EIA system in Zambia has a provision for public hearing during the EIA review process. This is conducted under the auspices of ZEMA for the purposes of verifying the EIA findings and ensuring that input from stakeholders was well captured as explained by Sambo (2019). The public hearing process allows for ensuring that the affected parties and relevant stakeholders are part of the decision making process. However, after project approval by ZEMA and implementation by the project developer, the project will be monitored throughout its life cycle.

- **South Africa**

The EIA process in South Africa is done under the auspices of the Department of Environmental Affairs which falls under the Ministry of Water and Environmental Affairs at both national and provincial levels as explained by Wessels *et al.* (2018). Policy formulation and coordination is done at national level while EIA approvals are decentralized and done by provincial structures as competent authorities except for projects of national interest as noted by Bond *et al.* (2020). Such projects of national interest will be approved by the minister who will exercise the power of the national competent authority as explained by Sebele (2019). Retief and Chabalala (2009) explains the EIA process in South Africa which is guided by the National Environmental Management Act (NEMA) No 107 of 1998. The minister I empowered to assume the functions of the national competent authority if either the project is of a transboundary nature or affects international environmental conventions as noted by Sebele (2019). Wessels *et al.* (2018) understands that currently the powers of the competent authority to approve EIA is decentralized in 9 provinces of South Africa. The project proponent or investor makes an application to the provincial competent authority which will screen the project upon payment of either ZAR2 000.00 or ZAR10 000.00 depending on whether the project requires a full EIA or a

basic assessment as determined by the provincial competent authority as established by Bond *et al.* (2020). The project proponent will then engage an EIA consultant firm registered with a professional board to conduct a full EIA if it required. Stakeholder consultation in South Africa is mandatory. However, no stakeholder consultation fees are charged although the proponent meets the costs of transporting stakeholders to project sites if need arises so that they can provided informed input in the EIA process. According to Wessels *et al.* (2018), the EIA review periods in South Africa ranges from 90 to 120 days depending on the size and magnitude of the project.

- **Zimbabwe**

The 1980 Zimbabwe Constitution which was amended in the year 2000 lacked a specific section which provided for environmental protection as regretted by Mangena (2014). However, in 2002 Zimbabwe enacted Environmental Management Act (Chapter 20:27) to offer legal provisions on protecting the environment as explained by Machaka *et al.* (2016). The Act resulted in the repealing of the Noxious Weeds Act (1993), the Natural Resources Act (1996), the Hazards Substances and Articles Act (1996) and the Atmospheric Pollution Prevention Act (1996) so as to guarantee consistency with economic, social and state political needs as recited by Mapuva & Muyengwa (2012). Sections of the repealed acts were amalgamated into the Environmental Management Act (Chapter 20: 27). Machaka *et al.* (2013) claims that the then Minister of Environment and Tourism was empowered by section 9 of the Act to institute the Environmental Management Agency (EMA) which regulates and approves EIAs in Zimbabwe. Musindo (2010) and Gwimbi & Nhamo (2016) agree that Zimbabwe's EIA system aims at early prediction of environmental impacts, development of mitigation and or enhancement measures and stakeholder engagement in order to aid decision making based on EIA findings. All developments listed in the First schedule of the Act prescribed activities and are subject to an EIA process before implementation according to Musindo (2010) and Machaka *et al.* (2016). The EIA system in Zimbabwe follows a quadripartite negotiation process where there are four major players namely the project developer, consultants, stakeholders and EMA as noted by Machaka *et al.* (2013). Environmental consultants conduct EIAs on behalf of project developers while EMA reviews EIA reports and grants EIA acceptance for proposed projects within 60 days (Machaka *et al.* 2016). The EIA system allows for project impacts monitoring post implementation. However the monitoring framework lacks adequate enforcement. EIA in Zimbabwe is regarded aas a tool for promoting sustainable economic development and eradication of extreme poverty. The EIA

system provides a framework for accountable and equitable utilisation of environmental capital and fostering the assurance for environmental safeguarding as explained by Musindo (2010). From a social point of view, the EIA system in Zimbabwe incorporates interests of private and public stakeholders including communities in decision making processes in line with the devolution of power agenda. This ensures that project developments consider input of even most marginalized individuals of society as noted by Gwimbi & Nhamo (2016). Sustainable utilisation of the environmental capital is the most important objective of the Zimbabwean EIA system. Mapuva & Muyengwa (2012) believes that for the most impecunious members of the society in Zimbabwe, predominantly those in rural areas, this means wise use of natural capital upon which communities immensely depend on for continued existence, hence the need for their input in decision making regarding the environmental resources within their jurisdiction.

2.4 Environmental Impact Assessment Stakeholder Involvement

For the purposes of this discussion, stakeholder involvement incorporates the dialogue and interaction amongst EIA stakeholders involved in the decision-making matrix for a proposed development as suggested by Aloni *et al.* (2015). However, Kolhoff (2016) views stakeholder involvement as inclusive of engagement and participation prior to either decision making or project implementation. Nadeem *et al.* (2016) and Eyiah-Botwe *et al.* (2016) consider these EIA stakeholders as interested and or affected individuals or institutions in the project design, execution and sustainability. While Kanu *et al.* (2018) realised the rising consensus that multidisciplinary and timely stakeholder engagement is an essential element for robust environmental impact assessment Kurian (2018) synchronously discovered that public involvement in EIAs has a tendency of improving the project's design and social acceptability thereby making it environmentally sound. Mwanyoka *et al.* (2019) witnessed a similar trend in Tanzania where EIAs that exhaustively involve multidisciplinary stakeholders led to most significant developments which provided more economic, social and environmental paybacks. Kolhoff (2016) and Kurian (2018) believe that EIA stakeholder involvement demystifies grey areas of environmental assessments with incorporation of indigenous knowledge which assists in sustainable development. As such, multidisciplinary EIA stakeholders underwrite the EIA process in unique ways and their input fortifies the EIA system. Benefits derived from a robust EIA stakeholder involvement process are summarised in Table 2.2 as noted by Aloni *et al.* (2015).

Table 2. 2: Significance of EIA Stakeholder Involvement

Proponent	Decision Maker	Affected Community
Increases the project developer's consciousness on anticipated impacts of a proposal on the environment.	Derives accountable and informed decision making.	Offers prospects for raising concerns and influencing decision making practice (Arts *et al.* 2016).
Makes proposals legitimate thereby ensuring project support and acceptance	Gives guarantee that legitimate concerns have been managed (Enríquez-de-Salamanca, 2018).	Opens a platform for understanding anticipated environmental risks and impacts.
Increases public confidence and trust (Chompunth, 2017).	Proves transparency and impartiality circumventing accusations of back door decisions.	Improves awareness on how decision making is done using community input.
Helps by providing indigenous knowledge (Mani-Peres *et al.* 2016)	Encourages good relations between developers and other stakeholders	Empowers communities in influencing decision making creating sense of ownership
Eliminates possible costly delays through early conflict resolution.	Eliminates delays in project implementation enhancing ease of doing business.	Ensures that all relevant issues and concerns are dealt with prior to decision making

2.4.1 The Evolution of EIA Stakeholder Involvement

EIA stakeholder involvement provides a platform for interested and or affected individuals to have an influence in the EIA process as understood by Simpson & Basta (2018). Ulibarri *et al.* (2019) further supports that this platform allows for decision making inculcating democratic processes and upholding the subsidiarity principle. The origins of stakeholder involvement can be traced back to around mid-1960s in the ancient Colonial New England and Greece regime where it was formalised in decision making (Hasan *et al.* 2018). Progressively stakeholder involvement as a critical component of the EIA process further gained momentum in the 1970s after the promulgation of the USA National Environmental Policy Act (NEPA) as echoed by Chabalala 2016 and Hasan *et al.* 2018. However, Simpson & Basta (2018) believes that stakeholder involvement in the EIA process is mainly thought to nurture democracy in policy-making rendering the EIA more operative. Khosravi *et al.* (2019) further argue that EIA stakeholder participation certainly proves to be significant on developmental projects and supports crucial

decision-making on protection of people and the environment. The US NEPA did not only initiate the growth of the technical EIA process, but synchronously the development of the concept of stakeholder involvement was embedded in it (Rega & Baldizzone, 2015). Wu & Chang (2020) also claims that following the promulgation of NEPA, numerous international conferences were held which formally recognised stakeholder involvement in the EIA process.

Pertinent to this discussion is the United Nations Conference on Environment and Development (UNCED) held in 1992 which recognized the importance of genuine stakeholder involvement to the effective implementation of Agenda 21. Moreover, in chapter 23 of the same framework, the significance of stakeholder involvement in EIA procedures is acknowledged as essential (Barrutia *et al.* 2015). Kanu *et al.* (2018) further explains that the 10th principle of the Rio Declaration which emerged from UNCED also known as the Earth Summit, pronounced three fundamental principles which guide the origination of stakeholder involvement regulations and policy. Grubb *et al.* (2019) noted that the principles that inform such a process are: access to contribution, access to the right information and access to justice. Subsequently, the United Nations Economic Commission for Europe Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, generally known as the Aarhus Convention was appended signature to in 1998 in the city of Aarhus and began to be enforced in 2001 as renowned by Poto (2015) and Weaver (2018). This international convention provides stakeholders with an opportunity for accessing environmental information. The convention enhances the environmental control network through introduction of an honest relationship between governments and its stakeholders. This fortifies the originality of a mechanism fashioned to sanction the importance of public involvement in the decision making as buttressed by Khosravi *et al.* (2019). To sum up, the convention also assures access to justice which ushers stakeholders into a new dispensation of an environmentally accountable society if well adhered to.

2.4.2 EIA Stakeholder Participation

In the discourse of the public participation theory, it's vital to comprehend two extensive decision-making approaches which include the democratic approach and technocratic approach as highlighted by Stie (2015) and Gilley (2017). Furthermore, Bertsou & Pastorella (2017) explained that the technocratic method involves the solicitation of scientific information, techniques and expertise in solving a problem. Quick & Bryson (2016) attributed the main belief underlying technocracy to experts who believe that they are best positioned to make intricate technical judgements. However, technocratic and scientific techniques have since botched resolving social

difficulties as argued by Gati *et al.* (2019). Democracy discusses stakeholder involvement actions relative to government's decision making and policy formulation as vowed by Stie (2015), Bertsou & Pastorella (2017) and Gilley (2017). Autonomous decision-making is founded on the hypothesis that those impacted by a proposed course of action have the right to take part in the decision making unlike in the scientific decision making process (Bertsou & Pastorella, 2017). Participation can either be direct in the conventional democratic logic or indirect through agents in a pluralist-republican design. Both approaches are used in the EIA process since the process involves the technocratic component and the social component as suggested by Mielke *et al.* (2016). The objective of effective stakeholder involvement is to empower citizen in terms of decision making in the EIA process so that development can be fully harmonised with the environment as elucidated by Khosravi *et al.* (2019). The aim of stakeholder participation in the EIA process is to ensure inclusivity in decision making process. It is a stage in which indigenous knowledge can be captured and formalised within the EIA process. Bertsou & Pastorella, (2017) believes that robust stakeholder engagement is key during this planning stage of the EIA since it will allow for the consideration of project alternatives which will further fortify the project and acceptance by the local community. This fosters a sense of project ownership such that the investment by the proponent will be safeguarded jealously by the local people. This will ensure coherence and project conformity with the local environment form social, cultural and ecological perspective. For the purposes of this analysis, Arnstein (2015) developed the ladder of participation in which he categorised forms of stakeholder involvement into three main levels. The depth of stakeholder engagement in proposed developments differs from one level to the other depending on the cultural beliefs of certain communities and their Uncertainty Avoidance Index (UAI) as explained by the Hofstede Model of National Culture (Hofstede, 2019). These levels of stakeholder engagement include non – participation, tokenism and citizen power as shown in Figure 2.3

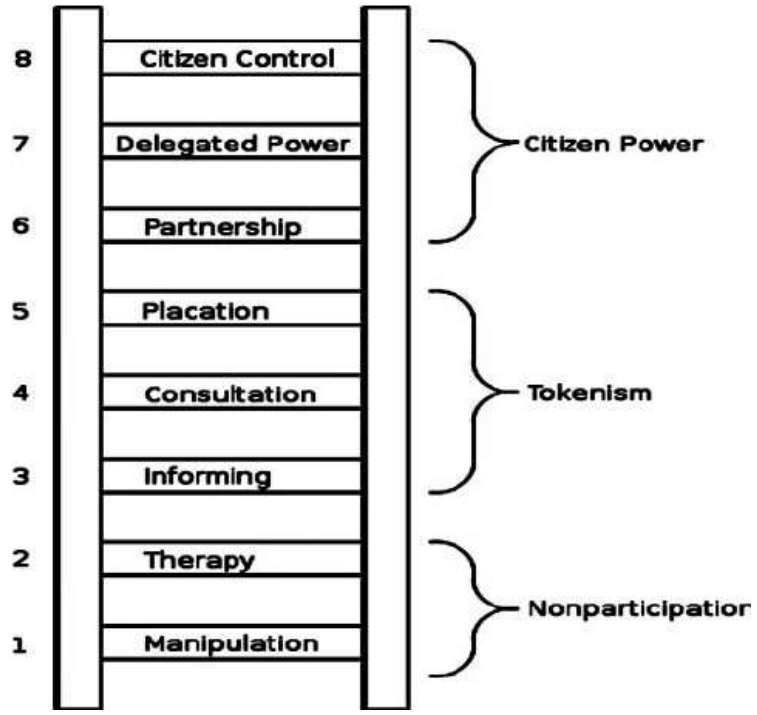

Figure 2. 3: Arnstein's Ladder of Participation adopted from Arnstein (2019)

Sherry Arnstein's writing in 1969 as stressed by Blue *et al.* (2019) on stakeholder involvement in the forecasting processes described a ladder of stakeholder participation that showed a scale extending from low to high level of involvement in decision making. Arnstein (2019) further supports his previous work by clarifying that the ranking on his ladder is a chaperon to seeing who has influence when imperative resolutions are being considered. It has lived since inception to date because of individuals who endure to challenge systems that reject to ruminate anything further than the lowest rungs as claimed by Falco (2019). The following synopsis gives a simplified explanation of Arnstein ladder of participation as depicted in Figure 2:

- *Manipulation and therapy:* Arnstein (2015) argues that these are both non- participative since their aim is to provide therapy or educate the stakeholders. The assumption by government and project proponents is that the proposed development will be the best and participation by stakeholders is meant to achieve public endorsement. Falco (2019) further complains that there is no communication as such at this level and stakeholders are made to believe in the way the developer or government want in order to achieve their desired outcome.

- *Informing*: This level of participation is one way in terms of communication and participants are educated on the proposed developed in an EIA usually through press

conferences or print media where there will be no room for feedback from stakeholders as argued by Arnstein (2019) and Falco (2019). It is the first level of legitimising participation and achieves awareness also acting as a means of garnering public support of the proposed development.

- *Consultation:* This also seeks to achieve legitimacy through community meetings, questionnaires and interviews to solicit for public input in the EIA process as noted by Blue *et al*. (2019). However, there are no safeguards to guarantee inclusion of the stakeholder input in the final EIA decision. It's more of a ceremonial process meant to involve public input at face value so that stakeholder are deceived to believe that they are in control of the EIA process and economic development in their jurisdiction as bemoaned by Falco (2019).

- *Placation:* This involves co-option of stakeholder committee members in the proposed project to have an advisory role in the planning process. However the project proponent or government still has the power to determine the legitimacy of the advice given to them as explained by Hurlbert & Gupta (2015). As such the execution may not necessarily be as per advice.

- *Partnership:* Arnstein (2015) recognises that this is the first level were citizen power is redistributed through a negotiation process between stakeholders and project proponents. There is dialogue and decision making, planning and responsibilities are shared through joint committees between stakeholders and the proponent for instance in implementation of agreed corporate social responsibility initiatives as bolstered by Falco (2019).

- *Delegation*: At this level, stakeholders have more seats in the joint stakeholder – proponent committees on development with delegated authority for planning and decision making as suggested by Arnstein (2019). Power is vested in EIA stakeholders to guarantee accountability in economic development projects within areas of their jurisdiction.

- *Citizen Control:* Carpentier (2016) recites that EIA stakeholders or the public will have the entire responsibility for planning on economic development and decision making within areas of their jurisdiction. Furthermore, Mak *et al.* (2017) concludes that this is the most desired level of EIA stakeholder consultation which results in a more environmentally conscious, socially responsible and accountable society.

2.4.3 EIA Stakeholder Manipulation

EIA stakeholder manipulation is considered as intentional bias with counterfeit interests presented with the intention of modifying judgments for self-benefit. A study by Arena *et al.* (2015) revealed that significance of environmental impacts is subject to interpretation which brings bias or manipulation especially by stakeholders who may have vested interests in proposed projects. Schnackenberg & Tomlinson (2016) categorically states that manipulation may manifest when for instance the severity of the impact is deliberately underestimated. Since EIA is multidisciplinary and involves many stakeholders, there is a high possibility of stakeholder manipulation. Reed *et al*. (2018) agrees with Sarkar (2019) that manipulation can be due to the general public, EIA consultants, competent authorities and even the project proponent. For the purposes of this analysis, the forms of EIA stakeholder manipulation are summarised by Enríquez-de-Salamanca (2018) as shown in Table 2.3.

Table 2. 3: Forms of EIA Stakeholder Manipulation

Manipulation	**Explanation of EIA Stakeholder Manipulation**
Incorrect information	The proponent and EIA consultants may present false information in order to expedite acceptance of a project by communities and approval by competent authorities especially when EIA has been considered late in the project planning cycle (Sarkar, 2019). This may include forged budgets, fraudulent baseline data and erroneous references to regulations with the aim of supporting opinions or false feasibility judgments.
Deceitful alternatives	The common practice in EIAs is to deliberately suggest unfavourable alternatives with the intention of comparing them with the desired option so that the alternatives will be discarded. Controversial elements are at times intentionally introduced and later removed during stakeholder involvement to portray an image of demonstrating goodwill (Arena *et al.* 2015).

Exaggeration of information	In some instances the information supporting a project will not be false as such but exaggerated. A typical example is when forecasting for traffic growth level in a road development project, the outcome may be exaggerated if the stakeholders are biased in favour of the project. This brings about optimism bias (Enríquez-de-Salamanca, 2018). Biased positive evidence upsurges the possibility of choosing an unfriendly option resulting in premeditated manipulation. Another example is the hyperbolic emphasis on socio -economic benefits of projects which have strong societal rejection as suggested by Sarkar (2019).
Withholding information	This type of manipulation is not ease to detect especially if the nature of the project is unique and new. In the event that the scope of the EIA is dynamic, it becomes difficult to establish if some information is hidden (Khan *et al.* 2018). The public or pressure groups such as Harare Wetlands Trust in Zimbabwe at times hide their genuine interests during the EIA stakeholder involvement process thereby misinforming both the consultants and the competent authority in favour of their interests (Arena *et al.* 2015).
Unrealistic valuation of impacts	Depending on the interests of the stakeholders, impacts can either be overstated or understated deliberately through the use of unpredictable methodology to valuate impacts as explained by Reed *et al.* (2018). There are incidences when environmental impacts are undervalued in order to justify exclusion of alternatives. Conversely, some stakeholders may overvalue impacts during EIA public participation as a defence for reinforcing their disapproval of the project (Sarkar, 2019).
Unclear information	It is almost impossible to define how evidence ought to be presented in the EIA processes. Technical and scientific consistency requires the usage of proficient language which may ultimately impede the comprehension of the EIA by non- technical public (Mareddy *et al.* 2017). A common remedy will be to have non-technical abstracts in the EIAs. Nevertheless, this gives room to manipulated management if the intention is to hinder public involvement.

Self - suppression	Perhaps the indirect practice of manipulation is to maintain silent while collecting relevant material so as to avoid reprisals or conflicts (Butalia, 2017). It's detrimental when the one silent is an ordinary citizen but becomes manipulation by oversight if it's a public organization or institution. The administration of public funds by political Figures is an influential control tool which could encourage silence (Arena *et al.* 2015).
Administrative manipulation	The EIA agency may exclude certain stakeholders during the screening phase allowing for either manipulation if some are purposefully excluded or bias in EIA approval. Manipulation can also be linked to unavailability of data during stakeholder participation in order to reduce antagonism though low stakeholder involvement as explained by Enríquez-de-Salamanca (2018). The strongest administrative EIA stakeholder manipulation is to evade stakeholder involvement usually for political motives for instance, imposing a project on the basis of it being of national interests as well articulated by Grano (2015).
Bribery and inducements	Inducements and rewards in EIA stakeholder consultations in order to consider favourable information so that the public consent to a project is some form of manipulation which Williams & Dupuy (2017) terms corruption. This involves use of incentives to gain public support for proposed projects which in some cases may be environmentally costly.
Extortion and coercion	(Sarkar, 2019) argues that extortion is a hypothetical corruption risk associated with skewed data collection and interpretation in favour of the one with financial muscle to control the process. A stakeholder that financially relies on another either directly or indirectly can be susceptible to extortion (Butalia, 2017). National governments can intimidate local authorities by systematically reducing investments in their jurisdictions whenever their decisions are contrary to a development.

2.4.4 EIA Stakeholder Consultation Ethics

Environmental Impact Assessment is a form of practical research which makes it imperative for EIA consultants to adopt ethical research principles and to ruminate on the principled manner of different ways of societal inquiry as suggested by Taebi *et al.* (2016). Lefkowitz (2017) further noted that ethical codes and morals become significant in stakeholder

consultation and negotiation processes in order to derive mutually tolerable solutions. As such, professional EIA consultants are expected observe ethical values of professional regulatory institutions such as the Environmental Professionals Council of Zimbabwe (EPCOZ), Environmental Assessment Practitioners Association of South Africa (EAPASA) and International Association of Impact Assessment (IAIA) just to mention a few as proposed by Wiscombe (2017). EIA is one of the many tools for furthering sustainable development and advancing the basis of social and environmental justice. However, Akinsemolu (2020) argues that the uneven spread of environmental risks is becoming the main public policy issue. As such, applied disciplines such as environmental management and EIA draw mainly from ethical theory to discover and relate ethical concepts in national policy more explicitly and systematically as explained by Abdelzaher & Abdelzaher (2017). Ethical concepts of justice, equity, duties, rights and fairness are relevant to the contemporary ethics discourse and are intricately related as mentioned by Lamorgese & Geneletti (2015). Each concept concerns ethical principles and norms that ought to be embraced by EIA consultants / practitioners involving decisions with regards right or wrong conduct when undertaking EIA stakeholder consultation as suggested by Akinsemolu (2020). Figure 2.4 shows the intricate relationship amongst these ethical concepts which needs to be observed to by EIA consultants if they are to come up with defensible stakeholder consultation outcomes.

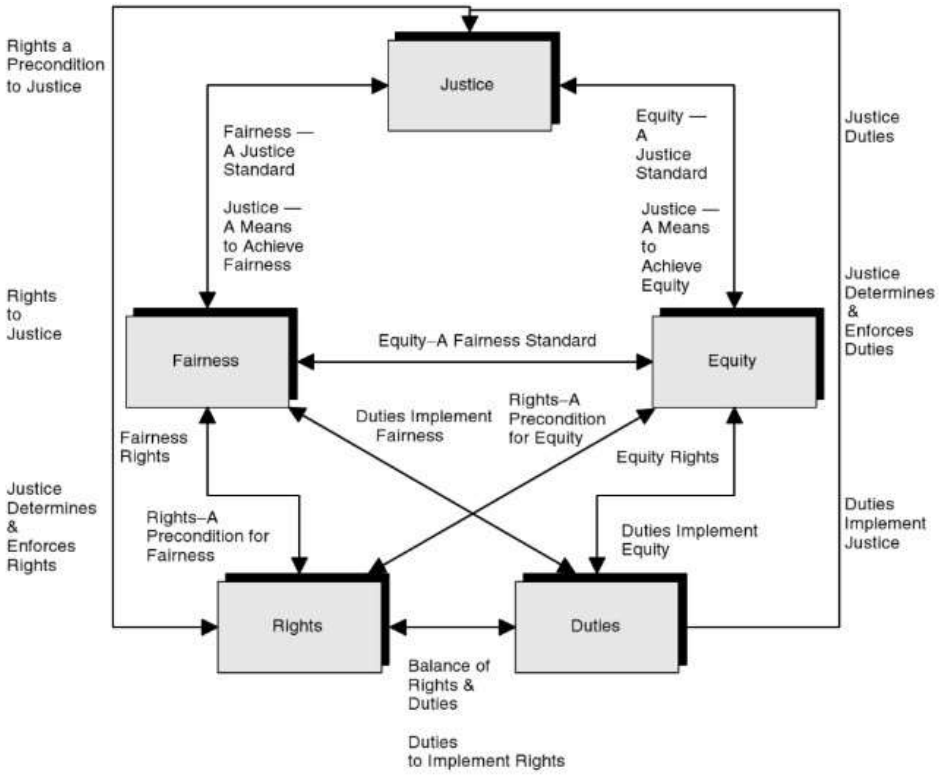

Figure 2. 4: Ethical concepts intricate relationship adopted from Lefkowitz (2017)

The right to take part in effective EIA stakeholder participation is vested in both affected and interested groups in an EIA process. Such rights concerns ground rubrics for withdrawal from the EIA process or participating in it. Taebi *et al.* (2016) and Wiscombe (2017) concur that proponents and EIA consultants have a duty to ensure project clarity, fairness in stakeholder representation, equity in sharing project benefits, promoting justice in allocation of resources and ensuring that the rights of affected and interested parties are upheld in the EIA process while minimising bias. This will help in developing a robust ethical EIA system. Just like any applied research prior informed consent is necessary when conducting EIA stakeholder consultations and maintaining good professional standards so as to avoid delays and conflicts during the social inquiry process (Akinsemolu, 2020).

2.4.5 Merits of EIA Stakeholder Involvement

EIA stakeholder involvement is the modus operandi of ensuring that stakeholders have direct say in EIA decisions which affects them. In a research conducted by Udofia *et al.* (2015), they discovered that many EIA consultants and proponents decide to minimize or exclude stakeholder involvement during planning stages claiming that EIA stakeholder involvement is time consuming and costly. This oversight results in an unethical EIA stakeholder involvement void of the numerous benefits the process proffers to the overall EIA process as echoed by Lefkowitz (2017). As a consequence of an effective EIA stakeholder consultation process, numerous long term tangible paybacks can be derived. Nankoris *et al.* (2018) and Nyaranga *et al.* (2019) identified seven benefits of EIA stakeholder involvement to the planning cycle:

- EIA stakeholder involvement generates new ideas and information which may not have been thought of at project conception stage which improves the overall project design and harmonisation with the immediate environment as echoed by Kanu *et al.* (2018).
- The process provides stakeholder support and project endorsement which is critical for sustainable planning decisions.
- It avoids of prolonged stakeholder conflicts and costly project delays during project implementation.
- It serves as a reservoir for good will that can be carried over to forthcoming decisions when the project expands.

- It creates the spirit of collaboration, harmony and trust between the project proponent and its stakeholders which creates mutual sense of ownership and responsibility of the project as suggested by Lefkowitz (2017).
- It results in development of the most adaptable project alternatives that can stand the test of time.
- It promotes embracing indigenous knowledge in the project design which helps in the management of the project in the best practicable way familiar with the local stakeholders.

The merits of undertaking EIA stakeholder consultation are pertinent to the EIA system, the project developer, stakeholders and the decision maker in most cases the environmental agency mandated to grant or reject EIA acceptance or approval as noted by Kanu *et al.* (2018). Nwapi (2015) discovered that recent EIA decisions have resulted in protracted court cases coupled with overall lack of confidence among many stakeholders with regards to the EIA process which is void of comprehensive stakeholder participation. As such, stakeholder involvement is a panacea to reducing conflict, civil unrest and tension over EIA decisions. Cape *et al.* (2018) campaigns for soliciting EIA stakeholder input in an effective and inexpensive way from a large array of methods which is an advantage for project developers and participants willing to tap into the numerous tangible benefits harvested from effective stakeholder involvement practise. Nevertheless, Queen (2015) advocates for a balance between the prospects of project proponents and the EIA stakeholders which ought to be approximately equivalent in order for the effective stakeholder consultation process to be achieved. Contemporary planning simulations for instance the interactive planning system described by Pelzer *et al.* (2015) integrates stakeholder input at all stages in a planning process. Theoretically, involvement of interested and affected stakeholders at all planning stages and decision-making levels results in informed decisions with ultimate citizen power being made. EIA stakeholder therefore forms the basis of dialogue between project developers and the stakeholders in a bid to develop sustainable solutions and decisions prior to project implementation as summed up by Cape *et al.* (2018).

2.5 Environmental Impact Assessment Implementation Costs

The exact EIA costs are hard to determine since large projects generally require many investigations such as specialist studies as alluded to by Montgomery (2015). These costs incurred during an EIA implementation entails costs related to the EIA studies such as administrative,

specialist studies, logistics, EIA review, EIA review timeframes and stakeholder consultation costs. Jones & Fischer (2016) declares that in most countries these costs are incurred by project proponents and seem to vary depending on the project type and location. As such there are temporal and spatial discrepancies associated with EIA costs world over as also observed by Pediaditi *et al.* (2018). While Eberhard *et al.* (2016) noted that EIA implementation cost rarely exceeds 1% of the total project investment costs Lyhne *et al.* (2017) suggested that this proportion can be lowered if local EIA consultants undertake the EIA studies. The usage of local EIA consultants entails a reduction of EIA logistics costs which ultimately reduces the EIA implementation costs. Uttam & Roos (2015) further explains that engagement of local consultants gives them a competitive advantage when preparing for project bids since project proponents have the tendency of selecting the lowest bid which meets the minimum required technical specifications. World Bank EIA project costs vary from 0.06 to 0.1 % of the total project investment costs (Eberhard *et al.* 2016). The increase in the EIA costs of a project is directly proportional to the increase in the capital or investment cost of a development as interpreted by Komal & Abbas (2015). Contrary to this phenomenon, when measured as a percentage of the total investment cost, the EIA cost is inversely proportional to the magnitude of the project as argued by Eberhard *et al.* (2016). Nevertheless, there are little empirical studies conducted on EIA costs due to the complications associated with clarification of the terminology and definition of EIA cost as expressed by Rebelo & Guerreiro (2017). For the purposes of this discussion, EIA implementation costs will therefore refer to expenses incurred by the project developer directly or indirectly when conducting an EIA study.

2.5.1 EIA Specialist Studies

An EIA report will have multidisciplinary studies with respect to the proposed development as explained by Bragagnolo *et al.* (2017). These sub studies consist of specialist or professional or expert studies and they do come at a cost to the project developer although they are all coordinated by the lead or principal consultant who should be qualified to undertake an EIA at that level. Wilson *et al*. (2017) generalised specialist studies to constitute intellectual property which usually is the most expensive part of the EIA process. Depending on the nature of the development, environmental professional studies are sanctioned with the aim of producing information essential to answer significant issues related to the proposed development in a timeous manner as coined by Chiomba (2015). Durden *et al.* (2018) further buttresses that the role of an expert in the EIA study is either to address concerns raised in the scoping stage and or to offer

satisfactory information which will be used during decision making. Mareddy *et al.* (2017) and MacKinnon *et al.* (2018) concur that the levels of expertise, competence and experience of a professional scientist have a strong bearing on the quality of an EIA study and associated costs. As such, a high level of expertise generates a high quality EIA which is directly proportional to high specialist studies cost as expounded by Durden *et al.* (2018). However, there is a need to strike a balance between managing expert studies costs and EIA quality. It is therefore imperative to ensure that utmost suitable EIA team is chosen to undertake required researches as summed up by Rampersad (2017). Fonseca *et al.* (2017) specified credentials to be considered for specialist studies which will generate high quality EIAs to include:

- Verified competence and track record measured by the strength of the curriculum vitae with a chronology of peer reviewed articles in the specialist subject.
- Appropriate professional and academic qualifications in a specific area of study.
- Accreditation with a specialized and acknowledged professional body.

However, Duckworth & Yeager (2015) argues that an expert's personality and personal attributes are as essential as the technical credentials. As such, the selected expert must be endowed with good people management skills coupled with technical capacity so that communication and interaction with other experts is made much easier in the EIA team as proposed by Fonseca *et al.* (2017).

When selecting EIA specialist as a lead consultant, it is important for them to confirm ability to fulfil the terms of reference within allocated timelines and budget in order to avoid legal costs which may arise as a result of lack of clarity in terms of what they will be expected to do (Khan *et al.* 2018). Individual expert studies are generally done separately and provides discrete sets of information which is mostly fragmented with regards to temporal and spatial scales. However the cost of this intellectual property and innovations which will be fused in the environmental management plan of an EIA comes at a cost as explained by Wilson *et al*. (2017). The costs associated with analysing and consolidating these discrete sets of information is usually transferred to the project proponent hence escalating the cost of the EIA. Depending with the nature of the project and its complexity, specialist workshops may be convened usually at project sites or an ideal facility which also generates costs which ultimately increase expert costs in an EIA as noted by Rampersad (2017). A sound EIA ought to be conducted by at least 8 specialist who should generate specialist studies reports. However due to integration and multi-tasking of

EIA experts, this number of consultants can be reduced by 50% as long as the practitioners has the requisite skills needed to substitute other specialists.

2.5.2 EIA Administrative and Compliance Costs

EIA administrative costs are operating expenses that are incurred by an organization and are indirectly tied to a definite task such as consultancy, capacity building, or marketing as coined by Fortlage (2017). These costs are related to an EIA firm in total as opposed to a separate unit or department. Lucey *et al.* (2015) vows that such costs include rentals, utility bills such as water, internet and electricity, legal fees, insurance, wages and monthly salaries. However, these administrative expenses can be categorised into four types which are variable costs, fixed costs, intermittent costs and discretionary or non-essential costs as further supported by Fortlage (2017). Variable costs will involve utility bills while fixed costs include rental assuming that the economy is steady with very low inflation rates. Intermittent costs are in most cases emergencies while discretionary are those costs an organisation can do without for instance charitable donations and bonuses (MacKinnon, 2017). Durden *et al.* (2017) argues that a successful EIA is measured by its scope and robustness in terms of its environmental management plan. For this to be achieved, there is need for prior planning and preparation which entails preliminary research work, organising EIA teams, recruitment of special project based personnel which will results in escalation of EIA administrative costs as explained by Lucey *et al.* (2015). While Nooteboom *et al.* (2015) claims that many project developers complain that the EIA process causes massive delays in the implementation of projects, Chompunth (2017) established that these delays are mainly due to underestimation of EIA administrative costs and poor coordination of the process usually caused by:

- the proponent commencing an EIA when it's too late
- the terms of reference which are not well articulated
- the EIA which is poorly managed to a timed schedule
- inadequate EIA consultative and technical aspects
- incomplete information in the EIA report or insufficient to aide in decision making by the competent authority as also suggested by Jianliang & Arthur (2015)

Compliance costs are mandatory and supported by legal provisions of the governing country in which the EIA consultancy firm will be operation from as mentioned by Yee *et al.* (2016) and Bennett & James (2017). These cost include corporate tax payable to the national

revenue authority for instance Zimbabwe Revenue Authority in Zimbabwe, mandatory national social security pension schemes, registration fees with environmental professional bodies such as International Association of Impact Assessment or Environmental Professional Council of Zimbabwe and registrations with an EIA competent authority such as Environmental Management Agency in Zimbabwe. Schaltegger & Burritt (2017) argues that taxation introduces various expenses on EIA consultancy firms which include hidden costs that arise from the taxing and collection system. Such cost includes bank charges and transfer costs which are incurred by the company. Compliance costs take up to 35% of the organisation's profits per year as reported by Stamatopoulos *et al.* (2017). This and other costs are transferred to project proponents on a pro-rata basis thereby escalating the overall EIA implementation costs in a bid for EIA consultancy firms to remain viable and profitable while meeting their legal obligations.

2.5.3 EIA Logistics Costs

Logistics is explained by Khan *et al.* (2020) as the management function for transit of goods and services within a country or across countries. As such logistics costs entail additional unit costs beyond primary production expenses. In the context of the EIA sector which is more of an intellectual service industry, these costs manifest in the form of transportation costs, inventory costs, hiring of out of office accommodation and project specific research as explained by Wilson *et al.* (2017). EIA consultancy firms map out their transportation trail for the EIA service into the supply chain, or the transportation trail repeatedly use when delivering their service to the clients. While Psaraftis (2015) testifies that EIA consultancy firms move their consultants by a combination of transportation modes such as road and air in most cases depending on the nature and location of the project, Khan *et al.* (2020) underscores the need for logistics management when time management is a prerequisite. Drone technology and remote sensing technology help to collect data from the environment in which the proposed project is to be undertaken to the experts and there are costs associated with collection and transportation of such information (Wilson *et al.* (2017). Generally Tadeu *et al.* (2015) believes that logistics and transportation related costs range from 9 – 12% of the total EIA costs depending on the nature and location of the project. Piecyk *et al.* 2015 and Suwanteep *et al.* (2016) concur that transportation expenses alone constitute the majority of this cost for most EIA firms. However, if the EIA firm adopts the 'Best in Class' logistics management strategy, logistics related expenses as a percentage of total EIA costs will do down to between 4% and 7% subject to the nature of the project as outlined by Grant *et al.* (2017). Most companies fail to increase their bottom line due to escalation

in logistics and transport cost which needs sound management. As such Zaharia (2017) makes it imperative for EIA consulting firms to manage their logistics costs through decentralisation.

EIA consulting companies may have to manage logistics costs by reducing movement of EIA consultants. This can be achieved through establishing local offices in areas where there is a lot of activity on projects they manage. Kerzner (2017) encourages EIA firms to enter into long term service level agreements with their clients in order to guarantee existence and sustainability of such establishment. Grant *et al.* (2017) reiterates that this will help reduce transport cost which could either be road or air depending with the location of the projects under consideration. Furthermore, distance from the offices to the site entails fuel costs, parking fees, work permits if projects are out of the country, hired accommodation and associated subsistence allowances which ultimately inflate logistics costs resulting in a domino effect of the overall EIA cost as complained by Stark (2016). Every EIA consulting firm has distinctive service supply chain which has extremely customized logistics expenses. In other industries, companies recruit logisticians to manage day to day logistics challenges with the view of optimizing transport and logistics costs within the supply chain (Grant *et al.* 2017). This is critically important as it will allow for the constant service supply to clients and preparation of emergencies such as breakdowns which results in delays on service delivery.

2.5.4 EIA Stakeholder Consultation Costs

Stakeholder consultation is one of the critical and mainly used forms of stakeholder involvement which is in many countries a legal requirement in the EIA process. Naser (2015) and Durden *et al*. (2018) vow that this process is associated with costs which may constitute between 9 to 14% of the total EIA costs. The process of identifying stakeholder which may have been proposed by the screening process is equally costly. As such, initially it is costly to build an EIA stakeholder database in terms of time and money as observed by Toosi *et al.* (2018). This then calls for EIA consultants to embrace the benefits of technology including social media in solicitation of stakeholder's input and development of e –databases which can be used for future projects at reduced costs enjoying the first move advantage as suggested by Gutierrez *et al.* (2015). From an environmental perspective, an e-database will be more sustainable and convenient since it can be easily be shared with other local offices at minimum costs. In as much as the stakeholder consultation cost are borne by the developers, different governments have

instituted various systems to ensure that they can regulate the stakeholder consultation costs in a bid to incentivise investments in the country.

Social media platforms such as LinkedIn, Twitter and Facebook can be useful in proactively searching for individuals, organisational representatives who may have interests in the proposed project that needs EIA stakeholder consultation (Richard & David 2018). Voinov *et al.* (2016) noted that network consultation is also emerging as the most efficient and convenient way of collecting data from key EIA stakeholders. However, these approaches may not be user friendly where there is no robust internet connectivity and information communication technology (ICT) infrastructure to support such innovations. As such in most remote areas traditional methods of conventional methods of stakeholder consultations are done which include the use of questionnaires, community meetings and interviews (Alloghani *et al.* 2017). Key stakeholders such as government department, local authorities and parastatals usually charge some fees to be consulted and this does not resonate well with the government spirit of promoting ease of doing business particularly in Africa as explained by Murombo (2016). In most cases the consultation fees are not supported by any legal instrument and there is need for regulation particularly in Zimbabwe as explained by Mapuva (2020). E-governance may help in reducing some of the cost associated with traditional ways of stakeholder consultation which involve site reconnaissance which will be a duplication considering that EIA consultants would have provided the project brief during the consultation process (Kalsi & Kiran 2015, Alloghani *et al.* 2017 and Alloghani *et al.* 2017).

2.5.5 EIA Review Costs

In some cases EIA review fees are separated into two sets which include the prospectus review costs and the actual EIA review costs as distinguished by Machaka (2016). However, Durden *et al.* (2018) argues that all the costs are borne by the project developer prior to EIA submission for review by the competent or regulatory environmental authority. Kolhoff (2016) discovered that some small island states (SIS) for instance Fiji use environmental bonds when reviewing EIAs. Sugden (2017) further affirms that all exploration projects in Fiji have been subjected to an environmental bond equivalent to 20% of the total project budget since 1998. Elmqvist *et al.* (2015) believes that an environmental bond is calculated on the basis of the cost of the amount money that would be required for pollution abatement or to restore, rehabilitate and or compensate people or the environment on the damage that may be caused by the impacts of the proposed project. Nevertheless, this is done after meticulous verification and analysis of the

impacts and consideration of environmental economic principles as suggested by Kolhoff (2016). The modus operandi of an environmental bond strategy is based on a futures contract and provides incentives for both the environmental competent authority and the project proponent as explained by Avgerinopoulou (2019). The competent authority will be persuaded to invest the money while the project proponent will have to uphold sound environmental management strategies in order to be reimbursed the money locked in the bond plus interest if there are no negative environmental impacts realised after an agreed period. It therefore helps in the implementation of the environmental management plans as proposed in the EIA report with minimum supervision from the environmental competent authority as coined by Durden *et al.* (2018). Under such circumstances, an environmental bond which will be surrendered to the environmental competent authority upon EIA submission can either be in form of cash, financial derivatives, bank guarantee or indemnity insurance after through financial due diligence audits as suggested by Elmqvist *et al.* (2015) and Kolhoff (2016).

Sugden (2017) noted that the environmental bonding regime in Fiji and other SIS involve a cash deposit to government in form of a security. In the event of the project proponent defaulting on implementing promised environmental management plans in the EIA during project decommissioning, the bond will be used for rehabilitation as explained by Morrison-Saunders (2018). However, this strategy only covers for final pollution abatement at the site after project life as opposed to considering environmental impacts management throughout the operation phase of the project as queried by Kamali, & Hewage (2016). As such, to warranty sustainability, the EIA system ought to sufficiently cover spatial and temporal aspects of environmental impact evaluation. In Zimbabwe, the Environmental Management Agency adopted a sliding scale for EIA review where all prescribed developments were categorised according to the significance of their negative impacts to the environment (Spiegel, 2017). This sliding scale fixed the prospectus review fees at USD115 and the EIA review at a range of 0.8 to 1.2% of the total project cost as explained by Machaka *et al.* (2016). The EIA review payments are also staggered depending on the stage of the project implementation. The cost structure is aimed at promoting ease of doing business in the country by promoting sustainable investment. However, the costing structure does not define what constitute the project cost as stated by Spiegel (2017). As such, some projects which could be costly in terms of investment capital such as commercial solar photovoltaic projects ends up paying more that those projects likely to have significant environmental impacts but with less investment capital such as medium scale mining with cynidation processes. As such

there is need to ensure that the project cost is well define in order for it to be limited to the cost of the externality associated with the proposed project as opposed to the investment cost.

2.5.6 EIA Review Timeframes

The time taken from project submission to its approval by the competent authority is regarded as the EIA review period according to Durden *et al.* (2018). The delays in EIA review as a result of the legal provisions of the law or deficient EIA reports entails significant costs to the project developer in terms of time and interests on loans which may have been taken from financiers to fund the EIA process (Spiegel, 2017). Project proponents are mainly concerned with turnover and the return on investment as an indicator of project security and sustainability as explained by Yoshino *et al.* (2019). In countries where there are inconsistences and volatility in the policy framework coupled with unstable macro-economic fundamentals, the risk of investment becomes higher. As such if projects takes longer EIA review periods it entails high costs in terms of interest from the financiers before the project starts paying dividends as noted by Umamaheswaran & Rajiv (2015). In Zimbabwe, the prospectus is reviewed within 20 working days while the EIA is reviewed within 60 working days according to the Environmental Management Act Chapter 20:27. This gives a cumulative maximum of 80 working days for the EIA to be completed depending on the nature and complexity of the project assuming that all the sufficient information has been submitted in the EIA report (Machaka *et al.* 2016). Table 2.4 summarises the EIA review periods and initial EIA certificate validity in different countries.

Table 2. 4: EIA Review Periods and Certificate Validity

Country	EIA Review Period	Initial EIA Certificate Validity
Canada	24 months	Not specified
Zimbabwe	3 months (60 working days)	2 years
Botswana	3 months (60 working days)	Not specified
China	3 months	5 years
Kenya	2 month (45 working days)	2 years
Tanzania	4 months (90 working days)	3 years
Mexico	3 months (60 working days)	Not specified
Fiji	2 months (35 working days)	Not specified
Nigeria	Not specified	Variable
Malaysia	4 months (90 working days)	Indefinite

2.5.7 EIA Implementation Costs Synthesis

According to Jones & Fischer (2016), EIA as a process has varied costs which builds up to the total EIA implementation costs which are incurred by the project developer before project implementation. EIA as a system of decision making is in itself based on the precautionary principle and hence the costs are need to be factored in the planning process as articulated by Farber (2015). EIA cost can however be managed at various levels both by the proponent and the EIA competent authority if countries are to enhance ease of doing business in a sustainable manner. EIA consultants also ought to have an understanding of such costs so that they can also be profitable without jeopardising the potential for the proposed project growth. Logistics, administrative and costs associated with specialist studies need to be well calculated so that EIA bids remain competitive and avoid taking the industry into abyss as a result of unclear EIA prizing model as explained by Uttam & Roos (2015).

