EVALUATING LESSONS LEARNED PRACTICES (LLPs) IN PUBLIC PRIVATE PARTNERSHIP (PPP) PROJECTS IN NIGERIA

BY

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DECLARATION

I hereby declare that the work in this thesis titled **EVALUATING LESSONS LEARNED PRACTICES IN PUBLIC PRIVATE PARTNERSHIP PROJECTS IN NIGERIA** was performed by me in the Department of Quantity Surveying under the supervision of Dr. A.D. Ibrahim and Dr. Y.M. Ibrahim.

The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this work has been presented for another degree or diploma at any institution.

Abdu-Lawan Gali Zarewa ……..

CERTIFICATION

This thesis titled **"EVALUATING LESSONS LEARNED PRACTICES (LLPS) IN PUBLIC PRIVATE PARTNERSHIP (PPP) PROJECTS IN NIGERIA** meets the regulations governing the award of the degree of M. Sc. Project Management of Ahmadu Bello University, Zaria and is approved for its contribution to Knowledge and Literary Presentation.

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ABSTRACT

The increasing complexity, duration and multitude of parties involved in a typical PPP procurement process, have made several studies to stress the importance of proactive and systematic capture of project knowledge through the use of formal lessons learned practices (LLP). The conduct of LLPs in the procurement of PPP projects has the potentials of improving the projects performance and providing information on reasons for their success and/or failures, the problems encountered and how they were addressed. This study evaluated Lessons Learned Practices (LLPs) in PPP projects in Nigeria through the use of Semi-Structured interviews with people from two client organizations and two concessionaires who have participated in 19 PPP projects and case studies of two PPP projects. The interviews have revealed that all the project participants considered LLPs in PPP projects as desirable and useful; the projects' participants' knowledge in LLPs needed to be improved; the conduct of LLPs was neither formalised nor conducted in accordance with best practice or requirements of the LLP concept; there was no framework and/or standard template for the conduct of LLPs; none of the interviewees' organizations has a knowledge management strategy for the capture, application and sharing of project knowledge; while the level of LLP application in the projects was discovered to be only 12%. Case Studies of the two PPP projects conducted thereafter with a view to arriving at more conclusive findings have confirmed the first five findings of the interviews while the average level of application of LLPs per project was below 9.1%. The findings have further suggested that correct conduct of LLPs in the procurement of PPP projects in Nigeria can lead to a more successful delivery of such projects.

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ABBREVIATIONS AND DEFINITIONS

A. ABBREVIATIONS

A.B.U.	Ahmadu Bello University
AICL	Abuja Investments Company Ltd
AIPDC	Abuja Investment and Properties Development Company Ltd
Arch.	Architect
BOO	Build, Operate and Own
BOT	Build, Operate and Transfer
BUK	Bayero University Kano
CDC	Centre for Disease Control
CSFs	Critical Success Factors
DBFO	Design, Build, Finance and Operate
DCMF	Design, Construct, Maintain and Finance
Eng.	Engineer
FCDA	Federal Capital Development Authority
FHA	Federal Housing Authority
FMHUD	Federal Ministry of Housing and Urban Development
ICRC	Infrastructure Concession Regulatory Commission
IDIS	Integrated Development and Investment Services Ltd
IWMS	Intelligent Workplace Management Systems
IT	Information Technology
JV	Joint Venture
KM	Knowledge Management
LL	Lesson Learned

LLDB	Lessons Learned Data Base
LLP	Lessons Learned Practice
LLS	Lessons Learned System
MDAs	Ministries, Departments and Agencies
NATO	North Atlantic Treaty Organisation
PFC	Petroleum Financial Corporate Ltd
PFI	Private Finance Initiative
PM	Project Manager
PPP	Public Private Partnership
Qs.	Quantity Surveyor
SELL	Society for Effective Lessons Learned
SPC	Special Purpose Company
SPV	Special Purpose Vehicle
TPL	Town Planner
U.S.A.	United States of America
UDBN	Urban Development Bank of Nigeria
UK	United Kingdom

B. DEFINITIONS

Best Practice (BP): A BP is "an activity or a series of activities proven effective through analysis that can be replicated by others in a similar situation" (NATO, 2004).

Concessionaire/Special Purpose Vehicle (SPV): A concessionaire is a consortium formed particularly for a PPP project and charged with the responsibilities of financing, design, construction, operation, and maintenance of the facilities provided by the project and the transfer of the facilities to the client in operational condition at the end of the concession period. A concessionaire is also at times referred to as special purpose vehicle (SPV) (Kwak et al 2009).

