AN INVESTIGATION INTO CONSTRUCTION CONTRACTS IN MALAWI – TURNKEY VERSUS TRADITIONAL CONTRACTS

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ABSTRACT

This thesis provides results obtained from the study on an investigation in the construction contracts in Malawi with precision on management of turnkey and traditional contracts. To fulfil the objectives of the study, the researcher carried out a literature review of the same using the previously documented articles, periodicals, journals, books and dissertations. In addition to the same, survey questionnaires, interviews, focus groups and desk research were conducted to obtain localized data in Malawi.

The data collection techniques of using questionnaires and interviews were designed in such a manner so as to meet the research’s objectives and test its hypothesis. The goal of the questionnaire was to analyse the importance of implementing projects using the turnkey approach. The questionnaire was developed to focus on the identification of benefits and drawbacks of the turnkey approach, the comparison of the turnkey approach against the traditional approach and proposal of areas where the turnkey approach can be improved. Interviews and focus groups on the other hand focused on validating information gathered from the survey questionnaire. Emphasis was made on obtaining views and opinions of the turnkey approach with respect to the Malawian society. With respect to the sample used in this research, it was envisaged that with the ongoing turnkey projects being implemented in Malawi and the historical experience in traditional contracts, different views and thoughts were gathered creating a remarkable outcome on the results obtained from the questionnaires and focus groups. Data was collected from fifty one respondents which were more than the sample required and was used for analysis.

It was noted that the majority of the sample represent by seventy nine percent (79%) preferred turnkey contracts to traditional contracts as being effective in the implementation of mega construction projects (MCPs) in Malawi. Nonetheless, the study still identified challenges and shortfalls in the turnkey contract that required amendments in order to achieve the required effectiveness in the construction sector of Malawi. The study therefore concluded with the provision of recommendations on the resolving the shortfalls of turnkey contracts so as to improve their implementation effectiveness and adoption in the construction sector of Malawi.
DEDICATION

To my parents, for their love and support in my career building activities,

To my fiancé for her care and assistance in literature and data collection,

And lastly to my uncles and aunties for their support in knowledge sharing and connections to experts in my research.
ACKNOWLEDGEMENTS

I wish to express my deep appreciation to supervisor Mr. David Aldridge and Mr. Peter Chiligo for their support and guidance.

Gratitude is rendered to all individuals who were involved in the study from all parties of the clients, the consultants and the contractors executing turnkey contracts.

My thanks and gratitude is due to my employer Mr. Wilson T.M. Chirwa for provision of resources and literature in finalizing the study.
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LIST OF ABBREVIATIONS/ACRONYMS

AFDB = African Development Bank
AVIC = Aviation International Cooperation
BEE = Black Economic Empowerment
BOT = Build, Operate and Transfer
CJIC = China Jiangxi International Cooperation
EPC = Engineer, Procure and Construct
EXIM = Export Import Bank
FIDIC = International Federation of Consulting Engineers
GDP = Gross Domestic Product
GOM = Government of Malawi
ICE = Institution of Civil Engineers
IPP = International Private Partnership
JCT = Joint Contracts Tribunal
JICA = Japanese International Cooperation Agency
JV = Joint Venture
ME = Marginal Error
MCPs = Mega Construction Projects
NCIC = National Construction Industrial Council
NSO = National Statistics Office
ODPP = Office of the Director of Public Procurement
PPP = Private Partnership Program
PMI = Project Management Institute
SADC = South Africa Development Corporation
Chapter 1

INTRODUCTION & BACKGROUND

1.1 Introduction

This chapter of the research introduces the main problem being encountered within construction contracts in Malawi. It further provides a background the newly introduced turnkey contracts, the significance of the research towards the construction industry in Malawi and highlights the aims and objectives of the research inclusive of its research questions. Consider the schematic flow layout of this thesis below:

![Diagram of introduction framework]

Figure 1: Schematic diagram of the introduction framework

1.2 Background

The construction industry in Malawi was incorporated in 1996 through the enactment of the National Construction Industry Council (NCIC) whose main aim was to regulate, promote and develop the construction industry in Malawi. The introduction of multiparty democracy in 1994 has resulted in a growth in the number of contractors and consultants in the construction industry which resulted in their regulation in 1996 (Kumambala, 2014). Through the implementation of projects since 1994 to date using the traditional system of contracts, the country has economically developed with respect to growth in infrastructure developments and job creation (Record, 2015). Consider the bar chart below:
Figure 2: Growth of Government of Malawi debt with respect to its gross domestic product (www.tradingeconomics.com, 2014)

Reference being made to the above graph, the growth of infrastructure development suddenly took a significant decline in 2009 when Malawi's economy crippled due to an increase in government debt and low income revenues. This resulted in the introduction of investor related contracts called turnkey contracts that led to Chinese investors taking over major projects within the construction industry (Cammack, 2011). As such, the job market in the Malawi construction sector has declined leaving a lot of professionals unemployed as these foreign investors use their own human resources to implement these turnkey contracts (Kamanga, 2013).

The fall in Malawi’s economy has also reduced the scope of knowledge on the implementation of complex and/or mega infrastructure projects and has led to private contractors implementing these projects using their own knowledge and resources (Mwanakatwe, 2014). The turnkey phase began in 2009 with the commencement and agreement of the build-operate and transfer (BOT) contracts with foreign contractors. These contracts failed to take shape due to political and regional barriers such as the construction of the Nsanje inland port under Mota-Engil Portugal that resulted in the introduction of design-build turnkey projects. The currently introduced turnkey contract has resulted in the introduction of mega and complex engineering projects built under a soft loan agreement between the investing contractor and the client (Government of Malawi).
Mega projects can be defined as construction projects that have a project duration of more than 10 years, costs greater than one billion dollars, associated with high risks, colossal use of resources, new technological changes and very complex in nature (Kovaka, 2005; Peng, 2012; Oliomogbe, 2012). Comparing the same with developed countries in Southern Africa like the Republic of South Africa, turnkey contracts have face-lifted their economies through the implementation of various infrastructure developments (Ugwu, 2007).

The effect of complex or mega projects, and pitiable economies has resulted in the implementation of turnkey contracts in Malawi and Africa in general. This is currently superseding the traditional contracts being practiced that has created gaps in project deliverables of time, quality, cost and scope (Enfiedjian, 1997). Megaprojects in construction have been defined as enormous public investment projects that costs more than US $1 Billion, have a complexity in financial, technical and human terms and are characterized with countless records of poor delivery (Luberoff, 2003). Turnkey contracts also referred to as EPC (Engineer, Procure and Construct) contracts can be defined as construction contracts that involve the use of the contractor’s own resources to design and implement the contract upon agreement with the client to a point of delivery of that contract to a fully functional/operational state (at a turn of a key) (FIDIC, 1999). Traditional contracts also referred to as “design – bid – build” contracts have been the natural trend of construction contracts in Malawi since independence. These contracts involve the client appointing a consultant to detail design, prepare all contract documents, tenders and thereafter invite contractors to compete through bids (Chapel, 2004). The successful contractor with the winning bid is allowed to implement the contract under the consultant’s supervision (Sears, 2008). The existence of turnkey contracts has illustrated economic growth in infrastructure development but with a lot of side effects.

Understanding the international knowledge of turnkey contracts and its significance towards infrastructure development is vital in the delivery of complex projects in developing economies (Schneider, 1986). The lack of knowledge of turnkey contracts in the construction sector has resulted in the poor delivery of vital and economically viable projects in Malawi. However, interventions are being made whereby mega projects which were run by traditional contracts are being opened to foreign investing contractors to execute using the turnkey approach. Nonetheless, the government of Malawi has been found to be at a disadvantaged as most of the turnkey contracts secured have a poor cost benefit return in terms of the development of the country (G. Kululanga, 2010). Previous research has indicated that the use of the traditional approach of contract management with the government of Malawi as the client has resulted in
either a delay, suspension or cancellation of the contract due to a lack of funds or poor project management techniques (Kamanga, 2013). Obviously, this has become harmful to infrastructure development and donor confidence, as projects are not delivered on time, within budget and scope. In addition to this, the quality of delivery has been observed to be below the designated threshold for those projects delivered in the scheduled time period (Bossinik, 2004). Consequently, the experience of the shortfalls of traditional contracts gathered over the past years in the implementation of mega projects in Malawi has therefore set a precedence for this study to determine the competence of turnkey contracts on the same.

1.3 Problem Statement and Research Justification

Poor delivery of mega/complex projects (valued over $15 Million) under the traditional contract management system in Malawi has greatly affected the infrastructure development of the country. This has mainly been caused by poor financial management, lack of technical expertise, corruption, absence of specialized equipment and tools to mention a few (Kaliba, 2009). Therefore, it is important to explore the turnkey contract management system for such projects and understand its influence of delivery on the same.

Absence of basic knowledge on administering construction contracts has created a fundamental setback in the delivery of mega construction projects in developing countries. The significance of technical know-how of turnkey contractors play a vital role in the development of infrastructure in third world economies as complex and mega projects are achieved in time, cost, scope and quality (Voss, 2010). In relation to the Malawi scenario, the inadequacy of advance knowledge in design, management and implementation of mega construction projects has led to most projects either failing or being implemented below basic standard requirements. This has in turn affected the cost return of such viable projects as the project investment has overtime not returned any revenues towards the economic development of Malawi. Henceforth, the significance of achieving the project deliverables of such viable projects is fundamental and acts as a pivotal point for the country’s financial and performance confidence towards the donor community (Rwelamila, 1995). Nonetheless, the effect of change due to globalisation has resulted in the phasing out of the traditional approach of procurement and contracting in Malawi whereby doors have been opened to private investors to implement projects using the turnkey approach. Notwithstanding the foregoing, the increase of such private investors has negatively affected other areas of social economic development in the country which has led to an outcry in the general community towards patriotism, ownership and sustainability of developments (Chiocha, 2011). The effects of
continual termination and suspension of major construction projects has been the root cause of the implementation of these turnkey contracts as a means of ensuring productivity and end value of donor funds (ASANRA, 2011). In addition to the same, highly corrupt practices in developing nations have continuously affected the proper management of traditional contracts that have led to donor aid and grants being withheld for mega projects in these countries. The detrimental effects and malpractices observed by previous researchers on the same have shown the shortfalls and side effects on traditional contracts such that contractual parties have been blamed as the root causes of project failure (Bowen, 2012). The basis of such claims, has created a foundation to identify the cause and effect of implementing mega construction projects in Malawi using the two commonly used contracts practices. Thus, the findings from this study will assist investor and donors in their decision making processes to either use turnkey or traditional contracts when implementing complex and mega construction projects in Malawi.

1.4 Aim of the research
The following is the main aim of the research:

- Performance analysis of managing mega construction projects in Malawi through the effective use of turn-key contracts.

1.5 Objectives of the research
In order to achieve the main aim of research, the following objectives were developed:

- To investigate the importance of implementing mega construction projects in Malawi using the turnkey contract approach.
- To identify the benefits and challenges of the turnkey contract approach.
- To compare and contrast the traditional contract approach to the turnkey approach in the implementation and management of construction projects.
- To determine areas of improvements in turnkey contracts in the implementation and management of mega construction projects in Malawi.

1.6 Research Questions
The following are the research questions which were developed to address the objectives as follows:

- What was the basis for using turnkey contracts to implement mega construction projects in Malawi?
- What differences exist between the traditional contract and the turnkey contract approach in the construction industry?
Which areas of implementation do turnkey contracts fall short?

What are some of the problems that the turnkey contract has brought to the construction industry of Malawi?

What are some of the potential improvements that can be identified for effective implementation of turnkey projects?

1.7 Research Study Area

The research study area covers mostly the central and southern regions of Malawi with a major focus on the two economical cities namely Lilongwe and Blantyre city respectively. The turnkey projects being implemented in these two cities substantiate the selection of the same as the main areas of focus for the study.

The building of the Bingu International stadium in Lilongwe by the Chinese using the turnkey approach has created interest in this research as an area of study. Lilongwe city is Malawi’s capital and administrative city which was inaugurated in 1975 after being relocated from Zomba. Levels of development in infrastructure and urbanisation have grown tremendously in Lilongwe due to the relocation of all government head offices from Blantyre in 2005. Regardless of the increase in urbanisation, Lilongwe lacks the necessary financial resources to implement significant development plans and urban services needed for economic development (D. Mpoola, 2011). Currently, the city has approximately seventy six (76) percent of its population residing in informal settlements with a poverty rate at twenty five (25) percent and unemployment at sixteen (16) percent (D. Mpoola, 2011). The city operates through the local government act of 1998 which entitles citizens to elect councillors directly who are in turn responsible for selecting a mayor among themselves. The outcomes of poor governance of the city have developed due to corrupt practices, lack of sufficient capacity, poor revenue generation, and poor accountability and transparency which in turn has affected service delivery and the implementation of viable infrastructure projects. The city’s major land owners being the ministry of lands, housing and urban development (MLHUD), Malawi Housing Corporation (MHC), Airport Development Limited (ADL) and Press Corporation Limited (PCL). This indicates that about sixty (60) percent of the land in Lilongwe is public with thirty (30) percent of it being private and ten (10) percent as customary land (USAID, 2011). Customary land can be defined as land owned by the indigenous communities and administered in alignment with their customs other than those declared by statute law (Tarimo, 2014). The estimated total population of Lilongwe city as of 2014 is at 2,400,234 with a population distribution of 1,421,454 people located in rural areas and 978,780 people located in the city urban areas (NSO, 2015).
Furthermore, the research will also focus on Blantyre city as another study area where turnkey contracts have been implemented such as the construction of the Chipembele highway from Blantyre centre to Limbe trading centre. Blantyre city is the oldest urban centre in Malawi that was established in 1870s and declared a planned area in 1897 (C.Chanza, 2011). Sixty five (65) percent of the city’s population lives in informal settlements which occupy twenty three (23) percent of land in Blantyre. The city’s poverty levels stands at twenty four (24) percent while unemployment stands at eight (8) percent (BCC, 2000). The city’s slow development has been affected by poor governance, low revenue collection, poor management practices by the authorities. The majority shareholders of the land in the city are the central government, Malawi Housing Corporation (MHC), the private sector and the Blantyre City Council (Berge, 2008). Blantyre city has suffered a major difficulty of land management due to multiple ownership of the land as forty three (43) percent of the land is planned residential land, twenty two (22) percent is unplanned and twenty one (21) is semi-rural (C.Chanza, 2011). This result illustrates that the majority of the land is privately owned mostly by medium and high income classes of the society. The estimated population of Blantyre is currently at 620,126 with a distribution of 389,907 people located in rural areas and 849,741 people in urban areas (NSO, 2015).

The aforementioned areas of study which are located in the central and southern regions of Malawi have been illustrated below using the information map of Malawi. These two study areas have experience mega infrastructure developments using the traditional approach and the turnkey approach in the previous years which have resulted in the urbanisation of the same. As such, Lilongwe and Blantyre are the major commercial cities in Malawi where planning and procurement and in the medium scale implementation of complex projects are being performed. Consider the map of Malawi below showing the positioning of the two cities of Lilongwe and Blantyre respectively.
Figure 3: Map of Malawi illustrating study areas in the central and southern part of Malawi (www.thicktwice.com).
1.8 Dissertation Structure
The dissertation consist of six chapters, whose main aim is to address the defined objectives of the study. The following are the six chapters as follows:

Chapter 1 – Introduction: The introductory chapter presents the foundation and background of the study providing a synopsis of the current evolution of Malawi's construction sector. The foregoing foundation is justified by the problem statement that was used as mechanism for developing the research. This problem statement is channelled through the development of the primary aim and its respective objectives as a means of achieving the study’s deliverables. The main deliverable of the study is to improve the performance of project management in mega construction projects in Malawi through the effective use of turn-key contracts.

Chapter 2 – Literature review: This chapter will provide a literature review of the available theories related to the implementation of mega projects using traditional and turnkey contracts. The chapter will further explore the subject of construction contracts in general and the types of contracts mainly used in practice of construction. The same will also literature relating to traditional contracts and their operations in construction. Further to this, the same literature review will consider publications relating to turnkey contracts and its operations. In addition, advantages and disadvantages of the two systems of contract will also be highlighted as documented by other authors in different parts of the world. The chapter will end by identifying gaps with respect to the proposed research using the conceptual framework.

Chapter 3 – Research design and Methodology: The chapter considers the proposed research paradigm, approaches and their techniques. It will describe the methodologies adopted to achieve the specified set of objectives and provides for justification of the chosen methods. Thus, the chapter will look at process of sample design and determination of research population. It will further explain how questionnaires and interview questions were developed using the research questions and the conceptual frameworks. The chapter will close by providing details of how the questionnaire was administered and the methods and tools that were used for analysis.

Chapter 4 – Data Analysis and Discussion of Results: This chapter analyses the results from the questionnaires distributed and interviews conducted with professionals in the sample groups of donors, clients, consultants and contractors. The research questions of the study are used as a basis of discussion with respect to the literature review and the results obtained. Analysis of the data into results will involve the use of graphs and central measures of tendency to measure their weightings so as to provide for a discussion on the same.
Chapter 5 – Conclusions and recommendations: This chapter presents a summary of the findings and form these develops potential solutions to the research problem posed in the first chapter. The research questions that support the problem statement are answered in relation to the literature reviewed from various sources and the survey results justified by previous studies.

Chapter 6 – Future research: The findings of the research provides a platform for further studies in the area of effective implementation of mega construction projects in Malawi using turnkey contracts.

1.9 Conclusion

In a nutshell, this chapter has talked about the background of the study with respect to the construction history in Malawi and its growth from independence to date. The effect of the country’s depreciating economy has greatly contributed to the transformation of the construction sector that has been evolving in order to match the current environment of the country. The chapter has further talked about the introduction of turnkey projects that have opened doors to foreign investors to implement mega and/or complex projects in Malawi that the government has failed to implement using the traditional approaches. In addition, the chapter has highlighted the problem statement of the research inclusive of its rationale which has been supported by the research aim, objectives and questions. Further to the same, the chapter has also provided a background on the selected study areas of Lilongwe and Blantyre. It has also clearly defined the dissertations structure which the research will follow to document all proceedings of the study. All in all, the dissertation will comprise of six topics namely the introduction, the literature reviews, the research design and methodology, data analysis and discussion, conclusion and recommendations for future areas of study.

In order to critically analyse the research problem statement, a literature review was carried out to obtain different views and contributions that various researchers and scholars have contributed towards the study of construction contracts. Facts, opinions, arguments and gaps will be identified and provided for the foregoing chapter as a means of justifying the feasibility of this research.
Chapter 2
LITERATURE REVIEW

2.1 Introduction

This chapter will look at the literature compiled by previous researchers on the areas of the type of contracts, their theory and practices in the construction sector and their concepts and models. The two main types of contracts which this dissertation will dwell on namely the traditional contract and the turnkey contract will be emphasised. It will look at the project management and procurement concepts, models that have been developed over the past years in relation to the implementation of these contracts in mega projects. The chapter will further look at the conceptual framework used to develop the literature of this dissertation. Arguments, facts and outcomes gathered from previous research will be incorporated in the review to justify and validate the literature published in relation to this study. Gaps in the literature will be identified in this chapter through analysis of the various views and facts as documented by previous researchers who have performed similar studies of construction contracts.