2.6 Cost Estimation Techniques

Cost estimation is a process of approximating all the expenses associated with a project, program or an operation as noted by Mörtl & Schmied (2016). Relich (2016) and Hashemi & Kaur (2019) both concur that this estimate should have a single total figure and in some cases should have identifiable cost elements. It is against this background that Milani (2019) proposed the summation of separate cost aggregates to done using well-known cost estimation techniques based on valid data. Larsen *et al.* (2016) and Hatamleh *et al.* (2018) reiterated that the main aim of cost valuation is to consider factors that will lead into the calculation of an accurate budget that satisfies the financial obligations required for the successful completion of a project. In the context of an EIA, Salci & Jenkins (2018) vows that project cost approximations apply to all projects ranging from small ventures to large scale projects. Mahamid (2015) and Wilson *et al.* (2017) claims that the more accurate the EIA cost estimate is, the higher the likelihood the EIA consultant has on completing the project in question while Hashemi & Kaur (2019) believes that the correct prize estimation is essential in managing a proposed project within the budgeted framework. For the purposes of this discussion, six techniques will be explored but they are not just limited to these. However, they are very much applicable to the EIA industry as noted by Brooks (2016). For the purposes of this study, 6 cost estimation techniques were discussed in detail which can apply to the EIA discipline. Their pros and cons are well articulated in this section and help in building the EIA cost estimation model which the researcher intended to develop.

2.6.1 The Algorithm Cost Estimation Technique

According to Sarno & Sidabutar (2015), the algorithm cost estimation model is founded on a mathematical equation which will be depended on the actual measurements and processing of a specific project attribute. El-Sawalhi (2015) vows that this technique is good because it has evolved over time and has a well-defined methodology of coming up with an estimation. Furthermore, Kumar & Bhatia (2016) discovered that the model does not need an outside parameter that entails calibration as required by the measurement setting. This technique utilises scientific equations to execute cost estimation (Miandoab & Gharehchopogh, 2016). These mathematical or parametric calculations are based on historic theory or data and offer as output numerous resource needs in terms of time and costs as alluded to by Salhi & Kamoun (2015). However, some models will focus on the monetary aspect only depending on the requirements of the project (Hatamleh *et al.* 2018). Benner *et al.* (2015) and Nelson *et al.* (2017) are in agreement that statistical modelling uses service background to define statistical or mathematical rules or equations that allow prediction of the cost in accordance with known cost drivers. Simar & Wilson (2015) buttressed that such models are mainly premised on linear, polynomial, multilinear or logarithmic regressions. Some of the advantages of these cost estimation techniques in the EIA industry as summarised by Brook (2016) and Wilson *et al*. (2017) include the following:

- They allow for quick cost estimation of a new service / product based on known simple characteristics of a project such as size, location, cost drivers and project description as also supported by Dhir *et al.* (2017).
- Based on the reflexion of previous services actually offered in the past, the projected cost is practically more precise and consistent than a theoretical analytical method (Pearce, 2016).
- These mathematical techniques are predominantly useful in the early stages of project cycle in which an EIA is supposedly should be done because they allow for analysis of project alternatives which assist in decision making on the best course of action for consideration as also noted by Mardani *et al.* (2017).
- With the aid of current developments, artificial intelligence algorithms can model a huge sum of cost drivers, identify outliers and precision amplified by between 30 - 40% as suggested by Dhir *et al.* (2017).

While Leśniak & Zima (2018) argue that these algorithm cost estimation techniques have their own flaws as well, Pospieszny *et al.* (2018) believes that they often hardly take into account qualitative aspects of a project. They also fail to manage threshold effects for instance the prize is

not always proportional to the size of the project but other qualitative parameters may come into effect as explained by Dhir *et al.* (2017). As such, these demerits have a direct effect on the accuracy of parametric models and their usage as noted by Morley *et al.* (2018). However, it's now possible to remotely have precise cost estimates, even with limited observations, thus reducing the resources needed to collect input data for costing (Mardani *et al.* 2017). Additionally, the costs for multifaceted projects can now be simulated from certainly available practical cost drivers, making encryption principally fast and simple so that organisations can then have fair competing ground for bids as concluded by Sivarajah *et al*. (2017).

2.6.2 Expert Judgement Cost Estimation Technique

Expert judgement cost estimation is mainly used comprehensively based on past professional experience as alluded to by Al-Qudah *et al.* (2015). Cost estimators make several suppositions and judgements on what they assume a new service will cost. It is studied with reference to what thinking processes are involved when making a judgement as witnessed by Kwon *et al.* (2019). Adler *et al.* (2017) noted that this technique is based on specific expertise which will have been acquired since time immemorial in a particular field or industry. Additionally, Walker *et al.* (2017) noted that this technique doesn't have a formula but its basis is intellectual and may be provided by any person or group with expert knowledge, experience, skill or training. However, the team or project leader can provide this skill base so that the team can understand the basis of the cost estimate as expounded by Lindsjørn *et al.* (2016). More experienced experts are likely to make accurate expert judgement cost estimates than junior experts as suggested by Adler *et al.* (2017). Nevertheless, there are four main practises used in the expert judgement technique to improve precision and accuracy which are as abridged by Hemming *et al*. (2018):

- *Delphi technique:* According to Mukherjee *et al.* (2015), this is the most common practise in making an expert judgement cost estimate. It involves an expert or group coming up with a cost and then reviewed by other experts within the same organisation and industry as also noted by Adler *et al.* (2017). This helps to reduce bias and enhance precision and accuracy based on improved consensus.
- *Interviews:* This practise is done where knowledgeable experts are available and can be interviewed on the cost of a particular service to be offered which they can give Figured where an average, mode or median can then be used to determine the cost as explained by

Lindsjørn *et al.* (2016). Interviews increase the confidence in the final cost to be charged for the service in question.

- *Brainstorming*: This practise is mainly done when there is need for a group of experts to converge on a complex project that needs multidisciplinary skills. It involves analysis of alternative costs and establishment of a single best agreed cost as explained by Al-Zwainy *et al.* (2015) and Al-Sahar (2019). Brainstorming allows for the analysis of alternative costs so that a consummate cost that best meets the achievement requirements of the task at hand is established.
- *Historical data:* The practise of using historical data is ideal when accurate records of previous costs of similar projects are available as noted by Price-Whelan *et al.* (2018). It is therefore recommended that proper document control measures be put in place by an organisation so that it will aid in expert judgement cost estimation in the future. Lindsjørn *et al.* (2016) advocates for the storage of invoices of past experiences preferably in electronic format and on platforms such as Google drive, local server or cloud computing for future use should a similar project resurfaces.

While Shekhar & Kumar (2016) argue that expert judgement cost estimation model has its own weaknesses as a technique for cost estimation, Kwon *et al.* (2019) discovered that the selection of multidisciplinary experts which incorporates all aspects of scientific inquiry is in most cases lacking. Furthermore, some experts are overconfident and overshadowed by cognitive biases such that they may propose costs far beyond the reach of the project financier as described by Al-Qudah *et al.* (2015). Lastly, Walker *et al.* (2017) concluded that expert judgement expert judgement can be very difficult to teach others and has no formula which others can use as the basis of their costing.

2.6.3 Top – Down Cost Estimation Technique

Shekhar & Kumar (2016) believes that this technique is used by upper-level administrators to determine the total cost approximate of a project making use of the data from past similar projects. Najjar *et al.* (2017) reaffirms that this approach is usually useful when the project developer needs an estimate Figure to enable decision making and hence works as a guide to decision making process or to mobilise resources that would otherwise be required to implement such a project. Sánchez (2015) claims that in the case of an EIA, top – down cost estimation is done as a once of response to an inquiry and should just be used as a guide for planning purposes.

As such, Tsamandouras *et al.* (2015) proposed the use of another supporting technique in order to come up with the most accurate budget or cost of a project to complement the top – down cost estimation technique when the project commences. Kerzner (2019) believes that the main advantage of it is that it is fast in terms of coming up with a working budget hence ideal for planning purposes. However the planners need to ensure that there is a contingency aspect associated to it so that in the event that the actual cost is derived, the change on the budget won't be very significant as explained by Cunnama *et al.* (2016). The fact that this technique is fast in decision making makes its implementation quick as well. This is therefore particularly imperative when time is a limiting factor. The other advantage of top-down cost estimation as noted by Wilson, *et al.* (2016) is that it assists in the alignment of the project objectives with the corporate strategic aims since top management will be giving directions. Its main weakness is that it is inconclusive and many at times it does not reflect the cost breakdown of each cost component since it is a wholesome Figure based on past similar projects as noted by Najjar *et al.* (2017). Furthermore, this technique offers less scope to have lower level input. Also considering that the cost estimate from top management provides a helicopter view of the project costs, this technique overlooks numerous lower-level specifics as outlined by Tsamandouras *et al.* (2015). As such the approach is not through and therefore needs to be complemented by another technique when the projects is about to be implemented. When using top-down technique, cost estimators may not be tangled with day-to-day operations and as a consequence, they are usually not well informed on some specific costs associated with a project (Shekhar & Kumar, 2016). This generates problems for project executors scouting for resources that just do not fit into the top-down financial proposal resulting in compromises which jeopardised project quality as echoed by Najjar *et al.* (2017).

2.6.4 Bottom – Up Cost Estimation Technique

This method is classically more dependable and most preferred for cost estimation by virtue of its propensity to assess each task from the bottom going up to a deliverable stage as declared by Song *et al.* (2017). It is useful when project plans and budgets from past similar assignments are accessible for reference. Papandreou *et al.* (2018) believes that estimating costs and timeframes for each task to be executed helps in development of a single total cost for undertaking a project with specific timelines. There are two main approaches used by cost estimators when referring to the bottom – up cost estimation technique which includes as outlined by Schmidt *et al*. (2017):

- *Template Method:* Cost estimators can make use of budgets and schedules from past similar assignments as the starting point for new assignments making applicable adjustments in terms of scope and inflationary effects in order to maintain the time value of money in the final cost as renowned by Brook (2016). For instance, an EIA consultancy firm has different sets of typical templates for different projects such as for construction, mineral processing, power generation or manufacturing. Cost estimators use such templates to estimate the cost and duration of new but similar projects. Although alike in technical provisions, the scope and location of projects varies which triggers changes in the final cost (Song *et al.* 2017). It is therefore of paramount importance to store such templates within the EIA firm's database to enable the cost estimators or team leaders to improve potential budgets and schedules of optimum accuracy in the short timeframe.
- *Parametric technique:* This method make use of arithmetic means which are based on chronological past data and project scope of the proposed project to determine the cost of the assignment in question as articulated by Mardani *et al.* (2017). However, this approach is typically applicable when the economic and political environments are in a stable state.

Top – down and bottom – up cost estimation techniques can be used to complement one another depending on the environmental conditions present at the time of cost inquiry in order to come up with the best cost estimate for a project as suggested by Tsamandouras *et al.* (2015). However Table 2.5 summarises a comparison of the two techniques:

Table 2. 5: A Comparison of Top – Down and Bottom – Up Cost Estimation Techniques

Top - Down Estimates	**Bottom – Up Estimates**
Reasonable for initial cost estimates	Practical for more detailed cost estimates
Assignments are not clearly defined	Assignments are clearly defined
In unstable environment it's not feasible to establish well-defined costs	In steady environment it's possible to establish well-defined costs
Cost and timeframes are less reliable	More reliable costs and timeframes estimates

2.6.5 The Analogical Cost Estimation Technique

While Baldinger *et al.* (2016) claims that analogous approximation is a method which utilises the figures of parameters from past data as the foundation for making estimates of a similar project costs Busachi *et al.* (2017) noted that such parameters which are used include

previous costs, project scope, location and duration. The basis of this technique hinges on comparisons of costs to determine the cost of a proposed project as buttressed by Relich & Pawlewski (2018). In most cases project financiers are interested in project costs and its completion time schedules in order to make informed decisions. In such cases, analogical cost estimation technique becomes quite handy in estimating accurate costs and timelines as echoed by Hueber *et al.* (2016). The technique may not be a panacea to cost estimation but is accurate since it derives its value from historical data as queried by Bingamawa & Kamalrudin (2016) is simple to apply and its success rate is around 60% when compared to the preliminary estimates as claimed by Kadir *et al.* (2020). However, the more the past data of similar projects available, the healthier the approximate cost will be as explained by Sajadfar & Ma (2015). Analogous approximation is a better technique of estimation in the inception stages of the proposed project where limited details of it are known as detailed by Lukić *et al.* (2016). The method does not need much time in order to come up with a cost estimate for the proposed project if past data is available (Bingamawa & Kamalrudin, 2016). However, this technique is unreliable where historical data is limited, but is user friendly in enormously upstream stages where cost estimators will be looking for a business opportunity under unclear project characteristics as vowed by Sajadfar & Ma (2015).

2.6.6 Prize to Win Cost Estimation Technique

This technique involves selecting the cheapest and most competitive alternative that meets the customers' requirements as explained by Sammut-Bonnici & Channon (2015). It seeks to strike a balance between the quality of service or product to be offered against the customer's budget. As such price to win includes both a result and a process as noted by Spann *et al.* (2015). This prize can be considered as the market penetration prize meant to secure a contract as explained by Jochem *et al*. (2018). In a nutshell, in the EIA industry the price to win can be best described as the cost – competency trade-off that represents an EIA firm's operational strategy on a project since it's beyond just a numerical figure as noted by Scarpin & Brito (2018). The process involved in this technique includes identifying what is needed at minimum costs to achieve the desired goal with the view of getting into a futures contract and does not certainly mean winning as echoed by Kumar & Gupta (2016). Wheelen *et al.* (2017) and Bond & Morrison-Saunders (2018) concurs that the objective could be to ensure a break even and retain a customer so that the firm gets more business in the future for instance in the EIA industry, the EIA firm may choose to break even at the EIA stage and then maximise on post EIA monitoring tasks. In the same vein,

Nyaga & Muema (2017) believes that the price to win procedure is aimed at responding to customer expectations and applies factors such as aggressiveness, gaming strategy and business interest to best determine the best cost. As such the price to win point is the definite cost-competency trade-off that the organisation presents to the customer in bid response (Kumar & Gupta, 2016). It is a thoroughly thought position which includes strategy and cost to represent the organisation's inclusive business operational strategy. Bossle *et al.* (2016) and Lloret (2016) are in agreement that the company's business operational strategy is the principal driver for corporate decision making and the main factor in determination of price to win position which provides organisational insight for:

- Competitive prize positioning
- Strategic business partnering
- Overall risk tolerance
- Building customer relationships
- Optimal tender proposal strategy

While Osabiya (2015) claims that prize to win techniques have advantages to both the organisation and its staff, Rao (2017) believes that winning a tender opens new business opportunities and new business contacts. Furthermore, Rauter *et al.* (2017) claims that staff motivation and morale often increase when an organisation is triumphant in winning a business contract. Bond & Morrison-Saunders (2018) knows that the main disadvantage of this technique is that the organisation may at times make a wrong forecast that they will get business in the future and when it's the sorely cost estimation method adopted for all projects. Additionally Wheelen *et al.* (2017) feels that the organisation may fail to realise profits in the long term since there will be no guarantee for future contracts especially for once off projects for instance the EIA projects which may fail to be approved by competent environmental authorities due to adverse impacts they may have to the environment also as previously suggested by Lloret (2016). This then calls for visionary leadership skills with clear cut foresight and hindsight in cost estimation techniques.

Schinzel (2019) highlighted that the relationship in leadership can neither be delegated nor automated as with management. As such, the prize to win cost estimation model is best done by top leadership of an organisation who have the best shared strategy and interest of the organisation. Hofstede *et al.* (2010) further noted that the leader's influence will be negative and affects research and innovation in a negative way if his or her uncertainty avoidance index is

strong or high. As such the leaders with weal or low uncertainty avoidance index tend to be more innovative in their strategy of executing a project using prize to win cost estimation model so that the organisation won't incur irreversible losses in the long run as insinuated by Wheelen *et al.* (2017).

2.6.7 Cost Estimation Synopsis

There are many methods that can be adopted for cost estimation as explained by Woods *et al.* (2016). However, the cost estimate should be an accurate and precise indication of reality as noted by Mörtl & Schmied (2016). The cost estimate ought to show the highest level of information necessary for relevant informed decision making. Comprehensiveness in cost estimation requires the inclusion of all cost items that have a bearing on the successful execution of an assignment (Lemmens, 2016). As such, proposals must be presented in a format that can be easily understood, confirmed, checked and modified. Generally, cost estimation is a combination of art and science to forecast the future expenses of some assignment based on available historical data as noted by Lichfield *et al.* (2016) and Ni *et al.* (2017). Cost estimation is therefore used to determine the cost and quantity of resources required to successfully execute a task. Busachi *et al.* (2017) believes that the ability of an organisation to make spontaneous detailed examination of costs of an assignment or project is one key advantage of analytical estimation which gives it competitive edge over others. Assunção *et al.* (2015) suggested that this can only be strengthen by keeping past records in a way they can be easily retrieved for benchmarking when need arise. Jochem *et al*. (2018), Wheelen *et al.* (2017) and Kadir *et al.* (2020) all agree that historical data or past records provide best direction on cost reduction where necessary on future projects. For EIA projects, there is no one method that can be used for cost estimation and hence there is a research gap that needs to be filled by research as noted by Lichfield *et al.* (2016). As such this research seeks to close the gap by providing a solution to this academic research.

2.7 EIA and Sustainable Development

In the context of sustainable development, Ameen *et al.* (2015) and Babashamsi *et al.* (2016) agree that EIA is renowned as its main supporting tool. However, for EIA to successfully underwrite sustainable development in Africa, it should prove to contribute significantly to creation of employment, eradication of poverty and enhanced economic growth as noted by

Renwick *et al.* (2018) and Swilling (2019). Concurrently EIA is being implemented against the background of global pandemics such as Covid -19, limited human capital, scarce financial resources, fragile and dwindling natural resource capital within the quest to expand livelihood options as coined by Retief *et al.* (2016). As such, Biehl *et al.* (2019) calls for the need to fuse EIA in the sustainable development matrix to manage these limitations. Many African countries regard nature as the source of nourishment from a cultural and traditional perspective as alluded to by Lucas (2018). This perspective resulted in a symbiotic relationship of human beings and nature with the latter being nurtured while its resource capital is being sustainably used as echoed by Du Toit *et al*. (2018). Furthermore, Lucas (2018) realised that taboos that masked people – nature relationship were a mirror image of this nexus. Such taboos include totems associated with some animals for certain clans and could thus not be slayed, myths that certain birds for instance the owl when killed brings bad omen, the blue crane which should be preserved for it is linked to royalty and the leopard which is only slayed when making the royal blanket of the chief as coined by Allen (2016), Horsthemke (2017) and Lucas (2018). These taboos and myths systems were all set in order to ensure sustainable development where the current generation would enjoy the fruits of nature without compromising the future's right to enjoy the same ensuring intergenerational equity in resource utilisation as noted by Magni (2017).

Huckle *et al.* (2015) and Cobbinah *et al.* (2015) both claim that the concept of sustainable development was presented to the global discourse of environmental management during the 1980s as the manifestation of the interdependence between the ecosystem, economic growth and social expectations. Labadi (2017) observed that it is unfortunate that other decision making aids including Strategic Environmental Assessment (SEA) and risk assessment neither have mandatory nor legal status as EIA in addressing sustainable development issues. Nonetheless, Le Blanc (2015) is aware of the extensive acknowledgement that SEA is expected to stimulate sustainable development more than project - size or level EIA as shown in Figure 2.5. Rieckmann (2018) further reaffirms the high influence of SEA on sustainable development since utmost strategic decisions would have been considered before the proponent commences an EIA for a particular project. Moreover, Shapira *et al.* (2017) and El-Halwagi (2017) argue that earlier integration of sustainable development thoughts in decision-making provides for more efficient and focused alternative designs of specific projects to be made which are more environmentally sound, technologically innovative, economically viable and socially acceptable. EIA therefore provides a platform for innovation in developing project alternatives which are more sustainable thereby facilitating sustainable development in an area where proposed development are ear marked for.

Figure 2. 5: Planning levels, environmental impact assessment and sustainable development

Littlewood & Holt (2018) noticed significant growth in environmental professional practice in the southern region of Africa of late. South Africa has about 600 EIA practitioners with most active International Association for Impact Assessment (IAIA) affiliates worldwide as witnessed by Sebele (2019). Furthermore it has lately established a voluntary EIA professional's accreditation system though the Environmental Assessment Practitioners Association of South Africa (EAPASA) as observed by Wessels *et al.* (2018). There are some audited excellent EIA works which have stood well against global best practice in southern Africa as reported by Sebele (2019). Likewise, ingeniously applied with inclusive stakeholder involvement, EIA has the latency to elegantly integrate culture, art and science in an exclusively African context thereby significantly contributing to sustainable development as noticed by Sanwal (2015) and Mulvihill & Ali (2016). On the other hand, the African environment has continuously been a component of indigenous culture and livelihoods as echoed by Moura *et al.* (2019). As such, the test now is to fuse Western science with African indigenous knowledge values and traditions in order to catapult EIA into a tool that will provide the trajectory to sustainable development as suggested by Adom & Kquofi (2016) and Moshabela *et al.* (2016). However, sustainable development is supported by three broad pillars which include the environmental, social and economic as presented in figure 2.6. Furthermore, cultural and political pillars are emerging facets of sustainable development from the social pillar as noted by Dessein *et al.* (2015) and Purvis *et al.* (2019). However, sustainable development involves inclusivity and multidisplinarity in decision making backed by scientific evidence and indigenous knowledge system in decision making. The subsidiarity and precautionary principles are of paramount importance when sustainability issues are considered.

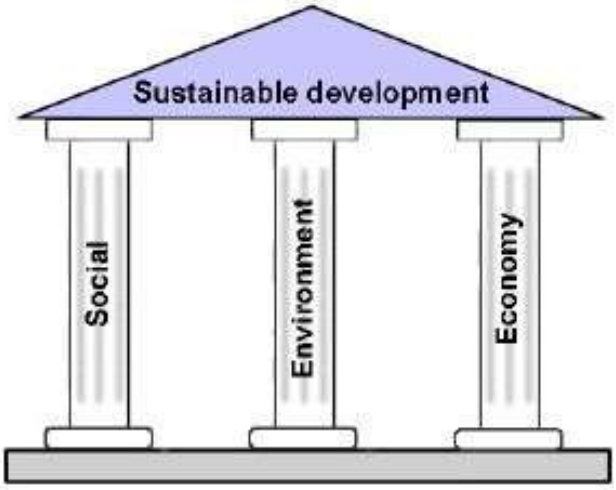

Figure 2. 6: Main pillars of sustainable development

2.7.1 An Account of Sustainable Development

Nosayaba (2017) believes that while the sustainable development concept has amplified its acceptance and importance in theory, its evolution tends to be downplayed and ignored. Although according to Lockie & Wong (2017) this evolution may seem insignificant to some scholars, it nevertheless could assist in predicting future flaws and trends thereby providing guidance to decision making as suggested by Scherer & Voegtlin (2020). Historically, the theory of sustainable development was derived from economics discipline as chronicled by Moore (2015) and Bende-Nabende (2017). The dialogue concerning the earth's capacity to continually sustain increased population of human beings against the background of limited natural resource capital gained importance with the Malthusian Theory on population growth in the 1800s as vowed by Bashford & Chaplin (2016). In 1789, Thomas Malthus hypothesised that human population was growing geometrically while subsistence was growing arithmetically as noticed by Wood (2017). As such, population growth would outstrip the environment's capacity to sustain the demands of an ever increasing population as shown in Figure 2.7. Therefore, if corrective mechanisms were not applied to curtail fast rate of population growth, depletion or exhaustion of natural capital would occur which would result in resource scarcity for human beings beyond Malthusian catastrophe point of crisis as narrated by Petersen (2018). The movement from abundance to crisis phase when the caring capacity is surpassed would generate a global turmoil owing to conflict, rampant natural resource degradation instability and global economic failure (Bashford & Chaplin, 2016). Nevertheless, the significance of this supposition tends to be overlooked hoping that innovations will be made to counter such manifestations. However, Mensah & Casadevall (2019) noted that global worries heightened regarding the non-renewable resources which would

impede production and ever - lasting economic developments as a result of unprecedented environmental pollution and degradation. This rekindled the awareness about the probability of the manifestation of Malthus' supposition resulting in questions being raised regarding whether the development trajectory that was being traversed was sustainable as quarried by Sauvé *et al*. (2016).

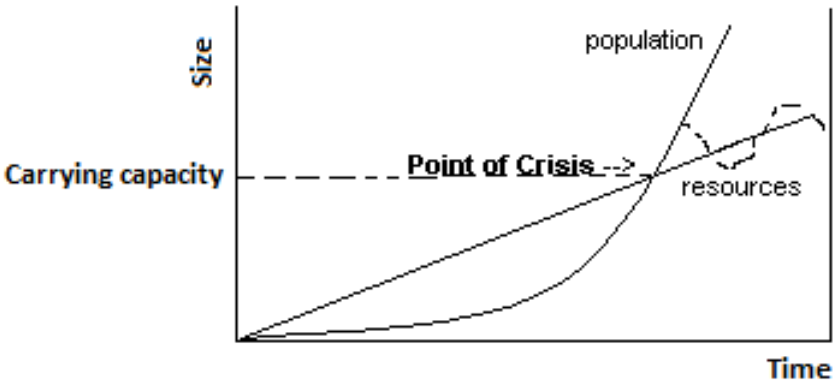

Figure 2. 7: Malthusian Model on resource and population growth

Correspondingly, probing if the hypothesis of universal economic growth was sustainable, Meadows and the Club of Rome researched on the Limits to Growth in 1972, utilising data on population growth, environmental pollution and production capacity of industry as explained by Gómez-Baggethun & Naredo (2015). Meadows discovered that the world was physically limited and exponential growing and these three parameters would ultimately hit the ceiling as shown in Figure 2.8. However, Haklay (2017) was surprised that some academics, development specialists and researchers argue that sustainable growth concept was awarded its inaugural global recognition at the United Nations Conference on the Human Environment in 1972 held in Stockholm. Neurath (2017) noted that studies by Meadows helped in restructuring the thinking of the world since the research results were astonishing in terms of what the future would be like in the year 2100. As such, efforts to have a better future gained momentum with the need to have a future that will continue to provide resources, reduced pollution and controlled population growth as suggested by Macekura (2015). This necessitated world leaders to rethink in a more futuristic manner in terms of managing the world and avoiding the catastrophe of global economic failure as explained by Gómez-Baggethun & Naredo (2015). However opportunists believe that necessity is the mother of all inventions and as such, scarcity will create the need for more innovations to support the earth in a more sustained way. Furthermore, technology has increased the capacity of

the earth to cope with population increase and demand for natural resources through circular economy development.

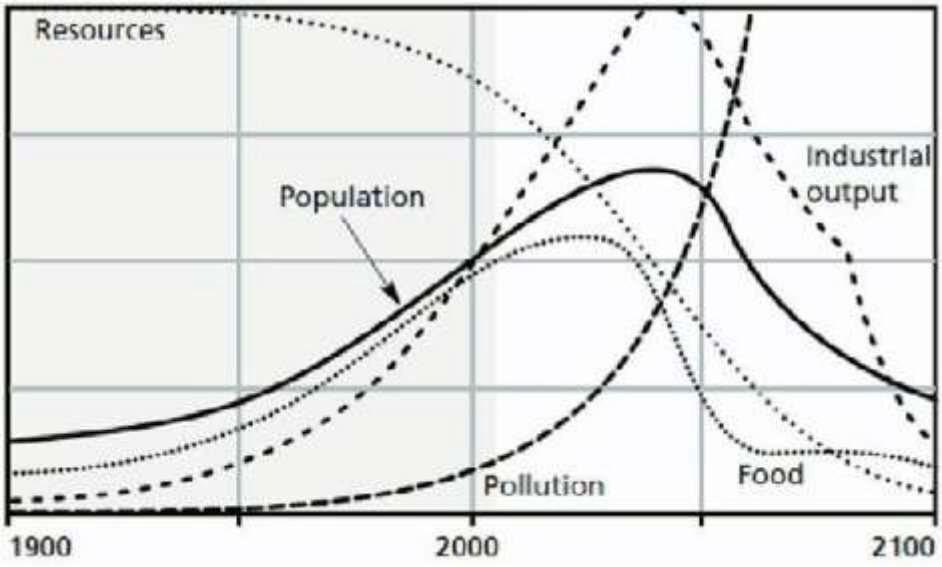

Figure 2. 8: Limits to Growth Curve

As a follow up to these milestone developments, Miller (2015) realised that the World Commission on Environment and Development revitalised the appeal for sustainable growth. This culminated in the crafting of the Brundtland Report titled "Our Common Future" in 1987 which coined the most used sustainable development definition today as described by Anand & Kumar (2016) and Langhelle (2017). Of significance in the Brundtland Report are two fundamental issues which are the notion of needs of the world's economically vulnerable and the notion of limitations enforced by the state of technological innovations and social order on nature's propensity to meet current and future demands (Miller, 2015 and Haklay, 2017). The Brundtland Report triggered the United Nations Conference on Environment and Development (UNCED) also referred to as the Rio Earth Summit to be held in 1992 as noted by Jain and Islam (2015). The UNCED resulted in the development of Agenda 21 which ranked sustainable development as the first priority issue when developing national strategies addressing economic, environmental and social injustices of development as articulated by Allen *et al.* (2018). The World Summit on Sustainable Development (WSSD), referred to as Rio+10 Summit was further conducted in Johannesburg in 2002 as a follow up to review the advancements that were made in implementing the resolutions from the WSSD (Grubb *et al.* 2019).

The first United Nations Conference on Sustainable Development (UNCSD) also referred to as the Rio+ 20 was held in 2012 in Rio de Janeiro as written by Holden *et al.* (2017). The conference engrossed on two sides of sustainable growth which are an institutional policy framework and green economy as explained by (Allen *et al.* 2018). A regurgitated assurance to sustainable development was the major outcome of the conference through "The Future We Want" Report. UNCSD included the procedure for developing sustainable development goals (SDGs) which were to be effected as from 2015 as noted by Weitz *et al.* (2017). The 17 SDGs were then launched in 2015 by the United Nations General Assembly with a target of being attained by 2030.

2.7.2 Environmental Pillar for Sustainable Development

EIA as an ante tool for decision making is at the intersection of environmental protection, ecological development and a healthy social environment that cares for the future as refined by Bond *et al.* (2020). As a consequence, EIA aids in sustainable growth since the principal objective of an EIA is to ensure that development is harmonised with nature without causing irreversible consequences both for current and future generations as articulated by Loomis & Dziedzic (2018). EIA is concerned with designing the future ensuring that the earth becomes a better world endowed with acceptable social amenities, economic development and maintenance of ecological integrity as chronicled by Williams & Dupuy (2017). Bond *et al.* (2020) discovered that the environmental anchor of sustainable growth resonates well with EIA in the sense that it is concerned with prior protection of the environment from damage induced by industrial activities, urbanisation and population growth. This is against the background that the environment remains the source of raw materials for industrial growth and commercialisation while also serving as a sink of industrial refuse as reverberated by Shakil & Ananya (2015) and Aung *et al.* (2020). As such, EIA seeks to redesign the future in a manner which promotes balance between nature's ability to provide raw materials and capacity to absorb the effect of pollution on the overall ecological caring capacity of nature (Bond *et al.* 2020). Sustainable development therefore calls for coordinated development with environmental considerations at the centre stage of growth as summarised by Aung *et al.* (2020). However, EIA becomes the critical environmental management tool for sustainable growth decision making as suggested by Loomis & Dziedzic (2018). Figure 2.9 shows the relationship between sustainable growth and EIA in the realm of social growth, environmental protection and ecological conservation as viewed by Bond *et al.* (2020). EIA allows for the prediction of environmental impacts of any proposed development, draws multidisciplinary experts to develop mitigation measures that will be compatible with the

recipient environment with stakeholder endorsement as summarised by Aung *et al.* (2020). This feeds into the sustainable development agenda since developments will be done in an inclusive manner factoring in needs of today's and upcoming generations in a holistic and coordinated approach.

Figure 2. 9: Intricate Association between sustainable growth and EIA

2.7.3 Economic Column of Sustainable Development

In the midst of sustainable expansion, Ward *et al*. (2016) explains sustainable economic development as the increase in a nation's living standards measured by its wealth through its gross domestic product (GDP) which satisfies demands for current and future forecasts. However according to Polasky *et al.* (2015), economic development on the African continent has been characterised by malevolent cycles of calamities with escalating forces from exponential growing human populations, increasing industrial and agricultural activities and uncontrolled rural to urban migrations. Nevertheless, in the interest of kick starting robust economic development as noted by Pattanaik *et al.* (2017) and Agarchand & Laishram (2017), numerous national development initiatives and foreign direct investments (FDIs) projects were embarked on without considering their detrimental impacts on natural resources and the socio-economic environment. Narasimham & Subbarao (2018) and O'Faircheallaigh (2015) confirm that this was mainly due to the need to address economic inequalities, imbalances and spatial differences that were induced by the colonial era on the African continent. As a consequence, significant destruction to the human and physical environments went unrestrained for many years as recounted by Poku-Boansi & Amoako (2015) and Okeke *et al.* (2018). Warde *et al.* (2018) reveals that EIA ensures integration of economic issues into the sustainable development matrix in a manner which allows for integration

of multidisciplinary perspectives on economic development. Furthermore, EIA promotes equitable distribution of wealth between project developers and affected parties providing for compensation mechanisms where there is need for such as buttressed by Židonienė & Kruopienė (2015) and Grabara (2017). It also allows for the designs and development of project alternatives which are more economically viable in order to ensure project sustainability within set local environmental parameters in which a project will be implemented as coined by Durden *et al.* (2018) and Enríquez-de-Salamanca (2018).

2.7.4 Social Pillar of Sustainable Development

While Ameen *et al.* (2015) believes that EIA seeks to ensure that there is social cohesion in developmental projects in order to promote sustainable growth in communities, Michel & Hudon (2015) is confident that in the same vein, social development is concerned with enhancing the welfare of people in a community nurturing their full growth potential. Cleary *et al.* (2017) realised that the prosperity of a community is correlated to the welfare of its citizen and as such, Steiner & Teasdale (2019) resolved that social development refers to the investment made in people by the government or project proponents resulting in its benefits cascading to generations in a domino effect within a particular community. However, Kenny & Connors (2016) and Rajan (2019) noticed that it was sad but common that some most deprived communities leave in proximity with profitable and large projects unfortunately defying the tenets of sustainable development. Although EIA systems in several developing nations may appear as they consider mitigation of social impacts of developmental projects as claimed by Aung (2017), empirical evidence show absence of direct mitigation mechanisms which are enshrined in their EIA regulations to facilitate development that alleviate poverty as observed by Alamgir *et al.* (2017). As a result, the emphasis in the EIA reports is on negative impact mitigation as opposed to enhancement of the existing environmental conditions which include human well – being as described by Arts *et al.* (2016). However, principle 5 of the United Nations Conference on Environment and Development (UNCED) acknowledged the inextricability of poverty and sustainable development hence the need for robust EIA on developmental projects as noted by Gwimbi & Nhamo (2016). The implication of UNCED's declaration is that there is no sustainable development without poverty alleviation, creation of employment and proliferation of ancillary economic activities as elucidated by Arts *et al.* (2016). Additionally, principle 3 of the Rio declaration on the environment and development articulated the concept of sustainable growth in a manner which allows for inter-generational equity and a balance between developmental needs

and environmental requirements without circumventing societal expectations as echoed by Hameed & Nadeem (2019). Jamal (2019) contends that the perception of inter- and intra-generational justice implicit in this explanation can be integrated into the EIA in order to attain sustainable growth at project level. Thus, Roos *et al.* (2020) suggest that for EIA system to be considered a sustainable development tool which is effective in Africa and beyond, it ought to redesign, reshape and relocate developmental projects in a manner which balances social value to societies and wider economic value to project developers without diminishing the environmental capital and its ecological carrying capacity. Any environment has its own carrying capacity beyond which environmental damage can be inevitable as observed by Muposhi *et al.* (2008). The social, economic and environmental balance that should exist in any built environment is as shown in Figure 2.10.

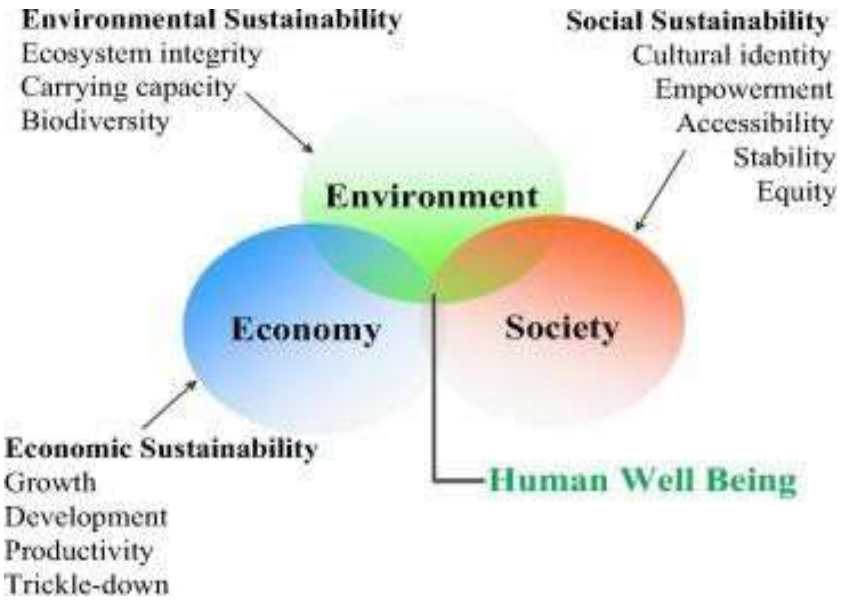

Figure 2. 10: Summation of the relationship of sustainable development pillars

2.7.5 Cultural Pillar of Sustainable Development

Bebbington & Unerman (2018) considers the cultural dimension of sustainable development as upcoming and fast gaining traction in the sustainable growth discourse. The expedition for safeguarding the environment from unprecedented anthropogenic induced degradation has been a topical global concern since time immemorial as explained by Cummings *et al.* (2018) and Merino-Saum *et al.* (2018). However, Battiste (2016) noted that several nations have had extensive histories on environmental management using indigenous knowledge systems,

local institutions, norms, taboos and myths all embedded in their cultures. It is unfortunate that these systems were once abandoned in the name of civilisation and globalisation particularly in the African continent after colonisation as reported by Ndoro & Wijesuriya (2015). Nevertheless, it is of paramount importance to note that management of the environment is not limited to deterrent environmental legislations only but rather through application of numerous informal and formal administrative cultural mechanisms as buttressed by Kolawole (2018). Ferim (2017) highlighted that it is in the best interest of sustainable development to promote use of local knowledge, designs and project locations compatible with the local culture when undertaking EIAs so that unassailable decisions for sustainable development can be made from an informed perspective. Bebbington & Unerman (2018) also believes that inclusion of cultural dimension in development promotes establishment of most effective mitigation measures for EIAs and design of most effective alternatives and interventions. Steger (2017) and Pieterse (2019) are confident that cultural dimension further allows for inclusiveness in sustainable development between investors and communities whereby projects will be implemented ensuring diversity and equity in the distribution of both financial and non - monetary benefits as shown in Figure 2.11

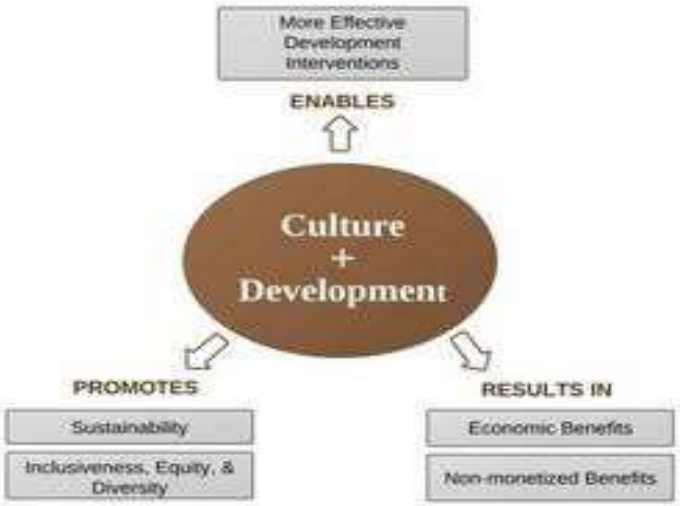

Figure 2. 11: How culture contributes to sustainable development

2.7.6 Political Pillar of Sustainable Development

While Sachs (2015) believes that the political pillar of sustainable development is an off shoot of the social pillar, Nhamo (2017) agrees that it seeks to support sustainable development from a policy perspective which is driven by the political environment in a particular country. Furthermore, Koester (2016), Dawodu *et al.* (2017) and Monkelbaan (2018) concur that at global

level, there are conventions, treaties and protocols which speaks to EIA and sustainable development such as the UNCSD, UNCED, Rio Declaration, Convention on Biodiversity and Earth Summit just to mention a few. Koester (2016) and Schulz (2017) agree that this is an indication of the presence of political will at global level for a future that is safe for both the current and future generations. Moreover, different countries have ratified most of these multinational agreements and domesticated them into their local laws through enactment of various environmental management legislations which speaks to EIA and sustainable development concepts as recorded by Mahbub (2016) and Tolentino (2016). USA was the first country to enact NEPA, a law on environmental protection in 1969 as a respond to environmental challenges it was facing due to development as recorded by Lima *et al.* (2015). After the move by USA, many other developed and developing countries also developed laws on EIAs and sustainable development issues including circular economy.

2.7.7 Gender, Environment and Economic Development

Gender studies are very important in the utilisation of environmental capital and subsequent economic development of a country as observed by Steiner & Teasdale (2019). Gender therefore deals with the characteristics of men, women, boys and girls which are socially constructed. This however, includes behaviours, norms and roles related to being a man, woman, boy or girl, as well as interactions with each other. The impact of gender on the environment and economic development is proportional to how well a society is in terms of social inclusion in holistic decision making as suggested by Cummings (2018). As a social construct, gender differs from community to another and is dynamic since it exponentially responds to external stimuli. As a consequence, gender becomes a significant consideration in community development as established by Ferim (2017) and Kolowole (2018). With EIA being at the centre of economic development and its emphasis on the social aspect of development, gender issues need to be well captured in an environmental impact assessment. The role that males and females play in decision making has a bearing on policy direction in terms promoting sustainable development and inclusivity. As EIA consultants conduct their EIAs for developmental projects, they engage males and females regard to participate in the decision making process. Schulz (2017) therefore argues that gender is a means of looking at how social beliefs and power structures affect the lives and opportunities which are available to diverse groups of males and females. A consistent outcome in psychological researches is that females are more passionate about environmental matters than

their male counterparts as noted by Steger (2017). As such, females tend to engage more in conservation initiatives than males. However, due to gender inequalities, environmental problems have different effect on women, men, boys and girls. Despite women representing two thirds of the less economically privileged in the Africa, their economic uncertainty is part of a vicious cycle of poverty, frequently perpetrated by discrimination in employment opportunities, access and ownership of limited natural resources which are the vices of economic emancipation as alluded to by Pieterse (2019). This economic insecurity has led to increased environmental degradation despite the existence of robust EIA systems in many countries. There has been increasing evidence globally that links gender equality to increased environmental degradation. In actual fact current evidence reveals a correlation between gender disparity and environment showing that high gender inequality results in increased forest depletion, increased environmental degradation and air pollution just to mention a few environmental problems linked to gender inequalities in a society as noticed by Roos *et al.* (2020). Gender equality is therefore a human right, despite the existence of a persistent gap faced by the world in terms of in access to employment prospects and decision-making supremacy for men and women. In many instances, gender inequality results in more women being more vulnerable to the vagaries of anthropogenic induced climate change. However, this is caused by the gender roles, predominantly in the developing countries since females are often rely on the natural environment for survival and generation of income as explained by Cleary *et al.* (2017). As a consequence, empowering women and the youths by ensuring gender equity and equality can significantly promote economic development in a country. Jamal (2019) observed that women's access to education opportunities and employment reduces the probability of household poverty and heavy dependence on the natural environment for resources. This further helps women and the youth in having confidence and capacity to make independent decisions whenever developmental projects are being proposed in areas they have jurisdiction over. Roos *et al.* (2020) established that gender equity contributes to meaningful debate within the EIA process which can generate plausible EMP recommendations for implementation. Gender equality has overwhelmingly shown traits of stimulating economic growth which is imperative especially in economies with higher unemployment rates and less economic prospects. Steger (2017) and Pieterse (2019) concur that better gender equality can improve economic productivity and enhance intergenerational development outcomes thereby making institutions and national policies more representative in terms of decision making pertaining to utilisation of environmental capital in pursuit of sustainable development.

Steger (2017) observed that women who live in rural areas are critical agents for socio – economic development. These women have a catalytic function towards attainment of transformational socio - economic, and environmental changes which are prerequisites for sustainable development. Furthermore, women play a pivotal role in the production of food and constitute a huge proportion of the agricultural labour force in the world as explained by Pieterse (2019). These women and children also play a pivotal function in both economic sustenance and growth. This strong function overlaps to overall enhancement in personal health at household level, improved chances of child survival demographics but also reducing exponential fertility levels which can be a function of slower population growth rate as noted by Cleary *et al.* (2017). The latter supports the sustainable phenomenon of motivating the ideology of investing more in women as they are the thread that binds the business and social world. The women who are in the low-income echelons have generally contributed to industrious activities such as small scale agriculture and agro-processing as established by Roos *et al.* (2020). However, there has been a propensity to underrate their economic functions in trade and commerce due to the prevailing meanings of what entails economic activity. Contrary to this, women have increasingly benefitted from social sector programs as evidenced by the increased enrolment of the women at all academic levels which has improved socio –economic development of many areas in the world as noted by Jamal (2019).