Continuous Improvement Process: A continuous or ongoing effort to improve products, services and/or processes by an organisation (IMWS, 2009).
Explicit Knowledge: This is knowledge that has been or can be easily documented and communicated such as processes, templates, etc. It is also sometimes referred to as codified knowledge (NATO 2010).

Knowledge Management (KM): KM is the creation, extraction, transformation and storage of the correct knowledge and information in order to design better policy, modify action and deliver results (Horwitch and Armacost 2002).

Lesson Learned (LL): Secchi *et al.,* (1999) defined lesson learned as knowledge or understanding gained by experience. The experience may be positive, as in a successful test or mission, or negative, as in a mishap or failure.

Lessons Learned Practice (LLP): Process of acquiring, handling and verifying good or bad practices from projects in different stages, disseminating the verified and approved lessons to related parties, and recording such practices in appropriate ways for future reuse (Fong and Yip 2006).

Lessons Learned Report: Lessons learned report is a document that contains detailed LL from a project and recommendations on how such lessons will be used for the benefits of project teams and future projects (Office of Government Commerce, 2010).

Organisational Learning (OL): Learning model in which enterprises attempt to not only become skilled at creating, acquiring, and transferring knowledge but also modify their activities to reflect new knowledge insights (Garvin 2003].

Public Private Partnership (PPP): A cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public need through the appropriate allocation of resources, risks and rewards (PPP Unit, Federal Ministry of Finance Abuja, 2006) .

Semi – Structured Interview: Interview in which the topics and questions are carefully designed to elicit the interviewee's ideas and opinions on the topic of interest as opposed to leading the interviewee towards preconceived choices (Hancock and Algozzine 2006)).

Stakeholders: Persons or organizations who are actively involved in a project or whose interests may be positively or negatively affected by the performance or completion of a project (Project Management Institute, 2008).

Tacit Knowledge: Highly personal and mostly undocumented knowledge that is gained through experience which may be largely influenced by beliefs, perspectives, and values embedded in the individual experiences of workers (NATO, 2010).

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Public Private Partnership (PPP), which emerged over three decades ago, is being increasingly used by Governments worldwide as a procurement strategy for the provision of infrastructure due to non availability of sufficient funds and increasing demand for such services by the populace. PPP involves partnership between the public and private sectors for the purpose of delivering facilities and/or service traditionally provided by the public sector. It (PPP) involves the private sector partner in the design, financing, construction, ownership and/or operation of public infrastructure. European Commission (2003) has defined PPP as an agreement between two or more parties who have agreed to work cooperatively towards shared and/or compatible objectives and in which there is shared authority and responsibility, joint investment of resources, shared liability or risks taking and ideally mutual benefits. PPPs provide government agencies with opportunities to deliver infrastructure facilities using private sector resources without necessarily committing public debt or equity.

If properly formulated and managed, a PPP can provide a number of benefits to the public sector such as: alleviating the financial burden on the public sector due to rising infrastructure development costs; allowing risks to be transferred from the public to the private sector; and increasing the "value for money" spent for infrastructure services by providing more efficient, lower cost, and reliable services (Kwak, *et al* 2009). Efficient project delivery under PPP is however according to Dolol and Jin (2009) complex due to presence of uncertainty and risks affecting virtually all aspect of project life cycle; complex

project composition and associated functional integration; complex network of relationship among various stakeholders; multi project operation and increased public participation.

The increasing complexity, duration and multitude of parties involved in a typical PPP procurement process, have made several studies to stress the importance of proactive and systematic capture of project knowledge through the use of formal lessons learned practices (Ibrahim & Price, 2005; Ibrahim, 2007). Lessons Learned Practice (LLP) is an aspect of knowledge management (KM) because it encourages the capture and dissemination of knowledge gained on past projects to enhance learning and future performance (Carillo, 2010). LLP involves the processes necessary for the identification, capture, documentation, storage and dissemination of lessons learned. Though many scholars, institutions and organizations have given various definitions for LLP, the one used by Fong and Yip (2006) in their studies which referred to LLP as the activities, people, and products that support the identification, collection, verification, documentation, storage, sharing, dissemination and reuse of verified lessons learned in organizations was adopted for the purpose of conducting this study.

The purpose of lessons learned practice/exercise is to share and use knowledge derived from experience to promote the recurrence of desirable outcomes and preclude the recurrence of undesirable outcomes (Department of Health & Human Services, United State of America, 2006).The implementation of lessons learned practices (LLP) within construction organizations are viewed as an important part of knowledge management (KM), having the potential to improve the outcomes of a project (Graham and Thomas, 2006). Aecom Consult (2007) have opined that application of LLP in PPP projects will explore the structure of the arrangement; the issues and impediments that confronted

members of the PPP teams and how they addressed them to move the projects forward; present the results of using a particular PPP approach; lessons learned from procuring the project under a PPP arrangement; and conclusions about the project.