2.2 Construction Contracts

Construction contracts have evolved in the last centuries due to changes in technological and organisational complexity. The field of construction is so vast and diverse due to the specialisation of skills and professions. Construction can be defined as the invention, creation, erection, repair or demolition of infrastructure to produce or make room for development (Hughes, 2000; Phillips, 1999; Marsh, 2000). Contracts on the other hand have been defined as binding agreements between two or more persons or parties (Phillips, 1999). It can be argued further that contracts are agreements which have to be legally binding to amalgamate two or more parties with a similar goal. Construction contracts can therefore be defined as agreements either written or oral executed between the owner (client) and contractors for construction and or maintenance of work done for compensation (Phillips, 1999). The Federal Association of Civil Engineers have contended that construction contracts are a combination of general conditions, supplementary conditions, specifications, drawings, bills of quantities, the tender, the letter of acceptance, the contract agreement and any other documents incorporated in the letter of acceptance or contract agreement (FIDIC, 1999). Different types of contractual agreements have been developed over the past years for construction works that have resulted in contracts being entered into with respect to the nature of the construction project, capacity of each party, location, environment, and working culture.
Hany Elshakour has classified construction contracts into two broad categories such being price-based contracts and cost-based contracts. He further argues that the selection choice of these two main contract categories is dependent on various parameters such as change management, risk allocation, time of delivery and most of all performance efficiency of the implementer (Hany Elshakour, 2013). The price-based contracts have been defined as contracts with prices already provided in advance before construction works while cost based contracts has been defined as those contracts that which involve a compensation of costs for works executed and valued (Klee, 2015). The categorisation of these contracts have been further broken down into subcategories depending on the nature of the construction contract. Priced base contracts are either lump-sum contracts or admeasurement contracts. The admeasurement contract, can even be further categorised as either unit price contracts or schedule of rates contracts (Fryer, 1997). On the other hand, cost-based contracts have been subdivided into four main divisions namely cost plus percentage of cost contracts, cost plus fixed fee, target cost with variable fees contract and guaranteed maximum priced contracts (Marsh, 2000). Consider the table below:

<table>
<thead>
<tr>
<th>Broad Category</th>
<th>Specific Category</th>
<th>Main Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRICE–BASED CONTRACTS</td>
<td>Lump – Sum Contracts</td>
<td>1. Contractor agrees to perform works in exchange for a fixed sum of money.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Payment is made upon satisfactory completion of the works.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Payment is staged at intervals upon timely completion of milestones.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Useful for construction works that have a predefined scope at the project inception stage, limited variations, low quantifiable risks and minimal management is required from the client.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Contractor is responsible for the preparation of Bills of Quantities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Risks associated with cost overruns and overheads are borne by the contractor.</td>
</tr>
<tr>
<td>Broad Category</td>
<td>Specific Category</td>
<td>Main Aspects</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------</td>
<td>--------------</td>
</tr>
</tbody>
</table>
| Admeasurement  | Admeasurement – unit price contracts | 1. Contractual works are itemised into specific quantities in Bills of Quantities.  
2. Estimated quantities are surveyed by the designing architect and engineer.  
3. Prices are rated for every unit quantity of works.  
4. Contract is based on the estimated quantity of work items and unit price of each work items.  
5. Payment is made on the basis of unit works actually completed and measured.  
6. Contract is associated with substantial quantity deviations which are covered with special conditions of the contract.  
7. Used for works that are well defined but whose quantities cannot be accurately determined in advance. |
| Admeasurement  | Admeasurement – schedule rate contracts | 1. Uses a list of materials without quantities that is prepared by the client to be rated by the contractor.  
2. Separates items of labour, plant and materials into individual quotes.  
3. Used mainly for repair and maintenance works or emergency works. |
| COST – BASED CONTRACT | Cost plus percentage of cost | 1. The contractor is reimbursed for all costs including a fixed percentage of overheads and profit of the project.  
2. The Contactor is entitled is to make all his records and accounts available for inspection by the client or any neutral third party. |
<table>
<thead>
<tr>
<th>Broad Category</th>
<th>Specific Category</th>
<th>Main Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3. Contracts are suitable for projects with vague requirements, design and build, emergencies, repairs, maintenance works, alterations, projects with unknown technologies/changes, confidentiality, client involvement in contract management and where a contractor possesses a special ability.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Negotiations involve items like subcontract—lettings, determination of fees payment, accounting methods and overheads.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Contractor is reimbursed for all costs with a fixed percentage of costs to cover his services.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Project/site overheads may be covered by the percentage or computed as one of the costs.</td>
</tr>
<tr>
<td>Cost plus fixed fee contract</td>
<td></td>
<td>1. The client pays all costs of construction with a fixed sum of money. The fee is fixed and does not fluctuate with the actual cost of the project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. The work must be fairly well defined by the client.</td>
</tr>
<tr>
<td>Target cost with variable fees contract</td>
<td></td>
<td>1. The contractor and client agree to a target estimate of construction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Bonus or penalties arrangements are tied to this target figure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. The work has a fairly definite nature. Drawings and specifications must be sufficiently developed to enable a reasonably accurate cost to be determined.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Cost targeted for the sharing of savings.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Time targeted with a fixed sum of money for each day.</td>
</tr>
<tr>
<td>Guaranteed Maximum Price Contract</td>
<td></td>
<td>1. Contractor guarantees that he will construct the project in full accordance with the drawings and specifications and that the price to the client will not exceed the agreed price.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Cost overruns are bared by the contractor.</td>
</tr>
<tr>
<td>Broad Category</td>
<td>Specific Category</td>
<td>Main Aspects</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td>Contractors are involved in competitive bidding as in lump sum contracts but are managed using the cost plus contract.</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>The successful bidder is determined on the combined basis of his quoted maximum price and fixed fee.</td>
</tr>
</tbody>
</table>

Table 1: An analytical view of construction contracts (Hany Elshakour, 2013).

2.3 Traditional (Design – Bid - Build) Contracts

Reference being made to the above table, traditional contracts also called conventional construction contracts belong to the price – based type of contract category. Traditional contracts over time can be in the format of either lump-sum contracts or admeasurement contracts depending on the nature of the project and the client’s perception. Traditional contracts are design – bid – build contracts that involve the engagement of a design team to completely design the whole facility, prepare bills of quantities and tender them out for contractors to compete (Chappell, 2006; Ndehugri, 2009). The client, with recommendation from the design team, then selects the most capable and affordable contractor who executes the works under the supervision of the design team. The traditional contract usually uses the lowest bid approach to select the winning bidder/contractor to execute the works (Bartholomew, 2001). Consider the flow diagram model below:

![Flow diagram model for traditional (design-bid-build) contracts](Tyson, 2005).

**Figure 4**: Flow diagram model for traditional (design-bid-build) contracts (Tyson, 2005).
Implementation of this contract involves the proper determination of its project delivery method and contractual arrangement which the client has to analyse. Items that require analysis include capacity and technical capability of managers, individual project drivers, sensitivity to cost and schedule escalations, and degree of comfort with the level of project risk (Ameyaw, 2011). The inability of traditional contracts to mitigate risks of cost performance, time control, variation orders and quality of the end product has resulted into other forms of contracts outweighing them. The presence of these risks results in the creation of a more adversarial relationship between all parties when disputes develop regardless that there is no contractual relationship between the contractor and the designer and no opportunity for their collaboration in the design phase (Godwin, 2012). This results in the contract approach developing merits of reliability, applicability, and definition of roles of the contractual parties. In addition, traditional contracts have also been the most recognisable approach for public clients due to their ability of complying with local, state and federal procurement statutes. They have also dominated due to their sense of ownership whereby the client has significant control over the end product since the project particulars are fully determined prior to the selection of the contractor (Brennan, 2008). Nonetheless, the contract approach is time consuming with respect to design and construction timelines, and costly due to variations and claims of overdesign and constructability. In addition, the contract has limited design time and cost ramifications which affects the value of the end product. The approach promotes antagonistic relationships rather than cooperation and coordination among the parties involved (Ryan, 2011). Further to the same, the absence of construction input by the contractor into the project design limits the effectiveness and constructability of the design due to change in project specifications and methodology without considering the construction perspective. The presence of technological and programmatic obsolescence act as a demerit for large, lasting projects using the traditional approach in times of project implementation (Murdoch, 2000).

Further to the same, with respect to the pros and cons of traditional contracts, concepts and models of procurement of these contracts have been devised in the past that required scrutiny. The use of the traditional contract approach has resulted in the application of a vertical construction bidding approach which involves the contractors submitting sealed lump-sum or fixed price bids (Varghese, 2004). This procurement model is mostly used for building and structural construction projects. Procurement of civil engineering projects using the traditional approach involves the use of the horizontal project approach whereby the competing contractors submit sealed bids of unit price or line item bids with works being paid by the client on a measureable basis (Pryke, 2009). Overtime, the procurement concept of the traditional approach has been modified by allowing pre-qualification of capable contractors either by invitation or through an
objective set of criteria considering construction experience and financial capability. The prequalification concept has been used in practice as a means of providing the client with assurance of the contractor’s performance (Smith, 2013). The selected contractor’s prequalified are then allowed to compete through submission of sealed bids, whereby the lowest responsive and responsible bidder is awarded the works. The model of traditional contract procurement varies with the type of client nonetheless. For public clients, pre-qualification conditions do not apply, contractors are invited to compete and are eliminated through the evaluation criteria (Squaires, 2011). Private clients on the other hand prefer negotiating bids with pre-selected contractors which allows the client to consider the qualifications, history and experience of the contractor in the implementation of similar projects. It also provides the client with maximum control of the resulting construction portion of the project as the client seeks the best value of money for the end product (Sidney Scott, 2006).

On a critical point of view, traditional contracts mainly focus on the formulation of standard forms and procedures of the parties involved instead of dwelling a lot on risk allocation affecting the implementation phase of the works. Thus, the contract just like any other written contract is comprised of a series of multiple types of statements (Uff, 1993). Such statements involves elements of obligations, entitlements, and liabilities concerning the works and services to be delivered and the price to be paid inclusive of the administration of the works themselves. These sets of procedures are the codes in which various parties involved in the contract are expected to run their daily business in the implementation of the contract. The outcome of the traditional contract is admirable, nonetheless the execution is poor. Previous research has further shown that the standard terms used in this form of contract have convoluted and prolix, to a degree that they have been declared unfit for some day – to – day requirements by many construction sites (L. Shen, 2004). The setback of these contracts is that they require contractual forms to act, not as legal documents of the binding agreement but also as a working tool through actions of simplicity of its clauses and sub-clauses (Stephen Furst, 2012). The major drawback of traditional contracts are its clauses that have been formulated and documented mostly to solve issues of risks or disputes in construction. This is justified by the prejudice language and style that the contract uses to convene the construction parties into a legal agreement as it mostly earmarks on safeguarding the client’s interest in the project.

In-depth analysis of traditional contracts has also illustrated ambiguities in the contract clauses to parties involved such that contractual terms have not been properly defined so creating the opportunity for disputes (Perez, 2002). For instance, traditional contracts have over time failed to
clearly define the time limits in terms of the practical completion of works which has resulted in uncertainty with regards to contractor’s obligations in delivering the projects on time. Reference being made from other contracts, views on the same is to include additional or substitute clauses that clearly defining these standards that can be categories such as special conditions of contract (Hayes, 1997). These clauses will not undermine the powers of the traditional contract standard forms but will resolve the ambiguities and contradictions currently included in the traditional contract standard forms. Arguments have been provided by preceding research that the proper arrangement of these contradictory clauses provides for simplicity, successful administration of these contracts with minimal disputes but with an increase in the paperwork involved. The Joints Contract Tribunal (JCT) has still complained that regardless of the traditional contracts being simplified as a tool for the implementation and retrospective legal analysis of disputes, guarantee is not still provided that the simplification also leads to clarity of the contract (JCT, 2005).

2.4 EPC/Turnkey (Design – Build) Contracts

EPC/Turnkey Contracts also known as design-build are construction contracts that involve the provision of engineering services, procurement of materials and delivery of the project to the client ready for operation (Huse, 2013). The aforementioned term is mainly used synonymously with expressions like “package contract”, or “design – build”, “single responsibility” or in other scenarios “design constructor”. The major feature of the contract is ultimate price and time of delivery that have the highest level of certainty. This provides a mandate/responsibility for the contractor to accept all risks associated with cost and control of time, removing any liability for the same from the client (Koch, 2010). The foregoing does not include consulting firms or independent specialists that are used to design and supervise the works as all works are transferred to the contractor to take full responsibilities of the same. These contracts have gathered merits over time of clear divided responsibilities, cut down schedules, delegations of works and known/fixed contract amounts. Nonetheless, the EPC contracts have been rated low in scope of works agreement, client’s ability of control, high cost of pre-tendering and the need for construction management skills in procurement engineering (Jha, 2011). Consider the EPC/Turnkey project setup below:
Turnkey contracts work on a concept of mutual understanding and relationship between the client and the contractor. The contract approach requires the contractor to undertake the duties of detail designing of the project regardless of whether the contract is only for the construction of the facility. Furthermore, this contract approach is characterised by the use of the new construction technologies, advance technical skills and modern project management techniques (O’reilly, 1999). Nonetheless, in the event that the contractor does not have such technologies, the use of third party technologies are incorporated either by virtue of the contractor’s own agreements or as requested by the client. This contract approach is either applied for the whole project or any sub-unit of the main project. In scenarios where sub-units are used, the contract approach applies when a separate identifiable component of the total project is easily assessed in terms of its performance (Nagarajan, 2004). Justin Sweets, has illustrated turnkey contracts as being more sales contracts than service contracts. He has further justified his arguments by demonstrating the fact that clients in turnkey contracts create warranties (guarantees) just like in sales with the contractor being responsible for all defects (J. Sweets, M. Schneier, B. Wentz, 2015).

Aspects of time, cost and quality mainly govern the modelling of the EPC/Turnkey contract approach. The contracts provide for a pivot point of single responsibility, fixed contract price, fixed completion date and performance guarantees. Consider the turnkey define pack below:
Figure 6: EPC/Turnkey define pack (UN, 2008)

Single point responsibility in turnkey contract models requires the contract to take responsibility for all designs, engineering, procurement, construction, commissioning and testing activities of the project. Henceforth, problems that arise in the project are solved by one – party, being the contractor, who is also responsible for compensations (Smith, 1990). In mega projects where several turnkey contractors form a joint venture, the responsibility is shared among the entities in the joint venture and other liable companies involved. In addition, the model looks at project delivery within a fixed contract price with no cost overruns. As such, risks of cost overruns are borne by the contractor with benefits of high revenue returns in scenarios of cost savings (Loraine, 1992). This results in the contractor having limited ability to claim for additional money in circumstances whereby the project has been delayed by the client or the client has issued a variation in works. Further to the same, the model having a fixed completion date results into the turnkey contract providing a fixed date or fixed period after the commencement of the contract. Failure to complete the works by the fixed date results in the contractor being liable for delay liquidated damages (DLDs) (Vivian Ramsey, 2007). These delayed liquidated damages are designed to compensate the client for loss and damage suffered as a result of late completion of the project. Henceforth, these liquidated damages are enforceable by common law jurisdictions such that they may be a genuine estimate of the loss or damage that the project company will suffer if the project is not completed by the targeted completion date. This estimate is determined
by reference to the time the contract was agreed and signed. The application of these damages are expressed as a rate per day which represents the estimated extra costs incurred for insurance, supervision fees, financing and loss of revenue (Samuels, 1996).

Performance guarantees are crucial in turnkey contract modelling as no due diligence is undertaken by the client on the contractors since competitive bidding is not part of the concept. Therefore, EPC/turnkey contracts contain performance guarantees which are backed by performance liquidated damages (PLDs) payable to the client if the contractor defects from completing the works (Vivian Ramsey, 2007). At the onset, as a means of assuring the client of project delivery, the contractor is required to furnish the client multiple bank guarantees such as retention, advance payment and performance. A guarantee is usually within the ranges of 5 – 15% of the contract price and is used as security for obtaining advance working capital to finance the works while a retention guarantee of 5 -10% is used as a bond/assurance of rectification of defects (FIDIC, 1999). Critiques can be presented that in turnkey contracts, the contractors are mandated to finance the project with their own resources and deliver the final product to the client in an operational state. Henceforth, payment can only be made once the end product or project is delivered such that the optional advance payment practised in traditional contracts is not easily accessible to the contractor due to his capacity (Marsh, 1994).

Risk management in EPC/Turnkey contracts has become crucial over the past years due to the inefficiency of the contract documents to mitigate potential risks which include default of the contractor, political risks, intentional fraud, competition, weather and community unrest (conflicts) (Thweatt, 2015). The risk of contractor’s default comes in due to aspects of a lump sum contract which are associated with unrecoverable cost overruns. This has been noted in most EPC projects in developing countries such that mitigations of using a joint venture (JV) approach has been incorporated to allow the contractors to share the risks of the entire project. This practice has been implemented with minimal effectiveness due to the effect of decision paralysis (DFID, 2006). Thus, when the main contractor pulls out of the joint venture, the other contractor suffers more of the risks which in turn affects the client and the project. The Institution of Civil Engineers (ICE) has therefore recommended the use of critical evaluation and selection techniques (due diligence) of contractors when selecting EPC contractors that have parent companies and have sound financial backing (William Hughes, 2006).

Further to the same, turnkey contract approach can be critically analysed to determine the merits and demerits with respect to experiences in previous projects. The approach allows for the contractor to get involved in the design stage which facilitates coordination with the designer
during implementation (N. Charles, 2005). In addition, the approach develops a conducive working environment for the project team as the designer and contractor are in one team which is liable in case of non-performance. This prevents excess costs in resolving disputes between the designer and the contractor and moreover the rapport reduces delays and other differences in ideologies (Levy, 2006). Thus the management time costs by the client are reduced as little time is required by the client to project manage the contract. This allows the project to be completed at lower cost and within the intended time period. Costs that are borne by the client for individual teams of designers and contractors like in the traditional contract are reduced using the turnkey approach as these two parties are amalgamated to form a turnkey contractor whose pricing includes the design element (Levy, 2006). Nonetheless, turnkey contracts have weaknesses in anticipating the client’s needs for the project. In addition, the approach requires high capital investments valued at more than One (1) Billion US dollars both in designing and implementation of the project as payment is made by the client upon final delivery of the end product (Lowe, 2013). It can be critiqued that the turnkey approach does not fully deliver the required quality of the project for the fact that works are undertaken with no independent supervision nor interest for the client (Rumane, 2011). This argument can be justified following previous research which has illustrated that the turnkey approach allows the contractor to select a designer/supervising consultant to form one team. The merger being controlled fully by the turnkey contractor compromises on quality deliver such that their performance appraisal is rated with respect to time and proper functionality of the end product. Thus quality in turnkey is defined as fitness for purpose and conformity to specifications (Knowles, 2011).

Further to same, the turnkey project management system is characterised with the project owner hiring the contractor to design and build the project through the use of respective subcontractors on the same. The criteria involves the owner’s design brief that contains the required needs and scope before an agreement is tabled and signed with the turnkey contractor. It is significant for the project definition to be understood by turnkey contractor in order to avoid risks of poor quality delivery and conflicts with respect to designs and/ or construction methodology (Chin-Keng, 2011). Since the contract with the turnkey contractor is awarded prior before design or construction a lump sum of fixed cost arrangement instead of cost plus or reimbursement contract. These contracts are usually used for process contracts or complex projects where the client expects significant risks or change and where the project owner is not precisely sure of his requirements. Quality control and assurance is very key in every project delivery yet in turnkey contracts, project deliverables of cost, scope and time are prioritised mostly than quality (Smith, 1990). Tools and techniques of quality management in traditional contracts have been identified
which turnkey contracts have fallen short of such as benefits/cost analysis, benching marking, flow-charting, and design of experiments, quality audit, quality costs, inspection, control charts, statistical sampling, flow chart and trend analysis (S.L Tang, 2005). It is therefore vital that in turnkey contracts, the project owner takes into account quality elements of quality planning (quality standard identifications), quality assurance (overall project performance evaluations) and quality control (specific project result monitoring) which are to be taken into account during the project initiation phase (PMI, 2013).

2.5 Conceptual framework

Greiman argues that the existence of mega construction projects in the developing world is a prerequisite for the study of project and procurement approaches required for the successful delivery of these projects (Greiman, 2013). This therefore presents the inception and conclusion process which constitutes the focus of this study. Implementation of these complex projects has resulted in the contractual procurement system to be used in the same mostly in bids, tendering and selection of contractors. Merrow has conceptualised construction contracts as being “legal machinery” of building infrastructure from plans to reality (Merrow, 2011). As such, this research will adopt the legal framework of the construction contracts as the terminologies required to determine types of contracts. The implementation of mega construction projects has previously used traditional contract approaches of design – bid – build that have in turn performed with negative side effects on project deliverables of time, cost, scope and quality. The development of the turnkey approach has revolutionised the implementation system into a design – build scenario that has allowed for risk mitigation.

The existence of various construction contract forms plays a significant role in decision making and selection of the same by the client during implementation of mega projects. The key to implementing complex projects is defined through the capacity, technology, resources that the selected contract form requires an implementer to ascertain before the project is executed. In principle, the types of construction contracts form a systematic and logical relationship to the type of project required (Henderickson, 1989; McCarthy, 2010). This investigative research into construction contracts in Malawi is firmly located within the connexion of concepts, forms of contracts, complexity and project deliverables but will be limited in depth to areas of risk and quality management. In particular, the framework will limit the research in identifying the benefits and challenges of the turnkey contract approach; compare and contrast the same with the traditional contract approach and determine areas of improvements of turnkey contracts in the implementation of mega construction projects in Malawi. The cause and effect relationship has
been developed from this research as being the framework relationship of variables and concepts in testing the research hypothesis of successful project delivery of complex projects using the turnkey contract approach. Consider the diagram below:

Figure 7: Conceptual framework for the implementation of mega construction projects using construction contracts in Malawi.