Inasmuch as modernization opened up economic prospects in certain areas, it has also led to a decrease in traditional flows of revenue for many women. Roos *et al.* (2020) argues that the introduction of mechanization and appropriate technologies in the agricultural sector has displaced small scale producers and unsettled traditional means of production. This has led to the exodus of women and the youth into urban settlements resulting in an increase in urban population and pressure on the capacity of the social amenities. Pieterse (2019) believes that the increase in population meant increased production in industries to support the population thereby pushing development in a positive direction which called for the need for environmental consideration in order to ensure sustained development. Chikwanha *et al.* (2018) and Ndlovu *et al.* (2021) concur that urban pollution has been caused by increased population growth as a result of rural to urban migrations. Women and the youth are therefore significant in decision making pertaining to environmental impact assessments. However, in many situations, the women and the youth lack capacity to voice their thoughts whenever EIA issues are being discussed due the nature of most African societies which are mainly patriarchal. There is therefore need for capacity building and

current EIA studies now focuses on gender issues so that the voices of all parties are well represented in the decision making process.

2.7.8 EIA and Business Intelligence Theories

There are a number of business intelligence theories that can be applied in EIA prizing in order to secure EIA bids. The researcher focused on those ones which resemble the behaviour and characteristics of animals when living in the jungle. These animals have developed certain traits and characteristics for them to be able to survive the competition in the wild. This is the case with the competition that exist in the EIA bidding process. Organizations either adopts the red ocean strategy or the blue ocean strategy depending with the situation for them to remain afloat in the stormy and turbulent business environment as explained by Alam & Islam, (2017). The objective of any business is to optimise shareholder's capital in a sustainable manner. However EIA consultant firms that adopt blue sky thinking are more advanced in terms of disruptive innovations and stands a higher chance to stand competition.

Giraffe Theory

The giraffe uses its tallness to see danger from a distance. It is also both a browser and a grazer and feeds on flourishing leaves far from the madding crowds of grazers. The giraffe stays in the forest with other animals but when day breaks the sun shines and kisses the forehead of the giraffe first before it does to other animals as articulated by Roberson (2021). When the sun sets on other animals it sets last with the giraffe because of its height. As such, EIA consultants who adopts this theory in their operations are able to see business opportunities before others can see them thereby moving swiftly in forging memorandum of understandings with their potential clients so that they ring fence themselves from bloody competition. There is therefore need for EIA consultants to be able to see opportunities ahead so that they can bid to win the tender and build a relationship with the proponents such that there will be more business in other environmental services such as environmental management plan monitoring and systems implementation since an EIA is a starting point of any prescribed project as noted by Machaka *et al.* (2013). EIA firms therefore need to ensure that they embrace sustainable development concept in their prizing and expansion strategy so that they can build vibrant and competitive brands.

Chameleon Theory

This theory advances the opinion that each organization should be cognizant of the value of hindsight, foresight and circum-sight at any given time. Such a 360 degree approach is a must in today's dynamic and competitive business environment as explained by Teece (2018). When in the wild chameleons use their talent to see backward, forward and right round for survival purposes. Chameleons have the ability to go off-radar oftentimes by changing their colour and blend with the environment. As a consequence, adaptive EIA firms are able to embrace scenario planning such that they can analyse trends of business growth and changes in government policies which may affect their operations way ahead of time. This enables them to respond to chance before it occurs thereby developing coping mechanisms smoothly and progressively. This 360 degree approach enables EIA firms to hedge their prizing against effects of inflation or any disruptions in the markets such that they remain afloat. This can therefore help organization to be way ahead of competition thereby avoiding the red ocean strategy in EIA prizing.

Zebra Theory

The Zebra is endowed with two fundamental abilities of speed and the ability to kick to death. When danger is imminent it takes to its heels, but when push comes to shove it kicks relentlessly for survival. Llave (2017) argues that the modern organization should realize that there are always unscrupulous and unethical rival companies which may use unorthodox means to wreck it out of the market. An EIA firm must therefore, comprehend its subterranean abilities to keep its head way above the stormy waters. The business environment is not level and successful organizations need to know when to employ the zebra theory to gain the market and enjoy monopoly when it intends to employ red ocean strategy in its EIA costing. Organizations should win their market share through relentless and persistent disruptive innovation as noted by Scarpin & Brito (2018). As such, success in any business is never by accident but a product of judiciously executed concerted efforts. So innovation is good for nothing if it does not give an EIA firm a novel cutting-edge and a unique competitive advantage.

Spider Web Theory

Every web begins with a single strand which forms the basis of the rest of the web structure. To establish this bridge, the spider climbs to a suitable starting point for example up a tree branch and releases a length of strand into the wind. With any luck, the free end of the strand will catch onto another branch. If the spider feels that the thread has caught onto something, it cinches up the silk and attaches the strand to the starting point. The web once woven will trap

anything that gets into it such that it will not get out without the spider praying on it. EIA firms with good business intelligence skills are aware that they ought to embrace the spider web doctrine in their operations. This will mean that once they attract a client or proponent, they will act as a one stop shop for all environmental services that may be required by that particular client. This helps to reduce competition since the company will need to ensure that it has well indoctrinated the client such that there is no need to opt for other service providers. It is of paramount importance to ensure that the client is aware that you also support his or her business by purchasing products or services of your clients such that there is a mutual intricate business relationship that will establishing a spider web doctrine as explained by Onyeani, (2000). Business is about supporting each other so organizations which operates with this philosophy are likely to establish a business community were wealth will be shared within this community. It is best for EIA firms to be part of that community for uninterrupted growth and development.

Eagle Theory

This theory postulates that an intelligent business should have cutting-edge plans, be surgical in its strategy towards market share and implement its plans with speed and relentless precision like the eagle. The eagle has naturally enhanced visual competences which give responsiveness to every minute detail. In like manner the modern organization should have the ability to peep into the distant future and plan accordingly as established by Alam & Islam, (2017). For EIA consultancy companies to survive competition and the macroeconomic environment induced by government policies, it ought to have a helicopter view of forces that may have an impact on the business. Such political, economic, social, technological, environmental and legal (PESTEL) factors need to be well managed otherwise the EIA firm may become moribund in the comfort of ignorance as noted by Llave, (2017). When EIA firms are bidding, they need to be motivated by the desire to win the bids and be able to execute the tasks in the shortest possible time so that they optimize on revenue that will be generated. This will help them build a formidable brands as they vie for the bigger markets beyond boarders.

Other Theories

There are other theories of business intelligence that EIA firms can adopt in their operations in pursuit of fostering economic development through the use of EIA as a decision making tool. Such theories include the chaos theory where EIA firms can create chaos in the EIA market such that they can emerge victorious in persuading proponents to consider EIA as a

significant stepping stone to business success. The David and Goliath Theory postulates that no matter how small a firm is, its impact is what matters. As such EIA firms are generally small but their input to development is so significant such that their efforts won't be in vain. The Failing Forward Theory by Jack Welch is one such important theory which postulates that organization ought to keep on trying new innovations and failure should never be a stumbling block for success. As such failing to win bids should not be a demotivating factor but EIA firms ought to draw lessons for future continual improvement. Jensen, (2021) argues that Brinnovation Theory recognizes that innovation is not innovation until it leads to business breakthroughs. Company stewards should therefore encourage, foster and nurture innovative ideas that are game changing, trend setting and pioneering. As such EIA firms have a diversity of professionals which need to be given an opportunity to either think outside the box or without the box in developing mitigations plans for the environmental action plans through coaching leadership styles by the principal EIA consultants. Teece, (2018) believes that firms need to embrace Winnovation Theory in marketing their services. As such, EIA firms are no exception in this dynamic and competitive business environment of the 21st century. Organizations should win their market share through persistent and relentless innovation. Winnovation is often used in guerrilla marketing. The concept of guerrilla marketing was invented as an unconventional system of promotions that relies on time, energy and imagination rather than a big marketing budget as established by Jensen (2021).

2.7.9 Sustainable Development Synopsis

Sustainable development is growth that is anchored on five pillars that have been described in terms of "5P's", thus people, prosperity, planet, partnerships and peace by Polido *et al.* (2019). People represent the social aspect, prosperity stands in for economy, planet is the environment and partnership is culture while peace stands in for the political aspect. However, the background of the '3-pillar' hypothesis has been mainly credited to the Agenda 21, World Summit on Sustainable Development and Brundtland Report as reported by Moldan *et al.* (2012). EIA is a tool that is used for decision making in order for sustainable development to be achieved. It is a system of proactive decision making based on precautionary principle in order to manage uncertainty as explained by Mardani *et al.* (2017). The history of sustainable development in the African context is tied in indigenous knowledge systems that have stood the test of time measured by the rich endowment of natural resources that still exist in Africa almost near pristine state as explained by Gwimbi & Nhamo (2016). EIA allows for scenario planning coupled with

forecasting in order to model the future and make encyclopaedic decisions which are best for both current and future generations. Sustainable development concept has developed over time and seeks to ensure intergenerational equity in terms of natural resource use and maintenance of good environmental quality free from pollution, effects of climate change and associated environmental calamities as noted by Villegas *et al.* (2017). In the African context, sustainable growth will need participation of all patrons in decision building and incorporation of indigenous knowledge systems in decision making aids such as EIA and other decision making tools utilising the subsidiarity principle. These systems can then be fused with Western science so that robust home grown solutions to local problems can be developed as suggested by Rappleye & Komatsu (2016). In conclusion, the main benefits of sustainable development are summarised in the 19th century American poet and essayist Emerson, who articulated sustainable development benefits in the statement that we didn't inherit the environment from our descendants but borrowed it from our off - springs as argued by McClure Mudge (2015), hence the reason to worry about the future of the earth. However, there is urgent need to ensure gender equality in terms of employment opportunities and decision making in order to safeguard environmental capital upon which economic development is premised as noted by Roos *et al.* (2020). EIA firms ought to embrace business intelligence theories and appreciate business leadership styles in order to develop sustainable consultancy firm. These firms will develop experience needed in proffering technological solutions in the environmental management plans for proposed developments.

2.8 EIA Regulatory Framework

It is unquestionable that the environmental impact assessment, just like other environmental management tools and decision making instrument, plays a significant role in fostering sustainable development and economic emancipation of a country as narrated by Muserra *et al.* (2020). Additionally beyond socio –economic benefits, other potential paybacks of the environmental impact assessment include sustainable utilisation of raw materials, compliance with appropriate environmental regulations, improved decision-making process through stakeholder involvement enhanced project design and substantial operating costs reduction as well articulated by Ramanathan *et al.* (2017) and Ghisellini *et al.* (2018). Gibson *et al.* (2015) believes that for an EIA system to be effective there is need for it to be founded on well-established legislation and practical rules. Hence under such circumstances, the obligations and rights of all interested and affected stakeholders will be clearly spelt out with clear enforcement mechanisms guaranteed through appropriate compliance and implementation monitoring infrastructure as

buttressed by Byambaa & de Vries (2020). These environmental decrees, regulations and laws constitute vital tools for environmental management and protection in all countries in the world as echoed by Mubanga & Kwarteng (2020). Environmental ethics provide the measure and context for wider economic avenues of encouraging environmental safeguard and lasting throughput which are the twin aims of sustainable development as coined by Olson (2019). While Stenmark (2017) believes that many countries have implemented guidelines, policies, laws and regulations on environmental assessment in the past three decades, Olson (2019), Schaltegger & Wagner and Goodstein & Polasky (2020) concur that this happened in both developed and developing countries during the period under review and the main influences that prompted this up surge in these policies include:

- The enunciation of NEPA in the United States which presented the environmental impact assessment in the jurisdiction of public policy.
- The adoption of the Brundtland Report entitled "Our Common Future" which prescribed for the improvement in environmental impact assessment processes to be developed at all government levels as claimed by Gerasimova (2017).
- The ratification of the Brundtland Report and the NEPA by many countries, international institutions and businesses as reference documents for local policy formulation as suggested by Meadowcroft *et al.* (2019)
- The adoption of formal EIA systems and principles to manage a wide range of projects that have an impact on the environment by both developing and developed nations (Schaltegger & Wagner, 2017).

Significant developments have been achieved in past few years, to establish a legal base for environmental impact assessments in Sub-Saharan Africa as explained by Reynolds *et al.* (2015) and Polasky *et al.* (2019) Although EIAs were characteristically done only to satisfy foreign donors' requirements, they are now mandatory in 22 Sub-Saharan nations as an imperative element for local environmental policy and legislation as reported by Kumwenda (2017). As such, Walker *et al.* (2016) argues that there are fundamental apparatuses of EIA requests, as well as the resemblances, and variances of the numerous state statutes in Africa and beyond. However, special consideration is made to the degree and role of public involvement, for the further improvement of EIA policy and law with respect to the Sub-Saharan Africa (Sinclair & Diduck, 2017).

2.8.1 Environmental Competent Authorities Regulation

The growth of environmental legislation in Africa was and is still frequently perceived as an unswerving consequence of the international financing agencies requirements as opposed to the outcome of a national environmental enthusiasm to fortify environmental agenda as observed by Nassanga & Makara (2016). Conversely, Carter (2018) and Aung *et al.* (2020) argue that the institution and recognition of EIA as a decision making and legislative instrument has been confronted by a general delusion regarding whether it will impede or enhance either technological or economic development. Furthermore, Kotzé (2019) is acquainted with many instances where sentiments have been voiced that EIA is costly, unnecessary and a replica of prevailing monitoring systems and other planning instruments. Nevertheless, Wehrmeyer & Mulugetta (2017) is certain that the latest upsurge in localised African EIA laws was influenced by:

- A general awareness increase on environmental glitches and disputes
- Development of vital pieces of environmental regulations, including EIA statutes with no donor agency involvement in many African nations as also noted by Alfred (2015).
- The addition of environmental law improvement as part of ultimate legal reform programme undertaken by various governments in Africa.
- The desire to obey newly established environmental necessities of universal trade as noted by Arts *et al.* (2016).

These and other reasons have resulted in the establishment of EIA competent authorities to administer EIA legislation in most countries as claimed by Karagiannis (2019). Khosravi *et al.* (2019) defines a competent authority as an organization with the legal power to refuse or permit development applications on behalf of the government. Cook (2020) recalls that after the promulgation of NEPA in the USA, Environmental Protection Agency was then established in 1970 to administer NEPA. It became the first competent authority in the world to be established mandated with superintending the EIA process as once reported by Karagiannis (2019). Many other countries then followed by establishing their institutions some which are parastatals and others are run under the ministry responsible with environment as proclaimed by Khosravi *et al.* (2019). In Zimbabwe, the Environmental Management Agency was established in 2003 through the gazetting of Statutory Instrument 103 of 2003 under the Environmental Management Act (CAP 20:23) as recited by Warikandwa & Osode (2017) and Mukahanana (2017). In Angola, EIA is managed by the Ministry of Environment under the National Directorate for Protection and Environmental Impact Assessment, which amongst other functions is has authority to review and

comment on EIA reports thereby making such approvals for granting EIA acceptance (Alfred, 2015).

2.8.2 Environmental Professional Regulatory Boards

EIA experts are professional in their own right and the USA has been on the forefront in terms of the EIA regulation in the world as explained by Bilgin (2015). After promulgation of NEPA, federal agencies were required to incorporate environmental ethics into their decision making procedures through consideration of environmental impacts of proposed projects and developments of project alternatives as claimed by Tshibangu (2018). The administration of this legislation provided for the motivation for the formulation of the International Association for Impact Assessment (IAIA) in USA (Bilgin, 2015). IAIA is an international association of EIA professionals including both environmental and social impact assessors and was incorporated in the year 1980 as reported by Nita (2019). Morrison-Saunders (2018) observed that currently IAIA operates in 17 nations with affiliates that are autonomous institutions which promote impact assessment on a regionally scale with members from over 120 nations globally. Arts *et al.* (2016) affirms that the Institute of Environmental Management and Assessment is the principal environmental professional regulatory board which was established in 1999 in UK. It was formed from unification of the Institute of Environmental Assessment, Environmental Auditors Registration Association and Institute of Environmental Management as reconciled by Tyler & Dymock (2017). In South Africa there is EAPASA, Uganda has Uganda Association of Impact Assessment which exist as an affiliate of IAIA (Ruth, 2019), EPCOZ in Zimbabwe which was established in 2014 (Machaka & Bere, 2014) and currently exist as a trust just to mention a few such institutions responsible for EIA practitioners conduct and regulation. Appavoo (2018) suggests that the main objective of professional regulatory bodies is to accredit practitioners, ensure continuing professional development (CPD), uphold professional code of conduct and ethics and institute disciplinary measures among practitioners when need arise so that stakeholders are protected. In the same vein, Barac (2016) acknowledges that CPD is a vital component of any profession in today's dynamic technological environment where change is inevitable. As such most professional regulatory bodies require registered members to submit evidence of annual CPD in order for them to have a new subscription for the following year as buttressed by Nash *et al.* (2017). Professional bodies are the engines of continual improvements in the EIA industry and many other professional organisations. As such, an EIA system backed by professional regulations tends to be more fortified than the one which does not have that mandatory requirement.

2.8.3 EIA Practitioners Accreditation and Registration

Jha-Thakur & Fischer (2016) argues that although there is inadequate information pertaining to an international EIA accreditation system, the Institute of Professional Environmental Practice (IPEP) has such a system. This institute was established in USA and has gained international standing with representation from Bahrain, Mexico, Canada and the United Kingdom amongst other countries according to Khan *et al.* (2020). IPEP requires all environmental professionals to abide by strict code of environmental ethics when conducting their services (Jha-Thakur & Fischer, 2016). As such, all EIA practitioners or consultants ought to be registered for them to be able to practice just like any other professions. Hasan *et al.* (2018) realised that in some cases the registration of practitioners is done by the professional regulatory boards while the firm to which they will be employed or associated with may have dual registration with the professional regulatory board and the competent authority. Montaño & Fischer (2019) believes that the aim of registration is to encourage the effective conduct of EIA by establishing quality standards grounded on experience and the knowledge of experts undertaking the EIA process. On the other hand, registration and accreditation provides an effective and efficient means by which consultancy firms and regulatory boards can prove to involved parties that their EIA teams satisfactorily qualified, experienced and trained to embark on the EIA process as outlined by Loomis & Dziedzic (2018). The registration allows for the establishment of a career development path for individuals undertaking the EIA studies. The following are some of the benefits of EIA registration and accreditation to individuals as summarised by Saif (2015):

- Earn proficient individual merit for EIA attributes and skills.
- Ability to demonstrate personal EIA, integrity, experience and knowledge to customers, local communities, EIA regulators and other interested stakeholders as supported by Makmor & Ismail (2016).
- Ability to elevate the company's EIA profile and capabilities through a qualified team.
- Receive all registration benefits from registration and accreditation boards such as networking opportunities, access to online resources and subsidised professional publications which are crucial for CPD as also claimed by Montaño & Fischer (2019).
- Enjoy tender bidding competitive advantage which may come with more profit margins as investors now consider quality of EIA documents especially if funded by multinational financial institutions such as World Bank or African Development Bank as coined by Bond *et al.* (2017).

However, not all countries require certification of EIA practioners for in instance in Canada, USA and Costa Rica registration is not required as narrated by Bond *et al.* (2018). Conversely, in Guatemala registration of multidisciplinary teams constituted by consultants is mandatory when conducting an EIA as vowed by Aguilar-Støen & Hirsch (2015). The same applies for Nicaragua where EIAs ought to be developed by corporations or individuals who are registered and certified by the Environment Ministry as recalled by Gustafsson & Scurrah (2019). Nevertheless, Nicaragua does not have EIA professional bodies or associations to register these professionals. Caviedes *et al.* (2020) noted that all environmental amenity providers in Honduras ought to be registered with MiAmbiente which was assigned with the obligation of creating and upholding the national EIA evaluation system. While accreditation and registration is a necessity in most nations, there are few EIA specific programs offered for training commitments as complained by Khosravi *et al.* (2020). However, in Zimbabwe registration is not mandatory but EPCOZ authorities, EMA and the Ministry of Environment are pushing for a legal framework for registration to be mandatory in order to bring harmony in the EIA industry, regulate EIA prizing and improve EIA quality as reported by Machaka & Bere (2014).

Voluntary accreditation is an autonomous process and does not necessarily require any governing legislation. Organisations and individuals have a choice to acquire accreditation willingly. However, Saif (2015) claims that for deliberate accreditation to be effective, it must offer reputational or market incentives for instance distinct advantage in contract awards. In some countries accreditation may be enshrined in legislation where it becomes mandatory for any practitioner to be accredited. Under such circumstances only EIAs conducted and submitted for review to competent authorities are acceptable as noted by Aguilar-Støen & Hirsch (2015). When EIA accreditation is compulsory, the enticement for accreditation becomes clearer and many stakeholders are compelled to be accredited. Nevertheless under such a situation, it is the government's responsibility to safeguard the functionality and integrity of the accreditation system as is the case with Macedonia as noted by Khosravi *et al.* (2020). While deliberate accreditation may be originated and administered by professional associations for instance the case of EPCOZ in Zimbabwe (Machaka & Bere, 2014), it can also be equally initiated by government. Also, a nation has an option to either start with a voluntary EIA accreditation system which can develop into a mandatory accreditation system with the passage of time (Saif, 2015). Most accreditation systems have started as voluntary and graduated with the passage of time. However in all the cases, professionals have the responsibility of levelling the playing field so that they operate ethically and professionally. Government policy or laws will simply fortify an existing system.

2.8.4 Environmental Consulting

Environmental consulting is usually a form of compliance consulting whereby a consultant's mandate is to ensure that the client upholds an appropriate measure of compliance with environmental statutory requirements as noted by Littlewood and Holt (2018). As such, environmental consulting in many countries is buttressed by the environmental laws over and above company registration requirements which may stipulate what constitute an environmental consulting firm. An environmental consulting firm is therefore a specialised technical and professional entity which aims at protecting the environment from degradation. However, Sebele (2019) observed that there are numerous categories of environmental experts, but there are two major groups which include those who get into practise from the industry side and those that are recruited from the environmentalist side. These environmental experts operate in a very wide spectrum with some who may take a broad view across a wider range of disciplines while others specialize in certain areas of environmental consultancy such as EIAs or air pollution monitoring and control, waste management or environmental systems implementation and auditing just to mention a few services or disciplines as postulated by Adom and Kquofi (2016). The environmental consultancy industry usually has holders of undergraduate and master degrees in environmental science related disciplines such as environmental technology and natural sciences and social sciences as observed by Sebele (2019). These consultants ought to have an in depth understanding of environmental regulations in order to offer sound advice to particular customers in the private or public institutions. Despite environmental consulting spanning a broad spectrum, the most fundamental industry where it remains prominent is in the manufacturing industry as argued by Shapira *et al* (2017). Many business lenders depend on environmental firms for due environmental diligence advice when mergers and acquisitions are being considered. Retief *et al.* (2016) and Biehl *et al* (2019) agrees that with increase in agriculture, construction and scientific companies engaging environmental consultancy firms coupled with increased environmental calamities including environmental degradation and climate change, the environmental consulting industry is expected to grow by 9.7% globally by 2030 further contributing to economic development. Some companies are legitimately motivated by the concern for the environment, but others engage consultants in order to appear as if they are "going green" so as to fulfil requirements of their financiers as observed by Swilling (2019). However this has proven beyond doubt to be a functional marketing tool which has increased bottom lines of many companies. The call by the United Nations Framework on Climate Change Convention to

eliminate fossil fuels and funding into renewable energy technologies with low carbon footprint is also helping the growth of environmental consulting particularly the EIA sector as organizations are investing in research and innovation in these areas as established by Sebele (2019). As such, environmental consultancy firms account for a largest fraction of environmental employers. However, Renwick *et al* (2018) confirmed that to start an environmental consulting firm, one ought to be a holder of a bachelor's degree in environmental science discipline, have experience gained from another established consultancy and be a member of a professional regulatory body since this industry is an offshoot of environmental regulations in many countries. Environmental consultants are expected to provide expert judgment and advisory services for their customers on environmental management issues. El-Halwagi (2017) noted that what environmental consultants are expected to do helps in reducing the negative impact of industrial, government and commercial initiatives on the environment. As such, environmental consulting helps to facilitate sustainable development.

Leaders of environmental consulting firms ought to exhibit good leadership styles in order to ensure that their team delivers up to expectations. However, there is no single prescribed leadership style that suites every situation in consultancy industry. The situation at hand detects the leadership style to be implemented. Nevertheless, the most important aspect to consider in these leadership styles are the emotional competences of each leadership style. EIA consultancy firms ought to have leadership which promotes leadership succession grounded on emotional competences. Maamari & Majdalani (2017) defines emotional competence as a learned capability based on emotional intelligence that generates best teamwork performance. There are five basic competencies that constitutes the field of Emotional Intelligence according to Maqbool *et al.* (2017). These are self-awareness, self-regulation, self-motivation, empathy and effective relationships. The first three are intra-personal, indiscernible to others and occur inside of us. The last two are inter-personal which occur between us and other people and are recognisable in our behaviour. The better developed a leader's intra-personal skills, the easier it is to demonstrate his or her inter-personal skills.

Emotional self-awareness is the art to focus your responsiveness on your emotional state. This skill helps the EIA consultant to make effective decisions in order to achieve better outcomes for his or herself and others. Emotional self-motivation is the ability to use your emotions to cause yourself to take positive action to continue to persistently pursue goals even in the face of significant adversity or difficulty as noted by Maamari & Majdalani (2017). However, empathy is

the ability to listen meritoriously and accurately adequate to put yourself in the other person's shoes. This is not necessarily to agree with them, but to truly comprehend the situation from their perspective in order to enhance problem solving, communication and trust. On the other hand, nnurturing relationships involves the ability to exhibit sincere care for others. This is about setting a positive tone for cooperation no matter how difficult the circumstances or conversation and having other's best interests in mind while concentrating on accomplishing goals to create win-win outcomes. These emotional competences affect different leadership styles which leaders embrace as noted by Maqbool *et al.* (2017).

Pacesetting Leadership Style

There are well documented conditions where this style is operative but it's very imperative to use it sparingly. The pacesetting leader sets both high principles for themselves and those they lead. One of the key characteristics of this style is the "lead by example" approach. These leaders don't ask those who follow them to do anything they wouldn't do themselves. Unfortunately, not everyone shares the same inspiring forces. Pacesetting leaders are also quick to pinpoint individuals that are not keeping up to speed with their anticipations as established by Maamari & Majdalani (2017). Poor players are asked to rise to the occasion, and if they do not, they are swiftly replaced. Pacesetters do not give followers a lot of positive reinforcement. However, they have no qualms jumping right in and taking over if they feel that progress is too slow. Kotsou *et al.* (2019) concluded that this type of leadership is suitable when leaders want to get prompt results from a highly enthused and competent team. The pacesetting style can be very operative in getting outcomes in the short term but cannot be used over prolonged periods. On the down side, the style has a deleterious impact of the work environment. Oftentimes followers are solely overwhelmed by the speed and the burdens placed upon them, resulting in self-confidence that quickly deteriorates. To make matters worse, the alacrity under this leadership style is such that directives to followers may not even be flawless as observed by Maqbool *et al.* (2017). Ironically, the leader has no tolerance for those that need to adapt, or are not picking up new tasks fast enough.

Affiliative Leadership Style

An affiliative leader is more thoughtful to the value of followers than attainment of goals. Affiliative leaders take egotism in their ability to keep followers happy, and build a harmonious work environment. These leaders endeavor to build strong relations with those being led, with the

optimism that these relations will bring about a strong sense of allegiance in their followers. According to Maamari & Majdalani (2017) an affiliative leader is a principal at building relations. This leadership style is most operative when there is a need to restore bad feelings that may have developed in a team, or to stimulate others during times of heavy assignments and stress. An affiliative leader is best defined by the phrase "people come first". Affiliative leaders also provide their followers with sufficient positive feedback. They are quick to spot the efforts of others, and provide incentives for a job well done. They build a sense of belonging among followers, and are tremendously effective at "patching things up" between participants of the team. However, Maqbool *et al.* (2017) believes that the affiliative leadership style is not one that a leader will need to exercise all the time. They often shy away from managing under-performing followers of the team. Since poor performance can go unrestrained in the team, some followers might get the impression that mediocre work performance is acceptable. This can therefore lead to a rapid deterioration in overall team performance and EIA consultancy productivity. Affiliative leaders are also unproductive when the team is faced with difficult challenges. Since the leaders provide strict positive feedback, they can inadvertently inspire their followers to continue down the incorrect path which will affect the overall work performance.

Coaching Leadership Style

Maamari & Majdalani (2017) claim that coaching leaders are exceptional at helping followers to improve their skills, advising on career guidance and building bench strength. Coaching leaders have the ability to tie together career ambitions and personal goals of their followers. Due to this ability and concentration in helping followers, they are good at mounting a long-term plan to reach long-standing goals. Coaching leaders provide abundant feedback on team performance, but they are also specialists at delegating and giving their followers assignments that are thought-provoking (Kotsou *et al.* 2019). Coaches will not hold someone's hand through the rough times, but they tell them how to withstand the storm by concentrating on the development of followers, while using their ardent sense of empathy and their own self-awareness. This style is most effective when followers working under the coach are amenable to this help. However, if the EIA team leader is managing a team that is extremely resistant to change, or is not interested in learning new things, the leader will struggle if they choose this style. It's also incongruous to use this style if the follower lacks the technical expertise required to help those they are leading. Maqbool *et al.* (2017) noted that the biggest shortcoming of this style is that it consumes time and endurance. A leader needs to make an up-front investment in the follower with the anticipation of

reaping the benefits of above average performance later on. However, this leadership style has more advantages to an EIA consultancy firm considering that it has numerous specialists who need to be activated to produce the best out of their expertise.

Democratic Leadership Style

Democratic leadership style guarantees that there is equilibrium in the decision-making process. Employees, or followers, are given an opportunity to participate in the decision and their sentiments count just as much as their leader. The key to this style is communication, pursuing the views of others, and the sharing of thoughts as explained by Maamari & Majdalani (2017). Since employees or followers have an equal contribution in the decision-making process, they are more dedicated to the anticipated outcomes. The common environment created by this style often results in more comprehensive solutions to problems. This creates an ideal environment for teamwork problem-solving in addition to decision-making. However, this process has its shortcomings as explained by Maqbool *et al.* (2017). The democratic leader relies on the acquaintance of his employees or followers and if the workforce is inexperienced, this style is not very operative. A fair extent of expertise is needed to make sound decisions. The other downside of the democratic style is that the collaborative effort is time consuming and prompt decisions cannot be made. When asking people for their thoughts, it takes time for them to explain what they think and for others to appreciate what is being said. Kotsou *et al.* (2019) further argues that if an exigent decision is needed, the democratic tactic is ineffective and the leader should switch styles. The democratic leadership style is most effective when there is a workplace that has experienced followers and there is ample time to develop an exhaustive solution.

Authoritative / Visionary Leadership Style

Authoritative leaders are connoisseurs in their field of work, and individuals that are able to unmistakably articulate a vision and the trajectory to success. The trademark of this type of leader is their ability to organize people towards a vision as observed by Maamari & Majdalani (2017). This leadership style is most operative when a new direction is needed, or when the route to that vision is not always clear. It is considered the best in the EIA consultancy industry when an EIA consultancy firm is either starting up or rebranding. One of the fascinating aspects of this style is that even though the leader is considered an authority, they allow their followers to figure out the best way to achieve their goals. Even though authoritative leaders have the most positive effect on the work environment, it is not essentially the style that should be implemented at all the

time as observed by Kotsou *et al.* (2019). In particular, if a new leaders finds themselves placed into a team of "experts," it may be challenging, if not impossible, for this new leader to enter the group and instantaneously express their vision of where the team should go.

Coercive / Commanding Leadership Style

The coercive style is one that should be used with caution. The style is most effective when an institution or group is faced with a calamity. This can range from dealing with ineffective followers to a complete turnaround for an organization or group. For example, if a department is having trouble with staff using unsafe work practices, the leader might make use of the coercive style to gain instant compliance with the company's safety standard operating procedures (Maqbool *et al.* 2017). One of the advantages of using commanding leadership style is that the leader has a great oversight regarding what's happening in their particular area of jurisdiction. This type of a leader provides the course of action and demands conformance. On the other hand, studies have established that this style has a very negative effect on the overall work environment as noted by Maamari & Majdalani (2017). In fact, by its very nature, the commanding style is uncompromising, provides little incentives and removes all responsibilities from followers for their actions as long as they follow commands. While some followers actually enjoy being told precisely what to do every day, the majority will find the commanding style unbearable in the long run. Examples of commanding power include intimidations of write-ups, demotions, layoffs, pay cuts and terminations if followers don't follow directives.

Kotsou *et al.* (2019) concluded that there is no one leadership style that suits every situation. As such, situational leadership where circumstances drive the style of leadership to be adopted is the best. The best EIA lead consultant will choose a leadership style based on the situation at hand and what needs to be achieved. Effective leaders must therefore be driven by emotional intelligence competences in their management of employees or their followers in order to achieve best results. Furthermore, the vision and mission of an EIA consultancy firm helps those in leadership position decide on the best leadership style depending on what is intended to be achieved by the EIA consultancy firm.

2.8.5 EIA in Economic Growth Doctrines

Laird & Venables (2017) and Bermejo & Werner (2018) underscore the critical role project proponents play in sustainable development of any economy not undermining their main focus on making profits ensuring return on their investments. It is therefore government’s

responsibility to create an enabling environment that promotes ease of doing business without jeopardising ecological functions and safeguarding social facets of a community in which a project will be developed as demanded by Williams *et al.* (2015). Amaeshi *et al.* (2016) and Andriof *et al.* (2017) are certain that EIA is an enabler of sustainable economic growth of any nation as it grows economically. There are different stages an economy goes through as it grows from an agrarian economy to a highly industrialised economy as suggested by various theories of economic growth (Rostow *et al.* 2016). Nevertheless, Rostow's model gives a good summary of national economic growth for the purposes of this discussion which goes through five different phases as shown in Figure 1. These stages are as follows in their chronological order:

- Traditional society which is dominated by subsistence agriculture or hunter-gathering as the first stage.
- Transitional stage is characterised by specialisation through education and skills development of the nationals. In the context of EIA expert development, it is in this stage where EIA professionals tend to develop their knowledge base which will feed into sound decision making and sustainable development as noted by Ross (2015).
- Take off phase is characterised by industrialisation and growing investment. At this stage EIA experts or professionals become very crucial in advising governments through EIA competent authorities by developing project alternatives which can be harmonised with the environment with minimum environmental impacts as explained by Rostow *et al.* (2016).
- Drive to maturity phase will entail diversification and innovation and less dependence on imports as manufacturing sector begins to grow. At this stage, continuous professional development becomes essential since the world is dynamic. Disruptive innovations in the EIA sector will result in development of up to date mitigation measures which can stand the test of time as suggested by Kindleberger *et al.* (2016).
- High mass consumption phase involves domination of service sector and improvement in durability of products which helps a country develop a global outlook (Kesgingöz & Dilek 2016). With respect to the EIA, the focus will now be on the quality of EIA documents produced by consultant companies and how they address the current challenges in a new narrative.

Rostow's philosophy can be categorized as top-down concept or one that underscores a trickle-down transformation effect on urban industry triggered by western stimulus to wholly develop a nation as coined by Kindleberger *et al.* (2016). However, Rostow postulates that all nations have an equal opportunity to grow regardless of its population size, location or natural

resources (Rostow *et al.* 2016). As such, Moyo & Tsakata (2017) observed that Zimbabwe's economic development is lower than the mean growth rate in Africa. It is however in phase two of Rostow's economic expansion model since it no longer depends on subsistence farming and barter trade but is characterised by skills specialisation, importation of goods and infrastructure development to support industrialisation as chronicled by Moyo & Salawu (2018). Mashanga (2019) noted that most of the EIA projects being undertaken in Zimbabwe are for small scale projects mainly in the mining (Spiegel, 2017), petroleum industry and infrastructure development. Conversely, Belgium is one of the countries in stage 5 on Rostow's development since it is characterised by high mass production and consumption by producers and consumers respectively as reported by Rostow (2019). EIA principles ought to be upheld in economic development in order to ensure sustainable development. It is the responsibility of government to ensure economic growth of a nation guided by EIA doctrine founded on the precautionary principle (Morrison-Saunders 2018). This will help avoid the catastrophic effects of pollution suffered during the industrial revolution in Britain, mitigate climate change impacts and ensure the ethos of The Future We Want Report of the United Nations Conference on Sustainable Development as mentioned by Mokyr (2018). Figure 2.12 shows the Rostow's phases of economic growth.

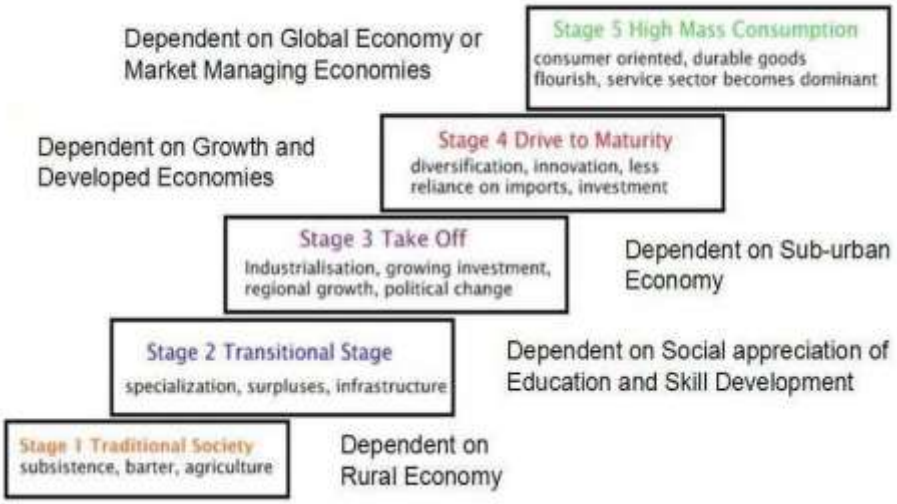

Figure 2. 12: Rostow's Phases of Economic Growth

2.8.6 Post EIA Implementation Monitoring and Audit

Jones & Fischer (2016) argue that Most EIA laws provides for post EIA implementation monitoring and auditing but lack enforcement mechanisms such that project developers fail to implement EIA recommendations. This has resulted in developmental projects having

unprecedented negative impacts to the environment despite having been approved by competent authorities as noticed by Bashour (2016). As such, project sponsors are therefore required to implement the recommendations proposed in the EIA in order to ensure minimum environmental disruption as suggested by Khosravi *et al.* (2019). The EIA project would have been approved on the basis of the strength of these recommendations and hence the need for strict adherence to its guidelines as encouraged by Bashour (2016). Aung (2017) suggests that the competent authority ought to be observing project impacts in real-time and also checking the effectiveness and accuracy of the proposed mitigation measures during the entire course of an EIA project implementation. This will give room for alterations to be made if there is need in order to ensure through environmental protection as proposed by Jones & Fischer (2016). The intention of EIA monitoring and auditing is to make a comparison of pre- and post - project situations on the project development location as explained by da Silva Dias et al (2019). Roach & Walker (2017) further suggests that EIA monitoring helps to compare predicted or anticipated to actual or real time environmental impacts of a project. EIA monitoring is particularly important on key impacts such as on water quality, soil fertility, air quality and endangered species as mentioned by Jones & Fischer (2016). Furthermore, it is a means of ensuring that project developers adhere to EIA conditions set by the competent authorities with regards to the proposed projects and government's expectations (Jain, 2015). Chang *et al*. (2018) suggest that the presence of the competent authorities during project implementation removes the "cutting corners" practice by project developers especially if proposed mitigation measures are costly in the short term. As a consequence, it is therefore in the interest of sustainable development to have a project commissioned only after successfully implementing all mitigation mechanisms as prescribed in the EIA report upon which it would have been approved as proposed by Oino *et al.* (2015). The additional bonus of project monitoring is that if EIA consultants had in some way overlooked a possible environmental impact of a project, the same can be realised during the EIA monitoring stage as observed by Jain, (2015). If we consider the multitude of impacts an activity can have, it is possible for the EIA consultants or practitioners and the competent authority to miss some impacts which would otherwise be identified and corrective measures done during the monitoring stage. While Chang *et al.* (2018) believes that EIA monitoring and audit allows for the project developers to make modifications on their project activities if considerable environmental impacts are observed prior to commissioning, Khosravi *et al.* (2019), Jha-Thakur & Fischer (2016) and da Silva Dias *et al.* (2019) concur that prediction researches are entirely theoretical and the chances of making errors are high hence the need for EIA monitoring to allow for observation of real time results and implementation of prompt appropriate corrective measures.

According to Heinel (2018), there are several approaches by which EIA monitoring of an area can be done depending on which aspect is being monitored. Sarfo & Karuppannan (2020) proposed the use of drone technology coupled with GIS and remote sensing techniques especially during this Covid -19 pandemic era and for areas which may be inaccessible for EIA monitoring and data collection. These technologies are relatively cheap considering that they provide large data simultaneously with reduced carbon footprint when compared to conventional methods of ground truthing as fortified by Padró *et al.* (2019). Certain parameters such as water and air quality may need sophisticated machinery and instruments for continuous monitoring, which may be mounted at strategic sites within the project location sending data to a control station as suggested by Wessels *et al.* (2015). However, Yuan *et al.* (2015) and Clements *et al.* (2017) are confident that ground truthing is perhaps the best technique to monitor impacts since some information that could be missed by enviro - technologies can be captured by trained specialists. EIA monitoring ought to be unbiased and accurate as tempering with information may mislead discussion making for remedial action as emphasised by Swangjang (2018). Unfortunately this review established that most countries do not have prescribed time frames for EIA monitoring as this is left open to stakeholder's complete discretion as also observed by Muir (2018).

2.8.7 Remarks on EIA Regulatory Framework

In conclusion, monitoring of environmental impacts and execution of mitigation strategies after project implementation is often a discretionary and a weak component of most EIA systems in many countries as observed by Heinelt (2018) and Bradley & Swaddling (2018). In UK there is a fragmented approach to post EIA implementation monitoring while in California there are no mandatory procedures of conducting such EIA audits resulting in them being not undertaken at all as noticed by Jones & Fischer (2016). The Environmental Management Act CAP (20:27) in Zimbabwe stipulates that biannual audits should be done however with the proponent tasked with making quarterly audits. However the Environmental Management Agency in Zimbabwe lacks the capacity to monitor these projects due to lack of resources both financial and human owing to bad economy and under staffing (Spiegel, 2015). It is therefore recommended that for the EIA system to be effective, it has to be backed by accreditation and the legal framework with clear monitoring mechanisms.

2.9 Chapter Summary

This study is anchored on Attribution Theory where the researcher seeks to establish the causes of certain behaviour of project developers and political actors which seem to undermine the significance of the EIA system in economic development of nations. Despite the merits that comes with sustainable development enhanced by the EIA framework, there is an upward increase of environmental problems such as climate change, biodiversity loss and land degradation just to mention a few as observed by Alfred (2015). It is therefore important to have a clear understanding of what an EIA system entails and its significance in economic development. As such, an EIA system is a process that helps in identification of possible environmental impacts of any proposed developmental activity and develops mitigation measures for such impacts in order to ensure that development is synchronised with the natural environmental setting as articulated by Arts *et al.* (2016). This enables an EIA report to serve as a technical instrument which aids in decision making and considers the impacts of a project on the physical environment, cultural, social and economic setting. The concept was first introduced in the USA in 1969 through NEPA as a system that would help address environmental challenges posed by development. The main advantage of this system is that it is proactive and since impacts of a project are identified well before its implementation giving room for corrective measures to be taken based on predicted impacts as suggested by Aung (2017). This allows for development of project alternatives and mitigation or enhancement measures in pursuit of ensuring sustainable development. The EIA system has since been adopted by many countries which have enunciated laws that support it with many financing institution now making it a requirement on project funding eligibility criteria as claimed by Bermejo and Werner (2018). As a consequence, institutions such as World Bank and African Development Bank have developed robust systems that make use of performance standards (PS) and operational safeguards (OS) in their EIA systems which are used internationally on projects they finance (Bond *et al.* (2017).

These EIA systems allows for public disclosure of such projects so that they can draw public scrutiny. This entails the need for stakeholder involvement in developmental projects so that they can contribute in decision making by incorporating indigenous knowledge in the scientific knowledge of a proposed development as vowed by Aloni *et al.* (2015). However stakeholder involvement is marred with manipulation of stakeholders which need to be well managed in order for the EIA studies to generate long lasting mitigation measures which can stand the test of time with public support. Andriof *et al.* (2017) suggest that EIA consultants need to be

cognisant of these manipulations and ensure that they minimise them when conducting EIA studies. Most of the stakeholder involvement in the EIA and public policy in general falls within the tokenism where mainly consultations are done. However it is in the best interest for stakeholder involvement to move from tokenism to citizen power where stakeholders will get into partnerships with project developers or have delegated power and ultimately have control of developments that occur in their areas of jurisdiction as proposed by Arnstein (2019). It is of paramount importance to note that EIA as a system is a consultative process of inquiry which helps to develop collaborative decisions which are multidisciplinary in nature. However the EIA system has its own shortfalls above manipulation related challenges. Prediction of environmental impacts requires a technical methodology which may not be familiar with local stakeholders as such, ranking and appraisal of such impacts may be problematic as complained by Bertsou & Pastorella (2017). Furthermore, there is weak legislation of post EIA monitoring in general which leaves a lot of questions on why pollution and environmental degradation remains unabated despite the existence of robust EIA systems in many countries especially in developing nations as queried by Avgerinopoulou (2019). Nevertheless, EIA brings with it numerous opportunities for improvement as we focust into the sustainable future. Development of project alternatives provide for further project refinement and redesign of the project so that it can blend well with the environment with minimum environmental disturbances. In addition post EIA monitoring also allows for corrective measures on all unanticipated environmental impacts to be done when observed thereby avoiding prolonged unabated significant environmental impacts as noted by Alfred (2015).