1.2 STATEMENT OF THE PROBLEM

It is worrying to observe that in spite of the attention given to PPP by researchers since it was introduced in the construction industry (Tang, *et al,* 2005), and efforts made by governments towards achieving more effective delivery of PPP projects, the projects continue to fail even in countries with long history of its application (Ibrahim et al, 2006). Mckinsey and Company (2005) has also observed that there was a limited body of literature on what a successful PPP actually looked like. Kwak *et al*, (2009) have observed that despite the conduct of several studies on wide ranging issues related to project procurement through PPP such as how to select an appropriate concessionaire, what were the critical factors for the success or failures of PPP projects, what roles government should play in PPP projects, risk allocation, revenue sharing, and other issues, many PPP projects were held up, terminated or even failed to take up. This development can be attributed to lack of studies on LLP in the projects because as can be observed from the above statement, most of the studies were conducted in areas other than LLP. Though capturing and sharing LL which LLP represents are according to Robinson *et al* (2010) critical to the successful delivery of PPP/PFI projects, Mckinsey and Company (2005) has observed that absence of summaries of key experiences and shared LL from studies on PPP projects have made the monitoring of PPP more challenging. Moreover, although the importance of applying LLP to reduce risk was frequently stressed, there was little material available to help technical and management personnel in collecting, researching, identifying, and documenting lessons

learned that will be useful to current and future management and engineering personnel (Goodman, 2008). Zack (1999b) has also observed that very little research has been done regarding the most appropriate LLP to use for a particular organisation and/or project such as a PPP project.

1.3 NEED FOR THE STUDY

It was sadly observed that despite concerted efforts by governments and scholars worldwide to improve projects delivery through PPP, many of such projects continue to fail. Even in cases where the projects were successful, the reasons for the successes were according to Li *et al* (2004) not clear. The need for a study that will identify possible reasons for the successes and/or failures of such projects with a view to offering possible suggestions on how to promote the successes and prevent the failures has therefore become very desirable.

Enhancement of organizational learning and continuous improvement processes by participating organisations in a PPP arrangement were other needs intended to be met by the study. Several studies have, according to Robinson *et al* (2010), recognised the need for a knowledge management strategy supported by appropriate tools for capturing, sharing, and applying knowledge to accelerate learning and build capacity for PPP/PFI projects.

This study intended to meet the above and other needs associated with PPP projects through the evaluation of how LLPs were conducted in the procurement of the projects. Correct conduct of LLPs in the procurement of the projects has the potentials of providing possible suggestions on how to meet the needs for promoting recurrence of desirable outcomes (such as delivering projects on time and within budget, delivering high quality products/services, higher customer and user satisfaction, etc.), avoidance of the recurrence

of undesirable outcomes in the procurement of the project and learning from past experience by prospective PPP participants for more effective future actions. LLP allows organisations to reflect on past experience leading to effective future actions (Carillo, 2005).

Capturing own experience, learning from the experience of others and transfer of project experience to other parties by PPP project participants with a view to improving project performance were other needs intended to be met by this study. The need for comprehensive understanding of PPP was also intended to be met by the study. Kwak, *et al* (2009) were of the opinion that understanding key findings derived from various researches and lessons learned will facilitate a comprehensive understanding of PPPs. Other needs expected to be met by this study were development of a knowledge management strategy that will ensure effective capture and sharing of LL which are critical to the success of PPP/PFI projects (Robinson *et al,* 2010).

1.4 AIM AND OBJECTIVES

The aim of the study is to evaluate Lessons Learned Practices (LLP) in PPP Projects in Nigeria while the objectives were as follows: -

i. To identify best practices of conducting LLPs, their benefits and challenges associated with their conduct;
ii. To appraise how LLPs are conducted in PPP projects in Nigeria; and
iii. To determine the level of application of LLPs in PPP projects in Nigeria.

1.5 SCOPE AND LIMITATION

The study focused on evaluating LLPs in PPP projects in Nigeria. The scope covered an investigation on how basic LL activities were conducted in the projects, who conducted them, when they were conducted, results achieved and identification of the challenges encountered in conducting them.

Limited number of PPP projects and literature on the study area in Nigeria were some of the limitations that were encountered in the course of the study. A case study research method was used in the study in order to minimize the constraint posed by these limitations. Bloomfield (2006) and Hedge and Greve (2006) have suggested the use of case study in situations where literature on a study area was still largely undeveloped.