Reference being made to the above diagram, the concept of “turnkey contracts” is reserved for complete and significant changes to the implementation of mega projects. The concept drives at determining this research to investigate the applicability of implementing complex projects with respect to developing economies. Project financing has been a setback to most clients of today such that the turnkey approach allows the contractor to produce a fully working and complete piece of infrastructure for a fixed price (Beyazay, 2015). The significance of the concept is to allow the contractor to accept as many possible risks that would result in increases to the cost of carrying out the works. Needless to say, the “traditional contract” concept has failed to manage the finances of the project due to variations and ambiguities in contractual forms, designs and agreements (Powell, 2012). By contrast the two concepts the research further investigates why turnkey contracts allow contractors to accept all discrepancies, ambiguities and liabilities of their subcontractors and suppliers. The common concept of “force majeure” which is defined as failure
to execute a project due to reasons beyond the contractor’s control rarely applies to turnkey contracts (Vinter, 2006). As such, only domestic subcontractors are used in these turnkey contracts as the client has no authority or control over their performance unlike in traditional contracts whereby nominated subcontractors are mostly used (American Institute of Architects, 2003).

2.6 Conclusion

In a nutshell, previous literature has envisage different views on the implementation of complex and mega construction projects due to effects of economic, financial and technical factors. The existence of construction contracts has been significant in the existence of legal agreements between clients, consultants and contractors in the execution of projects and their particulars. The introduction of traditional contracts in the construction history has involved the use of the design – bid – build approach. The approach has accumulated merits and demerits over time which has clearly identified areas of efficient implementation. The probability of shared risks has been the major factor of inefficiency of traditional contracts in implementation of mega projects such that the poor control of costs and time has resulted in most projects failing. Notwithstanding the foregoing, literature has argued that the EPC/turnkey contract approach which involves the design-build concept has transformed the implementation of megaprojects in such a manner that project success is guaranteed with minimal flaws. Justification has concluded from the risk mitigation techniques that the turnkey approach doesn’t allow for risk sharing. The basis of the literature has been developed through a conceptual framework that has been designed around the five main concepts of megaprojects, construction contracts, traditional contracts, turnkey contracts and project deliverables. The cause-effect relationship has been used to develop the said conceptual framework that illustrates the relationships and boundaries of this research.

In order to test the hypothesis of this research and achieve the project objectives, a methodology was designed to determine the criteria of sourcing both the primary and secondary data for the research. The following chapter will explain the detailed procedure that the research has used to obtain data for analysis and further discussions.
Chapter 3

RESEARCH DESIGN & METHODOLOGY

3.1 Introduction

This chapter will focus on the explanation and justification of the type of methodology used to achieve the objectives of this research. It will focus on the paradigms, the research design, the population used, the sampling criteria, data collection techniques and their justification for use in this research. This chapter will further look into detail on the selection of the pragmatism paradigm as the main philosophy of the research which will use a structured survey approach as the means of obtaining data for this research. The main data to be obtained will be mostly quantitative with complementary data being qualitative as a means of validating the quantitative data initially obtained. Data collection techniques used in this research will range from interviews, questionnaires as primary data collection techniques and desk research as the secondary data collection technique.

3.2 Research Design

This research will follow the structured survey technique that will mainly concentrate on the paradigm of pragmatism. The pragmatism paradigm has been adopted on the basis that the research data will comprise of both qualitative and quantitative data. The primary data to be collected will be quantitative (deductive) in nature but will be justified and verified through qualitative (inductive) data through the survey strategy. This will be achieved using the multiple method choice that allows for triangulation of the data using two or more independent sources of data or data collection techniques to corroborate the research findings. In addition to the same, the research will use a cross-sectional time horizon as the study is focused on current event of turnkey contracts in the construction sector of Malawi during this era of development. Further to the same, the time horizon choice has been selected as with respect to the current time frame available for this study. The research primary data will be collected using data collection techniques of questionnaires and interviews that will be sent to a selected sample group of a known population involved in the research. Interviews will concentrate mostly on the focus groups that will be selected from a group of experts in this area of study. In addition, secondary data will be collected through desk research methods that includes literature, manuals, records and reports compiled by other researchers. This research design has been selected in order to obtain quantitative data that can be validated for the proper testing of the research’s hypothesis.
Basing on Saunder’s research philosophy and the selected research design, a research onion can be developed for this study clearly illustrating the methodologies and approaches that can be adopted. Consider the following research onion schematic diagram for this research design as follows:

Reference being made to the above research onion, the survey strategy which this research has adopted will use the deductive approach but incorporating an inductive approach as a means of data triangulation as previous envisaged. This strategy has been adopted as a means of allowing for the collection of large amounts of data from a sizeable population in this research. This strategy will allow for the data technique of collecting data using questionnaires which are more economical and will be used for the standardisation of the results with a rapport in contrast and comparison analysis. This strategy will also be significant toward the study as it will allow for the provision of opinions and views for relations in the subject matter particularly to check on the current related variables and produce concepts or models of such relations. In addition, the strategy will also follow representative data collection from the sample group that will selected.
from the research population. The research focuses on designing and piloting the data collection methods so as to obtain a good response rate from the sample group.

Further to the same, the adopted quantitative and qualitative methodology of data collection that has been predominantly used has resulted in the use of the multiple method approach (Sekaran, 2003). Thus, the adopted approach will facilitate for the acquisition of both primary and secondary data. The foregoing multiple method approach uses the mixed method strategy of data collection combination techniques and analysis procedure of this research. This multiple – mixed strategy allows for both quantitative and qualitative data collection and analysis but prejudice will be provided to the quantitative technique as a dominant data source (Sekaran, 2003). The research has adopted this strategy of the multiple-mixed method as it has assisted in the facilitation of the data collected, and complements the research. Thus, the use of this method allows for the dovetailing of both data collection techniques allowing the questionnaires to be supplemented by interviews for samples that are within the vicinity of the research areas.

In addition to the same, the cross sectional studies adopted by the research look at performing the study by focusing on the construction contracts from 2009 to date. This time horizontal study approach has been adopted mainly to allow this research to compare the two current forms of construction contracts namely the turnkey and traditional contracts. The limit of time available for this research has resulted in the need to narrow down the methodology of this study by focusing on how to achieve the specific objectives of the study.

3.3 Research Population

Population can be defined as a full set of cases from which a sample can be obtained from a collection of a representative data for a study or research (Saunders, 2009; Fisher, 2007; Ketchen, 2007). Henceforth, this research’s population comprise of the main stakeholders involved in the construction contracts in Malawi namely contractors, consultants, public construction institutions and development partners. With reference to the registered number of contractors, consultants, public construction institutions and development partners by the Malawi National Construction Industry Council (NCIC), a total population size of 1,846 registered firms were obtained (Chiotha, 2011). The above population has increased from the previously years through the registration of new and foreign contractors that have emerged due to the introduction of turnkey contracts.
Consider the table below illustrating the population data for total number of registered construction firms and public institutions:

<table>
<thead>
<tr>
<th>Sub-Sector</th>
<th>2001/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractors</td>
<td>973</td>
<td>1259</td>
<td>1473</td>
<td>1658</td>
</tr>
<tr>
<td>Consultants</td>
<td>108</td>
<td>113</td>
<td>128</td>
<td>146</td>
</tr>
<tr>
<td>Public Institutions</td>
<td>19</td>
<td>19</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>Development Partners in Construction</td>
<td>11</td>
<td>13</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>1111</td>
<td>1404</td>
<td>1637</td>
<td>1846</td>
</tr>
</tbody>
</table>

Table 2: Total number of registered firms in the construction sector 2011 - 2015 (NSO, 2015)

3.4 Sampling Design

This research has used the non-probability purposive sampling which used the division of the population into discrete groupings depending on their involvement in turnkey projects across Malawi (Saunders, 2009). Taking into consideration our known population of 1846 elements and the Gaussian confidence levels, this research assumed the use a ninety five percent (95%) confidence level with a common value of 1.96σ which is practically met by most researches unlike the ninety nine percent (99%) confidence level with a value of 2.58σ that is occasionally used by perfectionists (Barlow, 1989). In addition, the foregoing assumption also took into consideration addition assumptions of the confidence interval of fifteen percent (15%), marginal error (M.E) of two and half percent (2.5%), and a prior judgement of a correction value (p) of 0.7% (Barlow, 1989). Therefore, using the statistical formulae of sample determination at ninety five percent confidence level; our sample size (n) can be obtained as follows:

\[ \text{Marginal Error (M. E.)} = 1.96\sigma \]

where \( \sigma = \sqrt{\frac{p(1-p)}{n}} \)

Equation 1: Marginal error equation (Barlow, 1989)
Hence taking our values of a Gaussian 95% confidence level of M.E = 2.5% and \( p = 0.7\% \)

such that, 

\[
0.025 = 1.96 \sqrt{\frac{0.007(1 - 0.007)}{n}}
\]

\[
n = \frac{0.007(1 - 0.007)}{0.013^2}
\]

Therefore, the sample size \( n=41 \)

Using the sample size of forty one (41), samples were selected purposively in relation to the geographical area of study (southern and central) regions of Malawi with a specific focus on the affected players in the construction industries being the development partners, public construction institutions, consultant and the contractors. Focus groups made up of a representative of 3 – 5 personnel were obtained in each sample subset that were used for obtaining data for this study with respect to the objectives (Khotari, 2004). The following samples and subsets will be used in the study as follows:

<table>
<thead>
<tr>
<th>Sample Group</th>
<th>Sample Group Name</th>
<th>Number of Sample in each</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Partner</td>
<td>Japanese International Cooperation Agency (JICA)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALE</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>China Jiangxi International Cooperation (CJIC)</td>
<td>3</td>
</tr>
<tr>
<td>Institutions (Local clients)</td>
<td>Ministry of Transport &amp; Public Works</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Office of the Director of Public Procurement (ODPP)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Roads Authority</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Malawi Housing Corporation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Blantyre City Council</td>
<td>3</td>
</tr>
<tr>
<td>Consultants</td>
<td>SFS Property Consultants – Chartered Quantity Surveyors</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WTM Chirwa and Associates – Consulting Engineers</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 3: Non-probabilistic purposive sampling for research methodology

3.5 Data Collection Techniques

This research used four main data collection techniques namely questionnaires, interviews, focus groups and desk research (literature review).

3.5.1 Questionnaires

The questionnaire was designed to achieve the research aims and objectives and to test the hypothesis of the study. Firstly, the questionnaire has an introduction developed to allow the respondents to get a general overview of the topic under research mainly providing general information on the construction contracts in Malawi and the two main contracts that are under investigation with respect to mega construction projects. The questionnaire was designed to address all four objectives of the study mainly by addressing the research questions and the hypothesis formulated. The preliminary research questionnaire was developed and sent to the supervisors of this research for comments and review as a means of ensuring quality of the data to be collected. The final edited and approved questionnaire was then sent to the sample group for their feedback on the research.

The aim of the questionnaire is to investigate the performance analysis of managing mega construction projects in Malawi through the effective use of turn-key contracts; also, the questionnaire further examines the major causes of failure of mega construction projects. With respect to the non-probabilistic purposive sampling criteria that was used, the respondents’ feedback is expected to be varied with respect to their technical know-how, experience, and their position in the project setup. These factors were considered as primary factors that would impact on the answers being provided by the sample and as such the research paid attention to the
coloration procedure of linking the respondent’s background information in section 1 of the questionnaire to their feedback in the foregoing sections. Thus, the perspective factors influenced by the sample groups of clients, contractors, consultants and developing partners were properly scrutinised during the formulation of questions so as to prevent prejudice of the obtained data.

The questionnaire was then distributed through email addresses to the sample group as a means of speeding up the response and feedback process. Google forms were used to allow the response process to be faster and easier to track. A covering letter addressing the objectives of the questionnaire was used in relation to the university of Bolton letter as evidence that the research was to be used specifically for academic purposes only. The questionnaire was structured in a smart and attractive design to facilitate the respondent’s provision of the information that the research required. The questionnaire was developed to be short with a maximum response time taken of eight (8) to ten (10) minutes, comprehensive enough to create a rapport with the respondent but in turn allow the information to be collected for the research.

The questionnaire was structured in a systematic manner and was divided into five sections with respect to the four objectives of the study as follows:

**Introduction:** in this area, the questionnaire was designed to provide background information on the research topic. It further defined the concepts of construction contracts, the traditional contract and the turnkey contract with relation to the Malawi construction industry. The foregoing was inserted in the questionnaire as a preamble to allow the respondent to have a general overview of the main aim of the research and its purpose.

**Section One:** Questions in this section were designed in such a manner as to answer the research objective of investigating the importance of implementing mega construction projects in Malawi using the turnkey contract approach.

**Section Two:** This section has questions designed to identify the benefits and challenges of the turnkey contract approach. Proposed merits and demerits obtained from literature were placed in this selection for the respondent to answer which elements were practical in his/her views towards the use of these two types of contracts. Areas for the respondent’s opinions and additions on the merits and demerits were provided to allow the questionnaire to obtain more data for analysis.

**Section Three:** In this area, the questionnaire was developed to compare and contrast the traditional contract approach to the turnkey approach in implementation of construction projects.
Questions were formulated in such a manner as to address the traits of each of the contracts towards the implementation of mega projects in Malawi.

Section Four: Questions in this section were designed to determine areas of improvements of turnkey contracts in implementation of mega construction projects in Malawi. The questions were set to allow the respondent to provide his/her views and remarks in addition to the suggested improvements in the turnkey contract.

The questionnaire was therefore designed to address all the specific objectives of this research so as to collect enough analysable data on the same for discussions and recommendations. This data collection technique was the main source of primary data collection of this research and its data was recorded in a quantitative manner for ease in analysis of the same. Nonetheless, this data collection technique was validated using interviews with respect to our philosophy selected.

3.5.2 Key Interviews

This study conducted key interviews whereby experts in turnkey contracts in developed countries were engaged such as those in South Africa. The interviews were conducted through skype phone communication which involved the use of structured questions as presented in the questionnaire which were used as a guideline of obtaining information on the study. This type of interview technique was adopted by the research mostly to compensate for the time and distance of travel to interact with the respondent. In addition, the flexibility of this processes in obtaining data allowed for a rapport in incorporating the same in this research. In order to validate the data obtained through this methodology, interviews were designed using sample questions that were credible, sincere, and non-offensive or biased towards a particular contract.

Measures were used to pre-select alternative experts of Chinese originality in scenarios whereby the respondents of the interviews in the developed countries failed to attend the interview. The research focused on the experts from AVIC International contractors who were currently implementing a turnkey construction project in Zambia. The availability of the selected expert from South Africa assisted the research in obtaining credible information as it created a sense of trust and confidence for the interviewee.

3.5.3 Focus Groups

This methodology was used to supplement the primary data collection techniques of interviews and questionnaires. Two focus groups were created with one focus group being made up of two (2) contractor representatives, three (3) consultants, two (2) client/public institution representative
representatives and the researcher being the moderator. The other focus group developed comprise of two (2) development partners, three (3) consultants and three (3) contractor’s representatives which was moderated by the researcher also. Both discussions were held for forty five (45) minutes where the research objectives where discussed with respect to the study aim. As the moderator, the main role was to ensure that the participants in the discussions are well aware of the topic under discussion, that the objective outline in the study are being debated on and mostly to steer all participants into discussion in order to obtain relevant information. Consider the table below of the two (2) focus groups developed:

<table>
<thead>
<tr>
<th>Focus Group A</th>
<th>Focus Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor</td>
<td>Contractor</td>
</tr>
<tr>
<td>Terrastone Building Contractors – 1 representative</td>
<td>China Jiangxi International Cooperation(CJIC)-3 representatives</td>
</tr>
<tr>
<td>Sharma Electrical Contractors – 1 representative</td>
<td></td>
</tr>
<tr>
<td>Consultant</td>
<td>Consultant</td>
</tr>
<tr>
<td>Quant Consult – Chartered Quantity Surveyors – 1 representative</td>
<td>SFS Property consultants – Chartered Quantity Surveyors – 1 representative</td>
</tr>
<tr>
<td>MOD Chartered Architects – 1 representative</td>
<td>Space and Time Chartered Architects – 1 representative</td>
</tr>
<tr>
<td>WTM Chirwa &amp; Associates Consulting Engineers – 1 representative</td>
<td>WTM Chirwa &amp; Associates Consulting Engineers – 1 representative</td>
</tr>
<tr>
<td>Public Institution representative</td>
<td>Malawi Bureau of Standards (MBS) – 2 representatives</td>
</tr>
<tr>
<td>Development partner</td>
<td>Chinese Embassy - 2 representatives</td>
</tr>
</tbody>
</table>

**Table 4:** Focus groups for quantitative data collection
3.5.4 Desk research (literature review)

The basic principle in obtaining previous views of different researchers was to obtain data through facts gathered already in their studies in similar environments as that of Malawi. The desk research was conducted in respect to the four main objectives such that each objective had its own literature of textbooks, academic journals, periodicals, conference proceedings and institutional publications to aid in obtaining data on the same.

This research adopted the external desk research system that involved the use of outside information to obtain data and relevant information. This type of desk research was selected as the research has moderate involvement with the organisation that the researcher is currently working in. Thus, resources and data were collected from the internet, publications of the government of Malawi, and information stored in the library of the Malawi Polytechnic. These main sources provided for credible information of which its relevancy was predetermined by the specific objectives that acted as the guideline to pin point the required data for this research.

This desk research involved the collection of data on the following areas:

- The implementation process of mega construction projects using the turnkey contract approach.
- The advantages of the turnkey contract approach.
- The challenges faced by the turnkey contract approach.
- The comparison and contrast of the two construction approaches under study in developing countries - traditional contract approach to the turnkey approach in the implementation of construction projects.
- Areas of improvements of turnkey contracts in implementation of mega construction projects.

3.6 Conclusion

All in all, the research methodology dwelled on the best practical procedure and techniques required to obtain both primary and secondary data for the research. This chapter has looked at the ways in which this study has managed to gather data using proper research design techniques. Being a pragmatism research, the study focused of collecting primary quantitative data which was to be validated with secondary qualitative data on the same. Having an unknown population, the research focused on sampling design whereby a non-probabilistic purposive sampling method was used to determine the sample size of the research which focused on
institutions, consultants, contractors and developing partners involved in the Malawi construction industry. Individual representatives in each of these categories were used as respondents to questionnaires that were developed to collect primary data. Validations through key interviews with turnkey experts from the sample and selected experts from developed countries like South Africa were used. Additional data was then collected through desk research which focused on the previous studies developed by others in the construction contracts sectors in developing countries. This therefore allowed for the accumulation of raw data which has to be analysed and interpreted into practical results for discussion. The foregoing chapter 4, will therefore analyse the data collected, test the research hypothesis and discuss the results.
Chapter 4
DATA ANALYSIS & DISCUSSION OF RESULTS

4.1 Introduction

This chapter will involve the analysis of data collected and the discussion of the obtained results. Primary data obtained from questionnaires, interviews and focus groups will be analysed using statistical graphs and central measures of tendency. In addition to the same, secondary data obtained from desk research will be categorised to check for its reliability and to act as validation to the primary data. Fifty one questionnaire respondents were considered, with two interviews from turnkey experts and two focus group discussions. Data analysis techniques of central measures of tendency such as the mean, variance, standard deviation, correlations and frequency distributions were used for analysis. Statistical graphs such as pie charts, bar charts, bar graphs, pyramids and frequency polygons will be used to determine the patterns of the data for analysis purposes. Hypothesis testing will also be performed in this chapter through the manipulation of the statistical data obtained from the data analysis techniques for both primary and secondary data. This chapter will include the quantitative analysis of the questionnaire field survey, contextual qualitative analysis of personal interviews, focus groups and finally the conclusion of the results.

4.2 Quantitative Data Analysis

4.2.1 Research Questionnaire

4.2.1.1 Demographic survey of respondents

The targeted respondents of the questionnaire survey were contract and construction experts in Malawi situated in the study areas of the central and southern regions. Out of the eight nine (89) distributed questionnaires, fifty one (51) valid responses were received comprising of forty one (41) local and ten (10) international respondents. From these fifty one (51) respondents, twenty six percent (26%) of the respondents were within five to ten years of experience in the construction sector, while twenty percent (20%) had less than five years of experience. Eighteen percent (18%) had fifteen to twenty years of experience, with the remaining fourteen percent (14%) being between twenty to twenty five years of experience while the other six percent (6%) had over twenty five years of experience. Consider the table 5 and its related chart below:
Table 5: Demographic data for respondents’ work experience

With reference to the above table 5, it could be noted that the majority members of the sample group were in the five to ten years of experience. This consensus has been identified mostly due to presence of a lot of graduate engineers in the Malawi construction industry that have just completed university education. Being the main implementers on the ground, their feedback and exposure to newly introduced turnkey environment was significant towards the research findings.

Figure 9: Pie chart distribution for respondents’ work experience

Nonetheless, reference being made to the pie chart above in figure 9, it could be validated and weighted that the responses obtained were weighed with respect to the timeline exposure of each respondent in the construction industry. Thus, those respondents that were in the twenty to
twenty-five years of experience were used as validators of the data obtained from less experienced respondents; as they were critical towards the research taking into account their exposure and observations on the construction contract evolution in Malawi.