EIA as a system has its own expenses which range from professional stakeholder involvement, logistics, administrative, EIA review and monitoring costs. However these costs are incurred by the developer before the project commences. As such EIA is viewed in some circles as a cost which hinders economic development since the developer incurs these costs before project implementation as noted by Aung (2017). There are however many strategies that can be adopted by EIA consultants, stakeholder and competent authorities that review the EIA reports to minimise some EIA costs in order to stimulate economic development for instance in Zimbabwe staggered EIA review payments are done where some payments can be done during and after project implementation (Machaka & Bere (2014). In some countries like Namibia, stakeholder consultation is coordinated by the ministry under which the project falls under and it’s done as a single multi – stakeholder meeting so that many costs associated with stakeholder consultations are reduced or in some cases eliminated. A number of cost estimation models have been

developed which EIA consultants can adopt depending on the nature and situation surrounding a proposed development. All these models seem to be very effective in cost estimation if past records of costs on previous similar projects are available as observed by Brook (2016). As such EIA consultants ought to have a robust data capturing system if they are to continuously improve on the accuracy of EIA costing and win tenders. The best cost estimate must indicate thoroughness and the highest level of necessary detail in order for an informed decision to be made by tender adjudication teams. Cost estimation completeness requires the inclusion of all cost drivers which have a bearing on the efficacious execution of an assignment as explained by Benner *et al.* (2015). As such, there is no best EIA cost estimation model which can be a panacea to the current problem of inconsistent and varied EIA prizing in the world. This therefore becomes a knowledge gap which this study seeks to fill. However, the costing of intellectual service has always been a problem in other disciplines. This has resulted in the usage of the amount of time spent on an assignment as the basis for prizing in terms of man hours as done by the United Nations system. However, this is also affected by the experience the experts have in problem solving as more experienced consultants tend to be faster leaving the use of time jeopardy. Nevertheless, EIA remains the tool for sustainable development achievement despite these EIA cost estimation challenges for similar projects.

Kabera (2017) identified four types of EIAs that can be conducted depending on the scope and purpose upon which it is undertaken. The Strategic Environmental Assessment (SEA) is conducted mainly by governments or government departments to identify the impacts policies plans and programs on the environment. These are done at the highest level and are mainly qualitative as explained by Blakley *et al.* (2020). Regional Environmental Impact Assessments is conducted to determine the environmental impacts at regional level focus on Trans – boundary impacts. However, McCullough (2017) established that sectoral EIAs are conducted focusing on specific sectors and are ideal for special economic zones where impacts of a particular sector are identified and developments with the same impacts can either be located in the same area or restricted in order to minimise the ecological footprint of the envisaged impacts. Project level EIAs are the most common and have more technical data which is both qualitative and quantitative. All the types of EIAs allows for stakeholder engagement in decision making and their objectives are all most similar with the pivotal function being to identify environmental impact and subsequently develop mitigation measures as expounded by Scott (2021). However, not all countries have embraced the four types of EIAs within their legislations. In some countries, they are practised but with no legal basis except for the project level EIA.

EIA systems in Canada, China, United Kingdom, Rwanda, Zambia and Zimbabwe all acknowledge the significance of stakeholder engagement in decision making process. EIA has been adopted in all these countries as a tool for sustainability which is proactive in nature making use of the precautionary principle in its functionality. The EIA systems in Zambia and Rwanda have a provision of public hearings during the EIA review processes by the respective competent authorities for the purposes of ground truthing and verifying EIA findings prior to decision making as observed by Sambo (2019). Additionally, the EIA systems have evolved to put people at the centre stage of participating in decisions on projects that have an impact to the communities they leave. This concept of embracing the subsidiarity principle in the stakeholder engagement process instils the sense of ownership and responsibility with regards to development. Zambia has the latest EIA legislation which came into force in 2011 having evolved from an incremental legal framework which has been in use since the establishment of the Environmental Council of Zambia as explained by Mubanga & Kwarteng (2020).

Sustainable development considers social, environmental, economic, political and cultural aspects as well articulated in the Brundtland Commission Report (Huckle *et al.* 2015). Furthermore, the aspect of gender, environment and economic development is critical in ensuring gender equality in terms of distribution of natural resources and decision making over utilisation of such. Countries which have empowered women and youth stand a better chance of having economic emancipation and reduced environmental degradation. EIA is the means of achieving sustainable development and should be embraced in all developmental projects or activities which have a potential for causing significant impacts on the physical environment, culture, social, political and economic status of a nation as explained by Biehl *et al.* (2019). Sustainable development seeks to ensure human well - being and perpetuation of the maintenance of ecological integrity, social and cultural fabric and boost economic growth while maintaining political stability. As such EIA is a cross cutting discipline which ensures that development is in tandem with expectations of the current generations with expectations of future generations being considered as well in decision making. However, for EIA to magnificently support sustainable development in Africa, it ought to prove to contribute significantly to creation of employment, eliminate poverty and enhance economic expansion as noted by Renwick *et al.* (2018)

The EIA system is therefore buttressed by a regulatory framework which governs operations of EIA stakeholders and undertakers. Many professional bodies have been established with the IAIA gaining international recognition in terms of regulating environmental assessors.

However there is no international EIA practitioners' accreditation body although there are some country specific boards as witnessed by Hasan *et al.* (2018). These registration and accreditation institutions are either voluntary or some are government controlled backed by legislation which makes it mandatory for such EIA consultants to have such recognition prior to conducting EIA assignments. In Zimbabwe EPCOZ was established in 2014 for the purposes of registering and accrediting environmental professionals which also include EIA consultants. It is a voluntary institution which has an intention of being incorporated into the legislative framework so that it can then be mandatory for such consultants to be accredited first before they can even establish EIA consultancy firms as claimed by Machaka & Bere (2014). This is being lobbied for in order to ensure improved EIA quality as the country battles with new project developments aimed at jump starting economic recovery after decades of economic decay and turbulence. The establishment of an Act of parliament that recognises EPCOZ is envisaged to go a long way in ensuring sanity in the EIA industry through enforcement of professional standards.

Chapter 3: Research Method

3.1 Introduction

There exist mixed sentiments amongst EIA stakeholders in Zimbabwe with respect to the significance of the EIA process to economic development. The world is facing numerous environmental calamities induced by insatiable appetite for nations to increase industrial production of goods. Kanyenze *et al.* (2017) noted that Zimbabwe is in the same predicament where people are in dire need for implementation of development projects in order to support the collapsing economy. However this growth in industrial production needs to be done in a responsible and sustainable manner in order to ensure intergenerational equity regarding the distribution of environmental capital as noted by Toosi *et al.* (2018). EIA has been considered a tool for ensuring sustainable development due to its *modus operand* where it provides for the identification of environmental and social impacts of proposed projects and proffer mitigation measure to reduce these impacts during the planning stages. However, the EIA process in Zimbabwe is purported to be delaying economic development and preventing access to lines of credit and foreign direct investment (FDI) in the country as noted by World Bank (2015). This is despite the fact that the EIA process in Zimbabwe is legally constituted under the Environmental Management Act (CAP 20:27). The hype of EIA stakeholders regarding bad publicity on the EIA process was an indication of how these stakeholders are prepared to implement development projects without undergoing through the rigorous and meticulous EIA process. Moreover, The Financial Gazette (2018) and The Herald (2018) both communicated that the situation in Zimbabwe was exacerbated by the World Bank's 2017 Report that hierarchically placed Zimbabwe at position 161 out of 190 countries with reference to ease of doing business index. The situation has improved since as of 2020 Zimbabwe had moved up to position 140 out of 190 countries. Nevertheless, Zimbabwe has lost her economic fortunes following decades of economic turmoil purported to be caused by illegal sanction which the country has been slapped with when Zimbabwe's relations with the western countries became sour although these countries maintains that they are targeted travel bans as noted by Manyeruke (2021). This follows years of hyperinflation characterised by loss of business confidence and closure of big conglomerates resulting in massive loss of employment of the general workforce. However, there has been a sharp rise of locally owned companies which now dominates many productive sectors such as the mining, tourism, construction and manufacturing industries just to mention a few. These are the business players who feel that the EIA process is stalling economic development in Zimbabwe due

to its high costs and prolonged processing of EIA certificates as reported by The Herald (2018). They are the advocates of the environmental Kuznets curve hypothesis where they want to degrade the environment while making some profits which they will later use for environmental rehabilitation. As such they are prepared to mandarin their stance that EIA process hinders business growth. Contrariwise, the Environmental Management Agency (EMA), Environmental Professionals Council of Zimbabwe (EPCOZ) and EIA consultants argue that Zimbabwe's EIA costs are low-priced when compared with other countries in the Southern African Development Community (SADC) region. As a consequence of these diverse sentiments and beliefs, it is imperious to study the implication of the EIA process on business undertakings (Rebelo & Guerreiro, 2017) and economic expansion in Zimbabwe. It is the researcher's desire to develop an EIA cost estimation model that can be used to determine the costs of conducting EIA studies in order to have the basis for cost determination and regulating the EIA sector in terms of costing. The model will even assist in making futuristic estimate budgets for project implementation in economic development of Zimbabwe.

The purpose of this study is to investigate the relationship between environmental impact assessment and economic expansion in Zimbabwe making use of mixed research approach. Zimbabwe is a developing country with vast mineral reserves which needs to be utilised in a manner which ensures the country develops and moves out of the virtuous cycle of poverty. This is well articulated in the government's economic blue print which aims for a middle income economy by year 2030. However, the development ought to be guided by the best environmental practices making use of the best available technologies in order to ensure that there will be no environmental degradation as suggested by Rebelo & Guerreiro (2017). Since most multinational finance institutions such as African Development Bank, FMO and World Bank have since advanced their interests in environmental social safeguards and due diligence as project financing requirement in pursuit of greening the world as observed by Buntaine (2016) and Hillsamer (2016), it is only prudent to undertake this study since it has a bearing on sustainable development and economic growth of Zimbabwe. In the same breath, the need to examine the intricate relationship between EIAs and economic expansion with the view of demystifying EIA stakeholder misunderstandings and perceptions that exist in Zimbabwe is inescapable. There an urgent need to sanitise the EIA industry and ensure that it becomes a force to reckon in contributing to the gross domestic product. Furthermore, the study upshots will augment the current body of theoretical information cross-examining in detail the relationship of these parameters from a holistic viewpoint. The study will also help in the development of

environmental curriculum with a business aspect so that environmental management can be viewed as a process that provides opportunities for business improvement which grows the organisation's bottom line unlike the current state where its viewed as a liability as echoed by The Herald (2018). This will therefore assist in providing acceptable empirical evidence of the connection that exist between these aspects and their importance to the current dialogue on greening the business sector. An acceptable EIA cost estimation model is developed as a result of this study that can be of use in determining EIA costs within the EIA industry. Schaubroeck *et al.* (2016) argues that for so long there has been no agreed EIA cost estimation model that could be used to cost the EIA service. This situation has seen the industry taking advantage of the situation such that they would create a situation where EIA consultants in Zimbabwe are entangled in the red ocean strategies for survival in terms of EIA costing and competing of EIA bids. The study forms the basis of future studies in this area so that there will always be continual improvement in a bid to refine this key industrial sector.

The researcher adopted the mixed research approach in an attempt to capture both quantitative and qualitative aspects of the study as suggested by Tashakkori *et al.* (2020). Concurrent triangulation was further used to enhance research validity making use of case study survey and archival research strategies in order to cross validate research finding as recommended by Chan *et al.* (2016). In the face of global shutdown induced by the Covid – 19 pandemic, the researcher made use of digital space for data collection ensuring that there was no physical contract between the researcher and the participants. Both probability and non-probability sampling procedures are used and a sample of 70 participants was recruited in this study. Random and snowball sampling methods were used to select questionnaire respondents. An online electronic questionnaire was administered using Kobo toolbox and telephone interviews were also done coupled by a virtual focus group discussion which was supported by zoom platform in a bid to comply with WHO and Ministry of Health and Child Care Covid -19 protocols and guidelines on social distancing and avoidance of spread of the novel corona virus. Data collected from telephone interviews and virtual focus group discussions was recorded on data capture manuscripts for further analysis. All ethical considerations were adhered to as a standard requirement for conducting research (Honorene, 2017) and the project has a low risk factor. The project had a low risk factor since there was no possibility to cause harm to participants. The research and its instruments got provisional approval by UREC prior to data collection which allowed for a pilot study to be conducted in order to fine tune the research instruments as recommended by Bond & Morrison-Saunders, (2018). The final UREC approval was granted

which further allowed for the final data collection observing all ethical considerations. The researcher identified Environmental Impact Assessment (EIA) costs, EIA cost drivers, EIA review periods and EIA perceptions as the main four dependent variables for this study. The collected data is imported to Statistical Package for Social Scientists (SPSS) version 20, Microsoft Excel and Framework Analysis Method (FAM) for analysis making use of both quantitative and qualitative data. Data obtained from archival research and literature review was finally used to develop an EIA cost estimation model to be used in the determination of EIA study costs in Zimbabwe and beyond.

3.2 Research Approach

The researcher used mixed research approach in this research since the approach is predominantly convenient in complementing quantitative and qualitative aspects under study as suggested by Saunders *et al.* (2009). The topic under investigation has both quantitative and qualitative aspects hence the use of mixed methods was ideas for this study. As such the data of this study can only be best collected using mixed method. Mixed research approach allows for the assemblage of both quantitative and qualitative data simultaneously and can be analysed with a single or multiple data analysis techniques. Dewasiri *et al.* (2018) and Tashakkori *et al.* (2020) both agree that from a more philosophical position, mixed research approach combines paradigms which allows for the investigation from both the deductive and inductive perspectives while consequently allowing the combination of hypothesis testing and theory generation by researchers within a single research. This helps the researcher in coming up with research that is complete and addresses deductive and inductive aspects within one goal as explained by Bloomfield *et al.* (2016) and Chan *et al.* (2016). Additionally, mixed methods provide a platform to investigate research participants while ensuring that study outcomes are anchored on participants' experiences. The EIA stakeholder perceptions are best understood when solicited from participant experiences with the EIA process in Zimbabwe. As a consequence, mixed methods capture human beliefs, behaviour and opinions defining the perceptions which research participants build as a result of their experience with the environment and phenomenon under investigation. Tashakkori *et al.* (2020) further highlighted that mixed study approach allows the investigator to be able to track unanticipated qualitative ideas which may be offshoots of the interviews and also comprehend symbolic aspects in an attempt to derive social sense. Unforeseen ideas ordinarily shape how people think and behave and this may be inadequately apprehended by quantitative approach alone henceforth the need to make use of the mixed research approach in

this study as echoed by Saunders *et al.* (2009). This approach enables the researcher to collect both quantitative and qualitative data in addressing the research objectives of this study and supporting the researcher's area of study. The study topic and objectives have both qualitative and quantitative components which need to be investigated concurrently. The researcher opts for this approach since it further promotes contrasting quantitative and qualitative data in order to ensure that research findings are exhaustive as echoed by Dewasiri *et al.* (2018). The contrast can either be diverging or converging, but produces insights that can never be produced by either quantitative or qualitative research approach alone as believed by Bloomfield *et al.* (2016). This makes this approach most appropriate for this study since it provides deeper, comprehensive and/or more valuable information which cannot be provided by other approaches. The approach also provides complementary evidence that makes up inadequacies of using a single method as suggested by Tashakkori *et al.* (2020). Generation of complimentary evidence due to triangulation is a good indicator of data trustworthiness which is an important aspect of research. The nature of this study demands rich datasets and information which can only be gathered using mixed research approach since it's more robust than any other approach. As such concurrent triangulation allows the researcher to identify characteristics of a phenomenon in a more accurate way which further improves data validity and reliability. Rebelo & Guerreiro (2017) and Dewasiri *et al.* (2018) concur that this is made possible by approaching the phenomenon from diverse vantage points making use of different techniques and methods.

The mixed approach helps in increasing credibility and reliability through the triangulation of qualitative and quantitative results. Validity and reliability are critical aspects of any research and as such mixed methods provides room for these issues to be addressed. This will further enable ease generalisation of results which assists in developing a robust EIA cost estimation model as one of the outputs of this study. Chan *et al.* (2016) buttressed that an indispensable principle of mixed research approach is that the utilisation of both qualitative and quantitative elements to complement one another will result in a better comprehension of the research problem than the utilisation of either one approach alone in an investigation. This is claimed to be one, if not, the most fundamental principle of the rational philosophical thinking in contemporary research as suggested by Rebelo & Guerreiro (2017). Nevertheless, either quantitative or qualitative research approaches could have been adopted for use in this study but they both fall short on addressing all the research objectives each and hence mixed research approach becomes a panacea to this study. The approach the researcher adopted allowed for the research design which

incorporates use of both quantitative and qualitative research methods in a holistic research design which allows for synchronised and simultaneous data collection.

3.2.1 Research Design

Concurrent triangulation design was adopted in this study making use of the case study survey and archival research strategies. The survey tactic was then applied within the case study research strategy. In essence, concurrent triangulation is regarded as the use of more than two methods to cross-validate, confirm or corroborate research findings within the research as coined by Chan *et al.* (2016). The researcher opted for concurrent triangulation research design because it enhances reliability and validity of results since data collection occurs concurrently thereby eliminating temporal stochastic variations. The rationale behind the selection of this design was that it would overcome shortcomings in making use of one method with the merits of another. A pilot test was done to verify the possibility of research design completeness in terms of the complementarity of the instruments that were used in the study. Miles (2013) and Honorene (2017) bolstered the concept of concurrent triangulation remarking that it is a persuasive technique which promotes cross verification of data gathered from more than two data sources. In this research, concurrent triangulation was ideal since data was collected from various stakeholders making use of three data collection techniques. In this study, the researcher aims at enhancing reliability and validity of research results through resemblance by the integration of the results or through complementarity by explanation of the results. This results in concurrent triangulation design corresponding with the aim of the researcher and the nature of the study. According to Dewasiri *et al.* (2018) concurrent triangulation consequently boosts confidence when there is complementarity of research outcomes since they will be the true replica of the phenomenon under investigation. The most important aspect of research is the ability of it being able to be replicated in such a way that it generates the same results as highlighted by Honorene (2017). Concurrent triangulation is the most suitable research design to be adopted in this research because it enables complementarity on research techniques as the flaws of one technique are complemented by the perfections of the other thereby refining reliability of the outcomes. Chan *et al.* (2016) and Bloomfield *et al.* (2016) support the idea of research methods complementarity since it boots research validity. As a result case study and archival research strategies constitute the concurrent triangulation research design with survey research impeded in the case study.

Case study survey research is a methodology used in both qualitative and quantitative studies which makes it the best main methodology for data collection in this study. Dewasiri *et al.* (2018), claims that the case study survey research is a research strategy which involves the application of a survey to a certain case. This is usually a small sample drawn from a small population of people in order to fully describe the characteristic or aspect of that population under investigation. There is no hesitation that case study surveys are insightful and a significant form of research for most field industries that use them as explained by Miles (2013). This methodology is responsible for rigorous study of a specific sector or unit and hence its' appropriate and applicable in the EIA sector as intended by the researcher. The researcher regards key informants as a unit of small group of people which qualified to be considered for a case study survey methodology. This group of informants is investigated and issues explored deeply and thoroughly. Furthermore, case study surveys are considered as one of the best ways of stimulating new research as observed by Dewasiri *et al.* (2018). If a case study survey is completed and outcomes are valuable, they may lead to novel and advanced studies in that field. Furthermore, case study surveys are excellent at challenging established philosophies and theories giving room to thinking outside the box thus promoting creativity, innovation and foresight as discovered by Bloomfield *et al.* (2016). As such this methodology helps the researcher in developing the EIA cost estimation model with prowess as an innovation borne out of this study. Daniel (2016) and Bertsou & Pastorella (2017) further support the use of case study survey strategies on qualitative research components since it gives room for thorough interrogation and description of a societal phenomenon. Due to Covid -19 restrictions worldwide, the researcher used electronic questionnaires which were administered during the study making use of the Kobo toolbox survey research platform which allows the participants to participate once in the survey. The function that allows the participant to respond once was useful in ensuring that participants won't respond multiple times thereby distorting the research findings. As such, this helped to reduce respondent biases which would distort research findings as noted by Dewasiri *et al.* (2018). In-depth telephone interviews and virtual focus group discussions were also conducted in order to establish EIA stakeholders' perceptions on EIA costs and review timelines in the Zimbabwe making use of Covid – 19 WHO guidelines on social distancing by use of zoom meetings.

Archival research methodology makes use of EIA documents, historical records and fellow researchers' studies. The researcher is cognisant that the previous studies could be undependable, or not gathered to the researcher's expected standard and had no authority over how the archival data was solicited. As such, concurrent triangulation design allowed for such flaws to be overcome

by the use of questionnaires, online focus group discussions and in-depth interviews to validate such findings as suggested by Honorene (2017) and Bertsou & Pastorella (2017). These desktop studies are very useful especially at a time when Covid -19 pandemic is at the peak. They help curtail spread of the deadly novel corona virus because there was no physical contact with the research participants. The use of the digital space in data collection further reduced risks from both the participants and the researcher thereby conducting research within the confines of UREC approval. Evaluations of primary research verdicts, findings of archival research and literature evaluation are also very important for quantitative studies as appealed by Saunders *et al.* (2009) and Dewasiri *et al.* (2018). The researcher reviewed the EIA Policy in Zimbabwe and its guidelines together with the Environmental Management Act Chapter 20:23 in establishing the EIA appraisal timelines and some EIA administrative and compliance costs. Archival research reduces the response biases of participants since the principal investigator was not present when the data was collected. Archival data is plenteous and pre-collected which makes data collection and analysis less costly, less time consuming and easier to process than alternative research methodologies as noted by Bloomfield *et al.* (2016). Use of archival data further helped the researcher to have an appreciation of the secondary data available at a lower cost shorter time than it would be if primary data was to be collected. Therefore, the researcher does not need to undergo through the organisational screening process to gain participants' consent to gather data. In the context of this study, archival research methodology is also appropriate for mixed research approach since both qualitative data and quantitative data can be collected from EIA documents and related statutory documents. Administrative and compliance costs charged by the Environmental Management Agency for Zimbabwe are derived from the first schedule of the Environmental Management Act (CAP 20:27).

Finally, archival data is very convenient in answering questions in longitudinal aspects, such as long term EIA cost drivers. Without such data, the time duration that the researcher could focus on would be limited. As a consequence, the researcher managed to review archival data for the past 10 years taking note of the changes and possible causes of such changes over time. Literature review further helped in understanding EIA cost drivers which builds up to the cost of conducting an EIA study. The EIA process involves many stakeholders since it is multidisciplinary in nature as established by Rebelo & Guerreiro (2017). As such the engagement of such stakeholders varies with the nature of the project which also determines the costs associated with such a process. Archival research curtails the response biases of participants since the principal investigator is not present during primary data collection and recording as explained

by Saunders *et al.* (2009) and Daniel (2016). As a result, the use of archival data and other and primary data further enhances research validity through complementarity of research findings. Plentiful archival data is available and has previously been composed making it simpler and often less expensive than alternate research methods for this study. Since the study had other participants outside Zimbabwe, this would have made the project very costly and time consuming. Cognisant of this background of the participants' physical locations, the researcher made use of the digital space to conduct the studies. This further makes this study more possible and easier to conduct since some data is available which needs to be processed so that it can generate insightful information. The information generated by this study can inform the development of an EIA cost estimation model for use in the EIA sector. Archival data also allows for generation of more information especially when the research population is small, it will help compliment primary data which is collected by other methods as suggested by Bigard *et al.* (2017). In this regard, the study focuses on a specialised professional sector which consists of EIA stakeholders. It is also the best option under the Covid -19 pandemic where the risk of spread of corona virus is curtailed through this method.

3.3 Research Population

This study focuses on Zimbabwe and the participants are drawn from a population which consists of registered environmental impact assessment consultants and institutions that participate in the EIA process as stakeholders of the EIA process in terms of technical support. As such, as of December 2020, the EMA EIA Register has 84 registered EIA consultants who constituted the research population (EMA, 2020). There are several government departments which are actively involved in almost all EIA project in Zimbabwe but the 10 common ones are the Zimbabwe Republic Police (ZRP), local authorities, Zimbabwe National Water Authority (ZINWA), National Social Security Authority (NSSA), local leadership, Ministry of Mines and Mining Development, Zimbabwe Tourism Authority, Zimbabwe Energy Regulatory Authority (ZERA), Forest Commission, Ministry of Health and Child Care just to mention but a few. However these EIA stakeholders vary from one project to another. Authoritative and senior representatives from these institutions were recruited in this study since it was assumed that they have more experience in the EIA system and the stakeholder engagement process. This population was appropriate for this study since it was the one which was involved in the EIA process on different projects on a daily basis especially in the manufacturing, tourism, construction, mining and energy sectors of the

economy. The population consists of youthful and veteran consultants both males and females with education levels varying from bachelor's degrees to doctorate degrees. A bachelor's degree is the minimum registration requirement for EIA consultants in Zimbabwe as stated in EIA and Ecosystems Protection (Statutory Instrument 7 of 2007) Regulation. As such all EIA consultants registered by EMA meet this mandatory professional requirement. This therefore makes this population the most appropriate one to be recruited in this study. The technical professional to be recruited represented a case study of EIA experts. There were 100 proponents who submitted EIA reports on energy, mining, tourism, construction and manufacturing according to EMA records as of the year 2020. All these constitute a component of the population of this study. As such, the total combined population of this study was 283 consisting of Zimbabwe, Zambia and South Africa. This population meets the research design criteria since this study focuses on the EIA stakeholders and partakers and also by virtue of the subject being technical; the population is mainly determined by the qualifications of the population and organisational affiliation. This population constituted a case which was under investigation since the population was made up of people in the same profession with comparable technical capabilities.

3.3.1 Research Sample

The researcher used a sample of 90 participants from the population. 30 EIA consultants were selected in Zimbabwe which represents about 35.7% of the EIA consultant's population in Zimbabwe. In Zambia and South Africa, 20 consultants were selected respectively using snow ball sampling. The initial participants for Zambia and South Africa were selected randomly from the Impact Assessors Association of Zambia (IAAZ) and Environmental Assessment Practitioners Association of South Africa (EAPASA) 2020 EIA consultant registers respectively. These initial participants then networked with the other 19 participants from each country providing emails and other contact details for the researcher to forward the questionnaire to them. All these participants were recruited for the online questionnaire survey in compliance with Covid -19 guidelines. Qualitative interviews were done in Zimbabwe with all the 10 major EIA stakeholders using the telephone and WhatsApp call platforms to ensure that most of the EIA perceptions were demystified. Focus group discussions were then done with 10 project developers who were representing 10% of the project developers that submitted their EIAs to EMA in 2020. The project developer's component consisted of 2 participants from each of the following economic sectors: tourism, manufacturing, construction, energy and mining industry who have conducted EIAs in the year 2020 and this data was retrieved from EMA's EIA report submission register. The

combined sample size was therefore 31.8% of the total population. Generally, according to Mohajan (2017), a good sample size should be at least 10% of the population and the sample size for this study was above this threshold hence the sample was more reflective of the population. This is very important especially on improving external validity of the research outcomes since they will perfectly represent the entire population thereby making generalisation of results much easier as echoed by Dewasiri *et al.* (2018). A research sample ought to be a perfect representation of the entire population so that they data collected from the reflective of the entire population as echoed by Bigard *et al.* (2017) and Tashakkori *et al.* (2020).

3.3.2 Sampling Procedure

The researcher used both probability and non-probability sampling procedures since mixed research approach was adopted in this study as suggested by Daniel (2016). Probability sampling was used to randomly select questionnaire respondents while stratified random sampling was used to select 2 SADC countries one from the northern side and the other from the southern side of Zimbabwe. SADC was bifurcated into two thus the north and south acting as strata upon which random sampling was employed to select one country from each stratum. However, Zimbabwe was purposively sampled from SADC countries since it's was the main study area. SADC consist of 14 member states and as such, Zambia and South Africa were selected for this study using stratified random sampling. Random sampling was utilised in selecting participants in Zimbabwe from the EMA register making use of emails to send consent forms and questionnaires to respondents. Random sampling was used since the population of EIA registered consultants is homogeneous based on the EMA and EPCOZ registration requirements which qualifies them to be EIA consultants. Furthermore, all respondents had an equal opportunity to be selected in the study as noted by Tashakkori *et al.* (2020). Snowball sampling was then used to equally select 40 questionnaire participants in the 2 selected SADC countries after randomly selecting the first node. This sampling method was used since it was cheaper for the researcher to collect data in other countries outside Zimbabwe making use of the available contacts of key informants found on professional organisations' websites for South Africa and Zambia for verification purposes as recommended by Rebelo & Guerreiro (2017). Email lists and phone / cell phone numbers were retrieved from websites of professional organisations such as EAPASA in South Africa, EPCOZ / EMA in Zimbabwe and Impact Assessors Association of Zambia (IAAZ) which were used in this study for participants' recruitment. However, both probability and non-probability sampling was used making use of purposive sampling to select interview and focus group discussion participants

in Zimbabwe. The researcher purposively selected five economic sectors as the key focus areas namely construction, mining, manufacturing, energy and tourism because that's where prescribed projects which requires EIAs to be conducted in the countries under study are.

3.3.3 Research Reliability and Validity

Concurrent triangulation design was adopted in this study making use of the mixed methods as suggested by Honorene (2017). The aim of using concurrent triangulation was to enhance the reliability and validity of research outcomes through resemblance by the merging of the findings or through complementarity by explaining the results in detail. This would therefore improve confidence if there was complementarity of research findings as the results will be a true reflection of the phenomenon under study as noted by Dewasiri *et al.* (2018). As a result, an online questionnaire, qualitative interviews and focus group discussions backed with archival research were used in order to enhance validity and reliability of the research outcomes. The questionnaire survey was supported by Kobo toolbox virtual survey platform while zoom platform was used to support the focus group discussions. Interviews were further conducted using telephones and WhatsApp calls. These platforms were handy and effective considering that the research was conducted under strict lockdown measures caused by the Covid -19 pandemic. Furthermore, randomisation during sampling helped in reducing sample bias. Tashakkori *et al.* (2020) argues that sample bias should be avoided in research so that the research findings remain valid, reliable and generalizable. As such, the researcher's intention by using random sampling was to reduce bias and enhance validity of the results. A pilot study was also done in order to test for the reliability of the research instrument after UREC's provisional approval in order to make adjustment on the final instrument that was used in this study. Validity is significant in research because it defines the survey questions to be used and aids in ensuring that researchers make use of important questions that accurately measure the matters of prominence. The validity of a survey is the level of measurement which it records what it asserts to measure. The sample size compared to the population as a percentage is good enough to produce results that can have better external validity since they can be easily generalised to the real world as emphasized by Mohajan (2017). As such, the researcher conducted this research making use of concurrent triangulation in a bid to conduct research that is ethical, reliable and valid results which can be generalised to the entire population. The researcher sought ethical clearance prior to conducti this research in order to ensure that the research is ethical and would not cause harm to both the participants and the

researcher as explained by Dewasiri *et al.* (2018). However the research had no risk to both the participants and the research and was therefore cleared with no comments.

3.4 Instrumentation

The researcher used the virtual surveys whereby the questionnaire and a qualitative interview guide were used to gather data in the concurrent triangulation research design using a specific profession as a case study. The EIA industry was used as a case study since the study would involve technical terms and process which would require participants with the relevant expertise in order to contribute significantly to the study. Archival study methodology was further used to support the case study methodology. The questionnaire had both closed and open ended inquiries in an attempt to solicit both quantitative and qualitative data respectively thereby buttressing the mixed research approach adopted as suggested by Bond & Morrison-Saunders, (2018). However, Bertsou & Pastorella (2017) believes that survey research originated from the American and English "social surveys" which were conducted during the eve of the 20th century by researchers and reformers who sought to document the magnitude of social troubles such as inequalities. By the advent of the 1930s, the USA administration was already undertaking surveys to chronicle social and economic conditions in that country as echoed by Wirtz *et al.* (2016). The zeal to make conclusions with regards to the entire population assisted spur developments in sampling techniques as outlined by Bertsou & Pastorella, (2017). However, during the same period, numerous researchers who had previously gained recognition in market research, researching on customer preferences for USA business enterprises, turned their focus to election voting. From market investigation and election voting, survey research found its way into many academic disciplines, including public health, environmental management and political science where it remains one of the principal approaches of gathering new data as noted by Aung *et al.* (2020). As a consequence, around 1930s, psychologists made significant improvements in questionnaire design, comprising contemporary techniques such as the Likert scale which are currently in use. Surveys can be used to undertake experiments to test explicit hypotheses on causal relations between variables as explained by Wirtz *et al.* (2016). Such researches, when undertaken on diverse and large samples, can be a convenient complement to laboratory researches.

Daniel (2016) argues that survey research is a twofold method which has both qualitative and quantitative characteristics. The surveys conducted in the case study allowed for the measurement of variables in question with self – reports. This generally means that respondents

were given room to directly report on their feelings, opinions and behaviours making use of open ended questions and some questions which had Likert scales as suggested by Bond & Morrison-Saunders, (2018). Additionally, the sample size as a function of the population was large enough to allow for random sampling which has the high probability of generating accurate data which mimics the entire population as supported by Mohajan (2017). The survey was therefore conducted using a mix of techniques which include telephone interviews with key informants, online questionnaires through Kobo toolbox and Zoom focus group discussions. Surveys are generally used to escalate knowledge in disciplines such as environmental and social research. Daniel (2016) further acknowledges that surveys can be used to assess sentiments, perceptions and emotional state. Furthermore, surveys can be specific limited and or they may have more widespread and global goals.

3.4.1 Electronic Questionnaire

The researcher used the electronic questionnaire as the main research instrument because it provided a relatively quick, cheap and efficient means of collecting large volumes of data from a large and geographically isolated sample of respondents as recommended by Tashakkori *et al.* (2020). The respondents to this study were drawn from widely separated geographical area which was not possible to traverse under the Covid -19 lockdown restrictions at the time of the study. However, the use of the virtual space helped to bridge the geographical gap in data collection in a way which was faster, convenient and trustworthy. The researcher designed the questionnaire with the aim of addressing all research objectives ensuring that the questions were short and precise only to capture the necessary detail with guarantee that respondents would complete the survey. Long and winding questions confuse respondents and that may result in the respondents less likely to complete the survey as observed by Daniel, (2016). The questions are organised in logical progression starting with the simple and specific to the most complex and from the behavioural and factual to the cognitive ones. The researcher ensured that the responses to the questions were not prejudiced by preceding questions during the questionnaire design as recommended by Dewasiri *et al.* (2018). The language that was used in the questionnaire was appropriate to the vocabulary of the EIA stakeholders and consultants who constituted a case under investigation. A questionnaire is an effective tool for measuring the EIA attitudes, behaviour, preferences, intentions and opinions of relatively large samples more quickly and cheaply than any other methods (Aung, 2017). As such this instrument captured both qualitative and quantitative aspects of this phenomenon.

Electronic questionnaires can be understood of as a form of written interview and can therefore complement qualitative interviews and focus group discussions as vowed by Bond & Morrison-Saunders, (2018). The researcher adopted the combination of these instruments since they complement one another in data collection. This further buttresses complementarity, enhancing validity through concurrent triangulation as recommended by Mohajan (2017). The questionnaire used both closed and open ended questions to solicit for data. This is an advantage since it entails simultaneous gathering of both quantitative and qualitative data instantaneously in the shortest possible time. The questionnaire was administered through Kobo Toolbox online application in compliance with World Health Organisation (WHO) and Ministry of Health and Child Care Covid -19 protocols. It was designed in such a way that only one responded would respond once using a particular device to minimise respondent bias in data collection. The questionnaire was administered online in within 15 to 20 minutes so that respondents won't get agitated by a lot of questions which could make them feel like they are under examination condition and end up not giving in depth feedback on questions. Daniel (2016) concurs that this allows for increased participants response rate. Research shows that the data quality diminishes on academic surveys that are more than 20 minutes long. As a consequence, the good rule of thumb is to target for a survey that consumes not more than 20 minutes in order to get good quality responses.

3.4.2 Pilot Survey

The researcher conducted a pilot study with 12 respondents who were randomly selected before administering online questionnaires, focus group discussions and telephone interviews. Twelve is considered to be an energy, cost and time efficient number of respondents to give feedback to the research instruments that will be used in fine turning the instruments as suggested by Bond & Morrison-Saunders, (2018). Though, the rule of thumb is to test the research instruments on a minimum of 12 to 50 respondents prior to full-scale research tools administration, the pilot study met the minimum threshold. The pilot survey provided useful feedback which was used in refining research questions eliminating ambiguity and enhancing the validity of the research instruments as recommended by Ameen *et al.* (2016). The pilot study enhanced the validity of this study based on the specialist knowledge from other researchers in the environmental management discipline, thereby averting falsified research instruments from being used in this study. The pilot study further allowed for checking if respondents understood the terminology which was to be used in the questionnaire, determine the time frame to complete

the questionnaire and checking whether emotive questions were used as suggested by Daniel, (2016). These questions could have made the respondents defensive thereby invalidating their responses. The adjustments to the questionnaire after the pilot survey feedback resulted in removal of leading questions there by reducing respondent bias specifically acquiescence bias and researcher bias explicitly leading questions and wording bias as suggested by Aloni *et al.* (2015). It also resulted in the reduction in the timeframe needed to complete the survey as questions were refined and some which were vague removed. The reduced timeframe was very important especially during the Covid -19 pandemic where most respondents were under lockdown and had reduced revenue and could not spend too much time on voluntary work which would need much data to remain online. No incentives were provided to the respondents as this would have been a source of respondent bias and hence the survey was designed and timed in such a way that it was cost effective and time bound.

3.4.3 Qualitative Telephone Interview

The researcher conducted telephone interviews including the use of WhatsApp calls which are cheaper and more convenient during the study period than face to face interviews. An interview guide was used to ensure that the interview remains guided within the confines of the aim of the research. Also under the Covid -19 pandemic, this method proved to be the safest in terms of protecting both the researcher and the respondents from either contracting or spreading the disease. Coupled with a national lockdown in Zimbabwe during the study period, telephone interview was the best option to use to collect data from key EIA stakeholders. Telephone interviews also allowed for collection of data from a wider geographical scope and multiple qualitative views from many interviews as suggested by Tashakkori *et al.* (2020). They further helped to elucidate, better comprehend, and explore opinions, research subjects, behaviour, phenomenon and experiences as buttressed by Bond *et al.* (2020). The researcher used open – ended interview questions in an attempt to gather in-depth data. The main shortcoming of telephone interviews is that the participant may unilaterally end the interview without giving notice by hanging up the telephone as complained by Tashakkori *et al.* (2020). However, this scenario did not happen throughout the research since respondents were made aware of the purpose of the study through the consent form and generally the research had low risk to both the respondents and the researcher. Although the researcher did not face such a challenge, he was cognisant of the ethical considerations that respondents have a right to withdraw from the research process if it becomes undesirable to continue discussing the issues under investigation as viewed

by Battiste (2016) and Akinsemolu (2020). Under such circumstances, their data will not have been used in the study. Nevertheless, the researcher did not encounter this challenge since all the 10 participants contributed to the study right up to the end of the telephone interview. The interviews are conducted within 15 minutes each in order to maximise on collection of relevant data from respondents before they get fatigue or bored as established by Daniel (2016). Telephone interviews are conducted with the highest authorities or their representatives of the 10 main EIA stakeholders in Zimbabwe which involve Zimbabwe National Water Authority (ZINWA), Ministry of Mines and Mining Development, Ministry of Health and Childcare, Local Authority representative, Zimbabwe Energy Regulatory Authority (ZERA), Zimbabwe Parks and Wildlife Authority, Zimbabwe Tourism Authority (ZTA), Environmental Professionals Council of Zimbabwe, Environmental Management Agency and Zimbabwe Investment and Development Agency (ZIDA). All the telephone interviews were recorded on a manuscript in order for analysis to be done later using Framework Analysis Method (FAM). This helped the researcher to focus his attention on data collection and moderating the interview process so as for the interviews to be completed on time.

3.4.4 Virtual Focus Group Discussion

The researcher used virtual focus group discussion for triangulation purposes in order to enhance research validity as coined by Mohajan (2017). This is done through a zoom platform considering WHO and Ministry of Health and Child Care Covid -19 protocols on social distancing. Virtual technology came handy under the circumstances and it helped collect qualitative data in a more convenient and cost effective way which is even environmentally friendly as discovered by Honorene (2017). This is done with both video and audio options enabled in order for the research to capture non-verbal communication of the respondents. However, the researcher used the audio option since it was cheaper that the video option and the participants were more comfortable with audio option since they were working from home during the time of the study. The virtual focus group discussion was done with 10 participants representing the five major economic sectors of Zimbabwe which include: mining, energy, manufacturing, construction and tourism. Two representatives from each sector participated in the focus group discussion. Ameen *et al.* (2016) claims that the major advantage of focus group discussions is that they offer an in-depth appreciation of the respondents understanding or appreciation of the subject under investigation. This enables the researcher to discover personal beliefs and attitudes that may not be replicated by other research techniques thereby giving more

insights on the topic under investigation as well articulated by Tashakkori *et al.* (2020). The researcher reduced observer dependency bias and groupthink by allowing robust debate and also selecting equal representatives of the five economic sectors in order to inculcate balance in the discussions. These are the biases inherent with focus group discussions as claimed by Aloni *et al.* (2015). The researcher further used moderation giving all participants equal chances to contribute on questions under discussion to avoid dominance of extroverts over introverts. This was achieved through the use of the focus group guide and the virtual focus group discussion was done in 30 minutes in order to keep the respondents alive to the issues under discussion also ensuring that they provide relevant data within the optimal timeframe. This allowed for collection of relevant data within limited Wi-Fi bundles the respondents had. The researcher was cognisant of the costs which the respondents were incurring and as such wanted to get the maximum data from the minimum time possible without escalating costs to the respondents.

3.4.5 Instrument Reliability and Validity

Instrument reliability reflects the degree upon which the research questions used in a survey tool consistently produce the matching results at every interval it is questioned in the similar circumstances on recurrent occasions. It is a statistical extent of how reproducible the research survey tool's data is as noted by Rebelo & Guerreiro (2017). Best research surveys generate truthful data and important information which provides salient gaps into the pith of the subject under investigation. Contrariwise, bad research surveys generate flawed data which misrepresent the phenomenon under study as explained by Daniel (2016). In summary, data that is unreliable, invalid or irreproducible leads to the incorrect conclusions and recommendations. Mohajan (2017) argues that there are several components involved in case survey strategy that have an effect on the quality of data collected and they include: the amount of time taken by respondents to finish a survey, the order of questioning, the scale of rating and the answering options available. However, the researcher identified and clarified variables to be measured for the purposes of this study in order to improve the quality of data collected by the research instruments used. The researcher improved the instrument reliability and validity by undertaking a pilot test which refined the research questions and helped in establishing and adjusting the time respondents would take in responding to the questionnaire which was between 15 and 20 minutes. The length of the questionnaire was made short enough to cover the essential details that were to be collected without consuming the precious time of the respondents who were also busy with their work commitments. Generally questionnaires are considered to be high up in reliability since it is

possible to ask a consistent set of inquiries as noted by Daniel (2016). Any challenges encountered in the plan of the survey can be addressed after a pilot test. As a rule of thumb, the more closed questions used, the more reliable the research. The researcher therefore used more closed questions with some predetermined responses with a few open ended questions in a bid to enhance the instrument reliability. This also helped in ensuring that respondents won't take more than 20 minutes responding to the survey. The timeframe allocated for this study was enough to generate good quality data since the quality of data diminishes with more time spend on the survey as observed by Mohajan (2017).

3.5 Operational Definition of Variables

Operational definitions or operational variables refer to how the researcher defines and measures specific variables as they are used in this study as explained by Agbazue & Ehiemobi, (2016). The researcher identifies four dependent variables for this study namely Environmental Impact Assessment (EIA) costs, EIA cost drivers, EIA review periods and EIA perceptions. These variables constitute research constructs of this study since they are the hypothesized cause of behaviour of EIA stakeholders in Zimbabwe. As a consequence, the researcher measured these variables in this study in order to establish the significance of EIA in economic development in Zimbabwe. The variables were measured from the virtual focus group discussions with EIA project proponents, telephone interviews with EIA stakeholders and online questionnaire administered through Kobo toolbox application to EIA practitioners in Zimbabwe, Zambia and South Africa. Zambia and South Africa were selected through stratified random sampling for the purposes of comparison of the EIA systems. The operational variables identified put the research in the context of the research problem and the aim of this study so that precise data could be collected without ambiguity as suggested by Agbazue & Ehiemobi (2016).

In their studies, Aguilar-Støen & Hirsch (2015) claims that EIA costs are the expenses incurred in the EIA study and implementation of the EIA recommendations which are enshrined in the Environmental Management Plan (EMP). Most financing institutions include the social component in the EMP and regard it as the Environmental and Social Management Plan (ESMP). However, the World Bank refer and ESMP as the Environmental and Social Action Plan (ESAP). This is a plan for implementation which constitutes impact mitigation technologies and strategies as explained by Rebelo & Guerreiro, (2017). The researcher grouped these costs into three cost components which are the EIA technical costs, EIA review fees and EMP implementation costs.

Technical costs are further trisected into professional administrative costs (those that relates to running a project) and stakeholder consultation costs. In the context of Zimbabwe, the costs are incurred first from the development of a prospectus report (Environmental Management Act CAP 20:27 of 2002). The prospectus is a document prepared by either the project proponent or an EIA consultant informing the minister responsible for the EIA process in Zimbabwe though the Environmental Management Agency (EMA) that a prescribed project is being considered for implementation as claimed by Machaka & Bere, (2014). These costs involve professional fees, administrative costs which entail logistics costs paid to the EIA consultant and prospectus review fees charged by the competent authority (EMA). Review fees are however bifurcated into prospectus and EIA review fees. The second stage of the EIA process will involve the full EIA study as expounded by Agbazue & Ehiemobi, (2016). This stage has technical costs and EIA review costs. In Zimbabwe, EIA review costs are charged by the competent authoring based on a sliding scale of impact significance which ranges from 0.8 – 1.2% of the total project cost as observed by Machaka & Bere, (2014). The EIA review cost charged by EMA used to be 1.5% of the project or investment cost prior to the year 2014. The current regime of 0.8 – 1.2% came into effect after the adjustments made by the Ministry of Finance and Economic Development in response to the outcry by project developers that the EIA review costs were too exorbitant and beyond reach of most starting up projects. Lastly, EIA costs in Zimbabwe arise from the EMP implementation which involves the implementation of the environmental impact mitigation and enhancement measures, strategies, technologies or designs (abatement costs) and environmental monitoring and audit processes as alluded to by Chikohomero, (2019). The researcher summarises EIA costs as shown in Figure 3.1 as the EIA Cost Pyramid.