Attitude of some stakeholders in providing information for studies such as this one and incomplete, restricted or often unavailable data due to the commercial and political nature of PPP arrangements were other limitations that constrained the study. The effects of these limitations were minimized by the use of semi-structured interviews in the conduct of the study. One-on-one interviews can be instrumental to locating source material, collecting observations and gaining understanding of how organizational politics and personalities played a role in the outcome of a project (Goodman, 2008). This research method also enabled the study to obtain not only answers to the asked questions but also reasons for the answers in addition to discussing sensitive issues with the interviewees.

CHAPTER TWO

LITERATURE REVIEW

2.1 PUBLIC PRIVATE PARTNERSHIP (PPP)

The world has in the last few years witnessed a dramatic increase in the involvement of private sector in the development and funding of public infrastructure (Sapte, 2006). Techniques often referred to as Public Private Partnerships (PPPs) are continuously being developed to bring the public and private sectors together for the procurement of public services and/or infrastructure with a view to sharing the benefits and risks associated with such partnerships, he added. This joint approach allows the public and private sector partners to blend their special skills and achieve an outcome which neither party could achieve alone (Akintoye *et al*, 2003). Lane and Gardiner (2003) have stated that the primary objective of PPP is to facilitate the delivery of high quality public facilities and/or services by the private sector over a period of time at a cost that represents value for money whilst at the same time transferring an appropriate level of risk to the private sector.

Many academics, public agencies and international organisations have given various definitions of PPP in a bid to explain this important method of project procurement that is being increasingly adopted worldwide. Her Majesty's Treasury (1998) has defined PPP as an arrangement between two or more entities that enables them to work cooperatively towards shared compatible objectives and in which there is some degree of shared authority and responsibility, joint investment of shared resources, shared risk taking and mutual benefit. The Canadian Council for PPP (2004) described PPP as an arrangement between

the public and private sectors with clear agreement on shared objectives for the delivery of public infrastructure and/or public services by the private sector that would otherwise have been provided through traditional public sector procurement while PPP Unit, Federal Ministry of Finance and Economic Development, Abuja in its condensed version of PPP Guidance Manual (2006) defined it as a cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public need through the appropriate allocation of resources, risks and rewards. Kwak *et al* (2009) gave a general definition of PPP as cooperative arrangements between the public and private sectors that involve the sharing of resources, risks, responsibilities, and rewards with others for the achievement of joint objectives.

Various types of PPP arrangements which vary in terms of the degrees of private sector involvement have been used to procure projects depending on the project objectives and requirements (Kwak *et al*, 2009). The arrangements can also differ in purpose, service scope, legal structure, risk sharing, finance sources and ownership of properties, they added. The United Nations Economic Commission for Europe (2002), have identified Design, Build, Finance and Operate (DBFO), Build, Operate and Transfer (BOT), and Design, Construct, Maintain and Finance (DCMF) as variants of the PPP contract family. Kopp (1997) in his work espoused the Build-transfer-operate (BTO), Build-operate-transfer (BOT), and Build-own-operate (BOO) as the three (3) main models of PPP being used worldwide with some variations.

So many arguments have been put forward to support the use of PPP for the procurement of infrastructure. Quirke and Walls (2006), Chen, (2007), Garvin, (2009), Raisbech, (2009) have among others identified the need to obtain value for money from projects as one of the

reasons for adopting PPP. Grimsey and Lewis (2002), Fapohunda and Windapo (2008), Orr, (2006), Roumboutsos, (2009) have identified constrained resources of government as another reason for adopting PPP. Fapohunda and Windapo (2008) identified greater efficiency in the use of resources as another reason for adopting PPP. Risk transfer was identified as a major reason for adopting PPP by many scholars such as Akintoye *et al* (2003), Chen (2007), Garvin (2009), and Raisbeck (2009). Business opportunities for the private sector, rapid economic growth, demand for better service, and cost effectiveness were also identified as reasons for adopting PPP by Hemming (2006), Ibrahim *et al* (2007), Shan *et al* (2006) and Akintoye *et al* (2003). Injection of extra resources to the public sector was identified as one of the benefits derivable from PPP by Mckinsey and Company (2005).

Several academics and institutions/organizations have identified some challenges and/or drawbacks associated with the use of PPP as a procurement strategy. Bing *et al* (2005) identified lot of management time spent in negotiation and contract transaction, lengthy delays in negotiation and high participation cost as the most significant challenges associated with PPP/PFI procurement. Hemming (2006) had highlighted that one common complaint about PPPs from the private sector was that bidding and contracting take much longer time than in the private sector.

2.1.1 PPP Procurement Method

PPP arrangements are complex comprising many agreements between three different types of organisations namely, the public sector client, the private sector provider of the required infrastructure and/or services and financiers/investors. PPP transactions are often seen as a three way relationship between the public sector client, the private sector provider of the

service generally referred to as Special Purpose Vehicle (SPV) or Special Purpose Company (SPC) and financiers/investors who provide funding for the project (Robinson et al 2010). A single contract is usually entered between the public sector client and a private sector company (SPV/SPC) specifically established for each project. This company may be owned by a large construction company specialising in PPP projects or other organisations.