In addition to the same, the research went further to categorise the respondents through their education background whereby analysis was made by looking at the level of technical know-how and knowledge capacity in the construction industry. Notwithstanding the foregoing, it was noted that other respondents had many years of experience with minimal education qualifications; such that their years of experience contributed to their technical capacity as compared to other respondents that used their theoretical knowledge accredited by their higher levels of education. Consider table 10 below:

<table>
<thead>
<tr>
<th>Demographic Information</th>
<th>Category</th>
<th>Frequency</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Qualification</td>
<td>Diploma</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Bachelors</td>
<td>27</td>
<td>54%</td>
</tr>
<tr>
<td></td>
<td>Post Graduate Diploma</td>
<td>6</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>Masters</td>
<td>12</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>PHD</td>
<td>2</td>
<td>4%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td>50</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Figure 10: Demographic data for respondents’ education qualification*

With respect to the demographic data obtained from the respondents, the majority represented by fifty four percent (54%) in the sample group were holders of a bachelor degree with the remaining group being comprised of master degree holders making up twenty four percent (24%), and doctor of philosophy at four percent (4%). In addition to the same, six percent (6%) of the respondents were holders of diplomas and twelve percent (12%) possessed post graduate diplomas. The presence of a majority holder of degrees in the research is dependent on the current situation of minimal qualifications in the field of study of this research. These graduates ranged from civil, electrical and mechanical engineering, architecture and quantity surveying whose years of experience were within five to ten years. Consider figure 11 illustrating the analysis of the education qualification;
Further to the same, the research also involved the demographic analysis of the respondents though their type of professionalism currently being pursued. Taking into account the field of study of construction contracts, the following respondents’ professions were identified as illustrated in Table 6 below:

<table>
<thead>
<tr>
<th>Demographic Information</th>
<th>Category</th>
<th>Frequency</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professionalism</td>
<td>Engineer</td>
<td>17</td>
<td>34%</td>
</tr>
<tr>
<td></td>
<td>Quantity Surveyor</td>
<td>8</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>Architect</td>
<td>7</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Project Manager</td>
<td>7</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Procurement Specialist</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Contracts Manager</td>
<td>4</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Others – Business Development,</td>
<td>4</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Training Directors etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 6:** Demographic data for respondents’ profession

*Figure 11:* Pie chart distribution for the respondents’ education qualifications
The foregoing demographic data was analysed using the chart below that illustrated the following distribution pattern as follows:

![Pie chart distribution for the respondents' professionalism](image)

**Figure 12:** Pie chart distribution for the respondents’ professionalism

With respect to figure 12, it can be identified that the majority percentage of construction professionals in Malawi construction sector are engineers in either electrical, mechanical or civil. The majority of turnkey contractors mostly dwell on the engineer’s ability to procure and construct the work to the client’s requirement with testing and commissioning after completion. As such, most of the data obtained was mostly from the large set of engineers that provided feasible information with respect to their experience in their companies and projects managed. Thirty four percent (34%) of the sample comprised of engineers, sixteen percent (16%) of quantity surveyors, with an equal division of project managers and architects that were at fourteen percent (14%). It was further discovered that the majority of the project managers had a foundation background of engineering, quantity surveying and architecture with an added specialisation of project management skills. The same was also identified with procurement specialist that made up six percent (6%) and contracts managers that made up eight percent (8%) of the sample. Nonetheless, it was further noted that some professionals were also identified during data collection such as business development engineers and training directors who had an engineering background but diverted in marketing of their construction firms and training of technicians respectively.
Furthermore, an analysis was made with respect to the types of firms that acted as major stakeholders towards implementation of either traditional or turnkey contracts. The following data collected on the type of stakeholders (firms and companies) that are involved in traditional and turnkey contracts are illustrated in the table below:

<table>
<thead>
<tr>
<th>Demographic Information</th>
<th>Category</th>
<th>Frequency</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Firm/Company</td>
<td>Developing Partners</td>
<td>5</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Institutions</td>
<td>11</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>Consultants</td>
<td>15</td>
<td>29%</td>
</tr>
<tr>
<td></td>
<td>Contractor</td>
<td>17</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>Others – semi – government, parastatals, marketing firm</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td>51</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 7: Demographic data for respondents’ firm/company

The following tabulated data was then analysed using the pie chart whereby the majority of stakeholders that were affected by construction contracts in Malawi were contractors (civil, building, electrical and mechanical) that made up thirty three (33%) percent of the sample size. Twenty nine percent (29%) of the sample size was comprised of consultants, with twenty two percent (22%) being made of institutions, ten percent (10%) being made of developing partners and remaining six percent (6%) comprising of other stakeholders like parastatals and marketing firms. The presence of traditional contracts has shown the interaction of most contractors, consultant and clients who are either government institutions or developing partners. This normal construction setup in Malawi has been altered by the turnkey contracts whereby main interactions are mostly between contractors and clients (developing partners or government institutions). The hypothesis test was dependent on the latter stakeholders of the turnkey contracts, such that the information obtained from the developing partners were key towards the significance of the study. The Chinese developing partners, VALE, World Bank, Africa Development Bank and the Southern Africa Development Corporation provided vital information towards implementation of mega projects in all infrastructure sectors of Malawi’s development through the turnkey approach. This analysis was graphically represented using the chart below to illustrate its distribution pattern:
Further to the same, mega construction projects (MCPs) at international perspective have been defined as complex project with a total budget of more than one billion US dollars (Luberoff, 2003). This definition mostly applies to construction projects that are being implement in developed countries in continents like America, Europe and Asia. In small scale economies and developing countries like that of Malawi, mega construction project have been categorised as investment projects valued at over ten million US dollars and aimed at supporting governments to achieve their social and economic development objectives (Othman, 2013). Using the forex exchange rate of 2016 of the Malawi stock exchange, mega projects in Malawi local currency can be valued at over six billion kwacha of the total construction cost. Consider the tabulated data collected below from the sample group on the current projects managed by each respondent for the past five years (2011 – 2016).
### Table 8: Demographic data for respondents' category of projects managed in the past 5 years (2011-2016)

<table>
<thead>
<tr>
<th>Demographic Information</th>
<th>Category</th>
<th>Frequency</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Category managed in past 5 years</td>
<td>Below MWK 100 Million</td>
<td>5</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>MWK 100 Million – MWK 500 Million</td>
<td>5</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>MWK 500 Million – MWK 1 Billion</td>
<td>8</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>MWK 1 Billion – MWK 10 Billion</td>
<td>14</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>Above MWK 10 Billion</td>
<td>19</td>
<td>37%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>44</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The above data was analysed using the pie chart to observe its behaviour and pattern of distribution as follows:

**Figure 14:** Pie chart distribution for the respondents' value of projects managed in the past 5 years (2011-2016)
In addition to the same, the research further on considered the demographic data of categorising project financiers’ in order to clearly understand the major developer using the turnkey contract approach. With reference to literature, most turnkey contracts are usually privately or publicly financed. It was noted that most publicly financed mega construction projects in Malawi usually involved developing partners that channelled finances through the Malawi government. Nonetheless, the same study also found that some mega construction projects were financed by donor’s mostly the Chinese government that used the turnkey contract approach as their guarantee for their funds to be wholly incorporated into infrastructural works. This guarantee was observed by the presence of their own turnkey contractors that implemented the works as per requirement of the donor. Consider the tabulated data below and its graphical analysis:

<table>
<thead>
<tr>
<th>Demographic Information</th>
<th>Category</th>
<th>Frequency</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Donors</td>
<td>18</td>
<td>35.3%</td>
</tr>
<tr>
<td></td>
<td>Public</td>
<td>37</td>
<td>72.5%</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>20</td>
<td>39.2%</td>
</tr>
<tr>
<td></td>
<td>Others – Developing Partners, NGOs.</td>
<td>3</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

Table 9: Demographic data for respondents’ selection of the client’s and project financiers interfaced with in past 5 years (2011-2016)

Figure 15: Bar graph distribution for respondents’ selection of client’s and projects financiers interfaced with in past 5 years (2011-2016)
Further to the same, mega construction projects (MCPs) are associated with long project timelines. As such, the research focused on identifying the demographic data of most project timelines being implemented in Malawi for the past five years so as to validate the documented timelines gathered by literature. Consider the table below:

<table>
<thead>
<tr>
<th>Demographic Information</th>
<th>Category</th>
<th>Frequency (counts)</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Timelines</td>
<td>Less than 1 year</td>
<td>5</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>1 – 2 years</td>
<td>14</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>2 – 3 years</td>
<td>15</td>
<td>29%</td>
</tr>
<tr>
<td></td>
<td>3 – 4 years</td>
<td>11</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>Above 4 years</td>
<td>6</td>
<td>12%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>51</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Table 10**: Demographic data for respondents’ selection of project timelines experience in the past 5 years (2011-2016)

The collected data was then analysed through the use of pie charts in order to evaluate its distribution as illustrated below:

**Figure 16**: Pie chart distribution for the respondents’ selection of project timelines experiences in the past years (2011-2016)
With reference to figure 12, it was noted that the majority of construction contracts in Malawi span for a timeline of two to three years from inception to delivery with a percentage of twenty nine percent (29%). Twenty seven percent (27%) of the sample had project timelines for a period of one to two years, twenty two percent (22%) of the sample experienced project periods of three to four years while twelve percent (12%) and ten percent (10%) had projects with timelines of less one year and above four years respectively. With reference to the literature on turnkey contracts, the most feasible timelines for mega construction projects in developing countries that are valued at ten million US Dollars are between three to four years (Gilge, 2013). This time period is referred to as the predictive timeline in which the project scope, time and cost are determined in the early stages of the project life cycle as practically as possible (PMI, 2013). The period comprises of all project life cycle stages from requirements, feasibility, planning, design, construction, testing and handover (PMI, 2013). From the data obtained, twenty two percent (22%) of the projects implemented in past five years fell in the turnkey project timeline of three to four years. Further analysis with respect to the project values from table 8 shows that most of these project are in the envelope of one to ten billion Malawi kwacha. It was noted that those projects that had time periods of over four years had project cost value of over ten billion kwacha which constituted twelve percent (12%) of our sample.

4.2.1.2 Implementation of construction project in Malawi using the turnkey contract approach

As categorised in the third section of the questionnaire, the knowledge base of the respondents towards the presence of the turnkey contracts and its sources played a significant role in determining its influence of change toward implementation of mega-construction projects (MCPs). The majority of the respondents in the sample group were aware on the existence of the EPC/turnkey contracts in Malawi as one of the construction methodologies for design and build contracts. Consider the tabulated data and graphical presentation below:

<table>
<thead>
<tr>
<th>Implementation Factor</th>
<th>Category</th>
<th>Frequency</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of Turnkey contracts in Malawi</td>
<td>Aware</td>
<td>44</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td>Not Aware</td>
<td>6</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>Not Sure</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>51</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 11: Awareness of existence of Turnkey contracts in Malawi construction industry
Reference being made to figure 13, It was noted that eight six percent (86%) of the sample group were aware of the presence and procedures of the turnkey contractors in Malawi. Twelve percent (12%) of the sample were not aware while the remaining two percent (2%) were not sure at all. This provided a precedent of the data collected for the research to be adequate and practical as the sample knew the background and processes associated with the turnkey contracts. In addition to the same, the presence of current Chinese projects in the areas of study of Lilongwe and Blantyre allowed for a rapport in the identification of turnkey contracts with respect to the traditional contracts. Such construction projects which were being implemented included the Bingu nation stadium in Lilongwe and the Chipembere highway in Blantyre.

In addition, the source of awareness or knowledge of the eighty six percent (86%) respondents mattered most for the research. Thus, a need to determine the level of knowledge was required so as to check the credibility of the feedback obtained from the respondents. Analysis illustrated that most respondents that had experience above ten years were either part of a turnkey project team in Malawi or other foreign countries. Those which had years of experience between five to ten years mostly knew about turnkey contracts through publications, seminars, higher studies or through interactions with other professionals. Consider the tabulated data below and its graphical presentation illustrating its distribution as follows:
<table>
<thead>
<tr>
<th>Implementation Factor</th>
<th>Category</th>
<th>Frequency</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of knowledge</td>
<td>Professional seminars</td>
<td>8</td>
<td>16%</td>
</tr>
<tr>
<td>for Turnkey contracts</td>
<td>Publications, Journals</td>
<td>13</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>Colleagues, Peers</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Already applied and from experience</td>
<td>15</td>
<td>29%</td>
</tr>
<tr>
<td></td>
<td>Studies in higher education/specialised courses</td>
<td>11</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>51</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 12: Respondents source of knowledge for turnkey contract in Malawi construction industry

![Pie chart distribution for respondents' knowledge source of turnkey contract existence in Malawi](image)

Figure 18: Pie chart distribution for respondents' knowledge source of turnkey contract existence in Malawi

With reference from the above pie chart, it was noted that twenty nine percent (29%) of the sample comprised of respondents that were already applying the turnkey contracts in their firms and from their past experience. Twenty two percent (22%) of the respondents had knowledge of turnkey
contracts through their studies of higher education and special courses that have been offered by construction training institutions such as the National Construction Industrial Council of Malawi (NCIC). Twenty five percent of the respondents showed that their knowledge base of construction contracts and turnkey contracts was dependent of publications and journals produced by other experts and professionals in different countries. Further to the same, it was also noted that sixteen percent (16%) of the respondents indicated that their knowledge of turnkey contracts was based on the professional seminars either in engineering, quantity surveying or architectural conference organised locally in Malawi or abroad. The sources of knowledge of turnkey contracts was significant to the research as the implementation criteria of these contracts was associated with change management. As such, the knowledge base of respondents provided for a basis of obtaining additional information from the literature gathered and to identify the importance of using these contracts as compared with traditional contracts in Malawi. The presence of a combine percentage of fifty one percent (51%) of the respondents that had adequate information on turnkey contracts from experience and high level education allowed for a practical data analysis and evaluation of facts rather than opinions or views. This resulted into the identification of currently cause of project failure in the construction sector of Malawi.

Using the feedback obtained from the sample the following were recorded as the major causes of project failure in Malawi construction sector as follows:

<table>
<thead>
<tr>
<th>Implementation Factor</th>
<th>Category</th>
<th>Frequency (Counts)</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Majors cause of Project Failure in Malawi</td>
<td>Political influence</td>
<td>28</td>
<td>54.9%</td>
</tr>
<tr>
<td></td>
<td>Corruption</td>
<td>27</td>
<td>52.9%</td>
</tr>
<tr>
<td></td>
<td>Lack of Capacity – Contractor &amp; Consultants</td>
<td>20</td>
<td>39.2%</td>
</tr>
<tr>
<td></td>
<td>Poor designs</td>
<td>13</td>
<td>25.5%</td>
</tr>
<tr>
<td></td>
<td>Poor project management skills</td>
<td>24</td>
<td>47.1%</td>
</tr>
<tr>
<td></td>
<td>Lack or mismanagement of funds</td>
<td>26</td>
<td>51%</td>
</tr>
<tr>
<td></td>
<td>Other factors</td>
<td>6</td>
<td>11.8%</td>
</tr>
</tbody>
</table>

Table 13: Major causes of project failure in the Malawi construction industry
With reference to figure 19, it was noted that all the causes of project failure of most construction contracts in Malawi were important. Nonetheless, the cause of poor designs was weighted below average to a percentage of twenty five comma five percent (25.5%) by respondents as the presence of poor designs did not fully cause failure but delays or partial completion of projects (Kamanga, 2013). The highest rated cause of project failure in the construction sector of Malawi was identified to be political influences which was rated at fifty four comma nine percent (54.9%). Thus, the presence of change in governments and power has resulted into mega construction projects in Malawi to fail either due to difference in ideologies or priorities of economic development. The same was seconded by factors such as corruption and mismanagement of funds which were rated at fifty two comma nine (52.9%) and fifty one (51%) percent respectively. The foregoing results have been identified by the respondents as a shared causes to all project stakeholders as mismanagement of funds is experienced by the client, contractor and the consultant. It was also noted that most local contractors that had limited capacity ended up mismanaging their advance working capital that has led to project failure. The same has also been identified with respect to corruption practices, whereby all stakeholders have been held liable to construction project failures in Malawi.
In addition, the research identified additional causes of project failure which constituted eleven comma eight percent (11.8%) of the sample group and included the following factors such as social influences, limited stakeholders involvement, inadequate planning at project inception, poor leadership, conflicts and poor economies. Further to the same, it was discovered that poor project management techniques and lack of capacity by local consultants and contractors also contributed to the causes of project failure with an average weighting percentages of forty seven comma one (47.1%) percent and thirty nine comma two (39.2%) percent respectively. The criticality of proper planning and feasibility studies in project management have been regarded as being very crucial whereby most projects that spend eighty percent (80%) time on planning and twenty percent (20%) time on implementation prove to be successful (PMI, 2013). This has been the trend in most traditional contracts in developed countries which Malawi has not utilised as the vice versa and short cuts are commonly used allowing for little time for planning and designing.

In addition, the research further identified the key importance of implementing mega construction projects (MCPs) in Malawi using turnkey contracts and the following data was obtained as follows:

<table>
<thead>
<tr>
<th>Importance of using Turnkey contracts</th>
<th>Weighting</th>
<th>Statistical determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>Guaranteed high quality of works</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Reduced costs over-runs</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>Timely delivery</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Flexible cash flow for client payments</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Contract biased towards contractor</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Rapport in procurement process</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Transparent and accountable, minimal corruption</td>
<td>3</td>
<td>16</td>
</tr>
</tbody>
</table>
Table 14: Importance of implementing construction projects in Malawi using the turnkey contract

<table>
<thead>
<tr>
<th>Importance</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal occurrence of disputes</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>Adequacy in project designs</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>Best Pricing for value of money</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Practical for complex projects</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Full stakeholder involvement</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>Transparent and accountable, no corruption</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Rapport in the procurement process</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Contract is biased towards contractor</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Flexible cash flow for client payments</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Time delivery</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Reduced cost over-runs</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Guaranteed high quality of works</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>12</td>
<td>16</td>
</tr>
</tbody>
</table>

Figure 20: Bar chart illustrating the weights of importance of the implementing construction projects in Malawi using turnkey contracts.
With reference to table 14 and figure 20, it was noted that the most important parameter of using turnkey contracts in Malawi were timely delivery of projects and its practicability for complex projects. These two important parameters were highly ranked as being very important by the sample group with standard deviations of 9.33 for timely completion and 11.58 for its practicability in implementing complex or mega projects. The magnitude of deviation of these two important parameters was high which clearly illustrated that the data collected from the sample on these two parameters was spread out over a wider range of data values. Thus, the parameter rating by most of the respondents were either in strong agreement or agreeing to the parameter set which created precedence to its high rating and deviation from the normal average response. In addition, it was also noted that parameters of flexibility of cash flow, rapport in procurement process, best pricing for value of money and adequacy in project designs were regarded as average in importance by the respondents. This resulted into the measure in dispersion of the data collected in order to weigh the parameters of importance in implementing projects in Malawi using the turnkey approach. Consider the figure below:

**Figure 21:** Pyramid illustrating the hierarchy of important parameter for implementing construction projects in Malawi using the turnkey contracts
The hierarchy of the importance of implementing projects in Malawi using the turnkey contract was arrived upon by measuring the variance of responses for each parameter provided. This measure allowed for weighting of the importance parameters from most important to the least important in this category. This enabled the research to determine how practical is was for one to implement project using this contract approach and what benefits would be obtained at the end. Reference being made to figure 21 and considering the first five important parameters, it can be clearly noted that turnkey projects are the most practical type of contracts for implementing project that are complex, time fixed, require minimal disputes, fixed budgets and require high quality standards.

4.2.1.3 Benefits and challenges of the turnkey contract approach

Further to identifying the significance of implementing mega construction projects in Malawi using the turnkey contract approach; section four (4) of the research questionnaire further proceeded to obtain data on the benefits and challenges of using turnkey contracts in Malawi. As such, respondents were requested to identify the challenges being faced in Malawi that are affecting the use of turnkey contracts. The following data was obtained and tabulated as follows:

<table>
<thead>
<tr>
<th>Challenges of using Turnkey contracts</th>
<th>Weight</th>
<th>Statistical determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>Lack of knowledge</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Too expensive to implement</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>Suitable for mega projects only</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>Require stable economies</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Affected by political and social influences</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td>Lack of capacity in contractors and consultants</td>
<td>7</td>
<td>18</td>
</tr>
</tbody>
</table>

Table 15: Challenges of implementing construction projects in Malawi using the turnkey contract
The tabulated data recorded was analysed using the following statistical graph as follows:

**Figure 22**: Bar graph illustrating the respondents' views on the challenges faced when implementing turnkey contracts in Malawi.