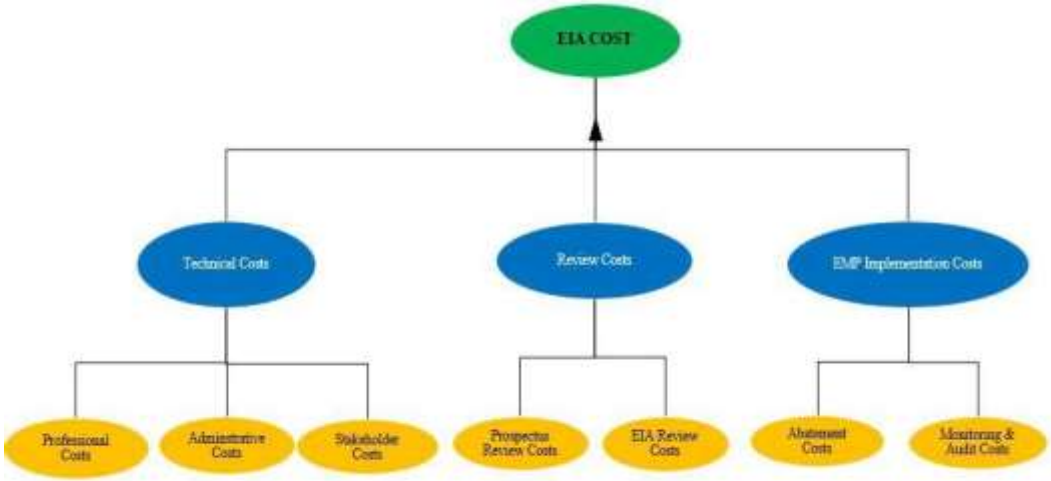

Figure 3. 1: EIA Cost Pyramid adopted from Chikohomero (2020)

EIA cost divers are structural determining factors of the final EIA cost or factors that cause a change in the cost of an EIA project as explained by Arts *et al.* (2016). These factors include the distance to project site, time spend on a particular project, level of skills deployment, stakeholder involvement requirements and total investment cost. They involve stochastic variations which have a domino effect on computing the final EIA cost as clarified by Nagashima *et al.* (2017). Distance to the project site generally has an effect of escalating the project cost since it will involve more logistics costs which involve overnight accommodation, travel and subsistence and out of office allowances for the consulting team as noted by Chikohomero, (2019). In some cases, there is a risk allowance attached to projects which are far from the normal working place of the EIA consultants. However this may be covered through insurances or in the event of an accident through Workers Insurance Compensation Fund (WICF) administered by the National Social Security Authority (NSSA) in Zimbabwe. The more time spend on a particular project has a direct relationship with the complexity of the project which will also influence the cost of that particular project. Aung (2017) discovered that the level of skills deployment is a function of the complexity of the project. Complex projects would call for more skilled and experienced personnel than simpler projects. As such, hiring more skilled personnel will result in the EIA cost being more expensive than when conducted by less experienced personnel. It is therefore the project developer's responsibility to develop terms of reference which should articulate the scope of work and the financing requirements in order to set a budget which meets the quality of the expected quality and depth of the EIA report to be produced by EIA consultants prior to engaging one. Stakeholder involvement varies across Zimbabwe and this has an impact the final EIA cost of a project. Arnstein (2015) and Andriof *et al.* (2017) concur that the level of stakeholder involvement which involves the number of stakeholders and their requirements also varies from one project to another and hence causes changes in the EIA cost of a particular project. Projects with more stakeholders to be consulted tend to have high EIA costs than those with fewer stakeholders. This is as such because an increase in stakeholders will entail more time and effort needed in developing a social impact assessment (SIA) which is a crucial component of the EIA process.

The EIA review period is the time taken to evaluate a particular project in terms the prospectus and the EIA study reports. In most cases the EIA review periods are prescribed in national laws of countries and vary from state to state depending upon the complexity of the EIA process of a particular country as buttressed by Rebelo & Guerreiro, (2017). In Zimbabwe, the Environmental Management Act CAP 20:27 provides for the maximum timeframes of 20 and 60 working days for the prospectus and EIA reports respectively. However in the spirit of ease of

doing business, the study is concerned with the operative timeframes which are within the stipulated timelines as argued by Chikohomero, (2019). In Zimbabwe, the EIA review process is done at three levels which are the district, provincial and EMA head office level. This allows for a thorough review process pregnant with important technical input to the EIA process. However this review period is influenced by the amount of other projects within a particular office which will be in circulation as observed by Machaka and Bere (2014). It is also a function of availability of review personnel which entails staff establishment requirements within the competent authority and staff motivation to do the work as observed by Arts *et al.* (2016). In most cases this is when the window of corruption may be opened in order to fast track the process and influence EIA review decision. The situation may be further exacerbated by the existence of a crumbling economic environment as with the case in Zimbabwe for the past decades as noted by Chikohomero, (2019). However, acting on unethical conduct, EIA consultants, proponents and EIA review officers may be conduits of corrupt and illicit deals which ultimately jeopardise the EIA process. It is therefore in the best interest of the EIA process and ease of doing business to have an EIA review timeframe which is long enough to evaluate the project and short enough to be efficient in order to incentivise economic development in a sustainable manner as renowned by Bende-Nabende, (2017), Bebbington & Unerman, (2018) and Chikohomero, (2019).

An EIA perception is the manner in which an EIA phenomenon is understood, regarded or interpreted by different individuals as vowed by Bond *et al.* (2020). Generally perceptions involve how people organise and construe personal sensory input or what they hear, feel and see which they regard as reality. Perceptions influence behaviour and thought processes of individuals to act in a certain way as explained by Bond & Morrison-Saunders, (2018). They attach meaning to an individual's environment and deduce the world's sense. As such, perceptions may be the cause of attribution of certain behaviour which will be exhibited in how people influence certain policy directions in a country. Perceptions are dependent ordinal variables which can be ranked using a Likert scale. These EIA perceptions are essential in this study because human behaviour is based on how they perceive reality with regards to the EIA process in Zimbabwe and its relevance to economic development. Benard (2016) and Alamgir *et al.* (2017) contend that a number of factors influence EIA perceptions which include academic level of education and experience, investor influence, economic stability of a nation, national policy, advocacy, consistence and awareness. What people are taught and exposed to define human perceptions with regards to the environmental impact assessments. Additionally the donor community and investors have a huge impact in terms of publicity and attracting the public in terms of what they want the operating

environment to be like as mentioned by Anand & Kumar, (2016). These sentiments are continuously indoctrinated in people's minds thereby shaping their perceptions where for instance people and the entire government may be made to believe that EIA costs scares investments as is the case in Zimbabwe. According to Benard (2016), EIA perception arises in five steps which involve stimulation, organisation, interpretation, evaluation and remembrance. An environmental phenomenon may provoke thought processes of individuals who can try to organise their thoughts based on their literacy and experience on the matter as observed by Alamgir *et al.* (2017). People or institutions therefore try to derive meaning from their interpretation of an occurrence leading to an appraisal of the entire process and will be able to refer to such an occurrence in the future thereby creating certain perceptions regarding the subject matter as elucidated by Bilgin, (2015). Perceptions are built in people's psyche over a long period as they will portray an imagination that reveals itself as reality in the immediate environment surrounding individuals. These perceptions are therefore shaped by exposure and experience encountered by people as a result of their history, beliefs and norms. The researcher acknowledged the effect of EIA perceptions on EIA pricing, stakeholder consultation process costs and policy direction at national level. As such it is an important parameter to be measured in order to inform the process of developing an EIA cost estimation model which can stand the test of time. There need to establish the effect of these EIA perception on each economic sector of Zimbabwe in inevitable hence there need for measuring this variable in this study.

3.6 Study Procedures and Ethical Assurances

The research was approved by Unicaf University Research Ethics Committee (UREC) preceding data gathering in terms of ethical clearance. The main purpose why the researcher sought ethical clearance for this study was to ensure that the study was conducted in an ethically accountable and responsible manner thereby minimising the risk of harm to participants and the researcher. This ultimately ensured that the study led to constructive outcomes for the EIA sector. The researcher demonstrated adherence to accepted ethical standards of honest research though obtaining both the provisional and the final ethical approval by UREC. This clearance escalates the possibility for recruitment of participants making it even much easier to get responses from participants who requested it. The study had a low risk rating and there were no other approvals required in addition to ethical clearance from UREC. Furthermore this research did not involve recruitment of children or human parts or organs and neither resulted in any harm to neither the participants nor the researcher. As such, conventional data collection tools are used

supported by virtual online platforms in the wake of Covid -19 worldwide pandemic which has necessitated the use of such platforms to avoid the spread of the deadly disease.

3.6.1 Study Procedures

Data was collected using an electronic questionnaire, online focus group discussion and telephone interviews. The online platform allowed for data to be collected in the safest way under the Covid -19 pandemic and lockdowns which characterised the research epoch. All research instruments were developed and submitted for approval by UREC. After approval the questionnaire was computed in the Kobo toolbox survey system and an option for the respondent to participate once was activated. The activation of the option for respondent to respond once was meant to reduce bias in the research results since a single participant would respond several times had the option not activated. The use of Kobo toolbox allowed for privacy, confidentiality and collection of data from one device hence ensuring that each participant would respond to the questionnaire once as suggested by Aung *et al.* (2020). The researcher created an account on Kobo Collect and designed the questionnaire which was linked to the universal resource locator (URL) on Kobo sever. The time taken to complete the questionnaire was approximately 15 minutes which was short and relevant enough to reduce respondent bias that would falsify the results. Long questionnaire which takes a lot of time to complete are usually not completed in many cases. As a result, Mohajan (2017) recommends the use of questionnaires which a short enough to keep participants interested in completing them. The Kobo toolbox link generated was then sent to emails of 30 EIA consultants in Zimbabwe who were randomly selected from the 2020 EMA register for EIA consultants which consisted of 84 EIA consultant firms (EMA, 2020). Four consultants are also equally selected randomly from South Africa and Zambia from their professional regulatory boards such as EAPASA and IAAZ respectively and further making use of snowball sampling to select the remaining 16. This means 20 Consultants are selected from Zambia and 20 from South Africa. The first 2 are selected randomly from the professional register found online and the 8 are selected using snowball sampling for both Zambia and South Africa. The researcher used snowball sampling for participants outside Zimbabwe since it was faster to find participants who constituted a sample. Referrals make it convenient to find participants since they come from trustworthy sources as explained by Saunders *et al.* (2009).

Snowball sampling is usually seen as an extremely effective sampling practise that enables the study of 'hidden' or difficult to reach or populations. It is also viewed as a respected tool for

use when studying private or confidential matters such as EIA prizing by EIA consultants. However, the disadvantage of this technique is that there is no guarantee of the representativeness of the research sample as noted by Bond & Morrison-Saunders, (2018). This is so because the researcher does not have full knowledge of the correct distribution of the entire research sample. To reduce sampling bias associated with this technique, the researcher randomly selects 2 participants each from EIA professional regulatory websites who then acts as referrals for snowball sampling as suggested by Saunders *et al.* (2009). In order to get 100 % feedback from all respondents, participants were given a maximum timeframe of 2 weeks in which the questionnaire were deployed in order for participants to submit their input online since the questionnaires were administered during the Christmas festive season.

A zoom meeting was scheduled where 10 participants were invited after ethical assurances for 30 minutes discussion with key EIA proponents who represents the five main economic sectors of Zimbabwe which included the mining, construction, energy, tourism and manufacturing. Each sector was represented by 2 participants discussing their perceptions about the EIA process in Zimbabwe and its significance to economic growth. The zoom meeting was recorded in order to enable qualitative data analysis using framework analysis method. Telephone interviews were also conducted with the highest authorities or their representatives of the 10 main EIA stakeholders in Zimbabwe which involved Zimbabwe National Water Authority (ZINWA), Ministry of Mines and Mining Development, Ministry of Health and Child Care, Local Authority representative, Zimbabwe Energy Regulatory Authority (ZERA), Zimbabwe Parks and Wildlife Authority, Zimbabwe Tourism Authority (ZTA), Environmental Professionals Council Of Zimbabwe (EPCOZ), Environmental Management Agency (EMA) and Zimbabwe Investment and Development Agency (ZIDA). Telephone interviews were conducted after making official appointments and seeking informed consent as suggested by Battiste, (2016) and making use of UREC clearance. Audio data collected was recorded for analysis using qualitative data analysis techniques.

3.6.2 Ethical Assurances

The ethical clearance from UREC made recruitment of participants much easier since participants had confidence that the research won't either harm them or the researcher. It is against this background that the researcher observed five major ethical principles. The researcher had to seek prior informed consent form potential research participants who were recruited for this study

as proposed by Dewasiri *et al.* (2018). Furthermore, the researcher indicated to the participants through the questionnaire that data collected will be treated in confidentiality and anonymity in order to minimise risk to participants. Nevertheless, this does not necessarily mean that all data gathered from research respondents ought to be kept anonymous or confidential. Lancaster (2017) claims that the data may be disclosed together with the views and identity of participants at different stages of the study process from data solicitation right through to the publication of this dissertation. Nonetheless, the researcher will seek for permissions before such anonymous and confidential information is divulged. Mohajan (2017) identified such risks to include psychological discomfort and distress, invasion of respondents' privacy and harm to the financial income of participants for example after divulging the EIA charges. Participants were additionally advised that it was their right to withdraw from the research process should they feel uncomfortable with the study at any time and guaranteed that their input will be withdrawn too from the study as explained by Honorene (2017) and Lancaster (2017). The researcher explained the purpose of the study both in the telephone interview and on the virtual online group discussion in order to avoid deceptive tendencies. This was done in order to make the participants aware of the project and prepare them for honest and well thought responses. Battiste, (2016) believes that explain the purpose and scope of any research helps in collection of valid and reliable data apart from fulfilling ethical research obligations and standards.

The researcher explained the purpose and scope of the study in order to captivate the attention of the participants without deception and emphasised that the participation was voluntary with no incentives attached to it for the participants as recommended by Honorene (2017). Research participants were further assured that the data collected will entirely be used academic research only and will not be shared to any third party other that Unicaf University for academic purposes without their approval as endorsed by Mohajan (2017). Debriefing was also done after data collection with each tool in order to inform participants about the intentions of the study which they participated in. Tashakkori *et al.* (2020) laments that the debriefing process is an imperative ethical reflection to ensure that participants are well informed about, and are neither physically nor psychologically harmed after their experience in a study.

Data collected from this study was to be secured in a safe place for five years and will only be used for the purposes of this study. The researcher further made a declaration to abide by the uppermost thinkable international ethical standards of the United Nations World Health Organisation (UN WHO) which governs the code of conduct of research which involves human

participants as recommended by Honorene (2017) and UREC. The researcher was also bound by the EPCOZ code of conduct and the constitution of Zimbabwe on fundamental human rights. Data collected using the Kobo toolbox was be removed from the Kobo server and kept by the researcher on a media the researcher has control over. This was done in order to ensure confidentiality in data storage and use.

3.7 Data Collection

Data was collected using online data collection methods in compliance with World Health Organisation (WHO) and the Ministry of Health and Child Care guidelines on Covid -19 since the data was collected during the world pandemic induced by the novel corona virus. An online questionnaire was administered using Kobo toolbox from 50 EIA consultants in Zimbabwe, Zambia and South Africa. A focus group discussion was conducted online using the Zoom platform with EIA proponents in Zimbabwe who had submitted a project to EMA in the last 5 years. These are drawn from 5 major economic sectors of Zimbabwe namely mining, manufacturing, tourism, construction and energy. Each sector was represented by 2 participants. Telephone interviews were also done with data recorded for analysis.

3.7.1 Data Analysis Techniques

Data analysis is the systematic application of statistical and or consistent techniques to illustrate, describe, recap, evaluate and condense data as explained by Saldaña (2021). This is done so as to generate information which has meaning. As such, there are countless analytic techniques that provide a means of coming up with inductive inferences from data and distinguishing the occurrence of interest from statistical fluctuations found in the data. O'Kane *et al.* (2021) further affirms that appropriate and accurate analysis of research results is an important component of safeguarding data reliability. Likewise, incorrect statistical analyses falsify scientific results, misinform casual persons who read and may adversely influence the general discernment of research as echoed by Saldaña (2021). Nevertheless, there are many approaches for data analyses which are fundamentally founded on either quantitative or qualitative data in research. As a result, the researcher used mixed research methods thereby adopting both approaches. This approach allowed for the use of Framework Analysis Method, SPSS and Microsoft Excel to analyse data collected from focus group discussions, interviews and the electronic questionnaires. The approach further gave room to triangulation of data analysis method thereby increasing validity and reliability of the findings.

3.7.2 Qualitative Data Analysis Techniques

There are five major qualitative data analysis methods which incorporate epistemological and ontological perspective as argued by Smith and Firth, (2013). Nelson *et al.* (2021) claims that these methods include content analysis, narrative analysis, discourse analysis, framework analysis and grounded theory. The researcher utilised framework analysis method to analyse focus group discussion and telephone interview recordings due to its systematic approach. Framework analysis is elastic since it allows the researcher to comprehensively explore data while concurrently upholding a transparent and effective audit trajectory, augmenting the strictness of the analytical procedure as suggested by Saldaña (2021). During analysis, data is processed according to key themes and issues in five steps.

The researcher undertakes the data familiarization procedure where data collected through audio recordings of the virtual focus group discussion supported by zoom platform meeting and telephone interview recordings were repeatedly listened to many times in order to get an in-depth comprehension of the issues under discussion. This process allowed the investigator to gain an understanding of EIA stakeholders' sentiments, perceptions, recurrent issues, EIA encounters, and propositions for improvement as explained by Zhou *et al.* (2021). During the data familiarisation process, the researcher would take note of the critical issues raised. This marked the commencement of the data synthesis process through framework analysis method. After familiarisation, the investigator undertook a process of finding thematic framework hinged on recurrent issues stemming from the familiarisation procedure. Incipient issues formed themes which commenced a process of ordering data into categories. Indexing or coding succeeded the identification of themes where the portions and sections of qualitative data which resembled a certain theme were indexed through the use of a numerical system as advocated by O'Kane *et al.* (2021) and Nelson *et al.* (2021). Framework analysis method was precisely, used in this study for the analysis of audio recording of the virtual focus group discussions and unstructured text drawn from the telephone interviews. Soon after indexing, some data sets were prearranged in charts of definite themes. This led to the fourth step called charting and it required that qualitative data be moved from its single textual format into meaningful evidence displayed in form of charts as expounded by Saldaña (2021). Mapping and interpretation was the last stage which involved the study of the major features in the charts. The analysis helped in providing a schematic illustration of the phenomenon thereby funnelling the investigator in the explanation of data and information generation as alluded to by Zhou *et al.* (2021). The framework analysis approach is a systematic

procedure used to review qualitative data. It gives researchers a room to ensure that they manages data as per prearranged procedures as observed by Nelson *et al.* (2021). This methodical approach helps investigators to establish themes whilst also accurately controlling research biases. As such, framework analysis method is a qualitative data analysis technique which is used to structure and organize research data with the aim of refining the researcher's focus in order to identify main themes. This technique was established by the UK's National Centre for Social Research which further developed the NVivo software package to assist in data analysis as explained by O'Kane *et al.* (2021). Figure 3.2 shows a chronological presentation of the steps that are trailed in the Framework Analysis technique of qualitative data analysis.

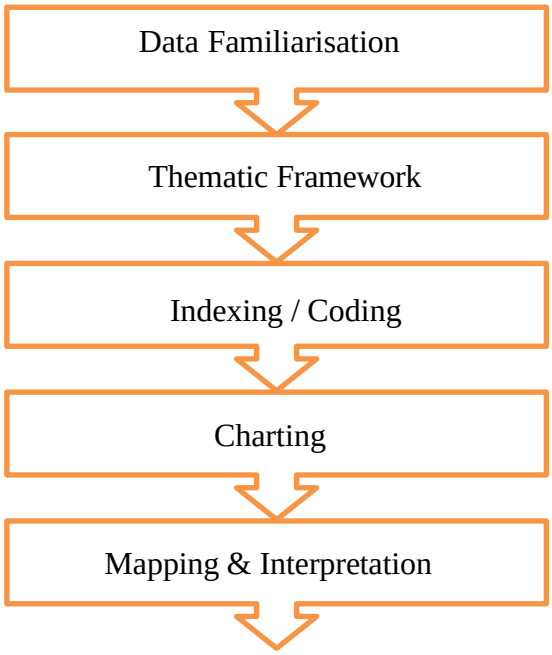

Figure 3. 2: Framework Analysis Chart adopted from Ross et al. (2021):75

3.7.3 Quantitative Data Analysis Techniques

Quantitative data analysis embroils critical inquiry and interpretation of statistical data and establishing the origin of the existence of main research upshots as explained by Tashakkori *et al.* (2020). Appraisals of primary data and the outcomes of archival study and literature review are very indispensable for quantitative research as foreseen by Daniel (2016). Quantitative data collected by the questionnaire using Kobo toolbox was exported to SPSS and analysed using SPSS and Microsoft Excel in order to make inferences. SPSS and Microsoft Excel were used for triangulation purposes in order to check for complementarity in data analysis. Triangulation is

considered as a research strategy to ascertain validity as a result of convergence of data analysis outcomes from different analyses as coined by Kaliyadan & Kulkarni, (2019). The researcher used descriptive statistics to describe simple patterns of the data that have been gathered in the study as recommended by Mishra *et al.* (2019). These analyses provided simple synopses about the sample and the measures such as the median, mean and standard deviation. Coupled with simple graphic analysis, they constituted the foundation of quantitative data analysis as noted by Kaliyadan & Kulkarni (2019). Non - parametric tests specifically the One – Sample Chi - Square was done at 0.05% significance level using SPSS version 25. However, parametric tests have more statistical power when equated to non - parametric tests as claimed by Mishra *et al.* (2019). Nevertheless the researcher used the One – Sample Chi – Square test due to its robustness with regards to data distribution, its relative ease of computation, the comprehensive information which can be obtained from the test, its utilisation in investigations for which parametric assumptions can't be achieved and its flexibility in data handling. Data obtained from archival research and literature review was used to develop an EIA cost estimation model.

3.8 Summary

The researcher adopted the attribution theory as the theoretical framework for this study. Mixed approach and concurrent triangulation research design were then used in this study since the topic under study would trigger both quantitative and qualitative aspects with respect to the nexus between the environmental impact assessment and economic development. Case study survey and archival research strategies were adopted in order to collect both primary data and secondary data. These strategies were adopted in order to fortify the study and enhance the research reliability and validity through triangulation. Additionally, Smith and Firth, (2013) and Nelson *et al.* (2021) concur that mixed methods research approach requires the usage of both quantitative and qualitative data analysis to fully understand the phenomenon under investigation. Case study survey was adopted with the use of online questionnaires supported by Kobo toolbox. Online questionnaires were administered in order to circumvent the effects of Covid -19 lockdowns which characterised the research period where movements were restricted in Zimbabwe and all SADC countries. At that time the national boarders were only open to essential services and intercity movement was banned as well. However, the researcher made use of the virtual space to collect data without any compromise to the quality of the data collected. A virtual focus group discussion was conducted using zoom platform with EIA project proponents

representing five major economic sectors of Zimbabwe. Telephone interviews were further used to argument the research instruments in the face of the Covid -19 pandemic.

The researcher sampled a sample of 90 participants in this study with 70 who participated through an online questionnaire which was supported by the Kobo toolbox platform. This survey platform knows no boundary and as such it helped the researcher to embrace the digital space and reached participants in Zambia and South Africa. Had it not been for the digital space this study would have been very difficult and costly to conduct with participants across national borders and those dotted around Zimbabwe. As such, 30 participants were from Zimbabwe's EIA practitioners sector and 20 from Zambia and the other 20 from South Africa. Random sampling was done for Zimbabwean questionnaire participants making use of the registered EIA consultants register obtained from the EMA website. The same approach was used in Zambia and South Africa to identify initial nodes which were then used to facilitate snowball sampling of the other participants. However, stratified sampling was used to select South Africa and Zambia from the 14 SADC member states while Zimbabwe was purposively sampled as the main study area. The researcher further interviewed 10 participants from key EIA stakeholders who are involved in EIA stakeholder consultation and these included ZERA, ZINWA, Forest Commission, Parks and Wildlife Management Authority of Zimbabwe just to mention a few. A virtual focus group discussion was further conducted with 2 of the representatives from construction, mining, energy, manufacturing and tourism sectors who had implemented some developmental projects in Zimbabwe within the last 10 years dating from year 2011 to year 2021.This was important in tracking changes that would have occurred in the EIA process in Zimbabwe and establishing the perceptions of these project developers based on their experience with the EIA system in Zimbabwe.

The researcher further identified four key variables which were measured by these research tools taking into consideration five ethical principles which are adhered to and supported by UREC's ethical clearance. These key variables were Environmental Impact Assessment (EIA) costs, EIA cost drivers, EIA review periods and EIA perceptions. The researcher had to seek informed consent prior to recruiting participants. The informed consent certificates or forms were submitted to Unicaf University together with completed research tools for safe keeping. Participants were made aware of their right to withdraw from the study and debriefing was conducted after each interview and the focus group discussion in order to ensure that what the researcher captured was in tandem with the responses of the participants before closure of either the interview or the virtual focus group discussion. Framework analysis method was used to

analyse qualitative data obtained from telephone interviews and focus group discussions which were conducted using the zoom platform as suggested by Saldaña, (2021). Data collected from the questionnaire through Kobo toolbox was exported to Microsoft Excel and Statistical Package for Social Scientist (SPSS). Descriptive statistics were done using SPSS and Microsoft Excel for advanced quantitative data analysis as suggested by Kaliyadan & Kulkarni, (2019). One - sample Chi – Square test was used to test the hypotheses at 95% confidence interval. Secondary data collected from literature review and archival data was further used to develop the EIA cost estimation model. All the completed questionnaires and consent forms were kept by the researcher and copies sent to Unicaf University as per the requirements of the doctoral studies at Unicaf.

Chapter 4: Discussion of Research Findings

4.1 Introduction

The purpose of this study was to examine the relationship that exists between environmental impact assessment and economic development in the Republic of Zimbabwe making use of mixed research method. Mixed research techniques provide a voice to investigate participants while ensuring that research outcomes are grounded respondent's' experiences as argued by Saunders *et al.* (2009). This was done with the aim of investigating the significance of the environmental impact assessment in decision making on developmental projects which drives the economy. Using mixed research method also helped the researcher to eliminate the shortcomings of a single research approach through triangulation. As a result, triangulation of methods provided opportunities for verifying unusual interpretations of the research data and for examining the degree to which the context assisted in shaping the research outcomes. Environmental Impact Assessment as a tool for decision making considers ecological, economic and social aspects which are critical in sustainable decision making on developmental projects. Additionally Buntaine (2016) and Hillsamer (2016) concur that project financiers such as the Asian Development Bank, African Development Band, Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden (FMO) also known as the Netherlands Development Finance Company, World Bank and Infrastructure Development Bank of Zimbabwe (IDBZ) now prioritise environmental and social safeguards in their financing criteria in pursuit of sustainable development. These environmental and social safeguards are the output of an environmental impact assessment enshrined in an environmental management or action plan. It is against this background that this research is premised upon and the research's intention was to demystify the perceptions revolving around the EIA system in Zimbabwe with regards to economic development.

This section first focuses on demographic data which was collected zeroing down to gender and academic qualifications of participants since the study's centre of attention was on the EIA professional sector of the economy. The EIA industry requires people who are trained to conduct environmental impact assessments and depending with countries, some have to be registered with a professional body while in some registration with a professional body is not mandatory as noted by Baker & Westman (2018). However, registration with an environmental competent authority is a legal requirement in almost all countries with the EIA systems in place.

Nevertheless, EIA stakeholders may not have the academic expertise regarding the EIA process but have indigenous knowledge which is very significant in decision making by the EIA practitioners and the competent authorities. All this has a domino effect on the overall cost of undertaking an environmental impact assessment. However, the researcher established that the costs of undertaking an EIA in the mining, tourism, construction and manufacturing and energy sectors in Zimbabwe, South Africa and Zambia coupled with the associated cost drivers in each sector were also explored. Furthermore, a comparison of EIA study timelines in Zimbabwe, Zambia and South Africa was done. Further analysis on the time required to review EIA reports by competent authorities in Zimbabwe, South Africa and Zambia were done in order to make comparisons using the Statistical Package for Social Scientists (SPSS) version 20 and Microsoft Excel as well since this has an impact on the ease of doing business. Framework Analysis Method (FAM) was used for analysis of EIA perceptions in Zimbabwe. Data analysis was conducted in a consistent, precise and thorough manner in order to enhance credibility of the findings. A hybrid EIA cost estimation model was developed from the identified cost drivers. The researcher protected data trustworthiness in this investigation through the use of concurrent triangulation which improves credibility of data as recommended by Honorene (2017).

Further efforts were undertaken to create an audit trail where the details of data gathering, analysis, records of exciting subjects for further research, data interpretation, coding and how themes were generated in order to ascertain research confirmability. This helped in unpacking EIA stakeholder perceptions in Zimbabwe where they were analysed making use of Framework Analysis Method (FAM). In pursuit of improving generalizability of the research, data was also gathered making use of participatory focus group discussions in which the principal investigator collected audio recordings in order to capture emotions and significant detail of the issues under discussion. The use of audio recordings relieved the researcher from note taking thereby permitting maximum concentration on listening to what was being said by the participants. This also allowed for follow up questions to be prompted for further clarifications where necessary. Furthermore, data was solicited from Zambia and South Africa in a rigorous, verifiable, systematic and empirical manner using electronic questionnaire supported by Kobo Toolbox platform. The main advantage of using the virtual space in this study was that it enabled the researcher to undertake this study that would be almost impractical under the Covid -19 lockdown restrictions using traditional methods. It was also easier and cost effective to collect data from widely dispersed respondents in the shortest possible time. The research participants were given a virtual opportunity to further evaluate the research outcomes from the summaries which were presented

to them regarding the interviews and focus group discussions to enhance data dependability. This improves the reliability and consistency of the findings of the study as echoed by Lemon & Hayes (2020). The researcher used the test – retest and the internal consistency to enhance the research reliability. Pilot studies were undertaken using the questionnaire and telephone interview tools which generated a fine turned research instrument with ambiguities removed thereby further improving the reliability of the research tools as buttressed by Blankson, (2020). Furthermore, the researcher tried to eliminate biases in order to enhance research reliability and validity by ensuring independence of participants in their input in the study.

4.2 Data Trustworthiness

Trustworthiness has emerged as a significant concept in mixed research because it gives room to researchers to depict the intrinsic worth of qualitative and quantitative aspects of research beyond the parameters that are usually applied in either quantitative or qualitative research alone. Lemon & Hayes (2020) believes that he goal of trustworthiness in a mixed research inquiry is to prop up the argument that the research's outcomes are worth giving attention. This is especially imperative when inductive content analysis is used as themes are generated from the primary data where there is no theory-based categorization matrix. The researcher further made significant efforts to reduce research bias in order to enhance trustworthiness of the data collected. Participants for both the focus group discussions and telephone interviews which were also done through WhatsApp calls to manage costs were given an opportunity to review the research findings of the discussion. This was achieved through confirming the summaries which were provided by the research at the end of each interview session and focus group discussion respectively. Furthermore, secondary data from literature was also used to verify some of the issues raised in the interviews, focus discussions and the questionnaires and checking for alternative interpretations in a bit to reduce research bias and enhance data trustworthiness. Research findings were also preliminarily reviewed with other research peers in order to eliminate research bias and enhance trustworthiness of the data gathered as recommended by Leichsenring *et al.* (2017). Connelly (2016) highlights eight strategies used to validate mixed research which includes extended engagement and tenacious field observation, multiple data sourcing and triangulation, peer review and external checks debriefing, negative case analysis, researcher bias clarification, thick description, member checking and external audits. Lemon & Hayes (2020) use the terms transferability, confirmability, dependability and credibility to bunch various techniques

under greater aims and to give alternate terms to concepts of positivists. They established that research trustworthiness and its outcomes are the fundamental issues in positivist principles of reliability and validity. In that intellect, the terms postulated by Lemon & Hayes (2020) are worthwhile in elucidating the trustworthiness aims of the philosophy. These terms are credibility, generalizability, dependability and confirmability.

4.2.1 Credibility

Credibility is the foundation of any assertion to trustworthy knowledge as explained by Ang *et al.* (2016). Rather than assuming the existence of "truth value" in research, credibility establishes that the depiction fashioned through a study is indeed believable and valid. As such, the researcher secured trustworthiness of data in this study through the use of concurrent triangulation which enhances credibility of data as suggested by Honorene (2017). This was confirmed by convergence of data which came from different data sources acquired by different research tools which were employed in the study. The strategy intensely ropes in reflexivity of the researcher which eases the worries of first-person data gathering and analysis as suggested by Connelly (2016). Concurrent triangulation further improved the validity of the data that was collected making use of the electronic questionnaire supported by Kobo Toolbox in compliance with WHO and the Ministry of Health and Child Care Covid guidelines, focus group discussions, telephone interview making use of WhatsApp calls since it was the most economical way of data collection and analysis of peer reviewed publications. Respondent validation was done whereby partially analysed data was returned to respondents in order to check for resonance with their practices and accuracy. However the researcher could not provide detailed data collected by electronic questionnaires to participants but summaries in order to avoid data from being stolen by participants. However, for the data that was collected using telephone interviews and zoom focus group discussions, the researcher summarised the data collected and asked the participants to confirm if the data collected was honest and accurate in order to enhance trustworthiness of data collected by the researcher. Lemon & Hayes (2020) claims that credibility through concurrent triangulation establishes research plausibility in data representation and outcomes. Concurrent triangulation allowed the research to complement weaknesses of the research tools that were used which resulted in a more fortified and credible research process capturing both the quantitative and qualitative aspects of the research. Secondary data used further cemented and verified some of the issues which were triggered by this research at the lowest cost and time.

4.2.2 Generalizability

The next vital step in transit to trustworthiness is the level to which the representation and outcomes are applicable outside a certain environment or inquiry. Ang *et al.* (2016) argues that naturalistic investigations or mixed research seeks generalise data by providing the specifics of the occurrences and setting in formal records like study reports. This is accomplished through thick description and it is a rhetorical approach which richly and thickly gives a description of events in such a manner that the readers feel as if they have experienced the described events. The goal of thick description with regards to validity is to pronounce the context and event with adequate detail so that that the researcher and reader can relate appropriate information from the description to another environment as suggested by Kyngäs *et al.* (2020). In pursuit of enhancing generalizability or transferability of the study, data was also collected using participatory focus group discussions in which the researcher made audio recordings in order to capture significant detail. Additionally, data was collected from Zambia and South Africa in a rigorous, verifiable, systematic and empirical manner using electronic questionnaire supported by Kobo platform. Collecting data from other countries within SADC helps in getting a clear picture of the environment in SADC and hence assist in generalising the study within SADC since the sample became bigger and varied. The main assumption during data collection was that the least academic qualification each respondent has was a diploma. As such this study may be transferred to a similar population and generate similar results. Intrinsically, establishing such study boundaries improves both the likelihood that results may be applicable to similar populations and internal validity as argued by Connelly, (2016). Thick descriptions of certain accounts are appropriate in providing satisfactory detail with regards to the context of events. This will enable readers to vicariously encounter the prevailing environment under which the study was conducted. As a consequence, readers can perform their private ‘thought experiment’ in pursuing to generalise the teachings learned from this environment encountered via a research manuscript as established by Ang *et al.* (2016). The systematic process in which data was collected provided empirical research finding with the research process being able to be conducted by other researchers in a way which generates similar results.

4.2.3 Dependability

Dependability dwells on common or shared constructs which are used to assess research events as vowed by Klenke, (2016). Dependability entails the participants’ appraisal of the

research outcomes, understanding and recommendations of an investigation such that all the findings are buttressed by the data as solicited from research participants. The researcher made use of audit trail on the data collected where raw data was shared with the supervisor and participants as part of the study process. In order to ensure dependability of the research findings, the researcher ensured that the participants evaluated the research findings from the summaries which were presented to respondents of the interviews and focus group discussions. This was done in order for the respondent to ascertain that what has been captured by the researcher was exactly what has been said during the course of the telephone interviews and focus group discussions as suggested by Lemon & Hayes (2020). This further helps in improving the reliability and consistency of the findings of the study since participants has a chance to correct issues which could not have been well captured through this appraisal process. Concurrent triangulation also further helps in boosting dependability of the research findings since the methods would complement one another in data collection as recommended by Honorene (2017). This was however achieved through the use of focus group discussions which were done virtually, telephone interviews and the use of the electronic questionnaire supported by the Kobo Toolbox platform. Furthermore, the code – recode procedure was used on qualitative data collected from both telephone interviews and focus group discussions throughout the data analysis phase after every two weeks in order to safeguard data dependability. These approaches were used by the researcher to ensure data trustworthiness within the research process as supported by Lemon & Hayes (2020).

4.2.4 Confirmability

Confirmability seeks to establish the degree to which research findings can be confirmed by safeguarding a degree of replicability of any study as noted by Cypress, (2017). However, mixed researchers disagree on dependability and confirmability terms. Others query their significance in research considering the underlying constructivist concept of multiple perceptions over outright truth that underpins mixed thinking. Conversely, they serve a real end, which is to unequivocally demonstrate how studies and outcomes can build upon one another through follow-up research of comparable inquiries as buttressed by Klenke, (2016). Moreover, the theories when followed up, they fortifies the claims to generalizability by outlining the procedural rigor of the interpretive strategies. This thoroughness is best regarded as transparency. The central claim to transparency is derived from reflexivity in research inquiries. Kyngäs *et al.* (2020) noted that reflexivity is the existence of a systematically modest account of how a study was done. As a

result, the concept of reflexivity spreads to other facets such as credibility where the issue arises through the investigator's categorical accounting for his or her existence in the study. Nevertheless, the main belief underlying reflexivity is the comprehension that trustworthiness of a study is a conversational matter which is constantly negotiable, open to constructive criticism and unassailable or not absolute as an issue of definite proof as summarised by Raby & McNaughton, (2021). As a result, the researcher established an audit trail where the details of data gathering, analysis, records of interesting topics for further studies, data interpretation, coding and how themes were generated in order to establish confirmability of the research findings. All the electronic questionnaires and audio recordings and notes were well kept and used for data analysis and can be made available for audit such that they can be verified and confirmed since their physical presence is there and well safeguarded in line with the research ethics and ethical clearance granted by UREC.

4.3 Data Reliability and Validity

Reliability is highly essential for philosophical research because it tests whether an investigation fulfils its expected goals and hypothesis as explained by Mohajan (2017). It further ensures that the research outcomes are due to the research in question and not any likely extraneous variables. Cypress (2017) believes that the rationale of establishing validity and reliability in mixed research is fundamentally to warrant that research data are replicable, accurate and sound. Additionally, the evidence of research validity and reliability are the prerequisites of assuring the quality and integrity of a research measurement instrument such as a questionnaire. As such, reliability refers to the accuracy of the research instrument in terms of measuring what it purports to measure as purported by Blankson, (2020). Blankson further identified four main types of reliability namely: test – retest, interrater, parallel forms and internal consistency. However the researcher made use of the test – retest and the internal consistency to enhance the research reliability. Pilot studies were also conducted using the questionnaire and telephone interview tools which resulted in fine turning the research instrument by removing some ambiguities thereby further improving the reliability of the research tools. The main reason for undertaking a pilot survey in research is to appraise the time requirements, feasibility, associated research risks, research cost requirements and the effectiveness of a research instrument as echoed by Cypress (2017). A pilot test is a small sample assessment which is undertaken to establish whether the respondents comprehend the research instrument such as a questionnaire or not. It helps to proffer solutions to the challenges which could arise during the actual investigation. Additionally, it

provides the general insights into the precise scope of the research project and the degree of readiness for the research instrument application to the participants as coined by Mohajan (2017). As a consequence, the test – retest reliability was confirmed since the outcomes of the pilot study were also compared with the outcomes of the refined instrument during data analysis. Furthermore, the research questions on the research tool were ordered in a chronological order in order to ensure that internal consistency or reliability was enhanced focusing on the same construct from a hierarchical order of questioning as suggested by Ang *et al.* (2016). This also allowed for follow up questions to be triggered even in the telephone interviews and focus group discussions in order to track consistence of responses which further enhanced research validity and reliability of the data. The Alpha Cronbach Value of 0.82 was obtained from SPSS which shows excellent internal consistency of the research tool (Shrestha, 2021) as shown in Table 4.1. Vaske *et al* (2017) believes that Cronbach's alpha is a quantitative gauge of internal consistency. It measures how strongly related a set of data are as a group and is often considered to be a gauge of scale reliability. Since the research was undertaken making use of a professional industry as a sample, the researcher accessed the respondent's competence through asking the level of their academic qualifications in order to gather expert views and judgements in a bit to enhance reliability of the study. This could also explain why the data was closely related since the input was coming from mainly experienced professionals in the EIA practise.

Table 4. 1: Alpha Cronbach Value Interpretation

Cronbach's Alpha	**Internal Consistency**
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Alpha Cronbach Value Interpretation Adopted from Shrestha, 2021

Connelly (2016) argues that internal validity in qualitative research is the degree to which an investigation institutes a trustworthy cause and effect association concerning a treatment and the result. As a consequence, the researcher increased internal validity by making audio recordings on the focus group discussions in order to eliminate alternative explanations on the qualitative components of the study as suggested by Ang *et al.* (2016). The audio recordings of the qualitative data was later analysed using Framework Analysis Method (FAM). Furthermore, increased randomisation in sampling respondents in Zimbabwe in pursuit of reducing sample bias also increased external validity of the study on both the qualitative and quantitative components of the investigation. However, questionnaires often lack validity due to numerous reasons for instance respondents may lie or provide desired responses. Cognisant of this, the researcher employed concurrent triangulation, in which the focus group discussions and telephone interviews were used to counter this effect as suggested by Blankson (2020). However, internal validity in quantitative studies is defined as the degree to which the detected results denote the reality in the population under investigation and thus, are not as a result of procedural errors as coined by Carminati, (2018). Since the researcher adopted mixed research, it was of paramount importance to ensure that validity is enhanced from both the qualitative and quantitative research perspectives. Research findings were compared with secondary data from peer reviewed articles in order to test for external validity. Lastly, the researcher tried to eliminate biases in order to enhance research reliability and validity in as much as they are difficult to be completely eliminated in any study as suggested by Blankson, (2020). The researcher further made use of more questions in order to assess participants' competence regarding the topic under investigation. Furthermore, a consistent virtual environment was maintained throughout the study in order to enhance research reliability as suggested by Cypress (2017) and Mohajan (2017). All participants had at the required minimum academic qualifications to participate in the study.

The research instruments were designed in such a way that they did not consume a lot of participants' time as this would have reduced the research reliability and validity. This was achieved through capturing detailed telephone interview notes and making use of audio recording devices with notes for pertinent issues being taken. The notes were then used to develop discussion summaries which were then confirmed by the participants before the end of the virtual data collection process. Digital files were then transcribed at the researcher's time in order to avoid inconveniencing research participants as recommended by Carminati, (2018). Data transcription is a procedure of providing a written report of spoken words usually from digital data such as audios as explained by Hammersley (2020). In mixed research, the researcher transcribes

qualitative data collected from personal interviews or focus group discussions and usually written verbatim as suggested by Parameswara *et al.* (2020). Data was the coded and three categories were created and labelled with regards to EIA stakeholder perceptive in Zimbabwe. This was all done making use of the Framework Analysis Method (FAM) as suggested by Hammersley (2020). Efforts were made to understand research biases as the researcher was cognisant of their impact on research validity, reliability and their cascading implications on research findings and misinterpretation of research data. The researcher engaged peers to make a preliminary review of data in order to check for research biases if they existed in the data collected. Additionally, the researcher avoided leading questions in the interview and the focus discussions in order to accord participants free will to provide responses without the researcher's influence in the research findings as recommended by Blankson (2020).

4.4 Results Findings

This section highlights the research findings making use of visual aids such as tables, line graphs and histograms. A brief outline of the results was done without making interpretation but giving a brief account of the results as they are shown in different data presentation styles. The researcher presented the results in order of the research objectives and questions of the study starting with the demographic data and ending with the EIA cost drivers as shown in various sub sections under this section.

4.4.1 Gender

The results of the gender representation in the EIA consultancy industry show that it is dominated by males when compared with the female counterparts. Males dominate the EIA consultancy industry in Zimbabwe, Zambia and South Africa. Males constitute 80% while women who participate in the EIA consultancy process in Zimbabwe as shown in Table 4.2 despite Zimbabwe's participation at the international Beijing Conference in the year 1995.

Table 4. 2: Gender in Zimbabwe's EIA Consultancy Industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	6	20.0	20.0	20.0
	Male	24	80.0	80.0	100.0
	Total	30	100.0	100.0	

In Zambia, the results of the females who were involved in the EIA consultancy were more than in Zimbabwe with male dominance standing at 70% as shown in Table 4.3. Zambia and Zimbabwe share the same historic background and were all under the British colony with similar education background. Females seem to be lagging behind in the EIA consultancy industry despite the existence of the world agreement on a comprehensive plan to attain global legal equality at the Beijing Conference in 1995.

Table 4. 3: Gender in Zambia's EIA Consultancy Industry

	Frequency	Percent	Valid Percent	Cumulative Percent
Female	6	30.0	30.0	35.0
Male	14	70.0	70.0	100.0
Total	20	100.0	100.0	

In South Africa, the males still dominates the EIA consultancy industry but the dominance is at its lowest when compared to Zimbabwe and Zambia. More women are active in the EIA consultancy industry in South Africa than in Zambia and Zimbabwe as shown in Table 4.4. In South Africa, 40 % women are active in the EIA consultancy industry while 60% are men.

Table 4. 4: Gender in South Africa's EIA Consultancy Industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	8	40.0	40.0	40.0
	1	12	60.0	60.0	100.0
	Total	20	100.0	100.0	

4.4.2 Level of Education

EIA consultants with diploma as their highest qualification are only found in Zimbabwe and Zambia. Most EIA consultants in Zimbabwe are holders of a master's qualification (60%) compared to South Africa which has 20% and 25% in Zambia. However, in Zambia and South Africa 60% and 45% of the EIA consultants are holders of the bachelor's degree respectively. In South Africa, 35% are have a doctorate qualification while in 13.3% and 5% are the statistics in Zimbabwe and Zambia respectively as shown in Table 4.5.