The public sector client perceives the need for the project and determines whether the project is suitable for financing on a PPP basis or not depending partly on the political and/or economic circumstances of the country (Sapte 2006). Once the project is approved to be procured on PPP basis, it moves to advertisement, bidding, negotiations, selection of the best bidder, construction stages and finally to operational and/or service delivery phase (Akintoye *et al*, 2003). The contributions of the public sector client in PPP projects vary widely according to the circumstances of each project but they mostly fall within administrative, economic and political spheres.

The SPV/SPC on the other hand procures expertise for the design and construction of the project as well as the maintenance and operations of the completed project in addition to sourcing the funds required to execute the project from interested financiers/investors thus introducing the third organisation into the project. The financiers and investors provide the funds required to execute the project in anticipation of repayment plus interest and/or dividends in the case of shareholders to the project. Since their returns are tied to the success of the project, the financiers and investors may influence the design (to ensure that it meets the client's specifications), maintenance and operation strategies (to avoid unduly value depreciation during the concession period). The success of a PPP project depends on the selection of the most suitable SPVSPC which requires a well structured tendering

process, an appropriate concessionaire evaluation method, and a set of evaluation criteria (Kwak, *et al*, 2009).

The complexity in contractual relationships between participants and the long concession periods have made PPPs distinct from a traditional infrastructure development routes due to broad range of uncertainties and risks associated with it (PPP); assumption of far more responsibilities and much more and deeper risks by the concessionaire than a traditional contractor; much more complicated financial issues and difficulty in the allocation of risks and rewards among participants (Kwak *et al*, 2009). The complex nature of PPP projects has according to Robinson *et al* (2010) made the use of appropriate management structure vital for their successful implementation. The management structure should reflect the diversity of teams and professionals involved, types of agreement and relationships between the different participants, they added. The scholars have observed that all sectors are sadly littered with PPP/PFI programmes and projects that failed completely or at least failed to deliver the intended benefits due to among other things inappropriate project management structure, inefficient processes and project teams not learning from previous mistakes. LL studies which highlighted that continued and repeated mistakes were made in the delivery of some PPP/PFI projects have recognised the need for knowledge management (KM) strategy supported by appropriate tools for capturing, sharing and applying knowledge to accelerate learning and build capacity for such projects, they added. They further stated that the characteristics of PPP projects such as long term cooperation and commitment, dynamic team membership from different disciplines and organisational boundaries have raised a number of challenges for managing project knowledge and accelerating learning. This development coupled with the complexity, expensiveness and long term commitment between various private organisations associated with PPP

arrangement have according to the scholars made many of such organisations to start using various KM tools to develop solutions to meet the need of public sector clients.

2.2 KNOWLEDGE MANAGEMENT (KM)

Knowledge Management (KM) enables the creation, communication, management, and application of knowledge of all kinds to achieve organisational goals (Tiwana, 2000). It deals with organisational optimisation of knowledge through the use of various technologies, tools and processes to achieve set goals (Kamara *et al*. 2000). One of the central pillars of KM concerns learning from others on their experiences and how they have overcome their problems (Robinson *et al* 2010). KM can be described as the process of creating, gathering, analysing, sharing and application of knowledge by an organisation for the enhancement of its operation. Though there was no general consensus on a unified meaning of KM, many scholars have given various definitions of KM. Bhatt (2001) defined KM as a process of knowledge creation, validation, presentation, distribution and application while Holm (2001) defined it as getting the right information to the right people at the right time, helping people create knowledge and sharing and acting on information. Horwitch and Armacost (2002) defined KM as the creation, extraction, transformation and storage of the correct knowledge and information in order to design better policy, modify action and deliver results. KM has also been defined as the practice or process of creating, acquiring, sharing and using knowledge wherever it resides to enhance learning and performance by organizations by Scarbrough *et al,* (1999). I cannot agree more with this definition.

Though the terms data, information and knowledge are often used interchangeably, there are differences in their meanings in KM. Data according to Robinson *et al* (2010) refers to

raw numbers, discrete facts about events while information is processed data that has been analysed and structured within a particular context. Knowledge on the other hand refers to the meaning of information in a special context, they opined. Knowledge is about knowing what to do with information and can be broadly classified into explicit and tacit knowledge. Ibrahim and Kolo (2011) have described explicit and tacit knowledge as follows. Explicit knowledge is knowledge that has been or can be articulated, codified, and stored in certain media, and can be readily transmitted to others. The most common forms of explicit knowledge are manuals, documents and procedures, audio-visual, works of art and product design. Tacit knowledge is knowledge that people carry in their minds and is, therefore, difficult to access and effective transfer generally requires extensive personal contact and trust. Tacit knowledge is considered very valuable because it provides context for people, places, ideas, and experiences. Knowledge can also be classified according to its content – for example project knowledge defined by Kamara *et al*, (2005) as the knowledge required to conceive, develop, realise and terminate a project. The effective management of project knowledge has been acknowledged as a necessity for improved project performance (Ibrahim and Kolo, 2011).