With reference to figure 22, it was noted that turnkey contracts in Malawi have failed to be initiated in some projects due to them being either too expensive to implement or lack of knowledge. It was noted that the respondents rated the latter challenges very high in terms of importance toward the setbacks of the turnkey approach implementation in Malawi. Further to the same, the standard deviation obtained from table 15 showed that the distribution of respondents' feedback in identifying the challenges showed the critical views and opinions that the sample had towards turnkey contracts. A standard deviation of 4.24 was obtained on the weighting of the challenge of unstable economies which illustrated that the dispersion of responses were very close to each other. Thus, in order to validate the importance of the challenge, it was noted that twelve respondents chose the challenge as vital while the other twelve disagreed. This resulted into a null/void selection of the weight for the challenge “unstable economies” such that a conclusion was made to declare the challenge as not applicable. Further to the same, the sample agreed less on the challenges of lack of knowledge and lack of capacity of contractors and consultant as being crucial challenges towards the implementation of turnkey contractors. All in all, the standard deviations obtained in table 15 on the challenges faced when implementing turnkey contracts were ranked in the order of their importance as follows:
Further to the same, the questionnaire also focused on determining the benefits of using turnkey contracts in implementation of projects in Malawi. Using the main benefits as per documented in the literature review, the respondents were guided by weighing the relevancy of these benefits with respect to the Malawi construction sector. Data was obtained from the sample group and was tabulated with statistical analyses being used to determine the patterns, deviations and variances of responses. Consider the table below:

<table>
<thead>
<tr>
<th>Benefits of using Turnkey contracts</th>
<th>Weight</th>
<th>Statistical determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timely completion of projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost effectiveness</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 23: Hierarchy list of the most important to the least important challenges affecting the implementation of turnkey contracts

- Suitable for mega construction projects only
- Lack of knowledge
- Too expensive to implement
- Affected by political and social influences
- Lack of capacity in contractors and consultants
- Require stable economies
Table 16: Benefits of using turnkey contracts for implementation of projects in Malawi

The collected data was then analysed using a combine bar graph and frequency polygon as a means of comparing between the challenges and the respondent's values obtained. Consider the figure below:
Reference being made to figure 24, it was noted that the responses obtained from the sample showed that the majority were in favour of using turnkey contracts for timely completion of projects. Thus, for projects that have fixed durations and are required urgently, the respondents' views were to use turnkey contracts as solution due to their time bound parameter. Nonetheless, the other benefits of cost effectiveness, quality assurance, and minimal risk of failure, durability of end product and the presence of no variations were rated on average by the respondents. Using the standard deviations obtained in table 16, the following benefits were ranked in their order of importance as follows:

![Diagram](image)

**Figure 25**: Pyramid illustrating the hierarchy of benefits of using turnkey contracts in implementation of projects in Malawi

It was noted further from figure 24 that the trends of the frequency polygons for the weights of the benefits varied with respect to the respondents' choices. Comparing the patterns of the graphs and the analysed data from table 16, an even distribution was observed for the level of importance of the other benefits apart from that of “timely completion of projects” as per figure 25. Needless to say that the ranking of these evenly distributed and weighted benefits had to involve the monitoring of each individuals response and the overall deviation from the average response required. Such a comparison analysis enabled for the elimination of the weakest benefits from the selection table being “durability of end product” and thereafter a proper weighting of the remaining benefits were done. The outcomes were presented in figure 25, where the turnkey
projects had a greater strength in delivering projects with priorities of fixed time, guarantees and fixed costs. In addition to that, the benefits of minimal variations or addendums were considered as being beneficial but subjected to unexpected changes depending on the complexity of the project. In addition to the same, benefits of “durability of end products” and “quality assurance” have been declined as important benefits of the turnkey contracts in their implementation of projects in Malawi. Upon critical observation of the responses, it was noted that this outcome was collected mainly as the turnkey contracts lacked independent consultants for quality control and assurance, checks and balances.

Further to the same, the questionnaire went further to evaluate disadvantages of implementing projects in Malawi using the turnkey contract system with respect to the benefits recorded above. Data was collected on the same and presented in a tabulated form below:

<table>
<thead>
<tr>
<th>Disadvantages of using Turnkey contracts</th>
<th>Weight</th>
<th>Statistical determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>Lack of skills transfer to locals</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Requires huge capital investments</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>No client ownership of the projects</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>No defects liability period</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>Zero quality control and assurance</td>
<td>3</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 17: Illustrates the respondents' weights of the disadvantages of using turnkey contracts in implementation of projects in Malawi
The tabulated data was then analysed using the bar-graph to plot the weights of the respondents against the proposed disadvantages from literature and monitor the highest but also the lowest demerits of the turnkey approach.

**Figure 26**: Bar graph illustrating the comparison and weighting of disadvantages of implementing projects in Malawi using the turnkey contracts

Reference being made to table 17 and figure 26, it was noted that all the disadvantages of turnkey contracts were key but the level of effect of each disadvantage varied. Thus, the level of skill transfer to the locals has been identified as the main disadvantage that turnkey contracts have bought into Malawi during implementation of mega construction projects. This has been illustrated by the methodology that the turnkey contractor uses both in the design and construction of the project. The contract being design-build, all works are done in house such that most turnkey contractors are international companies that tend to bring their own skilled and unskilled tradesmen for the works. In addition, it was also observed that these contracts provide minimal ownership to the locals both professionals and users of the project since they are not involved in the design and construction works. This demerit has been seconded by the involvement of international companies that have capacity to execute the projects as mega projects require huge capital investments which Malawi cannot afford due to the economic crisis it is currently experiencing. Furthermore, the structure of the contract has also provided a demerit on the
defects liability periods being used for the maintenance and rectifications of any snags that develop in the project. This was noted by various projects that are being implemented in Malawi whereby once the Chinese turnkey contractors complete their works, they demobilise completely all their human and equipment resources. Through standard traditional contracts, this is not applicable as the client is supposed to be guaranteed that the works have been completed to the designed quality by testing the project to adverse conditions for at least one year (FIDIC, 1999).

Nonetheless, the data collected showed an anomaly whereby one of the demerits listed for the turnkey contracts “no guarantee in quality control and assurance” was not considered as an disadvantage by the sample. Respondents disagreed with the same as they argued that the designs and methodology of works are overdesigned and executed with specialists such that the turnkey contractor takes all measures to safeguard their investments by not compromising on quality. It can therefore be noted that turnkey contracts provide for high quality of works with respect to the specialised technocrats and methodologies it uses during implementation. Consider the hierarchy diagram below analysing the level of significance of the disadvantages as follows:

**Figure 27:** Hierarchy list of the weight of disadvantages of turnkey contracts from most significant to least significant
The questionnaire went further to obtain views of each respondent in relation to how turnkey contracts have contributed to the construction development of Malawi in general. Different views and opinions were obtained from the sample such that they were analysed by weighing them in their order of importance. The following results were obtained and tabulated as follows:

<table>
<thead>
<tr>
<th>S/N</th>
<th>Respondents contribution</th>
<th>Weight</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>Paves way for implementation of viable projects in Malawi which government could not due to lack of finances and technical know-how</td>
<td>10</td>
<td>Very important</td>
</tr>
<tr>
<td>2.00</td>
<td>It is a source of employment opportunity</td>
<td>6</td>
<td>Slightly above average</td>
</tr>
<tr>
<td>3.00</td>
<td>Provide for high quality of end products and cost savings in implementation of mega projects</td>
<td>5</td>
<td>Average</td>
</tr>
<tr>
<td>4.00</td>
<td>Provide gateway to new sophisticated technologies in the construction industry of Malawi</td>
<td>10</td>
<td>Very important</td>
</tr>
<tr>
<td>5.00</td>
<td>They assist in town planning development of infrastructures such as roads and buildings for Malawi</td>
<td>8</td>
<td>Important</td>
</tr>
<tr>
<td>6.00</td>
<td>They allow for accountability and transparency of works</td>
<td>6</td>
<td>Slightly above average</td>
</tr>
<tr>
<td>7.00</td>
<td>They have assisted in face-lifting and aesthetics of the countries infrastructures</td>
<td>8</td>
<td>Important</td>
</tr>
<tr>
<td>8.00</td>
<td>Contributed on the improvement of procurement and award criteria methods in the construction sector of Malawi</td>
<td>6</td>
<td>Slightly above average</td>
</tr>
<tr>
<td>9.00</td>
<td>They provide for complex problem solving approaches in the construction industry of Malawi</td>
<td>9</td>
<td>Very important</td>
</tr>
<tr>
<td>10.00</td>
<td>They allow for rural economic development through implementation of mega infrastructures</td>
<td>8</td>
<td>Important</td>
</tr>
<tr>
<td>11.00</td>
<td>They have allowed for delivery of complex infrastructures in short limited timelines.</td>
<td>10</td>
<td>Very important</td>
</tr>
</tbody>
</table>

Table 18: Contributions of Turnkey Contracts in the construction development of Malawi
Nonetheless, some of the respondents in the sample had different views towards the contribution of the turnkey contracts in the construction sector of Malawi such that the following data were recorded as follows:

<table>
<thead>
<tr>
<th>S/N</th>
<th>Respondents contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>No contribution as no skills transfer have been done to locals</td>
</tr>
<tr>
<td>2.00</td>
<td>The projects are mainly associated with small projects in Malawi such that their development contributions are minimal</td>
</tr>
<tr>
<td>3.00</td>
<td>No much contribution has been noted as most projects have failed to materialise</td>
</tr>
</tbody>
</table>

**Table 19**: Setbacks of Turnkey contracts in the construction development of Malawi

Reference being made from table 18 and 19, it was noted that turnkey contracts have not only bought good in the construction sector but also harmful effects in the same. Thus, out of the advantages that were recorded and collected, it has been noted that turnkey contracts in other sectors of Malawi construction industry contribute little towards skill transfer of technical know-how or specialisation to the locals. It has been noted that little participation has been registered by such projects whereby a percentage of the works is provided to the local contractors or consultants to showcase their skills so as to build up their capacity. Furthermore, feedback from the respondents also showed that most of the turnkey contracts in sectors of electrical engineering and partly building construction have failed to materialise in Malawi. As such, they have been considered as not a contributing factor towards development as such setbacks have contributed a lot towards the depletion of the available resources such being electricity and accommodation. Factors of project failure highlighted in the previous subsections as have been key towards the failure of turnkey contracts to materialise in development construction sectors. These have resulted into investors and private turnkey contractors pulling out of the construction sector in Malawi painting it as a risky for business (Perry, 1986).

**4.2.1.4 Comparison and contrast of traditional and turnkey contracts in Malawi**

The research further investigated on the difference between these two types of contracts that are being implemented in Malawi. Thus, the study focused on a comparison and contrast analysis between the contracts by looking at their performance in time delivery, team work, joint ventures, risk sharing, robustness of designs, access to project information, dependence on design phase, procurement processes, quality control and assurance and levels of maintenance liability.

The questionnaire was formulated to obtain adequate data from the sample group by determining the best type of contract that allows for timely delivery of projects. As such, respondents were
asked to provide for reasons of their selection of each contract type with respect to time deliveries. The following data was obtained as follows:

**Figure 28**: Pie chart illustrating the responses on the best contract approach for time delivery of construction projects in Malawi

With reference to figure 28, it was noted that out of the whole sample group, twenty one percent (21%) of the sample was in favour of traditional contracts as being the best contract approach in effective time delivery. The remaining seventy eight percent (79%) of the sample selected the turnkey contract approach as the most effective time delivery contract for mega construction project being implemented in Malawi. A summary of their reasons and facts were summarised from the responses and tabulated as follows:

<table>
<thead>
<tr>
<th>Traditional Contracts</th>
<th>Turnkey Contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checks and balances allows for progress expedition of works.</td>
<td>Minimal disturbance from consultants and absence of non-payment from client.</td>
</tr>
<tr>
<td>Client has power to fix time precedence with liquidated damages in case of delays.</td>
<td>All resources of the project at the disposal of the contract.</td>
</tr>
<tr>
<td>Contractor has a good cash flow as payments are made monthly.</td>
<td>Contractor has full control of the project</td>
</tr>
<tr>
<td><strong>Traditional Contracts</strong></td>
<td><strong>Turnkey Contracts</strong></td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Client is able to nominate subcontractors that have capacity to complete or assist in the works.</td>
<td>Contractor executes works with respect to time. Failure results into liquidated damages.</td>
</tr>
<tr>
<td></td>
<td>Less conflicts due to reduced project team members.</td>
</tr>
<tr>
<td></td>
<td>Thorough designs before implementation phase.</td>
</tr>
<tr>
<td></td>
<td>Able to use various suppliers for time delivery of the project.</td>
</tr>
<tr>
<td></td>
<td>Contractor is motivated and works to reduce overhead costs such that projects are executed in the shortest time possible.</td>
</tr>
<tr>
<td></td>
<td>Minimal consultations from too many stakeholders.</td>
</tr>
<tr>
<td></td>
<td>Contractual procedures are less bureaucratic.</td>
</tr>
<tr>
<td></td>
<td>Rapport in planning which allows for quick delivery of projects</td>
</tr>
<tr>
<td></td>
<td>No certifications and measurements that delay progress of works</td>
</tr>
<tr>
<td></td>
<td>Stakeholder management is minimal during design and implementation of works</td>
</tr>
<tr>
<td></td>
<td>No force majeure. All risks are bared by the contractor.</td>
</tr>
<tr>
<td></td>
<td>Communication is two way as designing and implementation is done jointly.</td>
</tr>
<tr>
<td></td>
<td>Good project management setup that allows achievement of goals and objectives.</td>
</tr>
</tbody>
</table>

**Table 20**: Comparison and contrast of Turnkey and Traditional contracts on time delivery of projects

Referring to the above table 20, it was identified that traditional contracts performed poorly in delivering projects on time as compared to turnkey contracts. The presence of independent consultant in the traditional contract delayed the process of decision making process in implementation of projects. Nonetheless, their presence also contributed to minimal expedition of
works as they exert pressure towards the implementation contractor by assisting the contractor in determining the best methodologies of implementation. In addition to the same, traditional contracts are designed in such a manner that clients and their independent consultants can nominate preferable subcontractors to assist the main contractor during delays. Thus, the main contractor has no option but to abide to the same and work hand in hand with the nominated subcontractor. Further to the same, the ability of the contract to impose fixed time agreements with associated liquidated damages allows the contractor to identify workable methodologies to complete the works. Notwithstanding the foregoing, the contract facilitates that the contractor is well equipped in equipment, human and financial resources as it is able to service the contractor’s cash flow at intervals within the implementation period. With respect to the Malawi construction industry, turnkey contracts have performed beyond doubt in time delivery of mega construction projects as outlined by their merits in table 20. The overruling strength of turnkey contracts is their ability to engage contractors that have unlimited capacity and are able to design and build simultaneously. This allows the project to move on schedule when tracked with minimal delays as the contractor has majority control of the project resources.

Moreover, successful time delivery of projects is dependent on the effective team work of the project team. As such, this parameter was used in this study as a comparison benchmark for the two contracts such that the following responses were obtained from the sample as follows:

![EFFECTIVE CONTRACT TYPE FOR TEAM WORK & JOINT VENTURE](image)

*Figure 29:* Pie chart illustrating a comparison of the most effective contract type for team work and joint venture
Reference being made to figure 29, it was noted that sixty three percent (63%) of the sample group preferred traditional contracts as effective in team work than compared to turnkey contracts which had only thirty seven percent (37%) respondents from the sample. The views and reasons behind their selection were summarised and tabulated in the table below as follows:

<table>
<thead>
<tr>
<th>Traditional Contracts</th>
<th>Turnkey Contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involves all stakeholders which are affected by the project.</td>
<td>The contractor runs the whole process such that there is no team work or joint ventures allowed in the contract.</td>
</tr>
<tr>
<td>Presence of multiple parties allows for technical and financial capacity improvements through partnership and joint ventures.</td>
<td>The contract is rigid towards team work and joint ventures. This is due to the level of confidentiality the project has to other stakeholders.</td>
</tr>
<tr>
<td>Shared responsibilities among the client, consultant and contractor allows for the effective team work.</td>
<td>The contract type is able to achieve effective team work as there is little room of antagonistic feels as the project team is in one group serving one purpose.</td>
</tr>
<tr>
<td>Ownership is provided for in the contract where by a full involvement of consultants and clients in decision making is accommodated.</td>
<td>The contract allows the whole construction management team to work under one umbrella of the project contractor where each professional works under one management with a common goal.</td>
</tr>
<tr>
<td>The contract allows the client to have the majority say and selection of the most capable project team.</td>
<td>The contract provides the contractor with a choice of selecting any subcontractor for joint venture. The main contractor has rapport at selecting a team of subcontractors they have are conversant with.</td>
</tr>
<tr>
<td>The procurement system allows both consultants and contractors to bid as consortiums or ventures.</td>
<td>The contract incorporates a lot of specialists that boost the project team capacity.</td>
</tr>
<tr>
<td>Instant consultations and interactions that allow for the project team to work hand in hand.</td>
<td></td>
</tr>
</tbody>
</table>
Traditional Contracts | Turnkey Contracts
--- | ---
Provides for exchange of ideas and experiences by independent teams. |  
Constant communication between the team players provide a motive in project effectiveness.  
The contract is flexible and promotes capacity building of the bidding project teams.  

**Table 21**: A comparison analysis of the effective in team work and joint ventures between traditional and turnkey contracts

With respect to table 21, traditional contracts were considered significant in developing effective team work as they allowed for full stake holder involvement as compared to turnkey contacts. Thus, traditional contracts took into consideration the involvement of end users during feasibility and project design, the client’s standards, the consultants technical advises and the implementing contractor’s methodology. Moreover, turnkey contracts on the other hand have illustrated minimal teamwork to the extent that they have allowed for proper coordination between the turnkey contractor and his members to work at rapport without antagonistic feelings. In addition, the turnkey contracts being led by one contractor who has control of the whole project provides for proper leadership that allows for channelization of the whole team to achieve a common goal.

In addition to the same, the questionnaire further looked into the performance of traditional and turnkey contracts in risk management of mega construction projects. Risk sources were identified during the course of data collection in which the main risks identified were commercial risks, political risks, natural disaster risks, cost and time overrun risks. It was noted that in turnkey contracts, risks are minimised for the owner as the contractor has the liability of the whole project. On the contrary, traditional contracts have illustrated a viable risk management approach whereby their ability of stakeholder involvement in the inception stage of the project have led to the efficient planning, identification and analysis of risks. This allows for risk sharing as the individual team members are able to plan for their risk responses in advance for each team player. Thus, the project team is able to share the risks among themselves with respect to their obligations than compared to turnkey contracts that are risk averse. Consider the responses that were obtained from the sample as illustrated in the figure below:
Reference being made to figure 30, eighty eight percent (88%) of the respondents were in agreement with the ability of traditional contracts to share risks among the team while twelve percent (12%) of the sample agreed to turnkey contracts. Views and opinions of the respondents’ choices were summarised and tabulated as follows:

<table>
<thead>
<tr>
<th>Traditional Contracts</th>
<th>Turnkey Contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liability is spread across the client, consultant and contractor with respect to the agreed duties and responsibilities.</td>
<td>All risks are bared by contractor only.</td>
</tr>
<tr>
<td>Tri-party agreement in nature such that all risks are evenly shared.</td>
<td>Risk is shared mostly with subcontractors engaged under the main contractor’s roof.</td>
</tr>
<tr>
<td>Each project team member has a contractual obligation to fulfil.</td>
<td>Risk averse. Mitigation parameters are set in the inception stage of the project.</td>
</tr>
<tr>
<td>The contract allows all parties to be accountable for the project deliverables until hand over.</td>
<td>Project scope of works is too specialised such that only the contractor is aware of all risks than the client.</td>
</tr>
<tr>
<td>Traditional Contracts</td>
<td>Turnkey Contracts</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Risk outcomes of poor designs are shared by all parties such that the effects are mutual to all team members.</td>
<td></td>
</tr>
<tr>
<td>It involves the incorporation of independent risk managers and assessor both on the onset and during the course of the project.</td>
<td></td>
</tr>
<tr>
<td>Procurement process allows for a proper division and adherence to risks before commencement of the project.</td>
<td></td>
</tr>
<tr>
<td>The contracts are designed to allow each team players achieve independent project deliverables.</td>
<td></td>
</tr>
<tr>
<td>Multiple stakeholders are incorporated in the project other than the three main parties that allow a wide range of risk sharing.</td>
<td></td>
</tr>
<tr>
<td>The contract approach allows for subcontracts that are agreed with all team players which provide for individual risk liabilities for each member.</td>
<td></td>
</tr>
<tr>
<td>The approach allows for contribution of different ideas and solutions from all stakeholders that allows for risk sharing and mitigation.</td>
<td></td>
</tr>
</tbody>
</table>

**Table 22**: Table illustrating the comparison analysis of traditional and turnkey contacts in risk management

Moreover, the questionnaire further looked at determining the dependency of each contract with respect to the design stage of the project life cycle. The respondents were questioned on their experience with respect to the performance of both contracts and the project life cycle phase of designing. The presence of poor designs have been encountered in the project life cycle from such that delays in the project implementation phase have been encountered. As such data was obtained from the sample on the comparison and contrast of the two contracts with respect to the robustness of the project designs which were obtained and presented in figure 31 as follows:
Reference being made from figure 31, the sixty six percent (66%) of the sample indicated that the turnkey contracts had efficient and robust design than compared to traditional contracts that had thirty four percent (34%) of the respondents. Comparison and contrast data of the respondents’ views were tabulated for the two contracts as follows:

<table>
<thead>
<tr>
<th>Traditional contracts</th>
<th>Turnkey contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>The designs are made of too much assumptions.</td>
<td>Specialisation is involved hence the designs are practical and durable to implement.</td>
</tr>
<tr>
<td>Over designing is incorporated as the designer is mandated to mitigate any risks of failure.</td>
<td>The designer is also the constructor as such his designs are practical to avoid risks of failure.</td>
</tr>
<tr>
<td>The client has a special technical team that is able to provide technical checks and audit of designs before implementation.</td>
<td>Correction and amendments of designs are done are no costs.</td>
</tr>
<tr>
<td>The client is able to specify for standard requirements to be used for designs, testing and checking of the end product which are used as a basis of the project design.</td>
<td>The designers are conversant with the works they are required to implement as such all designs are workable.</td>
</tr>
</tbody>
</table>
Traditional contracts

- Involves the use of standard drawings or on the shelf drawings that vary with ground conditions.