Table 4. 5: A comparison of the level of education in Zimbabwe, Zambia and South Africa

	% in Country		
Level of education	**Zimbabwe**	**Zambia**	**South Africa**
Diploma	6.7	10.0	-
Bachelor	20.0	60.0	45.0
Master	60.0	25.0	20.0
Doctorate	13.3	5.0	35.0

Cross tabulations of the level of education and position held within the EIA consultancy companies were done. A diploma holder can be employed in an EIA consultancy firm as an operational staff while the same person cannot be recruited for any position of management be it middle or senior management. Holders of bachelors' degree can be absorbed at all levels within the EIA consultancy firms. However, there were no master's holders who were in the operational

staff since 14 out of 18 holders of a master's degree representing 77.8% were in senior management with 22.2 in the middle management in Zimbabwe. None were in the operational staff level. There were 3 out of 4 doctorate holders who were in the senior management with none in the middle management. However 1 was in the operational staff level in Zimbabwe as shown in Table 4.6

Table 4. 6 : Level of education versus position within your organisation

		Level of education				**Total**
		Diploma	Bachelor	Doctorate	Master	
Position within your organisation	Middle Management	0	3	0	4	7
	Operational Staff	1	2	1	0	4
	Senior Management	0	2	3	14	19
Total		1	7	4	18	30

4.4.3 EIA Studies Timelines

It's only in Zimbabwe where EIA studies can be concluded in 2 weeks when compared to Zambia and South Africa. However, this was established from 3.3% of the sample that participated in this study. Such projects which can have EIA studies completed in 2 weeks are few and rare. The common practice is that the studies stretches from 3 weeks to more than 7 weeks I the countries which were under investigation. However 60% and 70% of the participants from Zambia and South Africa respectively agreed that the EIA studies take up to more than 7 weeks with Zimbabwean EIA consultants contacting these studies fastest than their Zambian and South African counterparts as shown in Figure 4.1.

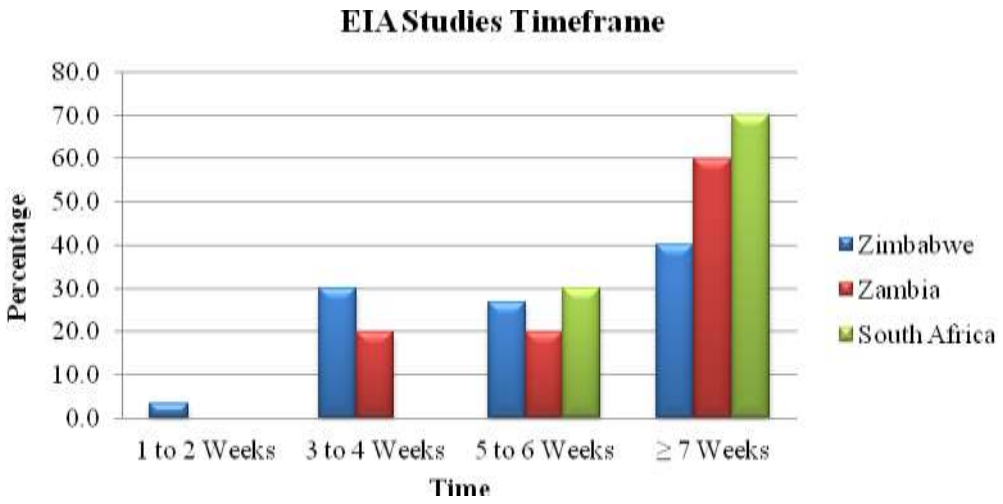

Figure 4. 1: Comparison of EIA study lead times

4.4.4 EIA Stakeholder Consultation Timelines

The stakeholder consultation process in South Africa and Zambia is faster than in Zimbabwe since 60% of the participants in Zambia and South Africa agreed that the consultation is concluded in 3 weeks while in Zimbabwe 50% of the participants share the same sentiments. However, only 16.7% and 20% of the participants in Zimbabwe and Zambia respectively highlighted that the stakeholder consultation process can take more than 4 weeks depending on the complexity of the project as shown in Figure 4.2.

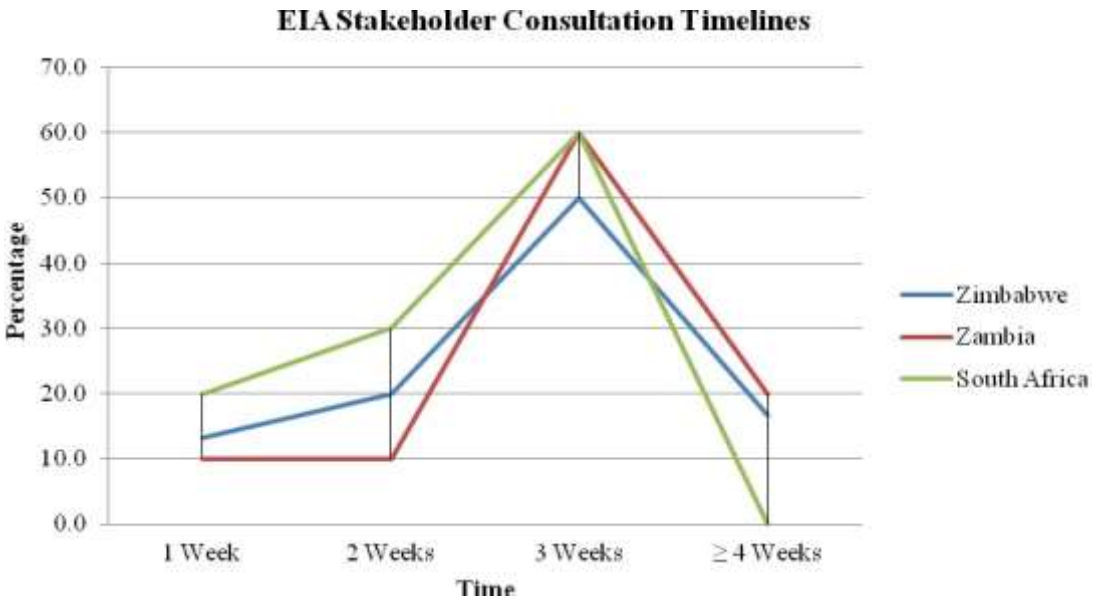

Figure 4. 2 : Stakeholder consultations lead times

4.4.5 Prospectus Review Timelines

It is only in Zimbabwe where prospectus feedback from the competent authority can be issued within 5 days. This shows how fast the Environmental Management Agency (EMA) is in responding to proposed developments. However, most participants agreed that the feedback from EMA comes within 6 to 15 days. In Zambia, prospectus feedback comes as from day 6 and with some projects taking more than 15 days as shown in Figure 4.3. However, in South Africa, prospectus review comments starts to trickle on day 11 after prospectus submission to the competent authority. Prospectus reviews are done fastest in Zimbabwe than in Zambia and South Africa which has the slowest response rate.

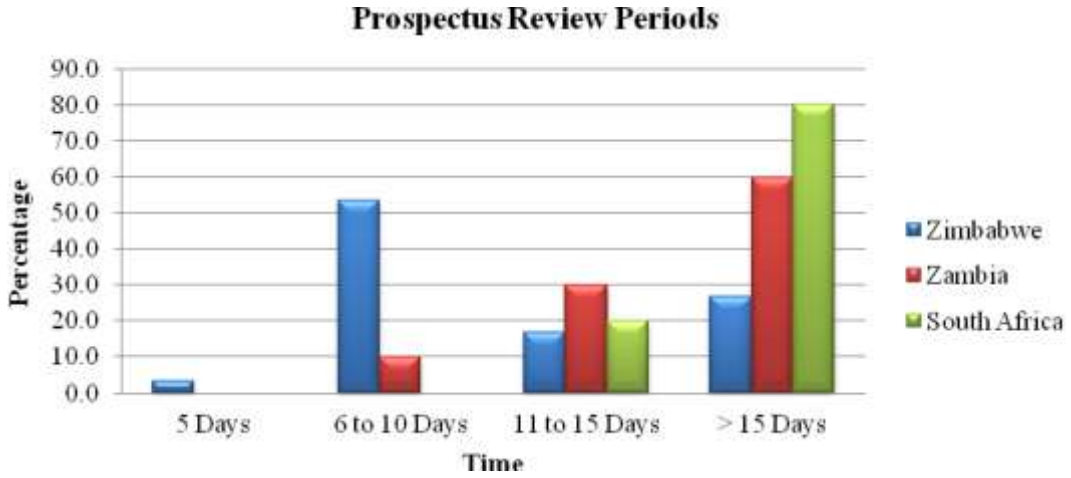

Figure 4. 3 : Prospectus review lead times

4.4.6 EIA Appraisal Timelines

In Zimbabwe, 60% of the participants confirmed that EIA reviews are completed within 1 month while in Zambia and South Africa 60% and 50% respectively of the participants agreed that it takes 3 months for EIA reviews to be completed by the respective competent authorities. This shows that in Zimbabwe EIA reviews are done much faster when compared with Zambia and South Africa as shown in Figure 4.4.

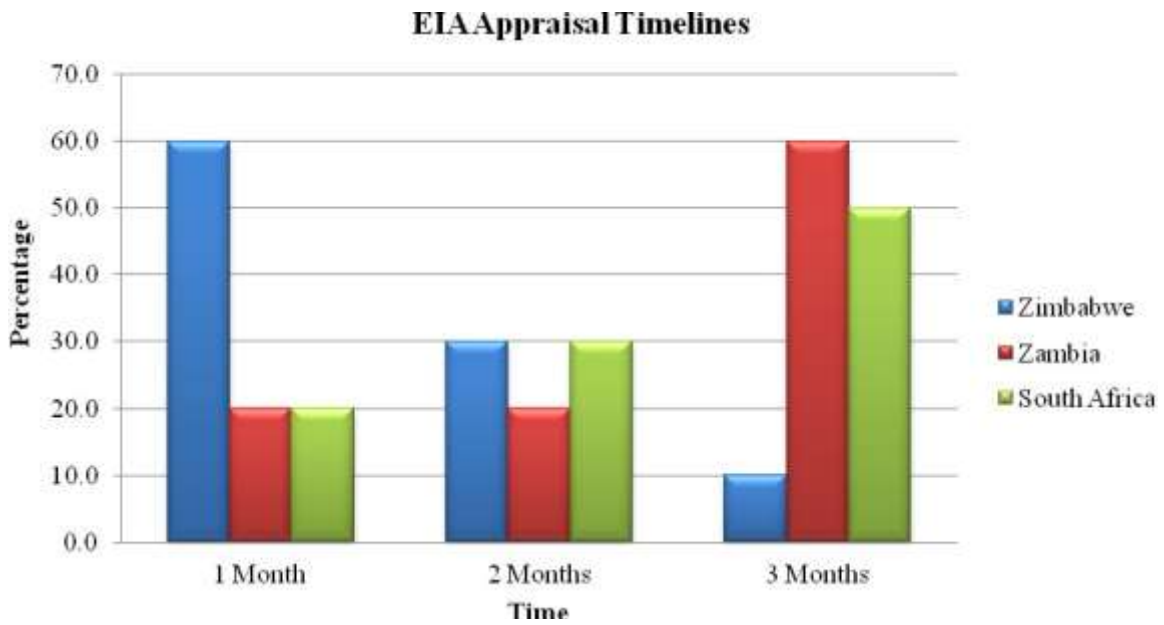

Figure 4. 4 : EIA review lead times

4.4.7 EIA Costs

Cross tabulations were done in the five economic sectors to determine the average EIA costs and compared with South Africa and Zambia. A total of 36.7 % of the respondents agreed that the total EIA professional costs and stakeholder consultation costs was in the range of USD 4001 to USD 6 500 for project level EIAs in the construction, manufacturing and mining sectors in Zimbabwe. About 13.3% converged on USD 4 502 to USD 7 000 as the EIA cost in the construction industry in Zimbabwe. Small construction projects have lower costs compared to bigger construction projects. Table 4.7 shows the cross tabulation results for the EIA cost in the construction industry in Zimbabwe. In the mining industry, 30% of the participants highlighted that the EIA cost was greater than USD 5 000 with only 10% agreeing that the cost is in the range of USD 4 502 to USD 7 000 as shown in Table 4.8. A total of 36.7 % of the respondents agreed that the total EIA professional costs and stakeholder consultation costs was in the range of USD 4001 to USD 6 500 as shown in Table 4.9.

Table 4. 7 : Cross Tabulation on Zimbabwean EIA Professional Fees and Stakeholder Consultation in Construction Industry

		Stakeholder Fees: Construction			Total
		< USD 1 000	USD 1 000 - USD 1 500	USD 1 501 - USD 2 000	
	EIA Professional Fees				
	< USD 3 000	2	1	1	4
Construction	USD 3 001 - USD 5 000	2	*11	4	17
	USD 5 001 - USD 7 000	0	2	1	3
	> USD 7 000	1	3	2	6
Total		5	17	8	30

Table 4. 8 : Cross Tabulation on Zimbabwean EIA Professional Fees and Stakeholder Consultation in Mining Industry

		Stakeholder Fees: Mining				Total
		< USD 1 000	USD 1 000 - USD 1 500	USD 1 501 - USD 2 000	> USD 2000	
	EIA Professional Fees					
	< USD 3 000	1	1	2	*10	14
Mining	USD 3 001 - USD 5 000	0	1	3	1	5
	USD 5 001 - USD 7 000	0	2	2	1	5
	> USD 7 000	1	2	2	1	6
Total		2	6	9	13	30

Table 4. 9 : Cross Tabulation on Zimbabwean EIA Professional Fees and Stakeholder Consultation in Manufacturing Industry

		Manufacturing			Total
		< USD 1 000	USD 1 000 - USD 1 500	USD 1 501 - USD 2 000	
Manufacturing	< USD 3 000	2	2	1	5
	USD 3 001 - USD 5 000	0	*11	2	13
	USD 5 001 - USD 7 000	3	3	2	8
	> USD 7 000	0	2	2	4
Total		5	18	7	30

In the energy sector in Zimbabwe, 40% of the respondents agreed that the total EIA professional and stakeholder consultation cost was above USD 8 500. About 23.3% also concurred that the cost is in the range of USD 6 001 to USD 8 500. Smaller energy projects have lower EIA costs compared to larger energy projects as shown by the cross tabulation in Table 4.10. In the tourism industry, 43.3% of the participants in Zimbabwe highlighted that the EIA cost is in the range of USD 6 001 to USD 8 500. About 10% of the respondents believe that the EIA cost in the same industry are in the range of USD 4 501 to USD 5 000. Smaller tourism projects tend to have lower EIA costs as shown in the cross tabulation in Table 4.11. The size of a project has an effect on the cost of an EIA.

Table 4. 10 : Cross Tabulation on Zimbabwean EIA Professional Fees and Stakeholder Consultation in Energy Industry

		Stakeholder Fees: Energy				Total
		< USD 1 000	USD 1 000 - USD 1 500	USD 1 501 - USD 2 000	> USD 2000	
	EIA Professional Fees					
Energy	< USD 3 000	0	1	2	0	3
	USD 3 001 - USD 5 000	1	1	0	0	2
	USD 5 001 - USD 7 000	0	7	1	1	9
	> USD 7 000	2	*12	2	0	16
Total		3	21	5	1	30

Table 4. 11 : Cross Tabulation on Zimbabwean EIA Professional Fees and Stakeholder Consultation in Tourism Industry

		Stakeholder Fees: Tourism			Total
		< USD 1 000	USD 1 000 - USD 1 500	USD 1 501 - USD 2 000	
	EIA Professional Fees				
	< USD 3 000	1	0	3	4
Tourism	USD 3 001 - USD 5 000	1	2	2	5
	USD 5 001 - USD 7 000	2	*13	1	16
	> USD 7 000	1	2	2	5
Total		5	17	8	30

Comparisons done for the five economic sectors in South Africa, Zambia and Zimbabwe revealed that EIA costs in South Africa were above USD 9 000 in all the economic sectors under investigation. This shows that out of the three countries, South Africa had the highest EIA costs incurred by the project developers. Zambia was second from South Africa in construction and mining ranging from USD 6 000 to USD 8 500. The EIA cost in the mining and energy industries were the same as with South Africa. However in tourism industry Zambia stood at the third position with the EIA cost ranging from USD 4 500 to USD 9 000 depending with the size of the project. Zimbabwe was at the third position in all sectors except for the tourism sector where it stood at the second position with EIA costs in the range of USD 6 000 t0 USD 8 500. Mining had the cheapest EIA cost in Zimbabwe with a cost of less than USD 5 000 when compared to other sectors as shown in Table 4.12.

Table 4. 12 : Industry Specific Cross Tabulation Comparisons of EIA Costs

Country	**Economic Sectors (Costs in USD)**				
	Mining	**Construction**	**Manufacturing**	**Energy**	**Tourism**
South Africa	> 9 K	> 9 K	> 9 K	> 9 K	> 9 K
Zambia	> 9 K	6 K – 8.5 K	6 K – 8.5 K	> 9 K	4.5 K – 9 K
Zimbabwe	≥ 5 K	4 K – 6.5 K	4 K – 6.5 K	> 8.5 K	6 K – 8.5 K

4.4.8 EIA Stakeholder Perceptions in Zimbabwe

There were three identified themes or categories following the use of the Framework Analysis Method (FAM) on focus group discussion and telephone interviews. These were labelled using the labels EIA stakeholder consultation delay, EIA review delay and EIA cost reduction strategy as shown in Figure 4.5. These themes carry certain meanings in relation to the EIA stakeholder perceptions in Zimbabwe. Corruption was cross cutting in terms of being a factor causing EIA stakeholder consultation delays and EIA review delays by the competent authority in Zimbabwe. Five EIA cost reduction strategies were identified.

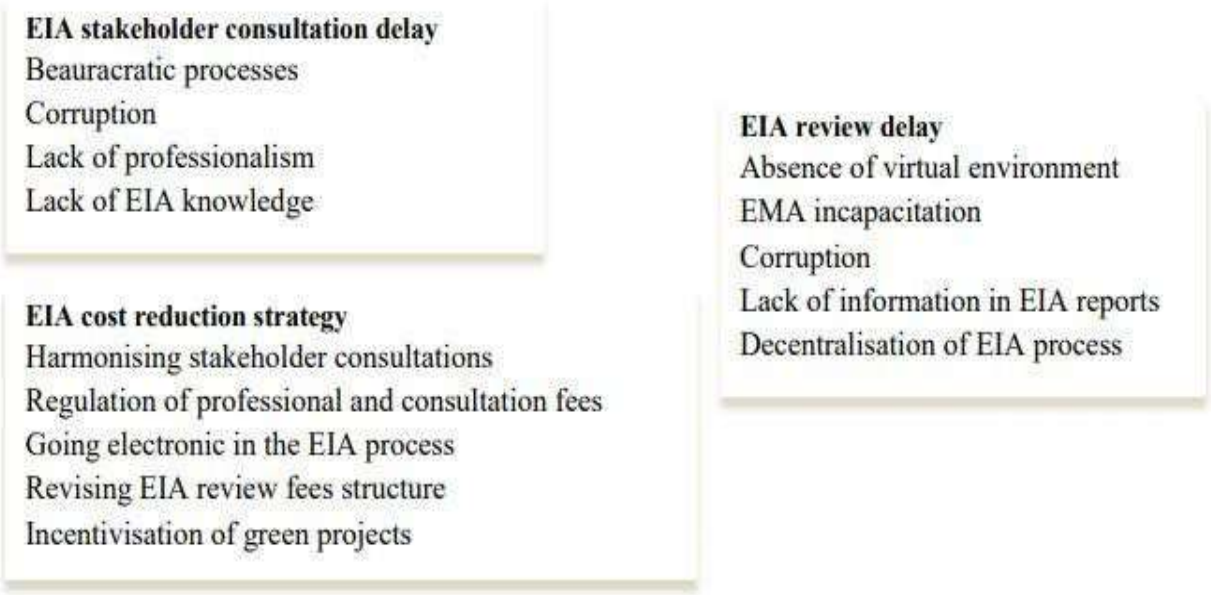

Figure 4. 5: EIA stakeholder perceptions in Zimbabwe

4.4.9 EIA Cost Drivers in Zimbabwe

Transport and logistics is the major cost driver in tourism and mining industries while corruption contributes significantly to the total EIA cost in manufacturing and construction industries. Likewise, EIA review fees and EIA professional fees are high in the energy sector as they have a higher contribution to the overall EIA cost. Administrative costs are the same across all industries under investigation while unregulated stakeholder consultation fees are highest in the construction industry followed by the mining industry. The effect of the lack of an EIA prizing model is at its peak manufacturing followed by the mining industry as shown in Figure 4.6. Seven EIA cost drivers were identified in Zimbabwe.

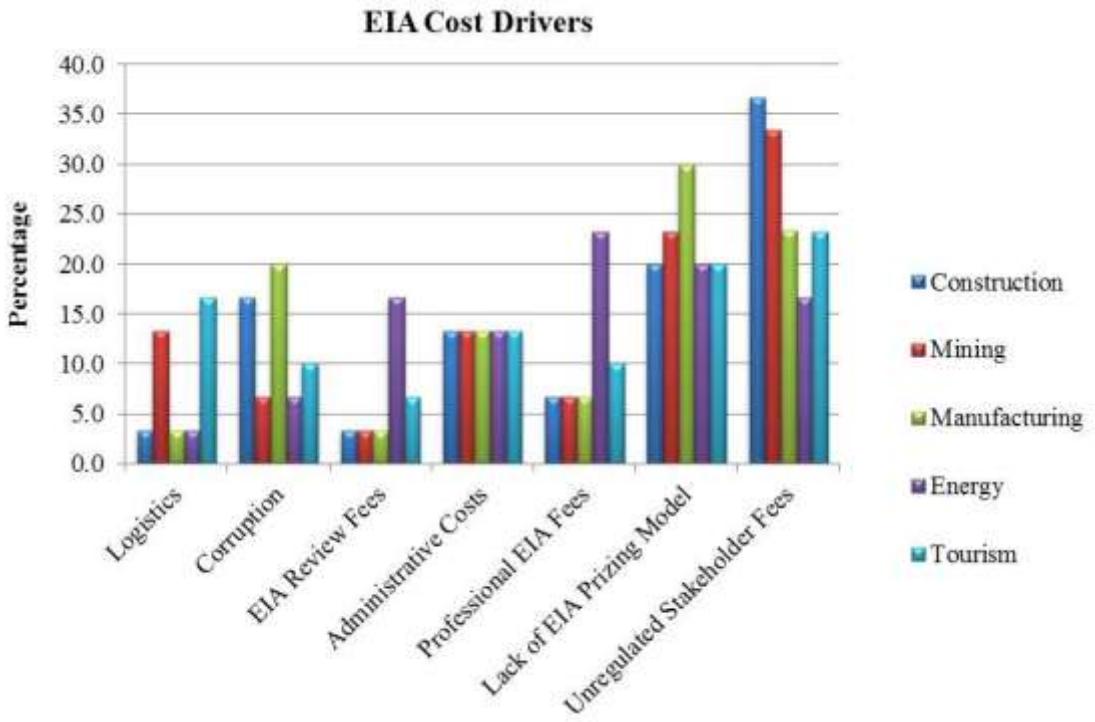

Figure 4. 6 : EIA cost drivers in Zimbabwe

4.4.10 Hypotheses Tests

Non – parametric tests were done in which the One – Sample Chi – Square test was performed at 95% confidence interval to test the null hypotheses. The Chi-square test is a non-parametric test which is used to test the hypothesis of no relationship between variables that is checking independence between two or more variables. In the first hypothesis, the null hypothesis was rejected in favour of the alternative hypothesis since $p = 0.046$ meaning that there is need for EIA pricing regulation by an environmental professional body in Zimbabwe. In the second hypothesis the null hypothesis is retained since $p = 0.080$ implying that there is no relationship between EIA costs and FDI hence EIA costs do not affect FDI in Zimbabwe as shown in Figure 4.7.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of a. There is no need for EIA pricing regulation by an environmental professional body in Zimbabwe occur with equal probabilities.	One-Sample Chi-Square Test	.046	Reject the null hypothesis.
2	The categories of g. EIA costs do not affect Foreign Direct Investment inflows in Zimbabwe occur with equal probabilities.	One-Sample Chi-Square Test	.080	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 4. 7 : One – Sample Chi – Square Test

4.4.10.1 EIA Pricing Regulation in Zimbabwe

There is need for EIA pricing regulation in Zimbabwe in a bid to protect and promote the EIA industry. The industry has received too much bad publicity in terms of EIA costing where investors and government believe that the EIA costs are too exorbitant. However, the study shows that the EIA cost in Zimbabwe are the lowest when compared to Zambia and South Africa in almost all the sectors under investigation. As such, EIA pricing regulation by an environmental professional body would bring sanity in the industry. This will help improve the EIA charges by the EIA professionals in Zimbabwe to be consummate with the intellectual studies they undertake in a bid to ensure sustainable protection and management of the environment. As such, having EPCOZ empowered by an Act of parliament will further fortify the EIA industry in Zimbabwe. However, since $p < 0.05$ the null hypothesis was rejected meaning that there was need for an EIA professional regulatory body in Zimbabwe to regulate EIA prizes. This body can provide guidance on the EIA prizing through the use of EIA cost estimation models or through benchmarking with other countries in developing EIA prizing standards. An EIA professional regulatory body will help in assisting EIA practitioners to develop bids that can compete on international market through continuous professional development (CPD) on prizing and other contemporary issues within the industry as suggested by Machaka *et al.* (2016). This will sharpen and empower the EIA practitioners so that they remain relevant and in sync with global trends. Other professional industries such as the legal sector in Zimbabwe have the Law Society of Zimbabwe which has the

mandate of regulating the legal profession in Zimbabwe and sets out the minimum charges or tariffs for the lawyers. This helps in ensuring that the industry is protected and intellectual property is well paid for and ring fenced from abuse or being undermined. In Zimbabwe there exists the Environmental Professional Council of Zimbabwe (EPCOZ) which is currently instituted as a voluntary trust. The research revealed that the regulatory body is needed in Zimbabwe to help in the EIA prizing regulation and ensuring sustainable development of the profession through ethical conduct of the EIA professionals.

Considering the low EIA prices experienced in Zimbabwe under the perception that it has been stalling economic growth, this proves to show that the EIA profession in Zimbabwe has been a victim of bad publicity by investors and a political system which disregards principles of sustainable development. As such, the recognition of EPCOZ at national policy level will help protect the EIA practitioners and the profession at large thereby building a multi-billion dollar industry that can contribute significantly to the national fiscus and Gross Domestic Product (GDP). In South Africa, Environmental Assessment Practitioners Association of South Africa (EAPASA) now exist as statutory body whereby all EIA practitioners in South Africa ought to be registered by EAPASA for them to practice in South Africa as noted by Bond *et al.* (2017). This could be one amongst other reasons why EIA costs in South Africa were the highest amongst the three countries under investigation. If consummate EIA prizes are established, the EIA studies that will be conducted are comprehensive and will have the highest probability of addressing environmental and social issues triggered by a proposed development as explained by Glasson & Therivel (2019). Furthermore, this generates robust and good quality EIAs which are cost effective to the community since mitigation measures and abatement strategies will be able to arrest environmental impacts of proposed projects after thorough EIA research. As such, the need for an EIA professional regulatory body to provide guidance on EIA prizing in Zimbabwe is inevitable.

4.4.10.2 Impact of EIA Costs on FDI Inflows in Zimbabwe

The EIA costs in Zimbabwe are too low such that they do not have an effect on foreign direct investments (FDI). As such investment in Zimbabwe is not hindered by the EIA process since the costs are the lowest in the Southern African Development Community (SADC) in all sectors under investigation. Furthermore, the EIA process in Zimbabwe is done more expeditiously when compared to South Africa and Zambia. Chinese and investors from Far East are expanding their business interests in Zimbabwe venturing in various projects which falls under

the sectors which were under investigation. The Chinese investors have embraced the spider web doctrine and are not at liberty to release funds to contractors and service providers such as EIA practitioners as noted by Yü and Yü (2016). As such, the perception that EIA costs are derailing economic growth in Zimbabwe is not correct since the country has been receiving FDI mainly from these Chinese investors though it may not be much. However, FDI inflows into Zimbabwe are way below its potential as a result of the recession experienced in the year 2019 due to the Cyclone Idai, El Niño drought induced effects macroeconomic and the health catastrophe caused by the Covid-19 contagion as established by Cilliers *et al.* (2020). The physical business closure of manufacturing plants, tourism sector and construction sites in order to contain the wide spread of the novel corona virus through global lockdowns caused immediate delays in the execution of investment projects in Zimbabwe and beyond according to the World Investment Report (2020). This resulted in the decrease in FDI inflows as well. According to the United Nations Conference on Trade and Development (UNCTAD)'s World Investment Report of 2021, FDI influxes in 2020 took a nose dive to USD 194 million compared to the pre-crisis Cyclone Idai period in 2018 where FDI stood at USD 745 million in Zimbabwe. Currently FDI is principally injected in the infrastructure, mining, healthcare, tourism, agriculture and manufacturing sectors. Chipaike & Bischoff (2019) and Алешин (2017) believe that the main investors are from the east chief among them are from China, India and Russia. These Caucasians have a deep belief in the spider web doctrine and are not at liberty to release money outside their network as noted by Fischer, N. (2016). The results of the One – Sample Chi – Square test are statistically significant since p was equal to 0.080 which is greater than 0.05. This therefore means that the EIA costs in Zimbabwe do not affect inflow of FDI since the null hypothesis was retained. There are other factors which are at play which future studies can unearth. Muzurura (2016) and Chikohomero (2020) concur that gross fixed capital structure, trade candidness, inflation, corruption, poor governance, political volatility, incoherent government policies and weak export competitiveness are the major factors that obstruct FDI inflows into Zimbabwe. As such, the EIA costs in Zimbabwe have no significant impact on FDI inflows. However, EIA as a decision making tool is very significant in sustainable economic development of Zimbabwe and all other countries in the world.

In 2020, Zimbabwe was ranked at position 140 out of 190 nations listed in the World Bank's Ease of Doing Business Report of 2020. This is a gain of fifteen places from the 2019's Report. Since 2016, Zimbabwe's ease of doing business has been improving from 161 to 140 in 2020. This general improvement in the ease of doing business attracts investment in a country and as such there are no legally constituted reforms that have been done to the EIA process in

Zimbabwe that can be attributed to FDI as noted by Machata *et al* (2016). Despite the establishment of Zimbabwe Investments and Development Agency (ZIDA), the unpredictability of Zimbabwe's macro - economic policies and the unstable economic and political climate in the past years has undermined FDI inflows as believed by Muzurura (2016) and Chikohomero (2020). Zimbabwe has her rich natural resource capital with great potential in the mining sector characterised by being endowed with the second largest reserves of chrome and platinum in the world as chronicled by Samanga (2021). Zimbabwe has satisfactory infrastructure except for recurrent electrical power cuts and these assets represent goodwill to foreign investors. This infrastructure support system is ideal to lure investors. Nevertheless, Chitsove (2017) established that the central administration reserves certain sections of the economy to national investors coupled with the indigenisation and economic empowerment law which mandates foreign investor to cede 51% of their shareholding to native Zimbabweans. This law is very good in terms of empowerment of natives but scares foreign investors thereby affecting FDI as opposed to the notion that EIA costs hinders FDI influxes in Zimbabwe. Investors from the east particularly the Chinese may be responsible for indoctrinating the media with the perception that EIA costs were stalling FDI inflows since they are the current major investors and most of them are not very much prepared to undergo the rigorous EIA process in Zimbabwe. This study has therefore retained the null hypothesis that EIA costs do not affect FDI inflows in Zimbabwe.

Zimbabwe has her strong aspects with regards to attracting FDI as established by Basera (2016). These include vast mineral resource reserves which attract investors, good agricultural land coupled with suitable climate, great tourism potential and its strategic geographical location in Southern African Development Community (SADC). However, these strong aspects are weakened by perennial shortages of cash in the economy, under investment in the energy infrastructure, high AIDS prevalence rate in Africa, policy inconsistencies and political instability characterised by polarisation as bemoaned by Muzurura (2016). These factors hinder FDI inflows since they lowers investor confidence despite the presence of a robust EIA system which is the cheapest and fastest in SADC. Zimbabwe has amended the indigenisation and economic empowerment law in order to liberalise economic sectors and ring fence the diamond and platinum mines in order to incentivise FDI in all other economic sectors. In a bid to attract more FDI, Zimbabwe developed incentives which included tax breaks for new ventures by both local and foreign business establishments and permitting capital expenses on new machinery to be wholly tax deductible as chronicled by Chikohomero (2020). The government also waives surtaxes and import taxes on capital machinery. These tax incentives are applied in mining,

pharmaceuticals, energy, agriculture, construction and mining sectors. This has boosted FDI characterised by many investments mainly by the Asian countries. The increase in FDI due to such interventions by government further confirms that the EIA costs are a constant which do not have any effect on FDI since some of the investments bringing FDI are prescribed projects according to the Environmental management Act (CAP 20:27).

4.4 Evaluation of Research Findings

The research findings were not expected considering the negative perceptions which were around the EIA system in Zimbabwe. Furthermore, there were no deviations or conflict with existing literature and statutory regulations which governs the EIA process in Zimbabwe. However, the findings were interesting as they can help in demystifying misconceptions regarding the EIA system in Zimbabwe and brings about interesting comparisons with other SADC countries. This further proffer some solutions which will help develop the EIA industry so that Zimbabwean EIA consultants can be able to tap into regional consultancy work with confidence and more insights for future use in influencing policy direction and academia. All the participants had a university qualification because the EIA consultancy industry is a technical specific sector which can only be practised by qualified personnel as noted by Baker & Westman (2018). However, in South Africa 20% of the EIA practitioners were doctorate holders which were the highest number of consultants with a terminal university qualification when compared to Zambia and Zimbabwe. In Zimbabwe the doctorate holders in the EIA consultancy industry constitute 13.3%. This is mainly because in South Africa there are many universities offering such qualifications in the environmental management discipline and more opportunities to further such studies as bolstered by Gomwe (2019). Coupled with higher EIA charges in South Africa, the EIA consultants have the capacity to finance their further studies coupled with higher scholarship opportunities than any other part in the Southern African Development Community (SADC) as noted by Mubanga & Kwarteng (2020). Zimbabwe and South Africa are in the top 5 countries in Africa in terms of literacy rate in Africa with South Africa on position 1 while Zimbabwe on position 2 with 95% and 87% literacy rate respectively as observed by Chipunza & Naong (2021). This could be the driving factor which has resulted in advanced studies in these two countries when compared to Zambia. However, Zambia's literacy rate currently stands at 86.7% and there were no doctorate holders in the EIA practise from the sample that was used in this research. This maybe as a result on no incentives for furthering studies since academic qualifications have no

impact on EIA costing. In terms of the bachelors' degree, South Africa and Zambia stood at 50% while Zimbabwe had the most master's holders in the EIA industry. In Zimbabwe EIA consultants are advancing their studies so that they can tap into the regional international market with a competitive edge against the local consultants since the Zimbabwean market is bearish characterised by subdued EIA prizes just like any other professional as observed by Thondhlana *et al.* (2021).

4.4.1 Gender Imbalances

Zimbabwean population is mainly dominated by females who constitute 52.28% of the population. Generally women in Zimbabwe traditionally held inferior positions at work places and the residual effect still stands in cultures which are mainly patriarchal. This is the case even in most African countries which explains why there are fewer women in the EIA industry in Zimbabwe and Zambia. Despite South Africa being an African country, it is an exception due to its multi-racial population which has since eroded its African identity. In Africa and Zimbabwe in particular, women are responsible for almost all of the subsistence farming work, cooking, brewing beer as well as maintaining the family huts. Since 1980, equality for women in education has been a top priority for the Zimbabwean government but is no longer the case. Steger (2017) argues that fortification of the patriarchal directive has been the operating belief of both the colonial and post-colonial eras. However, education was and is used to uphold the gender imbalance in most countries a noted by Roos *et al.* (2020). The education system in Zimbabwe consists of seven years of primary education and six years of secondary training before students can be admitted into the university system either in the country or overseas. As such, numerous factors for instance parents' level of education, level of income of guardians or parents, school facilities, domestic workloads and attitude of the society with regards to the girl child's education were identified as the major factors which determines the academic performance and continuity of female students as explained by Jamal (2019). Child marriages, early and unintended pregnancies are some of the reasons for the girl child school drop outs which results in the bottle neck type of education for girls resulting in fewer girls attending tertiary education when compared to male counterparts. Coupled with economic decay, the girls' education is declining in Zimbabwe since as parents and guardians tend to opt to educate their young boys if given the financial opportunity. Although high poverty rates have led to a decrease in both female and male pupils, young girls are at a higher risk of losing their right of access to education as observed by Pieterse (2019). This therefore has a domino effect to the number of females that will be employed

in professional industries such as the EIA sector in Zimbabwe. Hence the lower female counterparts involved in the EIA industry in Zimbabwe and Zambia can be attributed to the African history regarding the choices parents or guardians make on the girl child in the face of limited resources to support the education of the youth. As such there is need to promote gender balance in the education sector as suggested by Cleary *et al.* (2017). This is a fact specifically in the science, technology, engineering and mathematics (STEM) subjects which forms the basis of programs which constitute most of the EIA professionals in Zimbabwe and beyond.

4.4.2 EIA Costs

Special focus was given to the EIA professional charges and the stakeholder consultation fees for the five sectors under investigation in Zimbabwe. These costs were exclusive of regulatory charges by the competent authorities, logistics, administrative and monitoring fees. They are just a reflection of the major cost drivers from the EIA consultant's view point. The charges in construction and manufacturing industries were the same in the range of USD 4 000 ≤ x ≤ USD 6 500 for the Zimbabwean scenario. This is so because these developments do happen in almost the same environmental conditions. Construction and manufacturing activities are mainly done in urban centres where in most cases the projects will be expansion of existing developments. As such the technical work involved is not as much as it would be if new development is being proposed to the pristine environments as with case with tourism and the energy sectors as observed by Umamaheswaran & Rajiv, (2015). In Zambia, the EIA costs for the same industry are in the range of USD 6 000 ≤ x ≤ USD 8 500 while in South Africa its x ≥ USD 9 000. The charges in South Africa and Zambia are higher than in Zimbabwe due to high EIA professional fees charged in these two countries when compared to Zimbabwe. This can be attributed to the stable economic environments which characterise these two countries and hence there are more EIA opportunities which minimises competition by EIA consultants unlike in Zimbabwe where there is stiff competition which results in adoption of red sea strategies by EIA consulting firms in their costing. Application of the Zebra Theory in the Zimbabwean EIA landscape is rife such that doing business in this sector is more of survival of the fittest and in many cases unorthodox costing is used to secure EIA contracts. However, the EIA cost in the mining sector is greater than USD 5 000 with stakeholder consultation fees contributing a significant portion to this cost. Zimbabwe has many artisanal and small scale mining activities and usually the stakeholder consultation fees are very high and they mainly influence the final EIA

cost. Nevertheless, in the same industry, large scale mining proposals seem to have higher EIA professional charges due to the complexity of the EIAs to be undertaken. Rampersad, (2017) claims that there are many processes that will be involved in such big mining projects and hence the bigger EIA will have some complicated tasks that will need more technical detail in order to develop robust environmental management plans. Additionally mining projects are usually in places which are remote where logistics costs are high as EIA studies will need to be conducted by consultants who would have travelled longer distances and hence the increase in logistics costs. These logistics cost can only be reduced if the distance between the EIA consultant is also reduced as suggested by Piecyk *et al.* (2015).

The EIA costs for the energy sector particularly solar projects are higher than USD 8 000 in Zimbabwe owing to higher professional fees. Umamaheswaran & Rajiv, (2015) also reported that EIAs in the energy sector are high world over and as such the findings are consistent with global trends though in Zimbabwe they are from the lower side when compared with other countries under investigation. However, the EIA cost for the mining, manufacturing and energy sectors in both Zambia and South Africa are all above USD 9 000. This is further attributed to the stable macro-economic environments in these countries. Furthermore, they are the major economic anchor of these countries due to their higher contributions to the Gross Domestic Products (GDPs) of these countries and hence consultants are aware that that's where the money is and are not prize sensitive when charging EIA projects in these sectors. The tourism sector is another industry which is mainly associated with natural attraction sites and hence the charges are in the range of USD 6 000 $\leq x \leq$ 8 500. The effect of logistical costs is similar to the mining industry. However, in Zambia, the tourism industry is not well established and the EIA costs are in the range of USD 4 500 $\leq x \leq$ 9 000 depending with the magnitude of the project while in South Africa its always above USD 9 000 owing to the development of the tourism sector in that country and macro - economic stability as mentioned earlier. The high level of technical detail in South African Environmental Impact Statements also calls for the need of efficient EIA costing as detailed by Rampersad, (2017). Furthermore, the EIA industry is South Africa is legally protected by EAPASA in order to regulate the profession in terms of professional conduct.

4.4.3 EIA Review Periods

The EIA process in Zimbabwe allows for three decisions to be made once a prospectus is reviewed by the Environmental Management Agency (EMA) as the competent authority as

observed by Machaka *et al.* (2016). The project can be rejected is the negative impacts to the environment are very significant with potential to cause irreversible damage. A project can be recommended to undergo either a full EIA process or be exempted from the EIA process if the negative environmental impacts are insignificant. Considering that the prospectus review feedback can be provided in a week for such small projects with insignificant impacts to the environment as established by this study and stakeholder consultation input also done within a week, it is possible for EIA studies to be completed within 2 weeks. However, the EIA studies would have been conducted simultaneously with the environmental prospects desktop studies as noted by Rebelo & Guerreiro (2017). This is usually the case if projects are being fast tracked to meet certain funding deadlines by the proponent. The prospectus is the starting point of the EIA process in Zimbabwe and most environmental prospectus reports are reviewed within 5 days while in Zambia and South Africa they are done in more than 15 days. There has been an overhaul on the operations of EMA following an outcry by the office of president and cabinet over EIA issues which have been raised by parliament and the auditor general as observed by Spiegel (2015). As such, the EIA review process in Zimbabwe is completed within one month for most of the projects depending on the complexity of the project although it's not yet legislated. However, this further depends with the volume of EIA reports submitted to the Environmental Management Agency at different intervals as noted by Machaka *et al.* (2016). Field visits for EIA validation are done at district level which makes the process shorter in terms of the review process. However, the Environmental Management Act (CAP 20:27) read together with the Statutory Instrument 7 of 2007 on EIA and Ecosystems Protection Regulations provides for the EIA review within 60 working days. The EIA review process in Zambia and South Africa has most of the EIA being reviewed within 3 months. As such EIA process in Zimbabwe is being catalysed by need to enhance the ease of doing business index by removing obstacles within the business environment that can impede economic recovery and development as noted by Spiegel (2015). As a consequence, the EIA review timeframe of Zimbabwe is very much comparable with Zambia and South Africa although Zimbabwe is leading in terms of the turnover due to the current move by the second republic guided by the mantra Zimbabwe is open for business. Despite the EIA system in South Africa, being more decentralised (Chiomba, 2015) than the Zimbabwean system, the decision making takes longer for the EIA review than in Zimbabwe. As such, ceteris paribus, the EIA process in Zimbabwe has no negative impact on foreign direct investments. The EIA system in infect an enabler of sustainable development despite having received wrong publicity by the media especially by the Chinese investors are not prepared to operate within the confines of the Environmental Management Act (CAP 20:27) as evidenced by their desire to fast track projects

through bribes. However, the significance of EIA to economic development is unprecedented considering that there is need to inform sustainable development which ensures a balance between ecosystems protection particularly on wetlands, minimisation of pollution and conservation of nature with social inclusion and economic emancipation of the communities hosting developmental projects as chronicled by Murombo (2016).

4.4.4 EIA Stakeholder Consultation

Stakeholder participation is central in the EIA process as the world is now moving toward multidisciplinary inclusion in decision making as noted by Nankoris *et al.* (2018) and Nyaranga *et al.* (2019). This process is a legal requirement in many EIA systems with Zimbabwe, Zambia and South Africa having legislation that calls for inclusion of stakeholder engagement in their EIA systems. Generally most of the participants in the countries under investigation agreed that the stakeholder consultation feedbacks are received by the EIA consultants during the EIA studies after 3 weeks. However in South Africa EIA stakeholder consultation feedbacks are provided to EIA consultants well before 3 weeks owing to the decentralisation in terms of decision making by these key stakeholders as observed by Chabalala, (2016) and Chompunth, (2017). Decentralisation and empowerment of local institutions which are important in the EIA process allows more practical input to the EIA process and ease dissemination of feedback to EIA consultants and proponents. The lack of decentralisation as witnessed in the Zimbabwean scenario results in red tape which slackens progress thereby prolonging the EIA study period which could otherwise be done in the shortest possible time. Williams & Dupuy (2017) argues that whenever processes are beauracratic in nature, they breed room for corruption since responsible authorities will tend to request for inducements to facilitate the stakeholder consultation processes which will end up escalating the EIA costs. In Zimbabwe and Zambia there are some EIA stakeholder responses which come after 4 weeks owing to a number of reasons such as the absence of a virtual environment particularly in Zimbabwe which can be used as a quick interface for tracking feedback from stakeholders especially government departments and local authorities. The implementation of e – government will go a long way in improving service delivery and communication not only for the EIA process but on a number of areas as recommended by Nwapi, (2015). Lack of professionalism and knowledge with regards to the input to provide on proposed developmental projects is another major delay factor which results in some projects taking more than four weeks without being attended to.