Robinson *et al* (2010) were of the opinion that KM in PPP projects can accelerate learning and capacity building process to develop expertise and facilitate improvement in processes affecting planning and design development, construction and operational aspects as well as ensuring continuous improvement in the projects. The scholars added that understanding how to transfer lessons learned (LL) through KM and capacity building is fundamental to a sustainable improvement in the efficiency and effectiveness of PPP/PFI projects. A fundamental consideration of KM is the reusability of knowledge or transfer of knowledge

from one project to another. This led to the evolution of the *'lesson learnt'* concept (Tan et al., 2005; 2007).

2.3 LESSON LEARNT CONCEPT

Lesson learnt concept which involves the processes necessary for identification, collection, collation, validation, analysis and dissemination of lessons learned (LL) is also at times referred to as lesson learned practice (LLP). LLP will be used in place of LL concept for the purpose of this study. Lessons learned (LL) practices are important aspects of KM. LL practices according to Snider et al. (2002: 291) refer to the activities, people and products that support the recording, collection and dissemination of lessons learned in organisations. Lessons learned practice (LLP) is an important aspect of knowledge management (KM) that encourages the capture and dissemination of knowledge gained from past projects to enhance learning and future performance (Carillo 2005). The scholar continued to state that LLP allows organizations to reflect on past experience leading to effective future actions. LLP is used by project management team to review events and activities that occurred during project execution. The implementation of LLP has the potential of improving the outcomes of a project (Graham and Thomas, 2007). Findings from a survey conducted by Fong and Yip (2006) have suggested that real life adoption of LLP can lead to the successful management of construction project.

Various organizations and scholars have given different names to the LLP concept. Disterer (2002) has identified some of these names as post-project reviews, post-project appraisals, project post-mortem, debriefing, reuse planning, reflection, corporate feedback cycle, experience factory, and many others such as lessons learned concept while Fong and Yip (2006) referred to it as lessons learned system (LLS). Various definitions have also been

given to LLP by different academics, institutions and bodies. Graham and Thomas (2007) in their definition said that LL practices refer the activities, people and products that support the recording, collection and dissemination of lessons learned in organizations. Washington State Department of Information (2011) defined it as the process of gathering, documenting, storing and analyzing feedback on events that happened during a project for possible use in future projects. As stated earlier, the definition given by Fong and Yip (2006) which described LLP as the activities, people and products that support the processes of identifying, capturing, documenting, storing and dissemination of LL was adopted for the purpose of this study. Formalized systems for capturing and disseminating lessons within organizations and across projects also known as LLP have according to Snider, et al (2000) received increased attention in recent years. Interest in such practices (LLPs) has grown through popular concepts such as the learning organization, developments in knowledge management and technological advancements that hold the promise of wider, more efficient distribution of lessons learned within an organization (Fong and Yip, 2006).

2.3.1 Lessons Learned (LL)

Lessons learned are one of the most powerful and cost-effective project management tools available today Nielsen (2010). They (LL) are a principal component of an organisational culture committed to knowledge management and continuous improvement (Cowles, 2004). Lessons learned will according to King (2008) enable an organisation to become more efficient and effective in executing projects from conception to completion. Lesson learned are the vehicle for improving individual and organizational project competency and success (Reich, *et al*, 2008).

Lessons Learned (LL) describes activities relating to learning from experience to achieve improvements. A lesson learned is therefore a discussion of a project or an activity that enables individuals or organisations involved to learn for themselves what happened, why it happened, what needs improvement and what lessons can be learned. Lessons can be learned from any activity – daily events, exercises, training, etc. They (LL) are a product of operations, exercises, training and experiments (NATO, 2010). During the course of activities people do recognize ways of doing things more easily or efficiently that can be passed on to others to help them avoid problems and do even better. Carillo (2005) was of the opinion that LL is a discussion of a project or an activity that enables the individuals involved to learn for themselves what happened, why it happened, what needs improvement and what lessons can be learned from the experience.