- Designs incorporate all stakeholders’ needs and requirements.

Turnkey contracts

- Designs are developed jointly between the contractor and the in-house designer such that theory and practical experiences are amalgamated to form a robust design.

- Turnkey contracts have experience team members that can design-build components from experience.

- More time is invested in concepts, planning and preambles that allow all designs to be workable and operational upon completion.

- Input of work methodology and resources is made during design by the contractor such that the designer incorporates elements with respect to available resources at his disposal.

- Uses advance technologies during designs that have minimal error margins.

- It eliminates misrepresentation and misinterpretation of designs and standards as all works are done by one party.

Table 23: Illustrates the comparison analysis of most effective designs produced by either turnkey or traditional contracts

From table 23, it was noted that turnkey contracts delivered robust designs with respect to the fact that the designs involved a lot of specialisation, input from the implementation team, elimination of ambiguity in summary. The fact that the contractor attains both duties of designing and implementation, designs are robust and practical as the implementing team is able to understand the technicalities and procedures to produce the end product as compared to the traditional contracts. It was noted that project delays and misrepresentation of designs in traditional contracts have been on the rise such that projects have been either under or overdesigned with respect to their management procedures and techniques. Further to the same, the character of designs in traditional contracts being performed by individual consultants has made the estimation and budgeting ineffective in such a manner that during the implementation phase, variations and cost overruns are experienced.
In addition to the same, the questionnaire went further to examine on the level of transparency and accountability of either traditional or turnkey contracts with respect to their accessibility of project information:

![Pie chart illustrating the comparison of traditional and turnkey contracts in accessibility of project information.](image)

**Figure 32:** Pie chart illustrates the comparison of traditional and turnkey contracts in accessibility of project information.

Figure 32 illustrates the respondents’ feedback on their views from experience on the accessibility of project information in respect to transparency and accountability of the contracts. Turnkey contracts project information for mega construction projects has been made confidential in Malawi such that little knowledge has been made public to end users. Thus project documents such as drawings, designs, specials conditions of contract and bills of quantities are made in closed doors with little area of criticism and audit. This has led to the developments made by turnkey contracts being unsustainable as the end users have minimal information on the project setup and components. On the contrary, traditional contracts have been designed in such a manner that project information has been made public due to the presence of various stakeholder in the project team. The fact that traditional contracts have respective duties and obligations by each stakeholder, the public being the major stakeholder in the project, information is mandated by law to be made public for transparency and continuity of the project investment. This therefore led to eighty percent (80%) of the respondents agreeing to turnkey contracts being enigmatic in nature.
<table>
<thead>
<tr>
<th>Traditional Contracts</th>
<th>Turnkey Contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project team members work on their respective tasks which are distant from each team.</td>
<td>Agreements are made in closed doors.</td>
</tr>
<tr>
<td>In scenarios of security agreements of financial institutions, documents are restricted for public interest.</td>
<td>The approaches is too confidential in protecting information on pricing and designs as a measure of mitigating risks.</td>
</tr>
<tr>
<td>The client has minimal information of the final documents and operation manuals as agreements in this contracts allow only for handover without commissioning.</td>
<td>Contracts are politically motivated such that documents are not made for public viewing.</td>
</tr>
<tr>
<td>Stakeholders’ with different backgrounds fail to communicate and share information due to their independence of each other.</td>
<td>Specifications are developed by the contractor as such their act as design patents that are not subject to copyright or scrutiny.</td>
</tr>
<tr>
<td>Minimal communication and interactions between project parties results into minimal access of information.</td>
<td>Contractor is the sole custodian of all activities and risks as such project information is private.</td>
</tr>
<tr>
<td></td>
<td>The contract is heavily supported and instructive.</td>
</tr>
<tr>
<td></td>
<td>The contractor’s mandate to design-build-commission the project results into project information being made confidential to prevent sabotage.</td>
</tr>
<tr>
<td></td>
<td>Since there are no independent consultants or stakeholder involvements, most information is hidden.</td>
</tr>
<tr>
<td></td>
<td>Contract is associated with non-disclosure agreements. Documents are held private to prevent conflict of interest.</td>
</tr>
<tr>
<td></td>
<td>Contracts are investor related as such, information is protected to prevent corporate wars with competitors.</td>
</tr>
</tbody>
</table>

**Table 24**: Illustrate the contrast analysis between traditional and turnkey contracts in project information accessibility
Further to the same, the questionnaire investigated on the dependency of each type of contract with respect to the completion of the design phase. The following responses were obtained as follows:

**Figure 33:** Pie chart illustrating the dependency of turnkey and traditional contracts on the design phase

Referring to the above figure 33, it was noted that fourteen (14%) of the respondents were in agreement with turnkey contracts depending on completion of the design stage while eighty six percent (86%) were in agreement with traditional contracts. This majority response was deduced from the setup of the traditional contracts whereby their project life cycle has mutual dependency of each phase. Thus, the project inception stage cannot be overruled or executed concurrently with the implementation phase as each stage in the traditional contracts are dependent of each other. Respondents’ views and opinions were collected in the same questionnaire and were categorised in the table below:

<table>
<thead>
<tr>
<th>Traditional contract</th>
<th>Turnkey contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement process requires completion of designs approved by the client.</td>
<td>Implementation is done concurrently with the design.</td>
</tr>
<tr>
<td>Project management approach involves 20% time for designs and 80% for implementation.</td>
<td>The end product is the main goal of the project as such works commence before completion of the final design.</td>
</tr>
</tbody>
</table>
Traditional contract | Turnkey contract
---|---
To allow for proper budgeting of funds by the client, the contract requires completion of designs before implementation. | Works involves multiple specialists as such one unanimous design does not apply as each specialists bring his own design.

Procurement systematics in all competitors enables the contractor to select the most competitive bidder. |  

The design acts as a standalone output and may form basis of payment. |  

Project implementation is dependent on the value of the design such that if the design is expensive, the client can authorise implementation of the project. |  

Designs act as guidelines of agreements for all parties before implementation and agreements are made. |  

Nature of contract administration layout as per the project life cycle. |  

The design process assist in risk assessments and mitigation as such implementation can’t commence before finalisation of designs. |  

**Table 25**: Respondents views on the dependency of traditional and turnkey contracts on the design stage

It was noted from the responses in table 25 that the execution of traditional contracts in administering of mega construction projects requires the completion of the inception stages of feasibility study and designing. Thus, the completion of this phase allows for the execution of the procurement process of contractors, budgeting of the project, formulation of contracts, and most of all implementation of the project. Unlike in turnkey contracts whereby the project is rolled out before completion of the designs, the design phase is executed concurrently with the planning and implementation phase. This results in the project being executed within a short period of time as the turnkey project life cycle phases are independent of each other such that one phase does not affect the other during execution. The nature of turnkey contracts having full control of
the works and finances creates a rapport in project management layout such that phases are bypassed in order to compensate for time lost.

In addition to the same, the study also looked at how traditional and turnkey contracts perform in the procurement systems of mega construction projects. From the responses obtained from the sample group, the following data was registered as illustrated below:

**Figure 34**: Pie Chart illustrating the most bureaucratic procurement system between traditional and turnkey contracts

Reference being made to figure 34, ninety six percent (96%) of the sample illustrated that the traditional contracts have a bureaucratic and cumbersome system of procurement with two percent (2%) of the sample contending the same for turnkey contracts. The remaining two percent (2%) of the sample responded that both contracts have a cumbersome procurement system. The respondents’ feedback were summarised and tabulated in the table 26 below whereby traditional contracts were observed to have traits of slow and repetitive procurement systems. It was further noted that traditional contracts have a repetitive process of procurement with independent consultants being procured first before main contractors and subcontractor are selected. Each process is tedious as suppliers have to also undergo the same systems regardless of the main contractor attain liability of quality of works. Further to the same, in international competitive bidding, the procurement process is open to the whole world such that the client can’t quota or
limit the number of bidders. Thus, the procurement system is less efficient due to corruption as bribes are highly abundant. Consider the table below:

<table>
<thead>
<tr>
<th>Traditional contracts</th>
<th>Turnkey contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>The involvement of multiple stakeholders creates a bureaucratic system of procurement.</td>
<td>All procurement logistics are done by the contractor which makes the process slow and ineffective.</td>
</tr>
<tr>
<td>The project team is identified through procurement process that is tedious as firstly independent consultants are to be obtained who in turn have to identify a contractor.</td>
<td></td>
</tr>
<tr>
<td>Competitive bidding results into unlimited number of bidders that makes the evaluation process tedious.</td>
<td></td>
</tr>
<tr>
<td>For small contracts, it is impossible to quota the bidders as they are all eligible to compete by law.</td>
<td></td>
</tr>
<tr>
<td>The presence of independent evaluators allows for transparency and minimal corruption practices.</td>
<td></td>
</tr>
<tr>
<td>The selection of the project team is phases that results into repetition of bidding processes if bids are not competitive.</td>
<td></td>
</tr>
<tr>
<td>By law of procurement, the minimum number of bidders to be evaluated has to be 3 such that if the same are not obtain, the procurement process is incomplete.</td>
<td></td>
</tr>
</tbody>
</table>

Table 26: A comparison analysis between traditional and turnkey contracts in their procurement systems

In addition to the same, the study went further to compare and contrast on the quality control and assurance rendered by tradition and turnkey contracts in their management of mega construction project in Malawi. From the questionnaires distributed to the sample, seventy six percent (76%) of the sample preferred traditional contracts as the most desirable contracts that allowed for
quality control and assurance than turnkey contracts which only twenty four percent (24%) of the sample preferred. Consider the figure below:

**Figure 35:** Pie chart illustrating the responses preferred type of contract that renders quality control and assurance on mega construction projects.

The obtained feedback in figure 35 was justified by the respondents’ views and reasons on their choice of the contract type. Through a tabulated comparison analysis, their responses were summarised and tabulated in the table below:

<table>
<thead>
<tr>
<th>Traditional Contracts</th>
<th>Turnkey contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment and certification is only done upon delivery of the works with accordance to the quality specifications required.</td>
<td>Specialisation allows for the involvement of perfectionist that allow for quality control and assurance.</td>
</tr>
<tr>
<td>Involves the use of independent quality assurance teams.</td>
<td>Conglomerate contractors with unlimited capacity are normally used who have quality control procedures and teams.</td>
</tr>
<tr>
<td>Involves checks and balances during implementation by the design team.</td>
<td>The process of design and build allows for modelling, pre-testing before designs are made ensuring that the final design outcome complies with existing ground conditions.</td>
</tr>
</tbody>
</table>
Traditional Contracts | Turnkey contracts
---|---
Specifications are developed by independent consultants as per the client’s requirements which guarantees quality assurance. | Liability of failure of design is in the contractor’s hands as such, overdesigning is involved to guarantee quality.
Involves testing and auditing that ensure control in quality and assurance of the end product. | Since the end product is delivered at full functional stage, the turnkey contractor ensures that all components are delivered without snags.
Clients also employ representatives that are mandated to do the checks through the contract. | 
The contract has multiple check points along the milestones of the projects before final delivery. | 
All stakeholders are aware of the project progress. Defects are pointed out prior before handover. | 
All stakeholders agree to project implementation guidelines and specifications that are adhered by each project member as part of their obligations. | 
Presence of defects liability period in the contract ensures that the end product is guaranteed for its performance and durability after delivery. | 

**Table 27:** A comparison analysis between traditional and turnkey contracts on quality control and assurance of mega construction projects

Referring to the above table 27, turnkey contracts are designed for specialised works such that the client is assured of quality deliverance as the works are only executed by contractors that are specialist. In addition, the provisional clauses for the contract to test and commission the project at handover allows the client to certify that the project is indeed fit for their purpose unlike in traditional contracts where partial handovers are incorporated at handover. On the contrary, traditional contracts have incorporated check and balance during the course of the project whereby independent consultants are used to check for quality of works before certifications are
made. This allows the client to have assurance of quality of the final end product as these adhoc tests are credible and justified with respect to the design requirements. In addition, in order to mitigate the risk of poor quality, the traditional contracts allow for defects liability of twelve (12) months after handover for the client to monitor and evaluate the performance of the final product. Further to the same, the presence of the client during supervisions on monthly basis also creates an environment of quality awareness to the project team such that any deviation to the design is not accounted and compensated for by the client. This allows snags to be rectified during the course of the project before a major defect is created at handover stage of the project.

In addition, the debate on the quality control and assurance with respect to defects liabilities resulted into the study investigating further on the type of contract that has minimal liabilities and maintenances. The following results were obtained from the sample group as illustrated below with seventy one percent (71%) of the sample preferring turnkey contracts while twenty nine percent (29%) selected traditional contracts.

![Pie chart illustrating the responses on the type of contract with minimal liabilities and maintenances](image)

**Figure 36:** Pie chart illustrating the responses on the type of contract with minimal liabilities and maintenances

The results obtain in figure 36, were justified through a comparison and contrast analysis of the respondents’ reasons that were summarised and tabulated in table 28 below:
Traditional Contracts | Turnkey Contracts
--- | ---
Presence of checks and balances in the course of implementation allows for minimal liability and maintenances. | Product is delivered at full functional/operational state.
Strict site supervision leads to delivery of a better quality product. | Contractor delivers the projects with his own specifications and materials.
Project is delivered under strict guidelines and supervisions such that the end product is certified before handover. | All liability is on the contractor until handover of the end product.
Standard retention amount is small as compared to the cost of remobilisation such that the contract is designed to deliver products with no snags. | Quality liability is in the hands of the turnkey contractor as such delivery of end product is ensured to be fit for purpose.
The contract is designed to allow for testing and commissioning at delivery stage such that the contractor is exempted from liability.

Table 28: Comparison and contrast analysis of traditional and turnkey contracts on levels of liability and maintenances

Reference being made to table 28, it was noted that turnkey contracts had minimal liabilities and maintenance as compared to traditional contracts. This outcome was justified by the ability of turnkey contracts to deliver the project in a full functional state to the client. This eliminates all shortfall of quality as the clients is able to utilise the end product immediately. Further to the same, turnkey contracts shift all risks to the contractor as such the contractor takes precautionary measures of using specialised methodologies, specifications and materials that can mitigate risks of failure or defects. On the contrary, traditional contracts have also illustrated minimal liabilities and maintenances whereby the presence of independent consultants in the project team allows for quality control and assurance. The contention usually arises from the same consultant’s designs such that the contract has rigorous defects due to poor designs and specifications regardless of the contractor being professional in his dealings. This therefore results into traditional contracts being more liable to defects and maintenance more than turnkey contracts.
4.2.1.5 Areas of improvement of Turnkey contracts in the implementation and management of mega construction projects in Malawi

The study further investigated on how turnkey contracts can be improved for their effective use in implementation and management of mega construction projects in Malawi. As such the questionnaire was designed in section six to justify the current setback of minimal participation of locals in the turnkey contract. It was noted that eighty four percent (84%) of the sample indicated that local consultants and contractors had no participation in these contracts with the remaining sample group of sixteen percent (16%) indicating the involvement of locals in turnkey projects.

![ADEQUANCY OF PARTICIPATION OF LOCALS IN TURNKEY CONTRACTS](image)

**Figure 37:** Pie chart illustrating the participation of locals in turnkey contracts

This result was justified by the current projects being undertaken in Malawi at present whereby the majority of turnkey contracts are championed by international companies of Chinese origin. These turnkey contractors have mobilised all resources imported from the countries such that no participation of locals in the project management cycle is allowed for. Thus, the turnkey contractor uses his personnel for the development of the designs and other special works in the project. This has been so as most turnkey contractor have complained of most locals in Malawi lacking capacity for the joint ventures. Nonetheless, the incorporation of new regulation by the national industrial construction council of Malawi on the capacity building process has led to a minimal involvement of local consultants and contractor in turnkey contracts. It has been noted that the participation level of locals is usually on minor works either through provision of unskilled labour or plant/equipment or through supply of materials. Further to the same, the elements of
confidentiality has also contributed to minimal participation as turnkey contracts in Malawi have been affected by political influences and interests. As such to reduce the risks of exposure, these contractors do not allow for skilled locals to be involved in the projects as contracts are signed in closed doors with non-disclosure agreements.

Furthermore, the study went further to analyse the significance of stakeholder involvement in design phase of turnkey projects in order to weigh the cost benefit of these projects to the end user. Responses from the sample group were obtained and illustrated in the figure below whereby ninety six percent (96%) of the sample highly weighed stakeholder involvement in design as vital with four percent (4%) of the sample contending on the same.

![Figure 38: Pie chart illustrating the importance of stakeholder involvement in design phase of turnkey contracts for the effective project cost benefit](image)

It was noted that most of the turnkey project initiated in Malawi did not involve stakeholder analysis during their feasibility studies, hence little impact was made by the outcomes of such projects towards the end users. Thus, the type of infrastructures produced by these projects have minimal cost benefit in terms of the valued amount of investment with respect to the projects returns. As such, it was deduced that most of the projects were initiated as a means of political will without considering the actual needs of the locals. These magnificent products have turned into white elephants which have become even costly to sustain due to poor levels of participation by locals.
Consider the stakeholder analysis matrix figure below for turnkey contracts:

![Stakeholder Analysis Matrix for Turnkey Contracts](image)

**Figure 39: Stakeholder Analysis Matrix for Turnkey Contracts**

It can be noted from figure 39 that the turnkey contracts in Malawi are focused on the political and private gains; as in the region where the cost and benefits of the project are high end users are usually side lined. This has been observed most for the mining projects that are currently being implemented with the turnkey approach in Malawi. Notwithstanding the latter, where small project are involved and are implemented by the turnkey approach, end users are considered as these project are not beneficial to the private investors nor international contractors. They are poor investments with little returns as such the end user benefits are also short termed as the projects are not mega construction projects. In addition to the same, development partners and donor are abundantly investing is these small projects which are managed by their own turnkey contractor as a guarantee to safe guard their funds from being misused through cash gate or other corrupt practices. They have focued on these project as their benefits towards the end user are high so are the returns that are realised faster.

In addition to the same, the study requested the sample to provide for response on the probable defects liability period that could be used for effective implementation of turnkey contracts. The following data was obtained and tabulated below:
An Investigation into Construction Contracts in Malawi – Turnkey Vs. Traditional

### Table 29: Illustrates the proposed defects liability period for effective implementation of turnkey contracts

<table>
<thead>
<tr>
<th>Proposed Improvement Factor</th>
<th>Category</th>
<th>Frequency</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adding of a defects liability Clause in contract implementation</td>
<td>Less than 1 year</td>
<td>5</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>1 to 2 years</td>
<td>23</td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td>2 to 3 years</td>
<td>12</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>Above 3 years</td>
<td>11</td>
<td>22%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>51</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The tabulated data above was plotted into a pie chart to illustrate the distribution of the responses. The majority of the sample represented by forty five percent (45%) of the sample selected a defects liability of one to two (1-2) years while twenty three percent (23%) selected a defects liability period of two to three (2-3) years. In addition, twenty two percent (22%) selected a defects liability period of above three (3) years and the remaining ten percent (10%) chose a defects period of less than one (1) year. Consider the figure below:

![Pie chart illustrating the preferred defects liability period for effective implementation turnkey contracts in Malawi](image)

**Figure 40**: Pie chart illustrating the preferred defects liability period for effective implementation turnkey contracts in Malawi

Reference is made to figure 40, it can be noted that the most desirable defects liability period for effective implementation of turnkey contracts in Malawi is within the range of one to two (1-2) years after handover of the project. This preference was selected due the standard practice that
most contracts have been setup on to perform rectification after handover of the facilities to the client. The ability to subject the project to twelve months of work pressure and all weather seasons facilitates the judgement and appraisal of the quality delivered by the project. In addition, the minimum period of one year becomes adequate enough for the end user to determine whether the deliverables are fit for purpose and beneficial on not. Mega construction projects that have various components in their outcomes require ample time of more than one year so as to allow a proper inspection of each and every section of the end product. This is mostly common in construction projects across the world and in Malawi whereby after the lapse of one year the structures attain their designed strengths and settlements as such defects are clearly indicated for rectification.