4.4.5 EIA Perceptions

EIA stakeholders which include project proponents from the five key industrial sectors under investigation, government departments and parastatals have their own perceptions regarding the EIA process in Zimbabwe. These perceptions were categorised into three main themes by the researcher. There are delays by the stakeholders who are consulted during the EIA process emanating from lack of professionalism which results in input which has no technical value to the EIA output. This perception is in tandem with findings of Nwapi, (2015) who discovered the same cause of delays. Project site visits call for travel and subsistence costs as explained by Wilson *et al.* (2017). When travel and subsistence fees are not paid by the proponent to the stakeholders, they will not respond to the questionnaires used in the stakeholder consultation process in Zimbabwe resulting in further delays. This is further exacerbated by lack of clear understanding of some project description of the proposed projects and what information to put which will be of significance to the proposed project as claimed by Nwapi, (2015). EIA stakeholders are of the view that there are some delays that emanate from the Environmental Management Agency especially the project proponents. In most cases project proponents would have borrowed start-up capital for projects and they want projects to be implemented in the shortest possible time so that they can be able to pay their premiums and interests within agreed timelines. As such, delays by EMA are as a result of incapacitation of the agency in terms of lack of full staff complement to undertake the site visits and reviews simultaneously, staff demoralisation due to unfavourable working conditions owing to the deteriorating economic environment and staff turnover. The granting of EIA certificates still remains centralised since this is done by EMA head office creating a bottle neck kind of system where EIA review outputs will be limited thus resulting in prolonged waiting periods before a project can be commenced as suggested also by Machaka *et al*. (2016). Furthermore, the depreciating value of the Zimbabwean currency creates room for the need for enticements by EMA officials which is some level of corruption with some projects being granted EIA certificates without going through the rigorous process of review while others may take more time with EMA covering itself with the legislated 60 working days deadline for the worst case scenario as enshrined in the Environmental Management Act (CAP 20:27). With the absence of a virtual platform for submitting, reviewing and tracking EIA reports, the current manual system is slow as many prospectus and EIA comments will be received either by the proponent or EIA consultant days after the actual days when the decisions would have been made. Generally in every business, every minute counts so the loss of time is as good as the loss of

money especially in an economy with high inflation and interest rates (Umamaheswaran & Rajiv, 2015).

4.4.6 EIA Cost Drivers

The study established 7 EIA cost drivers that need to be well managed in order to curtail the overall EIA costs. These drivers include logistical costs which entail mileage, travel and subsistence associated costs when EIA consultants move from their permanent work stations to project sites as noted by Uttam & Roos, (2015). As the country is expanding in terms of development of infrastructure and urbanisation, there are more projects being implemented at the periphery of the urban areas hence these developments are not always in proximity to the offices of EIA consultants which results in the arise of logistical costs in conducting EIA studies. Additionally, stakeholder consultations escalate logistical costs since the key stakeholder consultation process is not yet fully decentralised in Zimbabwe. Corruption in form of inducements is very high in Zimbabwe and the EIA industry is not spared. As a consequence, the cost of corruption is transferred to the project developer. Administrative costs are also significant in determining the EIA cost though their effect is almost constant across all sectors of the economy. However in Zimbabwe the introduction of the 2% intermediated money transaction (IMT) tax on all mobile and electronic financial transaction towards the end of year 2018 resulted in upward adjustment of the administrative cost in the economy in general and the EIA industry is not immune to this effect. EIA professional fees are a function of the complexity of the proposed project in terms of the experts required, the magnitude of the project and the level of detail needed in establishing the mitigation measures as explained by Rebelo & Guerreiro, (2017). Simple projects tend to have lower EIA professional fees compared to large and complex projects. EIA consultancy entails trading time and hence there is a direct relationship between time spent on a project and its cost. However, the absence of an EIA prizing model makes the industry a free for all with two effects to the proponent and the EIA industry in general. The first effect is that when proponents are not aware of other EIA consultancy service providers, they will either be stuck with a consultant who may be fleecing them or favourably may be charging consummate EIA professional fees. The second effect is that if the proponent or project developer is aware of the many EIA consultancy service providers, the market will have perfect competition which leads to the most Pareto efficient EIA professional charge through a competitive bidding process. Suwanteep *et al.* (2016) vows that this system ensures that neither the project developer nor the

EIA consultant is made worse off in the EIA contract award process. However, Pareto optimality exists only as a philosophy, although the market can move toward Pareto efficiency. It is therefore in the best interest of EIA consultants to have a regulation mechanism in terms of qualifications and prizing in order to avoid market failure as suggested by Nooteboom *et al.* (2015). In market failure associated with the EIA industry, the individual consultant's incentives for rational behaviour do not lead to coherent outcomes for the EIA industry at large. In the same breath, unregulated EIA stakeholder fees are a major EIA cost driver. Most EIA stakeholders have developed a parasitic syndrome where they want to derive the maximum benefit before the proposed project kicks off there by escalating the EIA cost in Zimbabwe. The need for regulation of EIA stakeholder consultation fees in inevitable considering their impact on the overall EIA cost.

4.4.7 EIA Cost Reduction Strategies

EIA stakeholders are of the view that EIA costs can be reduced if all players are committed to ease of doing business and ultimate rebuilding and growth of the Zimbabwean economy. These stakeholders have wide-ranging consultation fees which can be eliminated by conducting a harmonised stakeholder consultation thereby reducing or regulating stakeholder consultation fees. In as much as it is the responsibility of the proponent to fund stakeholder consultation as the best practice world over (Jones & Fischer, 2016), the cost ought to be justifiable and within the scope of work. There is a general misconception by local authorities and other stakeholders that they should be paid for providing input to projects which benefit the local communities as a way of fund raising backed by their approved annual budgets. This thinking is retrogressive as it escalates EIA costs unnecessarily. Furthermore, the variance on EIA professional fees for the same project if proponents source for quotations is very worrisome. This leaves a lot to be desired regarding whether the EIA prizing system is informed by technical requirements or the economic and poverty related demands. As such, there is a perception that the EIA professional fees can be regulated through an environmental professional body (Nooteboom *et al.* 2015) the same way it is done with other professional bodies like the Zimbabwe Lawyers Association. This will also help would be investors to have a clear understanding of the costs involved prior to resource mobilisation for proposed EIA studies. There are some administrative costs which can be curtailed by going electronic in terms of EIA report submissions thus reducing on printing and mileage costs. This is the new narrative under the current Covid - 19 restrictions as the EIA industry also need to tap into the opportunities that are being ushered by the Covid – 19 business workspace in Zimbabwe and beyond. EIA review fees have always been an issue with the Ministry of Finance

and Economic Development having reviewed downwards the EIA review cost structure used by EMA in the year 2014 following public outcry by proponents. The current EIA review cost structure is based on a percentage of the project cost making use of a sliding scale from 1.2 to 0.8% of the project cost though not yet legislated. However in as much as this was a positive move by the Ministry of Finance and Economic Development, more can be done to further reduce these costs based on the severity and magnitude of the negative impacts of the proposed projects the EIA intends to curb as proposed by Montgomery, (2015) and Pediaditi *et al.* (2018).

There is a need for a total shift in the EIA review costing regime and adopt a more sustainable approach which incentivises environmental protection. Fiji uses environmental bonds when reviewing EIAs as discovered by Kolhoff, (2016). This is the most efficient way that can be used in Zimbabwe since it incentivises the project developer to invest in abatement technologies while giving the competent authority financial muscle to rehabilitate the environment in future. The purpose of the EIA is to avoid or eliminate negative environmental impacts and if avoidance is not practical to mitigate against the negative impacts as observed by Lyhne *et al.* (2017). In extreme cases where mitigation is not possible, compensation is the last option an EIA offers to those negatively affected by the impacts of a proposed development. As such, the EIA review costing structure should promote sustainable development and foster rapport between the project developer and the surrounding community. This will ensure that there will be proponent - citizen control in terms of environmental protection with the competent authority playing a supervisory role while EIA consultants provide technical support post project implementation and decommissioning as noted by Mapuva, (2020).

4.5 Summary

Zimbabwe and Zambia has lesser women in the EIA consultancy industry than in South Africa owing to the level of economic development among these countries. This can also be attributed to the level of government's intervention in terms of women empowerment as explained by Yaya *et al*. (2018). Generally in Zimbabwe, there are fewer females who undertake science subjects at A Level thus creating a bottle neck system which ends up with fewer females in the sciences discipline upon which the EIA field is premised. The government of Zimbabwe promulgated the science, technology, engineering and mathematics (STEM) programme under the auspices of the Ministry Tertiary Education, Science and Technology in a bit to motivate the girl

child to take up STEM subjects as explained by Kadziya & Ndebele (2020). Since EIAs are mainly done for starting projects, they are usually in remote areas of which due to less economic development in Zimbabwe and Zambia, the working conditions are not very much favourable for women in these two countries. In terms of qualifications, in South Africa no one can practice in the EIA consultancy without EAPASA registration due to the complexity of the projects being undertaken. However, in Zambia and Zimbabwe diploma holders can practise under supervision of higher qualification holders as enshrined in the Environmental Management Act (CAP 20:27). Most EIA practitioners in Zambia and South Africa are holders of a bachelor's degree while in Zimbabwe most of them are holders of a master's degree. Nevertheless, South Africa has the most doctorate holders in the EIA consultancy industry when compared to Zambia and Zimbabwe due to the vast academic opportunities that exist in South Africa as noted by Gomwe (2019). The EIA consultancy industry in South Africa is more lucrative and hence it can attract doctorates than in the other countries under investigation. This is also because the big projects being undertaken in South Africa are more complex and would require more detail at that level. Furthermore, most the EIA studies in South Africa are conducted in more than seven weeks where specialist studies will be done concurrently due to the complexity of such projects. The consultancy business is more of selling time spent on a particular project and this explains why EIAs in South Africa are the most expensive when compared to the other countries under investigation. However, it's only in Zimbabwe where some EIA studies can be completed in two weeks. This can only be attributed to the fact that, as a developing country dominated by indigenous investors, their projects are small to medium enterprises which are not very complex and hence EIA studies can be completed and reviewed by the competent authority much faster than would be if they were large scale project as echoed by Machaka *et al* (2016).

The EIA costs in Zimbabwe are the cheapest when compared with Zambia and South Africa. This is mainly so because the EIA industry has been a victim of bad publicity in terms of the EIA costs. This has generated negative perception which resulted in a bearish EIA marked forcing EIA prizes to take a nose dive since the adoption of Zimbabwe's new currency in 2018 as noted by Nyawo (2018). The main EIA cost driver which makes the other two countries have higher EIA cost is the EIA professionals cost. This cost is higher in Zambia and South Africa owing to a better business environment that thrives in these countries. In Zimbabwe, the EIA professional fees charged by EIA consultants is mainly influenced by high competition caused by low projects being commenced due to unfavourable business climate, economic instability and policy inconsistencies as lamented by Murombo (2016). This has resulted EIA practitioners

adopting the Zebra Theory of business intelligence in prizing which generates low prized bid in order for consultants to secure the bids. The main output of such a scenario is the competitive exclusion principle in which bigger consultants will be kicked out of such bids since they seem to have higher overhead costs. This red ocean strategy characterised by stiff competition for survival by EIA firms has generated low EIA bids which is now threatening the sustainability of the EIA industry as observed by Chipunza & Naong (2021). The threats to EIA business sustainability has subdued blue sky think and disruptive innovation where the EIA consultants are in a catch 22 situation. Zimbabwe's economy is not performing well with high levels of unemployment of 6% against a collapsing EIA industry. This has forced EIA consultants to charge ridiculously low EIA prizes in order to address pressing bread and butter issues. The manufacturing and construction industries have the lower EIA costs compared to other industries in Zimbabwe and Zambia except for South Africa which is the most expensive country to conduct an EIA in any of these sectors. This anomaly is as a result of the level of development in the countries under investigation where Zambia and Zimbabwe are lagging behind as explained by Mubanga & Kwarteng (2020). As such, the EIA consultants are mainly concentrated in the few developed cities and towns unlike in South Africa where EIA consultants are almost in every urban area. The energy sector in all the three countries seem to be on the higher side of the trend mainly because the SADC region is currently experiencing serious power cuts and there has been a drive to invest in solar energy and other renewable energy sources and hence this is a new business opportunities where investors are more prepared to put their investments into as observed by Mañoso (2019). As such it therefore becomes a white collar opportunity for the EIA consultants and hence the more charges experienced in that sector when compared to other sectors of the economy.

The EIA process in Zimbabwe is done more expeditiously as compared to South Africa and Zimbabwe such that it cannot be attributed as the reason behind the low foreign direct investment trickling in Zimbabwe. The prospectus reports are reviewed much faster in Zimbabwe when compared to the other countries under investigation. This follows with the EIA review which is also done much faster. However there are cases where some EIA reports go beyond 30 days but won't exceed 60 days which are prescribed in the Environmental Management Act. However, Zimbabwe needs to put into legislation the changes which have been implemented at operational level which have resulted in the speedy reviews of EIA documents by EMA in order to move up on its ease of doing business index as suggested by Murombo (2016). The EIA stakeholder consultation fees and timeframes seem to be the same across the countries under investigation with the proponent being responsible for stakeholder consultation fees. However,

EIA stakeholder consultation fees can still be reduced in Zimbabwe, Zambia and South Africa in order to curtail the overall EIA costs in SADC. The overall EIA costs can still be further reduced by harmonising stakeholder consultations as what is practised in Angola, regulating EIA professional fees and stakeholder consultation charges as suggested by Rebelo & Guerreiro (2017). EIA professional fees can be regulated by an environmental professional body supported by a legal instrument to enforce regulation as what is being done in South Africa through Environmental Assessment Practitioners Association of South Africa (EAPASA). Both the EIA consultants and competent authorities can make use of the virtual environment to submit and review EIAs with minimum necessary site visits in order to reduce EIA cost and comply with Covid -17 restrictions. The Environmental Management Agency can also adopt the environmental security bond system in establishing the EIA review fees as explained by Sachs *et al.* (2019). This system is more efficient in incentivising the project developer to manage the environment in a more sustainable manner than the current system of deriving the EIA review fees from a percentage of the project cost. Government has a responsibility of incentivising green development in a bid to promote sustainable development by making environmental management affordable.

The EIA system in Zimbabwe is almost similar to the systems adopted in Zambia and South Africa. Nevertheless, the system has some key areas that need to be enriched in the spirit of continual improvement. The EIA system in Zimbabwe is not more than 20 years old and hence it is still a growing system which can be revamped. Improvements can be in terms of averting EIA stakeholder consultation delays, delays by the Environmental Management Agency and ensuring an efficient EIA costing framework. Seven EIA cost drivers identified namely logistical costs, corruption, administrative costs, EIA review fees, professional EIA fees and stakeholder consultation fees can be reduced in order to reduce the overall EIA cost. EIA practitioners may need to decentralise their operations in order to reduce logistics costs. It is one of the governments' responsibilities to ensure a corruption free environment in order curtail EIA costs in Zimbabwe and beyond. Furthermore, the EIA review system can still be adjusted through innovative solutions in order to enhance its effectiveness during and post EIA implementation. Lastly EIA professional fees need to be informed by technical specifications in developing an EIA cost estimation model which will guide EIA costing.

Chapter 5: Implications, Recommendations and Conclusion

5.1 Introduction

The study was conducted in order to establish the significance of the EIA in economic development in Zimbabwe following misconceptions and perceptions by investors and other EIA stakeholders that the EIA process was stalling economic development. As such this was presumed to be limiting lines of credit and foreign direct investment (FDI) in Zimbabwe as stated by World Bank (2015). Investors therefore believes that the EIA process and costs was undermining the efforts made by the government in stimulating economic growth of a country that had suffered economic stagnation since the advent of the land reform program which started in the early 2000s. Coincidentally Zimbabwe stood at position 159 on the World Bank ease of doing business index as of year 2018. This further exacerbated the problem following calls by the office of the president and cabinet that investors were now shunning investing in Zimbabwe owing to high EIA costs and tedious process. Investors also further believed that the EIA process was time consuming such with the high inflation in the country; they were losing on the investments due to high interest rates in order to match inflation rates. As a consequence, the researcher was motivated in investigating the relationship that exists between EIA and economic growth in Zimbabwe using mixed research method. Additionally, multinational financiers such as FMO, African Development Bank and World Bank have developed interest in environmental and social assessments in their due diligence processes as a requirement for their project funding business criteria as echoed by Hillsamer (2016) and Buntaine (2016) in pursuit of sustainable development.

Concurrent triangulation was used to complement the research tools which were used under strict Covid -19 restrictions where virtual focus group discussion, telephone interviews and an electronic questionnaire was administered making use of the Kobo Toolbox platform for data collection. This further enhanced the validity and reliability of the methods used and efforts were made to reduce research biases. Mixed research methods allows for the capture of both quantitative and qualitative data which was analysed using SPSS and Framework Analysis Method (FAM). However, the major limitation of this study was that the researcher could not physically meet the respondents due to the effects of the Covid – 19 pandemic but this was ameliorated by the use of the virtual space. The use of virtual space further allowed for the research to be conducted at a cheaper budget that it would be if it was conducted using the conventional physical means. Additionally, the virtual space was ease and faster in data collection

than it would be using the conventional methods. The quality of data collected was good with good internal consistency measured by the Alpha Cronbach Value of 0.82 as explained by Shrestha, (2021). Ethical considerations were observed despite the use of the virtual platforms where the research was approved by UREC and prior informed consent was secured from participants. Respondents were briefed of the purpose of the study and their rights were well explained during the focus group discussions and telephone interviews. Data was extracted from Kobo Toolbox in Microsoft Excel format and later exported to SPSS with some analyses done in Microsoft Excel while others were done in SPSS. EIA perceptions collected from focus group discussions and interviews were analysed making use of the Framework Analysis Method (FAM).

Data was there after presented in various visual formats with non- parametric tests done for hypotheses testing. The One – Sample Chi _Square test was performed at 95% significance level to test for the hypotheses. The research findings were evaluated against existing literature and this chapter will focus on implications of this study and how the findings contribute to the current literature. The researcher established that the EIA costs for project level EIAs in Zimbabwe were the lowest amongst the three countries under investigation across the five main economic sectors. The EIA review periods for both the prospectus and the actual full EIA were the shortest implying that the Environmental Management Agency in Zimbabwe reviews EIA reports faster than any other country under investigation. Due to these findings, EIA cannot have a significant impact on obstructing economic development in Zimbabwe as perceived by most project proponents and investors. There are other factors which are obstructing inflow of Foreign Direct Investments (FDI) other that the EIA costs in Zimbabwe. However, delays by EIA stakeholders in providing input to the EIA process are as a result of lack of capacity of these institutions in terms of human capital and resources. The academia and professional regulatory bodies such as the Environmental Professionals Council of Zimbabwe (EPCOZ) is therefore recommended to proffer academic solutions coupled with practical expertise to offer refresher courses aimed at continuous professional development. This will ensure that the EIA practitioners will not be intellectually moribund in the contemporary EIA discourse. The government is further recommended to ensure that the economic environment is conducive for business through managing corruption. The Zimbabwean government is making some strides in ensuring a corruption free business environment as evidenced by the establishment of the Zimbabwe Anti-Corruption Commission (ZACC).

A doctoral study ought to generate significant contributions to literature and this study demystified EIA stakeholder perceptions and generated an EIA cost estimation model that can be used in coming up with EIA costs by consultants in Zimbabwe as an off shoot of recommendations for application. There has been no specific model in use foe EIA costing and the development of the model in this study will go a long was in the EIA practise in Zimbabwe and beyond. However, the Sunny's EIA Cost Estimation Model (SECEMO) is best used by experienced EIA consultants with a wealth of expert judgement in determining some initial costs to feed in the model. The model is also exclusive of the costs that will be incurred during the environmental and social management plan monitoring since there is need for further research to establish the longevity of such monitoring in order to establish the costs involved. Furthermore, special attention will be given to recommendations for application which can be adopted by policy makers, EIA consultants and the general EIA stakeholders in consolidating the benefits of the Zimbabwean EIA system with regards to economic development. It is recommended that Zimbabwe puts into law some of the political proclamations and directives which have resulted in the prompt review of EIAs in order to ensure that such reforms builds up to increased ease of doing business which can attract both domestic and foreign direct investment. This investment is much needed in stimulating economic growth following decades of economic turmoil in Zimbabwe characterised by cash shortages in the market, supersonic inflation and political instability. Future research recommendations derived from this study will also be discussed in detail in this chapter.

5.2 Research Implications

The research objectives of this study were to evaluate EIA costs for prescribed projects in Zimbabwe making comparisons with South Africa and Zambia, to examine EIA review timelines by competent authorities, to establish EIA stakeholder perceptions with regards to the EIA system in Zimbabwe and ultimately develop an EIA cost estimation model for use by EIA consultants in Zimbabwe. The conclusions drawn from this research results and how such findings may be imperative for practice, significant for policy and important for theory generation is well explained in the context of the research questions raised by this study. Nevertheless, the research findings on EIA costs were not expected considering the magnitude of the negative publicity the issue has received in the past years in Zimbabwe which even prompted EMA to temporarily suspend EIA consultant annual registration in 2015 which was letter lifted after EPCOZ's intervention. The EIA costs which were established in Zimbabwe were lower than those charged in Zambia and South

Africa for project level EIAs across all sectors. This therefore means that EIA costs in Zimbabwe are not a hindrance to economic development as perceived by most project developers and some EIA stakeholders. Research implications were considered on the EIA costs, EIA review timelines including both the prospectus and the actual EIA. Further implications on EIA stakeholder perceptions and EIA costing dynamics are explored. EIA costs established by the research are significant in terms of demystifying the perceptions regarding EIA costs in Zimbabwe while costing dynamics helps in EIA practice. The EIA review timelines which were established are important in informing policy direction in a bid to ensure sustainable economic development.

5.2.1 EIA Costs

The general EIA costs in Zimbabwe for the five industries under investigation are lower than in Zambia and South Africa. EIA costs for the three countries under investigation which represents SADC are even lower than those for the international EIA consultants. The situation is even made worse by the fact that consultancy work is seasonal and such lower costs may results in compromised quality of EIA documents. As a result, the EIA industry is lagging behind in terms of its contribution to the national fiscus when compared to other sectors. This therefore implies that the misconception that EIA costs in Zimbabwe are turning away investors has nothing much to do with the EIA costs in Zimbabwe but other factors are at play. A survey by Muzurura (2016) alludes to large market size, macroeconomic and political stability, growth of Gross Domestic Product (GDP), institutional regulatory environment and the facility to repatriate proceeds as the five most significant factors which drives Foreign Direct Investment (FDI). As a consequence, in as much as the EIA system falls under the institutional regulatory environment, the effect of the EIA system in the SADC region is the same hence it's a constant which cannot be attributed as the sole determinant of FDI inflows in Zimbabwe. However, in as much as the EIA stakeholder consultation fees are almost similar in the countries under investigation, these costs can be reduced in the EIA process as suggested by Nyaranga *et al.* (2019). Conversely, the conclusion that the stakeholder consultation fees are similar further implies that their effect on the overall EIA cost is the same and cannot be attributed to the low FDI when compared to other countries under investigation. This is consistent with the findings of Chikohomero (2020) in his in study on the appraisal of FDI in Zimbabwe under the Zimbabwe is open for business mantra and National Development Strategy (NDS1: 2021 – 2025) which ought to usher in an upper middle – income economy by 2030 in Zimbabwe. The EIA costs in South Africa were the highest in all the sectors

under investigation despite the country receiving more FDI when compared to Zimbabwe and Zambia as also established by Markowitz (2020). The stability of the South African economy and magnitude of investment can be a reason why the EIA practitioners in South Africa are at liberty to make higher EIA charges when compared to Zimbabwe which is has most investors financing small to medium projects. Coupled with the indigenisation drive by the Zimbabwean government, most prescribed projects under consideration are being spearheaded by local investors who do not have big financial muscles due to poor lines of credit from the local banks owing to economic instability and turbulence. As such, the EIA costs in Zimbabwe are lower due to a bearish market environment characterised by absence of economic buoyancy. This further affirms that the EIA costs in Zimbabwe have an insignificant role in stalling FDI but there are other macroeconomic fundamentals interlocked with political instability in the country. Zimbabwe has experienced a decade of economic meltdown and political instability which could be attributed to low traction on FDI and ease of doing business as echoed by Muzurura (2016). Political bigotry, immaturity characterised by legitimacy issues and inconsistent policy framework are some of the factors which affects investment in a country despite it having a robust and efficient EIA system as suggested by Chikohomero (2020). Further studies by Muzurura (2016) established that gross fixed capital structure, trade candidness, inflation, corruption, poor governance, political volatility, incoherent government policies and weak export competitiveness obstruct FDI inflows into Zimbabwe. However, South Africa and Zambia have been experiencing a stable political and macroeconomic environment during the last decade which has resulted in increased FDI as observed by Dunne & Masiyandima (2017). As such, it can be concluded that the EIA costs in Zimbabwe have no significant impact on FDI inflows. However, it is the government's responsibility to ensure an enabling environment in which EIAs thrive in a well-functioning economy as also discovered by Morrison-Saunders (2018).

5.2.2 EIA Review Periods

The EIA review timelines in Zimbabwe are even much shorter than in South Africa and Zambia. This therefore means that EIA reviews are done much faster in Zimbabwe when compared with the other countries under investigation. The EIA review timelines are even shorter than the legally prescribed periods as per the Environmental Management Act (Cap 20:27). A study by Chigudu (2021) further affirms that the planning framework for Zimbabwe and Zambia is similar although Zimbabwe is leading. However, some procedural issues in Zimbabwe have not

yet been legislated particularly the reforms with regards to the EIA reviews and EIA review fees. Such reviews are many a times political proclamations which lacks legal backing such that they are implemented hurriedly in a bid to meet investor demands or to gain political mileage. However, despite the lack of inclusion of current reforms in the EIA system in Zimbabwe, EIA remains a significant tool for harmonising development and economic growth in the context of sustainable development as also buttressed by Gwimbi & Nhamo, (2016) in their study on the effectiveness of the EIA follow ups in the mining sector. The EIA review process in Zimbabwe is a three stage process which starts with at the district level to provincial and lastly the national level for all projects. This blind review process allows for all pertinent issues to be appraised while maintaining the integrity of the process in the shortest possible time. The three stage review process is robust and meticulous where reviewers will be able to complement one another in decision making. The findings of this study add a dimension of the significance of expeditious EIA reviews in developing countries. In order to facilitate ease of doing business, it is prudent to have all business start-up procedures done within the shortest possible way without compromising quality and have these procedures backed by legislation as concurred by Muzurura (2016) and Markowitz (2020). The EIA review timeframes according to the Environmental Management Act (CAP 20:27) is more than what is happening on the ground. Since most of the EIAs are reviewed within 1 month (30 working days), an amendment to the SI 7 of 2007 would give impetus and assurance to the investors that commencing a project in Zimbabwe will not be a cumbersome process in terms of delays associated with EIA decision making by the competent authority after EIA studies. This will further help Zimbabwe move a step up in terms of the ease of doing business index if amendments are done to all laws that guides venture creation and well integrated and coordinated by the Zimbabwe Investment and Development Agency (ZIDA). This study points out to the significance of harmonising decision making as would be with EIA stakeholder consultation and alignment of the laws to the reforms which are in many times issued as public political commitments with no legal backing as also noted by Chikohomero (2020). Nevertheless, the EIA review timelines in Zimbabwe proves to be in sync with investment promotion such that the EIA process in Zimbabwe is more of an enabler than the perceived notion that it stalls economic development.

5.2.3 EIA Stakeholder Perceptions

The three themes of EIA stakeholder perceptions with regards to the EIA process in Zimbabwe contributes significantly to the current discourse in the EIA consultancy industry, academia and policy makers. EIA project developers and consultants believe that there are delays in stakeholder consultation process owing to bureaucracy and corruption in the EIA system and the economy at large. This implies that there are no developed institutional structures to manage the EIA consultation process within the EIA stakeholders mainly government departments in Zimbabwe which results in such delays. These EIA stakeholders are engaged during the EIA studies to provide technical input to the EIA process. Chompunth (2017) believes that EIA standards are deemed to be the strongest in Australia, Canada, Netherlands and New Zealand. In these countries, there is a strong track record of stakeholder participation, significant consideration of project alternatives and the contemplation of cumulative environmental and social impacts of the proposed projects. Contrary to the Zimbabwean situation, EIA stakeholder consultation is marred by the desire for money since it is considered as a revenue stream by many EIA stakeholders as observed by Gwimbi & Nhamo (2016). Furthermore, this is clearly evidenced by the quality of input that comes from the EIA stakeholder consultation which leaves a lot to be desired on whether the EIA consultation process is worthwhile as also observed by Machaka *et al.* (2016). The evidence in the EIA reports further affirms incapacitation of EIA stakeholders in terms of providing informative input in the EIA process in Zimbabwe. As such, the EIA consultation process seems to be done as a procedure for legal compliance while turning a blind eye on the efficacy and quality of the technical input that is expected of this process. This can be attributed to the fact that Zimbabwe is in the transitional stage of the Rostow's phases of economic growth as explained by Moyo & Tsakata (2017) and hence the EIA system is equally still developing despite being in existence for nearly 20 years. The situation is further worsened by the fact that there has been no reviews to the Environmental Management Act (CAP 20:27) and associated statutory instruments to incorporate such issues since its enunciation in 2003. Periodic reviews of the policies and laws allows for prompt alignment of the Acts of parliament with reality in solving policy problems as suggested by Arts *et al.* (2016). The EIA industry and the process is characterised by a lot of dynamism which ought to be aligned with contemporary and emerging issues within the EIA and economic development fraternity. However, the delays in EIA stakeholder feedback are attributed to lack of understanding of the proposed projects and how they interact with the environment. This implies that there is need for capacity building within the academic and professional curriculum to mainstream EIA aspects in various disciplines aligned to

developmental issues in Zimbabwe and beyond since environmental issues are cross cutting in sustainable development as recommended by Kolhoff (2016) and Khosravi *et al.* (2019). Furthermore, government departments need to have qualified personnel to coordinate EIA stakeholder consultations so that they can expedite this process and cut on the stakeholder feedback lead times. When the EIA stakeholder engagement is harmonised, the participants can complement one another in providing meaningful input to the EIA process as opposed to discrete EIA stakeholder engagement which may be time and resource consuming thereby escalating the overall EIA cost to the project proponent. The competent authorities such as the Environmental Management Agency (EMA) in Zimbabwe and professional regulatory boards such as the Environmental Professional Council of Zimbabwe (EPCOZ) have a responsibility in concertizing the public and EIA stakeholders in what they are expected to do with regards to stakeholder input as provided for under section 73 of the Zimbabwe Constitution which speaks to environmental rights. These delays are not with EIA stakeholders only but with competent authorities as well. However, in Zimbabwe the reviews are done much faster although Nyaranga *et al.* (2019) believes that there is room for continuous improvement in the EIA systems. Enhancements can be done through decentralisation of decision making, capacitation of EMA and other EIA stakeholder government department in terms of personnel and resources. There is need to establish a working environment in the country which provides motivation to all employees including those involved in the EIA review process so that they can discharge their duties timely and diligently. Governments must ensure that they create a corruption free environment and eliminate beauracratic processes in stakeholder consultations in order to speed up the EIA process. Perceptions by proponents and some EIA consultants are speculative considering that most EIA documents are reviewed within 30 working days. This is probably the fastest turn over time in SADC. The speculation is based on lack of information since there has been no study conducted in this area and this study's findings have managed to bridge that gap. Additionally, these findings are significant in the EIA practise and policy direction in Zimbabwe. Stakeholder consultation allows for inclusivity and multidisciplinary approach in decision making and ought to be conducted religiously in order to add value to the EIA process in terms of development of robust and sustainable environmental and social management plans as established by Aloni *et al.* (2015), Andriof *et al.* (2017) and Chompunth (2017) in their separate studies. As such, establishing a one stop shop for stakeholder engagement can go a long way in reducing stakeholder consultation costs and the time taking to complete the stakeholder consultation. The Namibian system can be adopted for further improvement and customisation to suite the local environment in Zimbabwe.

5.2.4 EIA Costing Dynamics

EIA costs are influenced by seven main cost drivers which include logistics, corruption, stakeholder consultation fees, professional fees, administrative costs, review fees and absence of an EIA cost estimation model. These factors however did not include the environmental and social management plan (ESMP) implementation costs which are continuous throughout the lifetime of a project since they are not incurred prior to project implementation. In the interest of good environmental stewardship by the proponent or project developers, the ESMP implementation monitoring should be frequent. However, it is often not monitored by the competent authorities post EIA certification. As a result, there is need for continuous project implementation and operation monitoring so that unanticipated impacts can be well managed in the spirit of continuous improvement. Generally corruption is high in Africa and in Zimbabwe to be precise and this has a negative impact on economic development. As such, the EIA industry is not sparred from this menace. Zimbabwe had to establish the Zimbabwe Anti-Corruption Commission (ZACC) in 2005 to try to curb rampant corruption. Efforts by governments to curb corruption will have a cascading domino effect on reducing the EIA costs as noted by Markowitz (2020).

The findings of this study also identified the absence of the EIA cost estimation model as driver to stochastic variations in EIA costing for various EIA consultant bids. This resulted in theory development through an EIA cost estimation model which can be adopted for use by EIA consultants in EIA prizing. This model is expected to bring rationality to prizing and bring sanity in the industry as vowed by Relich & Pawlewski (2018). The aim of the model is not to impose prize controls but to provide a sound and justifiable basis for EIA prizing. In a competitive industry, demand and supply will determine the prize but if the EIA quality is to be guaranteed, prizing should be informed by technical and operational specifications. Zimbabwe as a developing country which is aiming at moving into the “take-off phase” of the Rostow's phases of economic growth where industrialisation and growing investment is expected, this study becomes therefore becomes significant in terms of directing policy review by government as argued by Moyo & Tsakata (2017). EIA cost reduction strategies such as harmonising stakeholder consultations, use of environmental bonds for EIA reviews, decentralisation from both government and EIA consultants can be adopted but there is need to ensure that the EIA industry grows to a level where it can be competitive on international market as opposed to the lower prizing currently being experienced mainly in Zimbabwe and Zambia.

5.3 Recommendations for Application

The researcher makes recommendations that can be applied by the EIA regulatory authorities, EIA stakeholders, EIA consultants and academia. These recommendations are based on the research findings and the literature that supports these recommendations. It remains the responsibility of the specific sector to adopt or adapt the recommendations made by the researcher in order to enhance the significance and efficacy of the EIA in economic development in Zimbabwe, SADC and beyond. However, the recommendations made are based on the research findings and if adopted, the EIA industry can be well protected from bad publicity in Zimbabwe and be a multi – billion industry globally that can contribute significantly to the gross domestic product (GDP) of many countries. Recommendations for application were made to the EIA regulatory authorities such as the Environmental Management Agency (EMA) in Zimbabwe, EIA stakeholders, academia, EIA practitioners and the EIA cost estimation model that could be adopted by EIA consultants for use.

5.3.1 Recommendations for EIA Regulatory Authorities

The findings established that EIA review fees are one of the cost drivers of the total EIA cost incurred by the project developers. The researcher recommends the adoption of the use of environmental bonds in the EIA review process as opposed to the use of a percentage of the project cost as the basis of establishing the EIA review fee. The project costs for a solar project for instance is higher than a small scale mining project. As such, using the percentage approach to establish the EIA review fee may end up making the solar project having more EIA review fees than the mining project despite it being more environmentally sustainable than the mining project. The competent authorities particularly EMA in Zimbabwe and Zambia Environmental Management Agency (ZEMA) in Zambia ought to conduct a survey to establish the likely cost of environmental damage that can be caused by proposed project and come up with an environmental bond which will be tied to the EIA submission. The competent authority may invest the money paid and then generate its income from interest accrued while the project developer will have an incentive to protect the environment in order to be reimbursed his or her money once the project is decommissioned or has proved that the abatement measures in the environmental management plan have been implemented. Decentralising the EIA review process is one of the key recommendations to competent authorities as also recommended by Goodstein & Polasky (2020). This will help in developmental projects to be fast implemented at local levels with

comprehensive EIA reviews and monitoring done at that level. With reference to Zimbabwe, this decentralisation can be harmonised with the devolution as enshrined under section 264 (20) (a) of the Constitution of Zimbabwe. This will help expeditious decision making in terms of EIA reviews in SADC. It is further recommended that competent authorities ought to have a diverse workforce in terms of academic and or professional qualifications and culture in order to be able to handle EIA reviews of multidisciplinary projects as suggested by Jones & Fischer (2016). This helps reduce and or better eliminate incapacitation which delays EIA reviews. Investing in resources that enhances EIA reviews is of paramount importance to competent authorities (Morrison, 2018). This can be achieved through private – public partnership in terms of resource mobilisation in order to ensure smooth and efficient way of managing the environment.

Competent authorities ought to make use of tip - offs anonymous in managing corruption amongst its staff. This whistle blowing service offered by Deloitte and or Transparency Responsiveness Accountability Citizen Engagement (TRACE) provides an anonymous reporting conduit for unethical conduct in the workplace which can be used to incentivise curtailing corruption in the EIA industry. Corruption is the major cause of under development and has a negative impact on both domestic and foreign investment since it cripples the economy making investment unfavourable. In Zimbabwe, EMA must develop a virtual interactive platform for EIA submission, review, tracking and communication of the EIA verdict especially under the current Covid -19 pandemic situation, big data management is the way to go as it will reduce financial and health risks while reducing waste generation, environmental pollution and degradation due to heavy use of stationary and the impacts associated thereto. Use of a virtual platform has the possibility of reducing the turn over time on document reviews and decision making which creates a favourable climate for investment and ease of doing business. Competent authorities need to validate the ownership of the EIA by the by the project developers during the EIA review process by having a discussion with the highest authority of the project developers. This will help ensure that the project developers are well appraised of their expected responsibilities with regards to the implementation of the environmental and social management plan and corporate social responsibilities. Top management ought to show their commitment to address key environmental and social issues in the EIA process. This commitment must be verified and EIA certificate granted to those with an action plan and can demonstrate going beyond the ink. These responsibilities must be pinned on the highest authority within the investing company such that they become answerable to non-conformance and compliance to the environmental and social action plan.

Professional regulatory bodies are imperative in terms of regulating the professionals and the specific industries in general as established by Mubanga & Kwarteng (2020). The EIA industry is not an exception and the researcher recommends that countries enact laws which make it mandatory for EIA professionals from the consultant's side, reviewers and stakeholders to be members so that they share the same code of conduct. This will also allow for professional continuous development in the EIA industry in order for it to be in tandem with current global developments in that industry in terms of circular economy and sustainable development as noted by Tyler & Dymock (2017). This will further enhance integrity of the industry stimulating confidence in the EIA system in general. Adoption of these recommendations will help in establishing a sustainable EIA industry where EIA regulatory authorities including process regulators and those that regulate the profession can be able to manage the industry through knowledge transfer and pollination of ideas. Furthermore, the multi –disciplinary nature of the EIA calls for concerted effort in holistically managing the EIA process as a decision making tool for sustainability that need to be embraced at national strategic levels.

5.3.2 Recommendations for EIA Stakeholders

The EIA stakeholders which include those who are consulted during the stakeholder consultation process ought to decentralise their operations as well and be capacitated in order to provide meaningful input to the EIA process well advance in time. Their input serves in developing robust environmental management plans which will be implemented by the proponent to curb environmental degradation as a result of the establishment of the proposed projects (Goodstein & Polasky, 2020). They offer technical support to the EIA process by providing input based on their experience and expertise in a particular field. In Zimbabwe, these stakeholders may include government departments and parastatals such as the Zimbabwe National Water Authority, (ZINWA), Zimbabwe Energy Regulatory Authority (ZERA), National Social Security Authority (NSSA) and Civil Protection Unit (CPU) just to mention but a few. The same recommendation made to the competent authorities on corruption applies as well for the EIA stakeholders. It is of paramount significance for EIA stakeholders to consider harmonising the stakeholder consultation process so that the consultation for a particular project can be done at once as opposed to discrete consultations which are costly in terms of money and time. Government may set nominal consultation fees for such harmonised EIA stakeholder consultation in order to minimise the overall EIA costs that will be incurred by the project developers in pursuit of incentivising

economic development as vowed by Mashanga (2019). Stakeholder participation in the EIA process in Zimbabwe in particular ought to move from tokenism to citizen power as described by Arnstein (2019) and Blue *et al.* (2019). EIA stakeholders including the general public must have control over exploitation of resources in areas within their jurisdiction in terms of employment opportunities and many other benefits derived from the projects established in their areas. As such, there must be a legal framework to support such a system. The involvement of EIA stakeholder must follow a life cycle assessment principle where their input must follow the project life from cradle to grave. The general public and local leadership need to be empowered in terms of decision making with regards to projects which will be ear marked for development in areas of their jurisdictions in the spirit of devolution and intergenerational experience of the area which they would have gained since time immemorial. Project developers on the other hand are recommended to have an appreciation of the investment laws in countries they intent to invest in prior to decision making (Mashanga, 2019). Such information can be available from organisations such as Zimbabwe Investment and Development Agency (ZIDA) in Zimbabwe. This will help them in making informed decisions which will include factoring EIA procedure timelines in the final decisions on their investments.

5.3.3 Recommendations for Academia

There is need to revamp the academic curricula for environmental programmes to inculcate new EIA doctrines consistent with the current global trends by universities and other tertiary training institutions. Change is inevitable in a dynamic and competitive world. As such, the academia ought to respond to this dynamism relentlessly in order to remain vibrant and relevant in the contemporary EIA discourse. This will help in capacitating EIA stakeholders, competent authorities and EIA practitioners in executing their duties. Areas that need special attention include the EIA costing, review and environmental management plan monitoring. In Zimbabwe there is need for using environmental bonds for EIA review fees establishment and as such robust training in this area is a prerequisite. The reluctance by EMA to adopt the environmental bond system can be attributed to incapacitation as established by this research. Universities in Zimbabwe ought to engage in wide consultations when formulating new environmental degree programmes so that they are aligned with industrial expectations in order to remain afloat and relevant. Environmental professional organisations such as EPCOZ become fountains of such knowledge and ought to be central in guiding curriculum development and ensuring continuous

professional development as suggested by Tyler & Dymock (2017). Academic accreditation boards such as Zimbabwe Council for Higher Education (ZIMCHE) ought to partner professional organisations like EPCOZ when accrediting university degree programs making use of the pool of diverse professionals who will provide valuable input to the degree programs that will be offered by universities. This will help in capacitating professionals who will be employed by environmental consultants, EIA stakeholder organisations and competent authorities.

5.3.4 Recommendations for EIA Consultants

Most of the Environmental Impact Assessment cost drivers emanate from the EIA consultants. These include administration, logistics, professional costs and corruption though it cuts across the entire economy. EIA consultants or practitioners are encouraged to charge professional fees which are consummate with the work that need to be undertaken as opposed to being influenced by economic pressures coupled with poverty and desperation as echoed by Aung (2017). In as much as desperate times call for desperate actions, EIA practitioners ought to be guided by ethical standards and professional integrity in conducting their work. Continuous professional development (CPD) is essential in any intellectual profession. As such, the EIA industry is not an exception since this is more of a research based industry. Their work is delicate and compromising the EIA standards of EIA studies will have a long term effect on environmental sustainability. This will exert immense pressure on the environment since misinformed decisions which may have catastrophic effects will be considered based on such EIA studies (Morrison, 2018). Annual awards can be given to outstanding consultants by an accreditation or registration board in order to instil and incentivise good ethics amongst consultants which will ultimately improve EIA quality. This will help in building a resilient EIA industry which can stand the economic and political pressures in terms of EIA regulation of the industry and EIA prizing as suggested by Jones & Fischer (2016). Additionally, EIA consultants may consider optimising administrative and logistics cost by decentralising their operation to project sites. This will help lower logistics costs which are associated with so many travelling risks and focusing the costs on the intellectual specialist studies associated with the consultancy industry at large.

The EIA consultants have a responsibility of protecting their industry from a free for all kind of set up. In as much as the demand and supply may be the driving forces of prizing, it is prudent for the practitioners to have a system of rewarding experienced and educated professionals with well-defined levels as recommended by Tyler & Dymock (2017). This can be done in an

incremental approach to avoid EIA prizing catastrophe through the use of a professional environmental accreditation board which can regulate issues of prizing, ethics and indiscipline. Mubanga & Kwarteng (2020) believes that the responsibility is upon the EIA practitioners and other environmentalists to lobby with government for the enactment of laws that protect their professional and industry. Furthermore, EIA practitioners must ensure that there is continuous professional development (Tyler & Dymock, 2017) in order to build expertise of the industry which will even help in perfecting their EIA professional prizing system. However, the EIA professional costs in Zimbabwe are the cheapest and as such this may indicate that the quality of the EIA reports is compromised and hence there is need for consultants to be guided in their prizing by a simple EIA cost estimation model. This model will include all cost drivers to be considered in establishing the EIA cost of any project by EIA practitioners in Zimbabwe and beyond.