Many scholars and institutions have defined Lesson Learned (LL). Project Management Institute (2008) defined LL as the learning from the process of executing a project. NATO (2010) in its handbook on LL stated that LL is broadly used to describe people, things and activities related to the act of learning from experience to achieve improvements. LL was defined as knowledge and experience (positive or negative) derived from actual incidents by the U. S. A. Department of Homeland Security (2006). Milton (2009) was however of the opinion that most of the above definitions were for lessons identified rather than lessons learned. He opined that for a lesson to be described as lesson learned it has to be applied, communicated and/or re-applied by others. He went further to state the steps a lesson has to go through before it can be considered to be "learned" as follows: -

i. The lesson should reflect on the experience of what happened;
ii. It should also identify learning points such as the difference between what was planned and what actually happened, etc.;

iii. It should analyse what happened and identify reasons for the difference referred to above and root causes of problems;
iv. It should identify what should be done in future to achieve success and avoid recurrence of problems; and
v. It should be accompanied by action in form of a change in policy, structure, working practices, etc.;

After giving the steps a lesson has to go through before it can be considered as a lesson learned, Milton (2009) defined LL as a change in personal or operational behavior as a result of experience. Cowles (2004) defined LL as a knowledge or understanding gained by experience (positive or negative) and went further to state that for a lesson to be considered as lesson learned it: -

i. Must be significant;
ii. Must be valid;
iii. Must be applicable;
iv. Could describe a problem or issue that the organisation will investigate;
v. May contain or address pertinent information and
vi. May provide information of interest.

He further stated that a lesson that simply restates or paraphrases existing doctrine, policy, process, etc. does not qualify as an appropriate and bona fide lesson learned. Secchi *et al.,* (1999) provided a comprehensive definition that has been widely used by various space agencies: "A lesson learned is knowledge or understanding gained by experience. The experience may be positive, as in a successful test or mission, or negative, as in a mishap or failure … A lesson must be significant in that it has a real or assumed impact on operations; valid in that it is factually and technically correct; and applicable in that it identifies a specific design, process, or decision that reduces or eliminates the potential for failures and mishaps, or reinforces a positive result."

2.3.2 Conducting Lessons Learned Practices

Any organisation wishing to conduct LLP should according to Kartam (1996) have the following: -

i. A manageable format for organising, storing, retrieving and updating information and
ii. An effective mechanism for collecting, verifying, categorising and storing information.

In devising such practices, Robinson *et al*. (2005) have identified two distinct strategies: codification and personalisation. Codification involves capturing knowledge in an explicit form and leveraging it using IT tools such as an LL database (LLDB). Personalisation focuses on sharing tacit knowledge through human interaction. To improve LL practices, Davidson (2006) advised that the lessons should be regularly reviewed to ensure accuracy, reliability and relevance. Goodman (2008) has however observed that although the importance of applying LLP to reduce risk was frequently stressed, there was little material available to help technical and management personnel research and document lessons learned. Collecting, researching, identifying, and documenting lessons learned that will be useful to current and future management and engineering personnel was not always a straightforward task, he added.

Conducting LLP involves five major processes which include observation, analysis, capture, storage and dissemination of LL. These processes are made up of eleven basic LL activities namely handling of successes, handling of challenges/problems, LL identification, LL validation, LL verification, LL capture, LL report, LL storage, LL classification, LL indexing and LL dissemination as will be seen in the following discussions on the processes.

2.3.2.1 Observations

Lessons learned practice starts with gathering of observations. Observation which is the basis of LLP means "an issue identified for improvement" (NATO, 2010). Observation can thus be described as the difference between expected and actual outcome. Every activity in a project has an expected outcome. If everything goes as expected, there is little to learn from the activity. However, if expectations are either not met or exceeded, there is something to learn. Any difference between expected and actual outcome should be documented as an observation with the description of the sequence of events, conditions under which the events occurred, and other quantifying details. The observation should convey the basic details of the observed issue. At a minimum, the observation should address questions such as "what happened?"; "why did it happened?" and "how did it differ from what was expected?"

One of the most important tasks in lessons learned practice according to NATO (2010) is gathering observations from a project as they occur. The gathered observations should be reviewed to filter out unsuitable ones. The observer may conduct some initial analysis to elaborate on the reason(s) why the activity differed from expectation and identify a proposed solution. For more complex observations, further analysis may be required.

2.3.2.2 Analysis of Observations

Once it is decided that an observation is suitable for inclusion in a LL process, the next stage is the analysis of the observation. The analysis is usually undertaken to find root cause(s) and determine Remedial Action (RA) after which the appropriate person (s) or organisation to implement the remedial actions is identified. The analysis will ensure that the observation was significant (as it had made a real impact), valid (because it was

factually and technically correct) and applicable because it had identified something that eliminated the potential for future failures or reinforced a positive result (Weber and Aha 2002). According to these scholars, the analysis of an observation is vital because an assertion that a certain method was superior to another cannot be accepted without a justifiable reason.