Further to the same, the questionnaire investigated on the best procurement method that the Malawi construction sector can adopt on the selection of turnkey contractors both at local and international levels. The following data was obtained that was tabulated in the table below:

<table>
<thead>
<tr>
<th>Proposed Procurement Method</th>
<th>Category</th>
<th>Frequency</th>
<th>Representative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The best procurement system for effective selection of turnkey contractors</td>
<td>Prequalification</td>
<td>17</td>
<td>34%</td>
</tr>
<tr>
<td></td>
<td>Competitive Tendering</td>
<td>20</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>Mutual Selection</td>
<td>4</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Negotiation</td>
<td>9</td>
<td>18%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>50</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 30: Illustrates the preferred procurement system for turnkey contracts in Malawi

The foregoing data was analyses and plotted into a pie chart to monitor its distribution pattern. It was noted that the majority of the sample represented by forty percent (40%) selected competitive tendering while thirty four percent (34%) selected prequalification as the best procurement system. These two practices are normally used for traditional contracts in Malawi as they provide for a fair ground for competition to a bidders and eliminates prejudice and corruption. Further to the same, the ability of the client to have a choice in the contractor assist in provision of guarantee that works will be delivered to the required specifications. Prequalification of turnkey contractors assist in quota and minimisation of bidders as it has been observed that some turnkey contracts that are in the unlimited category are simply shell companies. The prequalification allows for due diligence of the interest bidders so as to iron out any ambiguities before contracts are signed.
Figure 41 below illustrates the most preferred procurement system for the effective implementation of turnkey contracts in the construction industry of Malawi:

**Figure 41**: Pie chart distribution of procurement systems for effective implementation of turnkey contracts in Malawi

In addition to the same, the study questionnaire concluded by investigating on the ways how adequate client ownership and participation can be improved in turnkey contracts to allow for the sustainability of the investment after delivery. Feedback data obtained from the sample was categorised and tabulated in table 31 with a measure of central tendency and statistics being deduced from the same. It was noted that the majority of the sample agreed to the proposed recommendation of using standard specifications in the management of turnkey contracts as each contract preferred to use standards from their designated countries which vary with respect to environment. It was noted that the Chinese and Indian turnkey contractors disregarded the international standards of quality control and high design requirements as such they prefer their own standards due their simplicity. In addition, the majority of sample with a standard deviation of 9.77 selected the proposed idea of introducing independent consultants to perform quality control checks as usually the client does not have specialisation nor confidence in the same works.
Consider table 31 below:

<table>
<thead>
<tr>
<th>Measure of increasing client ownership in Turnkey contracts</th>
<th>Weight</th>
<th>Statistical determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>Introduction of independent consultants</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>Nomination of subcontractors and suppliers</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>Use of standard specifications</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Use of standard project management techniques</td>
<td>10</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 31: Illustrates the respondents’ feedback on the proposed improvements of increasing client ownership during implementation of turnkey contracts in Malawi construction sector.

The above recorded data was plotted on a bar chart to examine the pattern and data distribution of the responses provided by the sample group. It was noted from figure 42 that on average the sample accepted the proposal of using the standard project management techniques and nomination of subcontractors and suppliers for the turnkey contractor. The use of the standard project management procedure which had a standard deviation of 11.27 indicated the significance of allowing for the chronological flow of all project phases during the execution of the project; such that all project procedures and steps are followed without short cuts. This allowed for a proper feasibility study and stakeholder involvement in the project, allowing for beneficial projects to be implemented only. Further to same, the ability of the client to identify and nominate subcontractors for the turnkey contract allows for an increase in local participation of the project and capacity building of the local construction sector. The availability of skill transfer upon the nomination of
the local subcontractors ensures sustainability of the project deliverables upon demobilisation of the international contractors. Consider figure 42 below:

![Bar chart illustrating the distribution of responses on increasing client ownership of turnkey projects in Malawi construction industry](image)

**Figure 42:** Bar chart illustrating the distribution of responses on increasing client ownership of turnkey projects in Malawi construction industry

### 4.3 Qualitative Data Analysis

#### 4.3.1 Interviews

Formal interviews were conducted through online communications to turnkey experts in South Africa and Zambia. A South African based contractor of Malawian origin called Mdina engineering, who are one of the turnkey contractors in South Africa were interviewed in order to determine their views and recommendations on how best turnkey contracts could be implemented in Malawi. A focus area of the interview was on the practical methods that other countries have used in implementing turnkey contracts. The following information was provided by the interviewee as follows:

**Interview Question:** Briefly recommend the best approach the Malawi construction industry can adopt to implement turnkey contracts effectively with respect to the current trends in South Africa?
Summary of Response:

- Government should promote sensitisation on general public on the advantages of such contracts such that politicians should look at these contracts favourably and not for their interests only.

- Preliminary feasibility studies and stakeholder meetings should be rolled out prior to implementation of the projects. This allows the contractor to iron out any risks or uncertainties that the project may face in addition to the determination of the benefits and rates of returns of the project. It should be noted that compensatory payment of the contractor also comes from the returns of the project as such if the investment is poorly implemented both the contractor and client losses out.

- Establish regulatory bodies that are independent of the government which should focus on protecting the interest of the local construction industry. The national construction industrial council of Malawi (NCIC) is not performing its duties abundantly; as compared to what developed countries like South Africa are doing whereby projects are rolled out with a black empowerment program (BEE) as a means of capacity building of local companies and firms.

- The Malawi construction industry is suffering the effects of corruption that has led to most of the mega construction projects being awarded unfairly. As such, the office of procurement which is championed by the government should have been a separate entity just as the newly introduced private partnership program (PPP). The independency of such institutions assist in credibility and protection of the locals’ interest in such projects. This enhances the maximisation of the countries construction sector and the economy in general can benefit from such contracts.

- The need for specialisation in the Malawi construction industry is very vital to its development. The introduced turnkey contracts are being implemented in sectors of the construction industry where we lack knowledge and therefore cannot contend nor critique on the procedures. “A highly educated society is a developed nation”, as such the Malawi construction industry requires specialist of Malawian origin to be exposed to such contracts that will in turn mitigate all the risks and setbacks being experienced.

The study went further to investigate on the turnkey contracts being implemented in the neighbouring countries by Chinese contractors and how their implementation is developing the economy. A representative of a Chinese turnkey contractor called AVIC international was
interviewed on their experience and proposed solutions to the implementation of these contracts in developing countries like Malawi or Zambia.

**Interview Question:** Referring to your experience gathered in Zambia and Malawi, can you briefly explain on the major setbacks and their proposed solutions that you have encountered during your implementation of turnkey contracts of mega road construction projects?

**Summary of Response on challenges:**

- The major challenge experienced in the implementation of mega construction projects in developing countries mostly Zambia, and Congo is the political influence of their governments. The difference in ideology of the running government and the oppositions creates an unconducive environment for channelization of information and finalisation of contract agreements.

- The effects of conflicts has been a challenging factor on the implementation of the turnkey projects. Areas where mega structures can be built to provide access for development and mining are under rebel governments which have a negative effect on the safety and security of private investors and turnkey contractors.

- Lack of capacity and technical know-how by the local firms and professionals have created a challenge in the cost of turnkey contracts. International turnkey companies have a time limit benchmark of project delivery with financial institutions like China EXIM Bank (Export Import Bank) to complete projects with the loan facility agreed time. The absence of skilled personnel result in the importation of expatriate labour as a measure to cut down on the time lost for skill transfer and internships.

- Further to the same, the instability of the developing countries’ economies highly affect the performance of the international companies as price rates of materialse are always changing every day. In addition to the same, the developing countries lack capacity of manufacturing specialised products to meet demands of large companies like AVIC which affects their local suppliers’ growth.

- Corruption has also been the main element of failure of most projects in Malawi. The government systems are very corrupt such that projects are only allowed to roll out at an agreed commission with the ruling government officials at the expenses of local tax payers’ money. For instance, one of the projects which AVIC was assigned to implement in Malawi for the construction of Mangochi to Mankanjila road failed to take off due to corrupt practises.
Summary response on proposed solutions:

- Capacity building of the local professionals in different construction sectors of development like civil, energy, mining and coastal engineering. Developing countries are relying on expatriate labour which hampers growth of local firms and also results into externalisation of revenues.
- To combat corruption, the government should introduce new procurement and selection systems for turnkey contractors such as international private partners (IPPs) that allows the investor to develop a construction business plan and implement the same with an agreed percentage being remitted as a dividend to the government treasury.
- Enhance the use of advance of technology in the developing countries that can eliminate risks of unfair dealings, poor designs, and can save time plus cost during implementation of turnkey projects. The introduction of e-procurement system allows for transparency and accountability of procurement procedures which are managed by a system and not individuals.
- The government should regularise the construction sector by introducing strong regulations that should protect the local company’s interests. The lack of capacity by local contractors is usually experienced by the presence of unqualified contractors who unfortunately have opportunities to execute the works due to political influences.

4.3.2 Focus Groups

The research also involve the use of focus groups as a means of triangulating the results obtained from the individual questionnaires and the selective interviews conducted. From the focus group discussions conducted the following data was obtained and tabulated as follows:

<table>
<thead>
<tr>
<th>FOCUS GROUP A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 1: Importance of implementing mega construction projects using the turnkey approach in Malawi</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| Local Contractor Representative | • The process is faster as no delays are experienced from consultants.  
• Minimal wastage of materials, design and build turnkey allows for material scheduling at design stage. |
### Stakeholder Remarks

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Consultants Representative</td>
<td>• Reduces contractual disputes with contractors and clients.</td>
</tr>
<tr>
<td></td>
<td>• Compromises on quality control as contractor is mostly in charge whose aim is to maximise on profit.</td>
</tr>
<tr>
<td>Government Institution Representative</td>
<td>• Mitigates risks of cost overruns which affects budgeting and sourcing of funds.</td>
</tr>
<tr>
<td></td>
<td>• Cheaper for implementation of mega projects with limited timelines.</td>
</tr>
</tbody>
</table>

**Objective 2:** Benefits and challenges currently experienced by turnkey contracts in Malawi

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Contractor Representative</td>
<td>• The contract approach benefits the contractor as overheads are reduced since all project resources are controlled by the contractor.</td>
</tr>
<tr>
<td></td>
<td>• The design build element expedites works as designing and implementation are performed concurrently.</td>
</tr>
<tr>
<td></td>
<td>• Challenges faced are cash issues as payments are made after handover.</td>
</tr>
<tr>
<td>Local Consultants Representative</td>
<td>• Quality control and assurance is not guaranteed.</td>
</tr>
<tr>
<td></td>
<td>• Capacity building through learning of new technologies.</td>
</tr>
<tr>
<td>Government Institution Representative</td>
<td>• Corruption.</td>
</tr>
<tr>
<td></td>
<td>• Risk averse, faster and cheaper.</td>
</tr>
</tbody>
</table>

**Objective 3:** Comparison and contrast analysis between traditional and turnkey contracts in Malawi
### Stakeholder Remarks

**Local Contractor Representative**
- Traditional contracts are tri-party while turnkey contracts are two way agreements dependent on contractor.  
- Construction and bidding is dependent on completion of designs.

**Local Consultants Representative**
- Traditional contracts involve interim payments while turnkey contracts involve lump sum payments.  
- Designing in traditional contracts is a separate entity while in turnkey contracts the works are implemented concurrently with the design phase.

**Government Institution Representative**
- Traditional contracts require full participation of the client while turnkey contracts rely on the contractor only.  
- Turnkey contracts are used for specialised projects while traditional contracts are standard.

**Objective 4:** Improvement of the turnkey contracts approach in Malawi for the effective implementation of mega construction projects

### Stakeholder Remarks

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| Local Contractor Representative            | • Reduce corruption  
|                                           | • Empower local contractors by regulating the construction market from foreign turnkey contractors. |
| Local Consultants Representative           | • Improving private partnership programs  
|                                           | • Setting independent quality control and monitoring specialist          |
| Government Institution Representative      | • Standardising project specifications.  
|                                           | • Training of local firms in new technologies and specialisations.       |

**Table 32:** Focus Group A responses on the investigation of the contractual setup of traditional and turnkey construction contracts in Malawi
Reference being made to table 32, it was noted that the effective performance of turnkey contracts is highly dependent on the proper understanding of the contract setup and its management criteria toward delivering mega construction projects. The presence of corruption and fraudulent practices in the procurement systems in Malawi have resulted into the poor delivery of projects being managed under turnkey contracts. The level of failure has been noted on the design, benefit of end-users, quality and sustainability of the delivered infrastructure. The focus group discussions conducted with the three main stakeholders of the construction sector being contractors, consultant and government institutions yielded results that clearly showed the significance of turnkey contracts in Malawi. Nonetheless, turnkey contracts have favoured the international community as mega construction project required large capital investments which most local contractors in Malawi cannot afford. This results in the domination of foreign contractors who apparent are not regularised by the government of Malawi to team up with locals.

In addition to the same, the exposure that turnkey contract have made on the Malawi construction industry have led to the transformation of infrastructure development. As such, the focus group discussion looked on how best turnkey contracts could be improved to allow for an effective delivery of mega construction projects in Malawi. It was noted that through the standardisation of specifications, empowerment of local firms both financially and technologically would assist in the proper implementation of projects using the turnkey approach effectively. Further to the same, the enhancement of stakeholder involvement in the project management of the contracts also contributes in breaching the shortfalls on quality and cost benefit of such economic driven projects. The focus group discussions also identified improvement parameters of partnership programs as a means of boosting local capacity of Malawian owned companies to participate in these turnkey contracts. Further to the same, the incorporation of independent monitoring and evaluation specialists allows for the quality assurance and validation of the project performance in achieving the designated goals. Thus, turnkey contracts have seem to out shine traditional contracts as they are risk free, cheap, and time manageable which most developing countries are currently adopting as a means of saving on their government budgetary expenses.

Unfortunately, due to the unavailability of the developing partner representatives, the research did not manage to conduct the second focus group discussions. Nonetheless, the data obtained from focus group A was significant enough to validate the quantitative data obtained from the sample group selected for the questionnaire.
4.3.3 Desk Research

The study also incorporated the methodology of using desk research as a means of acquiring previous recorded data and information on studies performed in different countries. As such journals, articles and conference proceedings were used to gather information related to the objectives of the research as follows:

- **Objective 1**: Importance of implementing mega construction projects using the turnkey approach in Malawi

Investigations into neighbouring developing countries like Zambia which are on the verge of development due to the incorporation of the turnkey contract in the construction industry has created a benchmark for reference of the same in Malawi (Renecke, 2013). It was noted that turnkey contracts were significant in the implementation of mega construction projects due to their flexible project procedures, emphasis on the general public and national interest, single point of communication, certainty on time and cost, maximisation of contractor's specialisation, rapport on the procurement process, use of private resources, and increase in the efficiency of the public sector (Franks, 1998).

Thus, turnkey contracts provide flexible project procedures that allow for change in the standard rules and regulations as most mega construction project implemented in developing countries are associated with public sector procedures. This flexibility allows for the client and contractor to negotiate on the project requirements (Kumaraswamy, 2000). In addition, the rapport in the procurement system allows for an open and fair competition, reduced bureaucratic procedures and selection of affordable cost effective bidders (Riggs Goodman, 1992). In addition to the same, Culp and Smith have argued that turnkey contracts focus on the public interest as they promote public accountability and certainty of cost (Smith, 2001). Further to same, mega construction projects are usually public initiated projects that are implemented to breach a gap in the economic development of the country as such time and cost are significant. The implementation of the same using turnkey contracts has made time and costs manageable by the public as implementation is able to commence before designs are complete which shortens the time period (Molenaar, 1996).

In addition, the contractor’s designs can be controlled since the client requirements are well defined and known at the inception stage of the project.

Moreover, the ability of specialisation by turnkey contracts allows for practical and economical viable designs that can increase productivity. Thus the presence of the in-house designer allows for a greater appreciation of the construction method and build-ability of the project. In addition,
room for innovations and designs for best value of money are provided in the same (Molenaar, 1996). Furthermore, the contractor uses his own private resources as such the client enjoy benefits of privatisation and risk transfer which increases operating efficiency and assist in reforming of the client’s structure (Walker, 1995). Thus, through the existence of turnkey contracts, the public sector is reformed in terms of its procedures and methods of conducting business so as to move with new technologies either required or implemented by the turnkey contractor.

- **Objective 2:** Benefits and challenges currently experienced by turnkey contracts in Malawi

The implementation of mega construction projects in the world have led to the identification of merits and demerits in construction contracts. The implementation of mega construction projects (MCPs) attracts both public and political attention due to their significant impacts on communities, environment and budgets (Capka, 2004; Marrewijk, 2008). Henceforth, implementation of such projects using the turnkey approach has yielded challenges overtime in areas related to policies, procurement, technology, infrastructure and production (Broadman, 1995). Cudney has argued that the presence of turnkey contracts in the construction sector have brought challenges toward project implementation such as reduced quality of materials and workmanship as the project is delivered faster and cheap. Furthermore, due to project owner having less involvement and control of the designs as the technical team is under the contractor; conflict of interest tend to arise that affect the credibility of the designs and level of stakeholder involvement. He further explained that the rigorous procurement systems results into a greater definition of the project at inception in terms of its goals, objectives, functionality, appearance, quality, materials and operations which also are mandatory for proper procurement process. In addition, Cudney also contradicts the facts that turnkey contracts are beneficial as they are risk free. From his findings, it was noted that the level of risk is high on the standard of the end product as once the contractor’s risks increase, cost saving methodologies are implemented that affect the quality and delivery of the project (Cudney, 2006).

Notwithstanding the foregoing, turnkey contracts have also provided a lot of benefits towards the economic development of developing countries. The ability of the contract to design, build, test and commission the project under one contractor presence a single point source for liabilities (Lam, 2005). In addition, since the contractor attains full control of the project and its particular plans; cost saving and speedier implementation techniques are used that are beneficial to the client as well. Further to the same, the presence of in-house technical designers by the contractor
allows for a rapport of amending design errors at no cost during project implementation (Sidwell, 1995). Moreover, the turnkey contracts virtually dictate a cost plus or lump sum approach to pricing which provides certainty of the final project costs with minimal variations than in traditional contracts which are unit rate admeasured contracts (Sidwell, 1995). Previous records have also indicated that turnkey contracts allow for milestone payments with respect to contractor’s progress and completion of works which is easier and faster unlike the traditional contracts that require justification of valuations. Furthermore, in the event of post-construction, the element of risk of failure for the end product to deliver or operate is handled by the contractor with no additional claims being made to the client (Masterman, 2002). Thus, the contractor bears the risk of project failure in the turnkey agreement such that the critical path of the whole project lies in the hands of the contractor.

- **Objective 3:** Comparison and contrast analysis between traditional and turnkey contracts in Malawi

Comparatively, turnkey contracts can be mapped against traditional contracts to contrast the two contractual systems with respect to their implementation in developing countries. Parameters of contractual arrangement, design and construction, communication, operational efficiency, project duration, cost, performance and change management are the main factors that can be used to compare and contrast these two contracts (Rizzo, 1998). Thus, turnkey contracts have a simplified contractual arrangement that binds only the client and the contractor with total responsibility being given to the contractor and his preferred subcontractors and suppliers. Traditional contracts on the other hand have complex contractual agreements as it involves the binding of multiple parties being the consultants, contractor, subcontractors and suppliers. Thus separate contracts are developed for each party upon meeting the award requirements of the client (Murdoch, 2000). Furthermore, turnkey contracts promote the integration of the designing and construction teams into one main contractor to deliver the project goal while in traditional contracts each party (designers, contractor, subcontractors and suppliers) works independently. Moreover, turnkey contracts provide for a single link as communication is between the client and contractor whereas in traditional contracts communication has been a problem as multiple parties are involved who misrepresent information as it moves from one media to another (Turner, 1994).