5.3.5 Recommended EIA Cost Estimation Model

The researcher developed a model based on Putman's Resource Allocation Model (PRAM) which may be used by environmental professionals particularly EIA practitioners in establishing the EIA cost of different projects. The study established that the absence of the EIA cost estimation model generated variation in the EIA costing framework in Zimbabwe, South Africa and Zambia. This hybrid model is a fusion of algorithm and expert judgement cost estimation techniques as suggested by Kwon *et al.* 2019. From the study, logistics costs, administrative costs and professional fees emerged as the major cost drivers which the EIA practitioner has control over and as such the EIA cost estimation model is premised on these cost drivers. Putman's model describes the time and effort needed to complete software projects of a specified size as explained by Nerkar & Yawalkar (2014) and is summarised as follows:

$$E = D_0 * td^3 \quad \textbf{(1)}$$

Where: E = Effort measured in man - days

D_0 = manpower build up factor (ranges from 8 to 27)

td = time of delivery in days

Putnam anticipated that optimum staff needed to establish a project trails the Rayleigh curve as established by Pandian & Kumar (2015). As such, only a small number of professionals are

needed initially to carry out preparation and specification responsibilities. As the proposed project develops and more comprehensive work becomes necessary, the number of professionals reaches the climax. After project implementation, the number of professional staff falls again. Both Jomboro (2018) and Gwebu (2018) discovered that the EIA consultancy work also follows the Rayleigh curve when conducting EIA studies and EMP monitoring. Few professionals are required to prepare a prospectus and more staff needed to carry out the EIA while few professionals will be required for EMP monitoring. As such, Putman's recommendation is also applicable to the EIA industry and project development effort is equally proportional to project development cost. In the context of the EIA, this therefore means that the effort required in conducting specialist studies can be determined using the Putman's model which can then be computed to the cost in monetary terms guided by environmental professional rates as prescribed by environmental professional bodies for instance EPCOZ in Zimbabwe and EAPASA in South Africa as follows:

$$SC = E * PR \quad \textbf{(2)}$$

Where: SC: EIA Specialist Cost

E = Effort derived from Putman's model

PR: Professional Rate from environmental professional board

The summation of efforts on all specialist studies generates the total EIA specialist cost. However, the Automobile Association of Zimbabwe (AAZ) rates are used to establish mileage rates in Zimbabwe while travel and subsistence fees specific to each EIA consultancy firm will be used to compute total logistics costs. The administrative cost is measured as 10 - 25% of the summation of the EIA specialist costs, logistics costs and stakeholder consultation costs as follows:

$$AC = \beta\left[\sum_{i=1}^{n} SC + \sum_{i=1}^{n} LC + \sum_{i=1}^{n} CC\right] \quad \textbf{(3)}$$

Where: AC: Administrative Cost

β: Administration factor which ranges from 0.1 to 0.25

SC: EIA Specialist Cost derived from Putman's model

LC: Logistics Cost

CC: EIA Stakeholder Consultation Cost

The Total EIA Cost (EC_t) is determined by a hybrid model computed using **equation 1, 2 and 3** through **equation 4.** The model is called Sunny's EIA Cost Estimation Model (SECEMO) and is presented as follows:

$$EC_t = PC + \sum_{i=1}^{n} SC + \sum_{i=1}^{n} LC + \sum_{i=1}^{n} CC + [AC] + \alpha \quad \textbf{(4)}$$

Where: EC_t: Total EIA Cost

PC: Prospectus Cost determined using expert judgement

SC: EIA Specialist Cost derived from Putman's model

LC: Logistics Cost

CC: EIA Stakeholder Consultation Cost

AC: Administrative Cost

α: Contingency determined using expert judgement

SECEMO can be used by EIA consultants who have expert judgement in responding to tenders if the professionals are to produce good quality EIAs. This EIA Cost Estimation Model is an attempt to standardise EIA costing without necessarily putting prize controls but to reward the effort by the EIA practitioners so that they can grow the EIA industry in a more sustainable and competitive manner as suggested by Morrison (2018) and Goodstein & Polasky (2020). If this model is to be adopted, it will assist EIA practioners to be able to come up with competitive financial bids which can attract the attention of multinational financiers who attach value to quality as opposed to consideration of just the cheapest bid while turning a blind eye from the expected output. The model developed can be generalised globally since each country can easily input the professional rate from its environmental professional board and other common variables in the model.

5.4 Recommendations for Future Research

Recommendations for future use have been proposed focusing on the use of environmental surety bonds in Environmental Impact Assessment (EIA), inclusion of environmental management plan monitoring fees to Sunny's EIA Cost Estimation Model (SECEMO) and how long an EIA project should be monitored. Furthermore, the study needs to be done elsewhere in Southern African Development Community (SADC) and beyond in order to get a global perspective of the significance of the EIA system in sustainable global economic growth. Recommendations for future research are made on the use of environmental surety bonds in EIA review costing, establishment of EMP monitoring duration and monitoring cost.

5.4.1 Environmental Surety Bonds

The researcher established that EIA review fees contribute significantly to the overall EIA cost endured by the project proponents in Zimbabwe. This cost is based on a percentage of the total investment cost ranging from 0.8 to 1.2% as noted by Jomboro (2018). The current EIA review prizing regime in Zimbabwe is inconsiderate of the nature of the project as some projects may have high investment costs with less environmental costs while some small projects may have significant environmental damages as observed by Spiegel (2017). As such, the researcher recommends further studies to be conducted to establish the possibility of using environmental surety or impact bonds in determining EIA review fees. Sachs *et al.* (2019) and Hanley *et al.* (2019) concurs that an environmental bond is a mandatory deposit which ought to be paid by a project developer who intends to exploit environmental capital in a way which is likely to degrade the quality of the environment. It is therefore a special guarantee that needs expertise in risk-based underwriting by a surety firm as noted by Sachs *et al.* (2019). Nevertheless, this therefore creates an opportunity for new venture creation where companies with expertise in risk – based underwriting and mitigating environmental and social impacts can be established in Zimbabwe after thorough market research. It further provides prospects for academia to establish programs that can empower EIA consultants to offer such services to proponents if comprehensive research and investigations are piloted in this discipline. Studies need to be conducted in order to establish the feasibility of using such a system which proves to have an incentive to both the competent authority, developer and the EIA consultant. The EIA consultant need to be held accountable to the pollution abatement measures proposed in the EMP in such a way that a percentage of the

environmental bond will be paid to the EIA consultant when its proven that the proposed abatement measures are containing environmental degradation. The proponent will have an incentive to implement the EMP in a bit to recoup the money invested in the environmental bond. Conversely, the competent authority will upscale its monitoring in order to minimise the risk of taking responsibility of environmental remediation if abatement measures are not implemented as per the EMP upon which the EIA acceptance would have been granted. Further studies need to be undertaken to unpack all these issues surrounding the use and applicability of environmental bonds in the EIA industry in Zimbabwe and beyond.

Environmental bonds are common in environmental management although in Zimbabwe the concept has never been adopted for use. However, it is the researcher's recommendation that the concept be adapted for use in the EIA industry upon conducting in-depth studies regarding its feasibility and the alignment of the Environmental Management Act CAP 20:27 to substitute the current percentage based EIA review regime. Further studies could also be done on other efficient and fair mechanisms of deriving the EIA review fees by the competent authorities. These mechanisms may take into consideration the likely environmental damage a project may cause and environmental economic concepts can be applied to establish remediation cost or the cost on internalising the environmental externality which can then be the basis of EIA review costing. The researcher therefore recommends further studies to be done in establishing negative externalities or deadweight loss of projects as the basis of establishing an environmental bond that will be used as the EIA review fees. Figure 5.1 shows the cost to society or negative environmental externality or deadweight loss which project developers should avoid in order to recoup their environmental bond from Environmental Management Agency in Zimbabwe after project decommissioning.

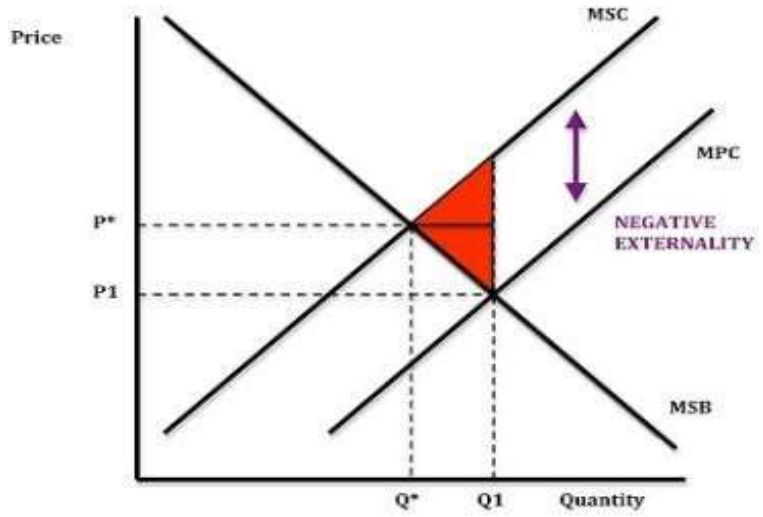

Figure 5. 1: Graph showing marginal social cost / negative environmental externality

5.4.2 Duration of EMP Monitoring

The environmental management plan (EMP) monitoring duration in Zimbabwe is not standardised for all projects as some are monitored continuously as long as they are operational and some are not as observed by Machaka *et al.* (2016). In most cases, construction and tourism projects are only monitored during implementation and once the construction is complete, there monitoring ceases complete. Contrary to manufacturing and energy projects, EMP monitoring is continuous as long as the project is operational. However, the researcher recommends further studies to be conducted to establish how long EIA projects should be monitored after implementation. This will help in determining the costs associated with the monitoring and hence the level of commitment of the investors in caring for our common future in a more sustainable and holistic manner. Generally, an EMP or environmental and social action plan (ESAP) has timeframes upon which mitigation tasks ought to be implemented as echoed by Mubanga & Kwarteng (2020). The rationale behind and EMP or environmental and social management plan (ESMP) or ESAP is to ensure timely implementation of pollution abatement measures and avoid or minimise environmental damage or cost to the society induced by a proposed project in an area (Morrison, 2018). One of the major principles of an EIA is that the project or investment that comes to the community ought to have minimum costs to the society hence it is the developer's responsibility to internalise project externalities. Therefore, an EIA should result in the development of impact mitigation measures in order to reduce the negative externality cost to the receiving communities. As such, once the mitigation measures have been implemented, monitoring will be done to determine the efficacy of the implemented mitigation measures so that remedial or corrective measures can be instituted when there is need to do so as vowed by Gwebu (2018). This is mainly guided or determined by the ability of the mitigation measures implemented to arrest environmental degradation as per the specifications of the EMP which would have been used as the basis of EIA acceptance by the competent authority. It is therefore the researcher's recommendation that studies be further conducted to determine how long an EMP should be monitored in pursuit of determining the costs associated thereto.

In Zimbabwe, the Environmental Management Act CAP 20:20 does not specify how long the environmental management plan monitoring ought to be done though the frequency is mentioned that it should be done quarterly per year according to Machaka *et al.* (2016). The

efficacy of the mitigation measures ought to be studied in various projects such that projects can be categorised and have their EMP monitoring timeframes post project implementation established. Industry has a role in protecting the environment and hence should be able to finance such studies when need arise. Research and development is the fulcrum of innovation and as such industry has a responsibility to ensure that they stimulate innovation in order to optimise the benefits derived from the environmental capital as echoed by Mubanga & Kwarteng (2020). The outcome of such studies will be of paramount importance to the business community in the establishment of financing mechanisms of the EMP monitoring process. The duration of EMP monitoring has a bearing on the total EIA cost from the EIA Cost Pyramid and hence the need to balance the economics of a project and ecological effectiveness of the process. In many projects, EMP monitoring costs are not computed in the EIA cost matrix resulting in poorly funded EMPs with the resultant effect being pollution and environmental degradation induced by established projects. As a result, there is need to conduct further studies which will ascertain the maximum EMP monitoring duration post project implementation or decommissioning. Gwebu (2018) emphasizes the need to have quality and well-resourced EMPs in order to guarantee environmental protection and reducing negative environmental externalities to project recipient communities.

5.4.3 SECEMO and EMP Monitoring Costs

Once the EMP monitoring duration is established, monitoring costs can be factored in SECEMO. As such, SECEMO has its own weaknesses of which the exclusion of EMP monitoring costs makes it not exhaustive. Further studies in the EIA cost estimation models can generate inclusive EIA costing once commissioned. SECEMO also depends on historical data or expert judgement. This makes it not user friendly to first time EIA consultants as they may not have historical costs which help them make expert judgements. As a result, further studies need to be done to perfect the model such that it can be user friendly to EIA students and junior consultants who may not have experience in EIA costing. The academia need to develop EIA costing teaching material and equip students with the necessary skills that help them make competitive bids once practising in industry. SECEMO is user friendly to experts who have vast experience in EIA costing and therefore serves as an initial attempt to EIA costing so that easier and user friendly models can be developed from it for use. The inclusion of EMP cost in SECEMO could be an area for further studies in the future where an integration of the EMP duration can be translated into costs that can be incorporated in SECEMO.

In calculating Effort, the scope of each specialist study needs to be well computed in a systematic way to avoid either underestimating or overestimating Effort as discovered by Kwon *et al.* (2019). This will have a domino effect on the total EIA cost if not accurately computed. Further studies on Effort determination need to be conducted in order to establish the feasibility of using techniques such as work breakdown structure / task decomposition, expert opinion, Pert and analogy in estimating initial effort hours in the EIA industry. Furthermore studies need to be done on how contingency (α) in the SECEMO is determined rather than depending of expert judgement as noted by Mach *et al.* (2017). There is need for an empirical methodology that should be developed and adopted for use in determination of contingency. The widespread use of the model by the EIA experts will give room for comparisons to be made resulting in better validation of SECEMO. Hence more studies can be done while validating the model thereby fine tuning it. The major weakness of SECEMO is its reliance on expert judgement on most of its components despite being a mathematical model. There is therefore need for further studies in demystifying expert judgement and developing empirical methods that can be used in identifying specific unit costs of intellectual expertise which forms the basis of EIA costing in Zimbabwe and beyond. More models can be developed which can help to make EIA costing easier and information and communication technology (ICT) software can also be developed the same way pastel and payroll systems have been developed.

5.4.4 Expanding the Scope

Similar studies can be conducted in other countries in order to establish the general global trend in the EIA costing. This study may also need to be extended to different types of EIAs such as strategic EIAs, regional EIAs and sectoral EIAs and project level EIAs so that comparisons can be made within these types of EIAs. Stakeholder consultation emerged as one of the cost drivers such that harmonising stakeholder consultation is seen as a means of reducing stakeholder consultation costs. However, studies need to be conducted on how this can be achieved considering the competing needs of these stakeholders in the EIA consultation process in Zimbabwe. A one stop shop for stakeholder consultation can reduce both costs and time spent on this process as noted by Aung (2017). The modalities of how this can be achieved needs to be studied so that the process can be constituted in a legal framework either through an amendment of the existing Environmental Management Act CAP 20:27 in Zimbabwe or the enactment of a new law on EIA stakeholder consultation. However, the amendment of the Environmental Management Act CAP 20:27 seem to be more feasible than the later and a statutory instrument

can then be promulgated to that effect. Additionally, EIA stakeholder consultation need to be conducted expeditiously and hence there is need for research on how that can be achieved without compromising the quality of the expected feedback. Studies on how to expand the scope of the EIA in Zimbabwe to incorporate the social and economic components need to be undertaken. International financiers such as the World Bank and African Development Bank now incorporate these issues in their project financing criteria and embrace the term Environmental and Social Impact Assessment (ESIA). As such, further studies need to be conducted to establish the impact of this change of nomenclature of the process and its significance on the overall EIA cost and SECEMO. Furthermore, the EIA costs in Zimbabwe across all sectors which were under investigation are lower than the ones in South Africa and Zambia. As such there is need for studies to be conducted in order to ascertain why they are lower and what could be done in order for Zimbabwean EIA consultants to charge consummate EIA charges so that they can compete on international projects. This will help demystify further the controversy around EIA costs in Zimbabwe.

The EIA review processes in South Africa and Zambia are not as fast as it is in Zimbabwe. Consequently, in a bid to standardise the EIA review periods, studies can be conducted to establish EIA review techniques that can be adopted by SADC in order to expedite this process without jeopardising the quality of the process. Such systems must ensure expeditious decision making such that EIA should be viewed as an enabling tool which facilitates sound and sustainable decision making as opposed to it being viewed as a time consuming process that delays investment as argued by Gwebu (2018). Studies need to be conducted on how the scope of the EIA process in Zimbabwe can be expanded so that it has jurisdiction over stakeholder consultation process and devolution of decision making at local levels. How this should be integrated into the existing system needs to be investigated as well so that the current system can be fortified as a tool for sustainable development as noted by Jones & Fischer (2016) and Aung (2017). The academia has a lot of research to do with regards to revamping the EIA tool to fully embrace environmental, social and economic aspects of a prescribed project. This will empower EIA graduates with skills that will enable them to use this tool on a broader spectrum regarding project evaluation of alternatives and final decision making. Corruption emerged as one of the EIA cost drivers and as such, the researcher recommends further research to be conducted on how corruption can be eliminated in the EIA industry. This could be done through reducing human interaction either by creating a virtual platform for EIA submission and review which can be tracked online in order to remove the human element. Artificial intelligence can be used to reduce

corruption by eliminating the human element on many processes as established by Aarvik (2019). Studies on how artificial intelligence can be of significance in curbing corruption in the EIA sector need to be done. This will further help in reducing EIA costs and enhancing efficiency within the EIA competent authority. Detailed studies ought to be conducted to unpack a myriad of issues around this broad topic and proffer a solution to eliminate corruption within the EIA supply chain in Zimbabwe. The researcher further recommends robust research to be conducted in order to establish the role of environmental professional regulatory bodies such as EPCOZ in Zimbabwe, EAPASA in South Africa just to mention but a few in upholding environmental ethics in a bid to curtail corruption within the EIA industry as well.

These are some areas that this research has provoked and need further studies in order to stimulate debate and add more information in the body of knowledge that currently exist. Some of the issues triggered would require the researchers to be multidisciplinary in approach since the issues cross cut all disciplines from science, economics and social aspects of the EIA studies. The EIA consultants and professional regulatory bodies have a lot to tap from this research which can be used to strengthen the EIA industry at large. Both the industry and academia need to partner in incentivising research in some of the areas triggered by this research in order to strengthen the EIA industry in Zimbabwe and beyond.

5.5 Conclusions

The EIA industry in the countries under investigation is mainly male dominated with Zambia and Zimbabwe having 20% females while South Africa has 40% females due to the nature of the industry. It is also a professional industry which requires academic aptitude as evidenced by the academic qualities of the sample used which had qualifications ranging from diploma to degree holders only. However, the EIA sector in Zimbabwe is an upcoming industry with the Environmental Management Act together with the Environmental Management Agency being 15 years old according to Machaka *et al.* (2016) making the agency 19 years old as of this year. As such the EIA consultants are equally young as well. This therefore has a bearing on how they charge for the EIA studies they conduct. From the study it emerged that the EIA costs in Zimbabwe are the cheapest when compared to Zambia and South Africa across all sectors under investigation. However the energy sector has the highest EIA costs in Zimbabwe for the economic sectors under investigation. Furthermore, the EIA review periods in Zimbabwe are shorter than in South Africa and Zambia due to the policy reviews that have been done in a bid to enhance the

ease of doing business in Zimbabwe. The researcher found out that there were EIA stakeholder perception that the EIA process in Zimbabwe was expensive and stalling economic growth. However the One – Sample Chi –Square test conducted at 95% significance level proved that EIA costs had no significant bearing on Foreign Direct Investment inflows thereby invalidating the misconceptions on EIA costs. The need for the EIA cost estimation model is inevitable and the researcher developed SECEMO to address this need. Consequently, the researcher established that EIA professional regulatory bodies were better positioned to regulate professional conduct of EIA consultants. This will ensure that EIA practitioners uphold professional ethics in a bid to protect and develop this upcoming industry in Zimbabwe and beyond as suggested by Machaka *et al.* (2013).

5.5.1 Sector Specific EIA Costs

The EIA costs in Zimbabwe across the five economic sectors which were under investigation are the cheapest when compared to South Africa and Zambia. Furthermore, South Africa emerged as the country with the most expensive EIA costs in all the sectors. This can be attributed to the economic stability in the country and the existence of the Environmental Assessment Practitioners Association of South Africa (EAPASA) which is supported by an act of parliament to register and regulate the profession as buttressed by Buthelezi (2020). In Zimbabwe, the EIA costs in energy sector are the most expensive ones compared to other sectors under investigations. This is mainly so because this industry is bullish as the country is grappling with power challenges which has forced the private sector following the opening liberalisation of the energy sector for the private entities to participate in energy generation particularly renewable energy projects under independent power producers (IPPs) in the Electricity Act (CAP 13:19) which is administered by the Zimbabwe Energy Regulatory Authority (ZERA). This has seen 26 IPPs being registered by ZERA as of 31 March 2021 (ZERA, 2021). Construction, manufacturing and mining has lower EIA costs in the range of USD 4K to USD 6.5K when compared to energy and tourism sectors which were in the range of USD 6K to USD 8.5K on average since most of the projects in these sectors are small to medium projects due to economic challenges faced by the country. Most of the investors in these sectors are Chinese who are prize sensitive with high bargaining power due to less competition in these sectors as noted by Sampson (2021). However, the tourism industry has been the hardest hit sector by the effects of the Covid – 19 pandemic in Zimbabwe. As such, business has been bearish resulting in the EIA costs in this sector taking a

nose dive as there has been no much activity. In all the sectors under investigation, the EIA cost drivers were EIA professional fees, logistics, administrative, EIA stakeholder consultation fees, EIA review fees and corruption. The absence of EIA stakeholder fees regulation has the highest impact on the overall EIA cost in the construction and mining sectors in Zimbabwe. The lack of an EIA cost estimation model in Zimbabwe results in large variances in financial proposals for the same bids which affects the quality of the EIAs done in Zimbabwe and the competitiveness of the EIA consultants in Zimbabwe on the international market. As such, the EIA costs in all the sectors under investigation do not significantly affect economic development in any way since they are the cheapest under the circumstances when compared to Zambia and South Africa. Furthermore, these EIA costs cannot be attributed to low foreign direct investment (FDI) in Zimbabwe. Furthermore, the One – Sample Chi –Square test performed at 95% significance level proved that EIA costs had no bearing on FDI thereby demystifying the misconceptions on EIA costs in Zimbabwe since the null hypothesis was retained.

In as much as the EIA cost in Zimbabwe, are the cheapest, there are areas where the EIA costs can be further reduced in response to the market performance. These areas include regulation EIA stakeholder consultation fees by establishing a one stop shop where all EIA consultations can be harmonised and done as a single physical or virtual meeting guided by Covid -19 guidelines on social distancing. The one stop shop for EIA stakeholder consultation process concept is currently being practised in Angola and reduces the EIA cost significantly as explained by Rebelo & Guerreiro (2017). This further provides a productive platform for discussions and dialogue amongst EIA stakeholder in providing useful input to the EIA process as opposed to the discrete process currently practised in Zimbabwe, Zambia and South Africa. EIA consultants can further reduce logistics costs by decentralising their operations though this may increase administrative costs but the resultant effect will be a reduction in the overall EIA costs. A cost estimation model will accurately guide EIA prizing in Zimbabwe. The Environmental Management Agency (EMA) may need to reconsider their EIA review prizing regime and adopt the environmental surety bond system which has the potential to incentivise environmental protection better that the current system. The percentage based EIA review costing regime has no financial incentive for project developers to take full responsibility of their environmental activities, aspects and impacts. Additionally, the central government has a full responsibility of ensuring the existence of a corruption free business environment in order to indirectly reduce EIA costs in Zimbabwe as suggested by Spiegel (2017).

5.5.2 EIA Review Period's Impact on Economic Development

Zimbabwe has the shortest EIA study timeframes followed by Zambia and South Africa having the longest EIA study timeframes. These timeframes may be equated to the detail of the EIA studies conducted in each country and has the domino effect on the ultimate EIA cost. This could explain why EIA costs in South Africa are the most expensive compared to Zambia and Zimbabwe. Subsequently, this therefore follows that the longer it takes to conduct an EIA, the more EIA professional fees to be incurred by the project developer and hence the more EIA cost as argued by Hochstetler (2018) and Ngetich & Ndiema (2020). Some tenders have been crafted with timelines on when the EIA studies ought to be completed and this should be an indicator of the detail required by the proponent and the expected EIA cost. The depth of the EIA detail also varies with the proponent's requirements. Most EIAs financed by multinational financiers such as AfDB and World Bank have detailed requirements which results in longer EIA study timelines and reviews as well. As such, their EIA costs are directly proportional to the time and expertise required which makes them more costly. Kamijo & Huang (2017) argues that the local EIA requirements in Zimbabwe, Zambia and South Africa are not as stringent as those for multinational financing institutions. Hence project which are done to meet local EIA requirements tend to have shorter EIA study timelines and review periods. EIA industry falls under consultancy industry and time is what is sold in this industry hence more time spent on a particular project means more revenue generated by the consultant firm. The other interpretation why the EIA studies in Zimbabwe are the shortest in terms of time is that the scope of work is not very much complicated since the projects being embarked on are small to medium owing to macroeconomic fundamentals which are inhibiting large investments in the country as established by Zvarivadza (2018). As such, when EIA reviews are being considered in Zimbabwe by the competent authority in this case EMA, it will focus on the minimum compliance requirements which in turn results in Zimbabwe having the shortest review periods for both the prospectus and EIA reports. About 53.3% of the respondents in Zimbabwe concur that most EIA prospectuses are reviewed within 10 days while 60% agree that the EIA reports are reviewed within 1 month by EMA while in South Africa and Zambia the majority of the respondents agreed that the EIA review is completed within 3 months. Markowitz (2020) laments that despite the EIA review periods in South Africa and Zambia being longer than in Zimbabwe, the two countries received more FDI than Zimbabwe in the last years. This further goes to demystify the perception that the EIA process in Zimbabwe stalls economic development and FDI. South Africa was on position 63 in

terms of the ease of doing business (EODB) ranking while Zambia was on position 85 out of 190 as explained by Chigudu (2021). However in terms of the EIA policy and process, Zimbabwe is doing its best in terms of EIA review timelines when compared to the other two countries despite them being high up on the EODB rankings. As a result of this expeditious EIA review regime, economic development cannot therefore be hindered by the EIA process in Zimbabwe since in South Africa and Zambia there is more FDI and economic development despite having protracted EIA review timelines. There could be other macroeconomic and policy fundamentals that maybe affecting economic growth and FDI in Zimbabwe. Markowitz (2020) believes that such as policy inconsistencies, economic stability and general lack of supporting infrastructure such as reliable energy, water supply and transport system just to mention a few could affect FDI inflows in any country. Rail and air transport systems in Zimbabwe are struggling with according to Chinguruve (2019), National Railway of Zimbabwe and Air Zimbabwe being perennial loss making state enterprises. Rail transport ought to be the cheapest mode of transport to move large goods in the manufacturing and mining industry thereby boosting economic development while the air transport must be linking Zimbabwe and the international community supporting tourism industry and FDI. These and other factors are crucial in reviving economic development. As such the EIA review periods in Zimbabwe surely have no significant impact of economic development since there exist a myriad of complex issues that needs government policy redress.

5.5.3 EIA Perceptions in Zimbabwe

The perceptions that there are EIA stakeholder consultation delays and EIA review delays are unfounded since the study established that EIA studies in Zimbabwe and the EIA review timelines are the shortest when compared to Zambia and South Africa. However, there are areas which may need improvement if Zimbabwe is to strengthen her EIA process and consolidate the efforts gained so far under the Zimbabwe is open for business mantra. The EIA review process can be done virtually with a tracking system which can show progress on each EIA report in the same way consignments are tracked by customers in the logistics companies such as DHL International, SkyNet Worldwide Express and FedEx just to mention a few. EIA decision making by the competent authorities can be decentralised in the spirit of devolution such that EIA acceptance can be granted at provincial level expect for projects which are either of national interest or which are transboundary in nature. This will strengthen the EIA system and help in expeditious decision making. The red tape within the EIA stakeholders can be curtailed if these institutions are

capacitated to handle EIA consultations in a bid to further speed up the process without jeopardising the quality and efficacy of the process. Lukito (2016) and Lu *et al.* (2019) concur that the government has a responsibility of fostering a corruption free environment so that the EIA system can thrive well with full support of all relevant stakeholders in a professional manner. Systems can be put in place such as tip off anonymous to minimise corruption in Zimbabwe and beyond.

There are five EIA cost reduction strategies that can be adopted in a bid to attract FDI and stimulate economic development. These strategies include harmonisation of EIA stakeholder consultations through establishment of a one stop shop as done in Angola where EIA practitioners submit an Environmental Impact Statement (EIS) comprising of the scientific and technical component of the EIA to the ministry responsible for environmental affairs. The public engagement process will be conducted under the auspices of the ministry in charge for the environmental affairs in partnership with the line ministry under which the proposed project falls in (Rebelo & Guerreiro, 2017). This strategy eliminates a lot of costs which could be incurred by the proponent if the discrete EIA consultations are done. EIA professional fees can also be regulated by a professional body such as EPCOZ in Zimbabwe but not necessarily putting prize controls. This is currently being done in Zimbabwe by the Zimbabwe Institution of Engineers (ZIE) and Zimbabwe Law Society (ZLS) where professionals get guidance on the range of charges they should charge based on their experience. Leiringer (2020) believes that this strategy helps in protecting any industry from either under-pricing or over pricing. Consummate charges will be established which will form the basis of pricing coupled with EIA cost estimation models to help justify the costs to the interested parties. Government can also prescribe nominal EIA stakeholder consultation fees to be charged by government departments through the ministry responsible for finance and economic development. This will ensures that there will be consistence among government departments and parastatals which have a stake in the EIA process for certain projects. The Environmental Management Agency (EMA) through the responsible ministry ought to revise its EIA review cost structure and adopt the environmental surety bond system in EIA review costing as also suggested by Roos *et al.* (2020). This environmental bond system has incentives which compel the proponent to implement the environmental and social management plan (ESMP) in the EIA report upon which the EIA acceptance will have been granted in a bid to recoup the funds in the future. The system will also hold the EIA practitioners responsible for the ESMPs they develop and the abatement measures developed to cub environmental degradation. In the current Covid -19 pandemic era, going virtual in terms of EIA report submissions and EIA

stakeholder consultations will go a long way in reducing costs associated with printing documents and emissions caused by travelling to project sites thereby reducing the ecological footprint of the proposed projects during the EIA planning stages. Green projects can be incentivised through reduction in taxes, duty payment of equipment and subsidies on utility bills and bank loans so that the overall EIA review fees can be reduced if the current EIA review costing regime is to be maintained as also echoed by Leiringer (2020). This will have the overall effect of reducing the total EIA cost burden to the proponent thereby creating an encouraging environment for both domestic investment and FDI which feeds into economic prosperity.

5.5.4 EIA and Foreign Direct Investment

The researcher established that the EIA system is a vehicle for sustainable development and the costs associated with the EIA costs in Zimbabwe do not significantly affect FDI. EIA is a planning tool which embraces both the precautionary and the subsidiarity principles. It serves to ensure implementation of sustainable development projects in Zimbabwe and beyond. Multilateral financiers use EIA as an aspect of their project financing criteria. As such EIA comes with FDI in any country. Some project developers use EIA in their proposal development for funding. The EIA costs in Zimbabwe across all economic sectors under investigation are the lowest when compared to South Africa and Zambia. However, Zimbabwe received less FDI than South Africa and Zambia in the previous year owing to unfavourable business climate in Zimbabwe as noted by Chigudu (2021). The World Bank business rankings based on the ease of doing business index in 2020 showed that South Africa and Zambia performed better than Zimbabwe. The Zimbabwean EIA costs and system in terms of reviews and conducting EIA studies are the best in terms of time efficiency despite receiving lower FDI. This therefore means the impact of EIA costs and duration has insignificant impact on FDI inflows in Zimbabwe. As such, the perception that the EIA process and cost are undermining economic development and scaring FDI are speculative and based on bad publicity peddled by unpatriotic journalism which is supported by capitalist investors mainly from east who are not prepared to do business in Zimbabwe in a sustainable manner. FDI inflows in Zimbabwe are therefore affected by other macroeconomic factors coupled with ageing infrastructure and policy inconsistencies as noted by Chinguruve (2019). However, these factors will need further investigations to ascertain their significance. However, EIA is a significant tool for decision making in Zimbabwe since it provides the basis for sustainable

development ensuring that negative externalities of developmental projects are curtailed prior to project implementation. This improves project design through establishment of alternatives.

5.5.5 EIA Cost Estimation Modelling

The researcher developed the Sunny's EIA Cost Estimation Model (SECEMO) which is a hybrid mathematical model informed by expert judgement and historical data as suggested by Kwon *et al.* 2019. The model is a summation of costs such as; prospectus fees, EIA specialist studies costs, stakeholder consultation costs, logistics, administration costs and contingency costs. EIA specialist costs are guided by Putman's model on establishment of the Effort required in completing a given task. As such the scope and magnitude of the project will be covered from the Putman's model hence SECEMO will be applicable to any project of any type or magnitude. However the model can only be used by experienced EIA practitioners since it heavily relies on expert judgement in establishing base costs such as EIA specialist costs and prospectus fees. As such the model serves as an initial step towards development of other models which can be developed from SECEMO. Areas of concern include the lack of EMP monitoring costs which will need to be included in the model if it is to be inclusive. However, there is a limitation that some projects do not have timeframes upon which monitoring comes to an end. As such, the researcher recommended further studies to be conducted on EIA cost estimation model. However, the model can be adopted for use by EIA consultants and the Environmental Professionals Council of Zimbabwe (EPCOZ) and other EIA practitioners regulating bodies as a guiding tool in EIA prize standardisation as recommended by Goodstein & Polasky (2020). Models have been used since time immemorial to depict reality and as such SECEMO has its strengths and weaknesses but serves the sole purpose of guiding the EIA costing. One major weakness of SECEMO is that it's exclusive of ESMP monitoring costs which makes it difficult for the EIA consultant to include such costs. However, since the ESMP costs are incurred post project implementation, SECEMO is useful in deriving an EIA cost that is consummate with the tasks that need to be undertaken prior to EIA certification by the Environmental Management Agency and other like - minded competent authorities in SADC and beyond. As such, it terms of fulfilling one of the objectives of this study, SECEMO has managed to do so.

5.5.6 EIA Professional Regulation

EIA professional regulation varies from one country to another with some being supported by the law and others being voluntary as noted by Arts *et al.* (2016). Either voluntary or

involuntary EIA professional regulation authority save the same purpose of standardising the conduct of EIA practitioners by prescribing minimum standards and environmental ethics to be adhered to by the would be EIA practitioners. However, the effectiveness of voluntary systems and involuntary EIA professional regulation is yet to be established as argued by Pring & Pring (2016). These EIA professional regulatory institutions have the authority vested in them through an act of parliament or a notarial deed of trust or a constitution recognised by the common law. As such there is no internationally agreed standard of how EIA professional regulation is done but certainly it ought to be guided by some principles and ethics recognised by the host country as articulated by Arts *et al.* (2016). The authority to regulate the EIA profession in South Africa by Environmental Assessment Practitioners Association of South Africa (EAPASA) is derived from the National Environmental Management Act (107 of 1998) as established by Buthelezi (2020). As such, it is a mandatory requirement for EIA practitioners in South Africa to be registered prior to conducting EIA studies in South Africa. In Zambia, the Impact Assessment Association of Zambia (IAAZ) is an affiliate member of the International Association of Impact Assessors (IAIA) and its recognition by Zambia Environmental Management Agency (ZEMA) makes it better positioned to regulate the EIA profession much better than the Environmental Professionals Council of Zimbabwe (EPCOZ) in Zimbabwe which exists as a voluntary trust with an Act in waiting. As a result, the membership to EPCOZ in Zimbabwe is currently voluntary despite efforts for it to be included in the Environmental Management Act CAP (20:27) by government now being at an advanced stage. The voluntary nature of affiliation or membership to EPCOZ in Zimbabwe undermines the regulation process of the profession thereby affecting the standardisation and consistence of the EIA quality and prizing. The One – Sample Chi – Square test conducted at 95% significance level proved that there was need for an EIA pricing regulation by an environmental professional body in Zimbabwe since the null hypothesis was rejected. However, like any other fully developed professional industries which have been in existence since time immemorial. the benefits of regulation outweighs its disadvantages since it brings harmony and standardised procedures of execution and supervision of tasks as explained by Arts *et al.* (2016). It is against this background that EIA practitioners are encouraged to operate under EPCOZ in defining the future of the EIA industry in Zimbabwe and continue lobbying for government to expedite the law formulation process which will give EPCOZ authority to mandatorily register the would be EIA consultants and other allied environmental professionals in order to bring sanity in this industry.

EIA practitioners in Zimbabwe will have more benefits when registered under EPCOZ since the professional regulatory body will be able to promote continuous professional development (CPD) which help to enhance professional capacity. Furthermore, disciplinary issues of EIA professionals and instillation of good environmental ethics and code of conduct can be best done by an environmental professional regulatory body. This will further help in standardisation of the EIA prizing either through the adoption of SECEMO or development of other EIA cost estimation models in Zimbabwe. The Environmental Management Agency (EMA) should be able to work together with like - minded professional organisations like EPCOZ in Zimbabwe and the same should happen in South Africa and Zambia so that the competent authority regulates the EIA process while professional bodies regulate the conduct of the EIA practitioners in order to promote good governance. This will help instil investor confidence when engaging EIA practitioners to conduct EIA studies. Furthermore, the EIA professional bodies are regarded as think tanks which should be able to advice policy makers on the best course of action to be considered in terms of policy development and direction. This will better protect the environment from the negative impacts of urbanisation and industrialisation through implementation of well thought strategies supported by scientific environmental and socio – economic research. Environmental issues are dynamic and hence professional bodies have a responsibility of ensuring that there is continuous professional development. This will help in modernising EIA mitigation measures so that they remain in sync with current trends in technological developments. This study was an applied research since the results can be used immediately such as the SECEMO which would be user friendly to EIA consultants. This model can be used as the basis for EIA costing which can bring about standardisation in the EIA prizing by the EIA consultants. On the other hand, the adoption of environmental surety bonds can be immediately adopted by the Environmental Management Agency to determined EIA review fees with a system that offers incentives for enhanced environmental protection by project developers, EIA consultants and the competent authority. The government of Zimbabwe can institute policy reforms and review the Environmental Management Act (CAP 20:27) in order to capture some of the research findings and also include the Environmental Professionals Council of Zimbabwe in the review process of the Act in order to align it with the provisions of the constitution of Zimbabwe or have a separate Act of parliament for the Environmental Professionals Council of Zimbabwe (EPCOZ) which will allow for regulation of environmental professionals and standardisation of the EIA prizes and the industry in general. The standardisation of the EIA industry will ensure that there is investor confidence in the EIA process which can help to further stimulate sustainable economic development. In the end, EIA is a significant tool for decision making that promotes sustainable economic development,

however the EIA system in Zimbabwe is better in terms of EIA review timelines and costs when compared to Zambia and South Africa although there are areas which needs improvement in the spirit of sustainable continual improvement.

5.6 Conferences where results have been presented

The researcher has made presentation of the research findings on 2 main academic platforms where more commends were incorporated in the final dissertation. However, the research has also been presented

- First Unicaf University Graduate Online Conference held on from the 22nd to the 23rd of March 2021. The researcher made a poster presentation with the panel discussions helping in defining the methodology to be adopted.

- Second Environmental Research Symposium held both physically in Harare and Online on the 29th to the 30th of September 2021. The supervisor Dr Ursula Schinzel also participated online when the research made the presentation of the research results. This symposium helped to redefine the research hypotheses.

- Second Annual Online Unicaf University Graduate Conference (UGraC) held from the 14th to the 18th of March 2022. The research made an oral presentation which resulted in the presentation being considered for publication.

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7.0 Appendices

A. UREC Provisional Approval

UNICAF UNIVERSITY

UREC's Decision

Name of Participant:	Sunny M Chikwanha
Title of the Research project:	Significance of Environmental Impact Assessments in Zimbabwe's Economic Development
Date:	07/11/2019

Comments

☐ **Approved** without revision or comments.

☑ **Approved** with comments for **minor revision.**

☐ **Not approved** with guidance comments for moderate revision and resubmission.

☐ **Not approved** with guidance comments for major revision and resubmission.

The student is advised to:

1. (REAF Form) Tick under point 21, point 9 as more permissions should be taken

B. UREC Final Approval

UREC's Decision

Student's Name: Sunny M Chikwanha

Student's ID #: R1804D5148331

Supervisor's Name: Dr Ursula Schinzel

Program of Study: UUZ: PhD Doctorate of Philosophy

Offer ID /Group ID: O21414G21415

Dissertation Stage: 3

Research Project Title: Significance of Environmental Impact Assessments in Zimbabwe's Economic Development

Comments: No comments

Decision: A: Approved without revision or comments

Date: 17-Dec-2020

UU_IC - Version 2.1

C. Informed Consent

Informed Consent Form / Certificate of Consent for Research Participants

This section is mandatory and should to be signed by the participant(s)

Student's Name:	Sunny M Chikwanha
Student's Email Address:	chikwahna.phd@gmail.com
Student's ID #:	R1804D5148331
Supervisor's Name:	Dr. Ursula Schinzel
University Campus:	Unicaf University Zambia (UUZ)
Program of Study:	PhD Doctorate of Philosophy
Research Project Title:	Significance of Environmental Impact Assessments in Zimbabwe's Economic Development

I have read the foregoing information about this study, or it has been read to me. I have had the opportunity to ask questions and discuss about it. I have received satisfactory answers to all my questions and I have received enough information about this study. I understand that I am free to withdraw from this study at any time without giving a reason for withdrawing and without negative consequences. I consent to the use of multimedia (e.g. audio recordings, video recordings) for the purposes of my participation to this study. I understand that my data will remain anonymous and confidential. I consent voluntarily to be a participant in this study.

Print name of Participant:	
Signature of Participant:	
Date:	

D. Questionnaire

Title: Significance of Environmental Impact Assessment (EIA) in Zimbabwe's Economic Development

Researcher: Mr. Sunny M Chikwanha

Email: chikwahna.phd@gmail.com

Supervisor: Dr. Ursula Schinzel

Institution: UNICAF University Zambia

Kindly complete this questionnaire to the best of your knowledge in the spaces provided. You are rest assured that the purpose of this study is purely academic research and strict confidentiality shall be maintained throughout the research study process. Data gathered shall be published with your consent if need arise.

1. **Name of Organisation:** _____

2. **Gender:**

   Male ☐ Female ☐

3. **What is your highest level of education?**

   Doctorate ☐ Master ☐ Bachelor ☐ Diploma ☐

4. **What is your position within your organisation?**

   Senior Management ☐ Middle Management ☐ Operational Staff ☐

5. **How many years of professional working experience do you have?**

   1 to 5 ☐ 6 to 10 ☐ 11 to 15 ☐ Above 15 ☐

6. **Are you aware of the Environmental Impact Assessment process in Zimbabwe?**

   Yes ☐ No ☐

7. How long does it take to conduct EIA studies in Zimbabwe?

1 to 2 weeks ☐ 3 to 4 weeks ☐ 5 to 6 weeks ☐ above 7 weeks ☐

8. How long does it take to complete the EIA stakeholder consultation process in Zimbabwe?

1 week ☐ 2 weeks ☐ 3 weeks ☐ above 4 weeks ☐

9. How long does the Environmental Management Agency take to review the prospects?

5 days ☐ 6 to 10 days ☐ 11 to 15 days ☐ above 15days ☐

10. How long does the Environmental Management Agency take to review the EIA Report in Zimbabwe?

1 month ☐ 2 months ☐ 3 months ☐

11. EIA significantly contributes to economic development of a nation

Agree ☐ Indifferent ☐ Disagree ☐

12. Tick where appropriate the Total EIA Professional charges in the following sectors:

	Sector	**< 3000**	**3001 -5000**	**5001 -7000**	**Above 7000**
a.	Construction				
b.	Mining				
c.	Manufacturing				
d.	Energy				
e.	Tourism				

13. Tick where appropriate the Total EIA Stakeholder Consultation charges in the following sectors:

	Sector	**< 1000**	**1001 -1500**	**1501 -2000**	**Above 2000**
a.	Construction				
b.	Mining				
c.	Manufacturing				
d.	Energy				
e.	Tourism				

14. Select one major EIA Cost Driver in the following sectors:

	Sector	**Unregulated Stakeholder Fees**	**Logistics**	**Corruption**	**Lack of EIA Pricing Model**	**Professional EIA Charges**	**Regulatory EMA Fees or charges**	**Administrative Costs on EIA**
a.	Construction							
b.	Mining							
c.	Manufacturing							
d.	Energy							
e.	Tourism							

15. Tick where appropriate

	Statement	**Strongly Agree**	**Agree**	**Partially Agree**	**Disagree**	**Strongly Disagree**
a.	EIA costs in Zimbabwe affect Foreign Direct Investment.					
b.	EIA Consultants charges are too high.					
c.	EMA Review Fees are expensive.					
d.	Government should regulate EIA charges through prize controls.					
e.	Total EIA costs can be reduced.					

16. Absence of a statutory constituted environmental professional body results in poor quality EIAs.

Agree ☐ Indifferent ☐ Disagree ☐

17. There is need for EIA prising regulation by an environmental professional body in Zimbabwe

Agree ☐ Indifferent ☐ Disagree ☐

18. State the main cause of stakeholder consultation response delay if any in Zimbabwe.

_____

_____

_____

19. **What is the main cause of EIA review delay in Zimbabwe if any?**

_____

_____

_____

20. **Suggest one best strategy that can be implemented to reduce EIA costs in Zimbabwe without compromising the quality of the Environmental Impact Assessments.**

_____

_____

_____

Thank you for responding to the questionnaire. Kindly send back the completed questionnaire to

Sunny M Chikwanha

chikwahna.phd@gmail.com

E. Interview / FGD Guide

Qualitative Interview / Focus Group Discussion Guide

Title: Significance of Environmental Impact Assessment in Zimbabwe's Economic Development.

You are welcome to the interview where you are expected to share with the researcher the knowledge you have on the questions that follows with regards to the subject under study. You are rest assured that the purpose of this study is purely academic research and strict confidentiality shall be maintained throughout the research study process. Data gathered shall be published with your consent. However, you reserve the right to withdraw from the interview should you feel uncomfortable with the contents that will be under discussion.

- Details of the Researcher and the Academic Supervisor

Name of researcher	**Name of Supervisor**
Unicaf Student Contact Details	Unicaf Supervisor Contact Details
Mr. Sunny M Chikwanha	Dr. Ursula Schinzel
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- **Interview / Focus Group Discussion Questions**

v. How much time is required to review EIAs in Zimbabwe?

< 1 month ☐
1 month ☐
2 months ☐
3 months ☐
☐

> 3 months ☐

No fixed timeframe

vi. What are the perceptions of EIA stakeholders' regarding the Zimbabwean EIA Process?

EIA in Zimbabwe is expensive ☐

EIA costs in Zimbabwe are fair ☐

EIA in Zimbabwe is inexpensive ☐

EIA delays projects implementation ☐

EIA scares investors ☐

EIA contributes to sustainable development ☐

vii. What could cause EIA delays in Zimbabwe?

Stakeholder consultation ☐

Inexperienced EIA team ☐

Unclear project description ☐

EIA review process ☐

Lack of project funding ☐

Project site accessibility ☐

viii. To what level is the EIA process significant to economic development in Zimbabwe?

ix. What are the charges and cost drivers when conducting EIAs for manufacturing, mining, energy and tourism projects in Zimbabwe?

x. Which costing technique can be adopted in Zimbabwe for EIAs in order to encourage sustainable ease of doing business?

Thank you for taking time in this interview. The researcher will analyze the data that you have provided and you will be informed of the findings soon.