The measure of operational efficiency has also created a comparison basis between turnkey and traditional contracts. Thus, in turnkey contracts clients have a single point of contact and liability with the implementation team who is then responsible to act on the clients request using his own means and methods (Yates, 1995). On the contrary, traditional contracts have low operational
efficiency mostly if the project team comprises of multiple independent consultants and contractors. The effect of risk sharing and blame shifting puts the client’s investment at risk which in turn affects the overall performance of the contract. A typical example is illustrated in structural building mega projects whereby multiple consultants such as architects, structural engineers, quantity surveyors, service engineers and surveyors are used independently to design and supervise the contractor (Gajurel, 2013). In addition, turnkey contracts are significant in project time savings as they are able to overlap the design and construction phases. Pre—construction procurement in turnkey contracts is reduced abundantly that results into the earlier commencement of works as compared to traditional contracts whereby the actual procurement and implementation stage have late start dates as they are dependent on the completion of the design phase (Tiwari, 2015).

Turnkey contracts have reduced costs as the client is aware of the total financial budget of the works prior to commencement of works on site. This reduces costs overruns as the pricing is done with a high degree of accuracy (Tiwari, 2015). On the contrary, traditional contracts as always affected by cost overruns and variations due to errors in the design and procurement stage of the project (Gajurel, 2013). In addition, turnkey contracts have a high increased performance as they usually use specific (particular) specifications for design, workmanships, and materials that are developed between the client’s requirements and the contractor's proposal (Ryan, 2011). Traditional contracts on the contrary are championed with standard specifications which all teams have to abide to regardless of the clients requirements. Change management in turnkey contracts is controlled and well managed such that the detailed brief and particular specifications agreed between contractor and client on the onset reduces variations and increases the responses time towards the client (Huse, 2013). Traditional contracts on the other hand are affected by the change usually in the negative way as designs, specifications and procedures have the tendency to change due to the use of standard specifications. These standards provide for too many assumptions to both the design team and the contractor such that during implementation, the contractor may either under or over value the works (O'reilly, 1999). Further to the same, traditional contracts have managed to mitigate risk through contingency planning which turnkey contracts do not abide to as they are fixed sum contracts. Results have indicated that is most cases, the contingency amount does not suffice to compensate on risks and as such the project becomes too costly for the client to complement resulting in delays and suspensions (J. Sweets,M. Schneier, B. Wentz, 2015).
Objective 4: Improvement of the turnkey contracts approach in Malawi for the effective implementation of mega construction projects

The effectiveness of implementation of turnkey contracts in Malawi for the management of mega construction projects is dependent on the improvement of its shortfalls with reference to the current conditions on the ground. Developing countries that are currently implementing turnkey design – build contracts have identified key parameters of improving these contracts which include careful choice of projects, adequate planning and preparation to procure and manage turnkey contracts (Nick, 2007). Furthermore, proper phasing of the project through time permits, environmental clearance, right of way and accessibility to site prior to commencement assist in prevention of delays to the implementing contractor. In addition, development of open ended specifications that can allow for quality assurance through amendments of specifications allows for efficient delivery of turnkey contracts (Micheal, 1986). Robust communication between the client and the turnkey contractor is key toward efficient and effective delivery of the project management for mega construction projects. Proper communication allows the two parties to have a common understanding in the deliverables of the project in terms of its scope, cost, time and quality. Once proper communication channels are followed on commencement, there is a rapport in the implementation of the project with minimal disturbance from the client (Higgins, 2011).

Furthermore, the intensive involvement of stakeholders in implementation of turnkey projects is also vital for their effective performance in mega construction projects. Thus through robust communications systems, stakeholders needs are continuously addressed during the implementation of the project (Higgins, 2011). In addition, agreed project specifications should stress more on project goals and deliverables. Project selection and procurement should not follow the standard procurement criteria of lowest bidder as outlined by most development partners like World Bank, African Development Bank and others but instead on the true value of works (Masterman, 2002). Furthermore, client participation should be increase through the employment of specialist in modern project management skills as a means to mitigate risks. Thus, turnkey contracts should incorporate risk management techniques during design and implementation phases of the project so as to identify and strategically allocate the risks among the individual activities in the project (Apte, 2014). The use of third party quality accreditors and risk advisers has worked for developed countries like USA, China, South Africa and Germany such that the client is well equipped before entering into agreements with turnkey contractors (Apte, 2014).
4.4 Conclusion

Based on the results obtained and discussed in this chapter, conclusion can be made regarding the future disposition of turnkey contracts as alternative methods for implementing mega construction projects. In a nutshell, impacts of project timelines, costs, quality control and assurance, risks, stakeholder involvement, communication process and procurement procedures were considered as influential factors in the effective delivery of turnkey contracts. The data collected from questionnaires, interviews and focus groups were earmarked to capture the required information related to the fulfilment of the objective of the study. As such, the significance of implementing mega construction projects using the turnkey approach has managed to yield positive results due to the practicability of the contract approach in delivering sound design at affordable cost and in time. Benefits and challenges were also considered of the turnkey approach whereby through critical analyses of the results the benefits outweighed the challenges allowing the contract approach to be workable in developing economies like Malawi. Notwithstanding the foregoing, a compare and contrast analyses was conducted with traditional contracts to cross examine the differences in project management and procurement systems. It was noted that turnkey contracts were flexible and adaptive to work with than compared to the bureaucratic traditional systems regardless that both contracts had some similar conditions and clauses. All in all the chapter concluded with identifying the areas of improvement of turnkey contracts for the effective delivery of the mega construction projects (MCPs) in Malawi.
Chapter 5
CONCLUSIONS & RECOMMENDATIONS

In a nutshell, the study on the investigation of construction contracts in Malawi focused on the analysis of implementation of mega construction projects using the normal traditional contract and they newly introduced EPC/turnkey contract. The aim of the study was to investigate on the performance analysis of managing mega construction projects effectively in Malawi using the turnkey contract approach. Specific objectives were developed on the same that focused on cross examining turnkey contracts on their significance, benefits, challenges, improvements and their comparison with the traditional contracts. Previous researchers documented various finds and backgrounds towards the performance of turnkey contracts in developed and developing countries which were significant for the study. Henceforth, a summary of the same was made that was used to design the research and incorporate two methods of data collection namely quantitative (questionnaires) and qualitative (interviews, focus groups and desk research) techniques. The data obtained from the sample size of forty one respondents was used to analyse and developed patterns for discussions. Statistical graphs mainly pie charts, bar charts, bar graphs, frequency polygons, pyramids and tables were used for interpretation of the quantitative data with calculation of standard deviations and variance incorporated.

All in all, qualitative data that was used to validate the quantitative was grouped and analysed by testing the correlation between the studies null hypothesis and the responses obtained from focus groups and interviews. In addition, desk research aimed at investigating previous trends and records that other related countries have developed in the implementation of mega construction projects using the turnkey contract approach. In supposition, the turnkey approach of implementing construction contracts in general proved to be effective with relation of the public governing systems in Malawi. The only elements that the research established as effective for the proper implementation using such contracts are to enhance local stakeholder involvement in all project management cycles of turnkey contracts. Through such incorporations, the infrastructural development of Malawi would grow with more investment opportunities, specialisations and revenue returns for the government.
Nonetheless, reference being made to the analysed data and discussed results, the following recommendation can be drawn out for the effective implementation of mega construction projects in Malawi using the turnkey approach as follows:

- Improving stakeholder involvement through private partnership programs with locals. This will enhance the feasibility, designs, and goals of the project and will in turn assist in the analysis of costs and benefits of the projects prior to implementation.
- Enhance transparency and accountability of the approach through open tendering and publication of evaluation results to the general public. This allows all stakeholders involved to scrutinise any elements of corruption or fraud in the procurement systems as it is the case currently.
- Raising the expertise and experience of construction authorities in government to modern project management techniques of construction contracts. Specialised trainings should be renders also to consulting engineers, local contractors on new practices being used in modern construction in order to equip the locals with the skills required for implementation of mega construction projects.
- Developing Malawi construction standards would breach the elements of quality control and assurance in turnkey contracts. Thus, the ambiguity of adopting foreign standards by both contractual parties will be eliminated.
- Introducing e-procurement system for turnkey contracts as a means of eliminating corruptions and lowest bidder selection criteria as currently practiced by ODPP. The system is able to select turnkey contractors on merit without personal or conflicting interests.
- Development of new policies that regularise the involvement of foreign turnkey contractors and expatriate labour. This will in turn serve the interest of the general public as job opportunities will result in rapid skill transfer.
- Empowering of local construction and consulting firms through public private partnerships whereby financial institutions should team up with construction companies to build up capacity when competing and implementing turnkey projects.
- Reviving of our town planning system will assist in the selection of viable and practicable projects that have high impact on the public sector. This avoids white elephants or risks of loses in the public investment as political and personal interests are eradicated.
Chapter 6

FUTURE AREA OF STUDY

The presence of limited time allocated to the research study has resulted in other areas of the research attaining average data than required for a practical assessment. As such, the study has created room for further research in the following areas that may benefit the construction industry of Malawi as follows:

- Mapping of the stakeholder analysis model in the implementation of EPC/Turnkey contracts in the construction industry of Malawi.

- The use of the PRINCE 2 project management model in the implementation of either traditional or EPC/Turnkey contracts in the construction industry of Malawi.

- Managing change in EPC/Turnkey contracts in the implementation of mega construction projects (MCPs) in developing economies.

- Performance analysis of public reform programs in the construction industry of Malawi.

- Cost – benefit of e – procurement in the effective selection and delivery of EPC/Turnkey contracts in Malawi.

- Effects of standardised practices in the implementation of mega construction projects (MCPs) using the turnkey approach.

- Assessment of quality delivery in EPC/Turnkey contracts using the European Foundation of Quality Management (EFQM) excellence model.

- Managing risks in the implementation of mega construction projects (MCPs) in Malawi using the turnkey approach.
REFERENCES


112. Tyson, 2005. *Design - Build, Design - Bid - Build and Contract Management: How to select the one that is right for you*. West Vickery Blvd, Tyson Building Corporation.


APPENDICES

- Copy of the research questionnaire used for quantitative data collection.
- Questionnaire link and responses – internet based on the following link: http://goo.gl/forms/OEbTfUtXeV
QUESTIONNAIRE: An Investigation into Construction Contracts in Malawi - Turnkey Versus Traditional Contracts

You are requested to participate as a volunteer in a research study conducted by Mr. Rodney M. Mshali, a Masters student at University of Bolton (UOB). This study is designed to gather information about the implementation of complex and/or mega construction projects in Malawi using turnkey contracts rather than the traditional contracts. The foregoing research questionnaire should take at most 8 minutes of your valuable time to be completed and should be submitted by the 11th of April 2016.

Brief Overview of Construction Contracts in Malawi:

Construction contracts can therefore be defined as agreements either in written or oral executed between the owner (client) and contractors for construction and or maintenance of work done for compensation. Two major types of contracts are being used in the construction industry in Malawi to date namely the traditional (unit rate) contracts and turnkey (design – build) contracts.

Turnkey contracts also known as EPC project service contracts are construction contracts that involve the provision of engineering services, procurement of materials and delivery of the project to the client at a fully operational state. Turnkey contracts provides the contractor with all the liability to design, price and implement the project with respect to the conditions and specifications agreed with the client. Traditional contracts are contracts that involve the client appointing a consultant to detail design, prepare all contract documents, tenders and thereafter invite contractors to compete through bids. The successful contractor with the winning bid is allowed to implement the contract under the consultant’s supervision.

Turnkey contracts are significant in terms of achieving project deliverables of time, cost, quality and scope as they ensure that the implemented solutions are ready to use as soon as the project is completed. These contracts provides a client with a guarantee that the funds paid for the works delivered has its value of money attached to the same. In addition, the client has minimal liability on designs, project management or decision making. Contracts of these nature work on fixed prices with no room of escalations and fluctuations enabling the client to minimal risks of variations and cost overruns in the project. Completion of this questionnaire will therefore assist in testing such a hypothesis for this research and determine the practicability of turnkey contracts in the Malawi construction sector.

*Required

MASTERS OF SCIENCE IN PROJECT MANAGEMENT

SECTION 1
DEMOGRAPHIC AND ACADEMIC INFORMATION

1. Please select your years of work experience *
   Mark only one oval.
   - Less than 5 years
   - 5 - 10 years
   - 10 - 15 years
   - 15 - 20 years
   - 20 - 25 years
   - Above 25 years
   - Other: .................................................................

2. Please select your highest qualification *
   Mark only one oval.
   - Diploma
   - Bachelors
   - Post Graduate Diploma
   - Masters
   - PHD
   - Other: .................................................................

3. Please select your position in your company *
   Mark only one oval.
   - Engineer
   - Quantity Surveyor
   - Architect
   - Project Manager
   - Procurement Specialist
   - Contracts Manager
   - Other: .................................................................

SECTION 2
FIRM/PROJECT INFORMATION
4. What type of firm/company do you work for? *
   
   Mark only one oval.
   
   □ Developing Partner
   □ Institution
   □ Consultant
   □ Contractor
   □ Other: ___________________________________________________________

5. In which category of projects have you managed or been involved in the past 5 years? *
   
   Mark only one oval.
   
   □ Below MWK 100 Million
   □ MWK100 - MWK500 Million
   □ MWK500 Million - MWK1 Billion
   □ MWK1 Billion - MWK10 Billion
   □ Above MWK10 Billion
   □ Other: ___________________________________________________________

6. Which majority of clients have you worked with in the projects implemented in the last 5 years? *
   
   Tick all that apply.
   
   □ Donors
   □ Public
   □ Private
   □ Other: ___________________________________________________________

7. What is the maximum project period that you have encountered during implementation of projects in the last 5 years? *
   
   Mark only one oval.
   
   □ Less than 1 year
   □ 1 - 2 years
   □ 2 - 3 years
   □ 3 - 4 years
   □ Above 4 years
   □ Other: ___________________________________________________________

SECTION 3
IMPLEMENTATION OF CONSTRUCTION PROJECTS IN MALAWI USING THE TURNKEY CONTRACT APPROACH
8. Are you aware of the existence of EPC/Turnkey (design - build) contracts in the Malawi Construction Industry? *

Mark only one oval.

☐ YES
☐ NO

9. Where did you learn about EPC/Turnkey contracts? *

Mark only one oval.

☐ Professional Seminars
☐ Publications, Journals etc.
☐ Colleagues, friends
☐ Already applied and from experience
☐ Studies in higher education/specialized courses
☐ Other: .................................................................

10. What do you believe are the major causes of project failure in Malawi? *

Tick all that apply.

☐ Political Influence
☐ Corruption
☐ Lack of capacity & technical know-how of contractors & consultants
☐ Poor designs
☐ Poor project management Skills
☐ Lack or mismanagement of Funds
☐ Other: .................................................................
11. In your own opinion, which of the following key features best illustrates the importance of Turnkey contracts in Malawi? *

*Mark only one oval per row.*

<table>
<thead>
<tr>
<th>Feature</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client is guaranteed of high quality of works</td>
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<tr>
<td>Reduced cost over-runs of the contract</td>
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<tr>
<td>Time delivery of the project/contract</td>
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<tr>
<td>Flexible cash flow for client during payments</td>
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<tr>
<td>Contract is biased towards contractor</td>
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<tr>
<td>Creates a rapport in the procurement process</td>
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<td>Transparent and accountable, minimal corruption</td>
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<tr>
<td>Allows for full stakeholder involvement</td>
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<tr>
<td>Practical for complex projects</td>
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<tr>
<td>Best pricing for value for money</td>
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<tr>
<td>Adequacy in project designs</td>
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<tr>
<td>Minimal occurrence of disputes</td>
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**SECTION 4**

**BENEFITS AND CHALLENGES OF THE TURNKEY CONTRACT APPROACH**

12. Which of the following are some of the challenges that you think Turnkey contracts are facing in Malawi? *

*Mark only one oval per row.*

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of knowledge</td>
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<tr>
<td>Too expensive to implement</td>
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<tr>
<td>Suitable for mega and/or complex project only</td>
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<tr>
<td>Requires stable economies</td>
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<tr>
<td>Affected by political and social influences</td>
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<td>Lack of capacity in contractors and consultants</td>
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</tbody>
</table>
13. In your own opinion, which of the following are the benefits that you would consider for using Turnkey contracts in Malawi? *

Mark only one oval per row.

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<tbody>
<tr>
<td>Timely completion of projects</td>
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<td>Cost effectiveness</td>
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<tr>
<td>Quality assurance</td>
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<tr>
<td>Minimal risk of failure</td>
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<td>Durability of end product</td>
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<tr>
<td>No variations or addendums</td>
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</tbody>
</table>

14. Which of the following do you think are the main disadvantages of Turnkey contracts? *

Mark only one oval per row.

<table>
<thead>
<tr>
<th>Disadvantage</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of skill transfer to locals</td>
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<tr>
<td>Requires huge capital investments</td>
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<td>No clients ownership of the project</td>
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<tr>
<td>No defects liability period</td>
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<tr>
<td>Zero quality control and assurance</td>
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</table>

15. In your own opinion, how best do you think Turnkey contracts contributed to the construction development of Malawi?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

SECTION 5
COMPARISON AND CONTRAST ANALYSIS OF TURNKEY AND TRADITIONAL CONTRACTS

16. Best contract methodology for fastest delivery of projects *

Mark only one oval.

[ ] Traditional Contracts

[ ] Turnkey Contracts
17. Please briefly provide for a reason for your selection above *

18. Allows for effective team work and joint ventures for the project team *
   Mark only one oval.
   - Traditional Contracts
   - Turnkey Contracts

19. Please briefly provide for a reason for your selection above *

20. Allows for risk sharing in project delivery *
   Mark only one oval.
   - Traditional Contracts
   - Turnkey Contracts

21. Please briefly provide for a reason for your selection above *

22. Provides for robust project designs with minimal errors *
   Mark only one oval.
   - Traditional Contracts
   - Turnkey Contracts

23. Please briefly provide for a reason for your selection above *

24. Project team has minimal access to project specifications, costs and documentation *
   Mark only one oval.
   - Traditional Contracts
   - Turnkey Contracts

25. Please briefly provide for a reason for your selection above *
26. Implementation is highly dependent on finalization of the design phase *
   
   Mark only one oval.
   
   ☐ Traditional Contracts
   ☐ Turnkey Contracts

27. Please briefly provide for a reason for your selection above *

   ...........................................................................................................................................................................

28. Procurement process is time consuming and demanding *

   Mark only one oval.
   
   ☐ Traditional Contracts
   ☐ Turnkey Contracts

29. Please briefly provide for a reason for your selection above *

   ...........................................................................................................................................................................

30. Provides for quality control and assurance of the final end product. *

   Mark only one oval.
   
   ☐ Traditional Contracts
   ☐ Turnkey Contracts

31. Please briefly provide for a reason for your selection above *

   ...........................................................................................................................................................................

32. Minimal liability and maintenance of end product after project delivery. *

   Mark only one oval.
   
   ☐ Traditional Contracts
   ☐ Turnkey Contracts

33. Please briefly provide for a reason for your selection above *

   ...........................................................................................................................................................................

SECTION 6

IMPROVEMENTS OF THE TURNKEY APPROACH FOR MALAWIAN SCENARIO
34. In your own opinion, do you think Turnkey contracts allow for adequate participation of local consultants/contracts or not? *
   Mark only one oval.
   YES
   NO

35. Please briefly provide for a reason for your selection above *

   .........................................................................................................................

36. Do you think intensive stakeholder involvement during the design phase of Turnkey contracts is vital for the projects cost-benefit analysis. *
   Mark only one oval.
   YES
   NO

37. Please briefly provide for a reason for your selection above *

   .........................................................................................................................

38. Which of the following defects liability periods would you prefer as being most practical for Turnkey contracts? *
   Mark only one oval.
   Less than 1 year
   1 - 2 years
   2 - 3 years
   Above 3 years
   Other: ................................................................................................................

39. Please briefly justify your selection for the above defects liability period. *

   .........................................................................................................................

40. Which do you believe is the best procurement method for the effective selection of Turnkey contractors? *
   Mark only one oval.
   Prequalification
   Competitive Tendering
   Mutual Selection
   Negotiation
   Other: ................................................................................................................
41. Please briefly provide a reasons for selection of the above procurement method. *

________________________________________________________________________________

42. How best do you think client ownership of the project can be enhanced in Turnkey contracts? *

*Mark only one oval per row.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction of independent consultants</td>
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<tr>
<td>Nomination of subcontractors, suppliers and sources of equipment</td>
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<tr>
<td>Use of standard specifications</td>
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<tr>
<td>Use of standard project management process</td>
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43. In your own words, what other recommendations can you provide to improve the use of Turnkey contracts effectively in Malawi for implementation of mega construction projects? *

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