Analysis is the study of a whole by thoroughly examining its parts and their interactions and is used to find the root cause(s) of an observed issue and identify a Remedial Action (RA) while an RA is a possible action that serves to rectify a fault or improve conditions (NATO, 2010). The aim of the analysis is to generate a Lesson Identified (LI) which was defined by NATO (2010) as "an observation for which an RA has been developed and person (s) or organisation to implement the remedial actions has been proposed." The lesson identified is after verification captured as lesson learned. Verification allows an organisation to tailor its lessons learned repository according to the standards it sets for itself (Cowles, 2004).

2.3.2.3 Capturing Lessons Learned

Many institutions and scholars have addressed the issue of capturing lessons learned with a view to providing a guide to project management teams on the subject matter. The issues mostly addressed under this subject included but were not limited to the following: -

i. When should lessons learned be captured?
ii. Who should capture lessons learned?
iii. Lessons learned capturing/collection techniques;
iv. What should be captured as lesson learned? and

v. The Lessons Learned Report.

Carillo (2005) had observed that though capturing LL is a highly desirable activity, it often does not occur for a number of reasons. Projects are of a temporary nature often involving multi-disciplinary stakeholders and virtual teams. Very few clients have a requirement for LL and it is logistically difficult to undertake in terms of when they should be captured and who in the project team should capture them, she added.

i. When should lessons learned be captured?

Though scholars and institutions differ slightly on when lessons learned should be captured, all of them agreed on the need for capturing them (LL) in view of their importance to project success. There were two broad schools of thought on when LL should be captured. The first one proposed that LL should be captured during the project while the second one was of the opinion that LL should be captured at the end of a project. There were also few scholars who felt that LL should be captured both during and at the end of a project. Even among those who proposed that LL should be captured during a project, there were differences regarding the stage at which LL should be captured. While institutions and scholars such as Centre for Disease Control and Prevention (2006), King (2008), Egeland (2009), Haughey (2009), Abudi (2010) and Lop (2011) proposed that LL should be captured throughout the project, others like Reich et al (2008) and Nielsen (2010) suggested that LL should be captured as soon as they occur and after a painful failure respectively. Another set of institutions and scholars within the first school of thought including Midha (2005), Office of Government Commerce (2010) and Lonely Project Manager (2011) were of the opinion that LL should be captured at the end of every stage or phase or milestone or after major work inspection.

The proponents of the first school of thought which suggested that LL should be captured during project execution cited the need to ensure that everything was captured and avoid the possibility of forgetting some experiences encountered during the project to support their preposition. When LL were written after a project, a lot of important events that affected the project may get lost in the track (Lonely Project Manager, 2010). They further argued that capturing LL during a project especially as soon as they occurred will ensure that they (LL) were captured when they were still fresh in the minds of the project participants. They also argued that since LL was a continuous process that should happen in all phases of a project, taking it at the end of the project and trying to remember what happened during the project may be useless. Carillo (2005) was of the opinion that an LL captured at the end of a project may be lacking in detail due to the time lag between the occurrence of the lesson and when it was recorded.

The second school of thought that proposed that LL should be captured at the end of a project included among others Heldman (2002), Portny (2007), Project Management Institute (2008),Stanleigh (2009) and Washington State Department of Information (2011). They argued that the most effective inputs will be gotten from project participants if LL were captured at the end of a project.

A lessons-learned weekly or bi-weekly meeting could be another great tool for sharing information on how obstacles were overcome, and what could be done better on the next phase or next project (Seningen, 2005). Sommers (2006) and Goodman (2008) in their contributions stated that lessons learned would be most efficiently and effectively captured during and at the end of a project, and should be a natural outcome of every project. Reich,

et al (2008) however recommended the capture of LL at the end of each major phase (as hand-over notes for the next group noting areas of concern, decisions still to be made, etc.), whenever key decisions were made or changed (to document rationale) and whenever key targets or deliverables change (to identify why this happened, what was decided and whether follow-on work was needed). It is however important to note that all the institutions and scholars have endorsed the idea of having project review meetings/sessions soon after project completion to discuss and review project performance (successes and challenges) with a view to coming up with a comprehensive LL report. A survey conducted by Fong and Yip (2006) has however discovered that professionals think that there is no specific period to acquire lessons learned, as any timeframe contains meaningful lessons to be learned.

The above submissions have clearly shown that it is very important for project stakeholders to capture lessons learned at the most appropriates times in order to document the causes of successes and problems encountered in their projects as well as reasons behind corrective actions taken to remedy any particular situation. I particularly recommend the capture of LL regularly throughout a project's duration while their review and collation should be done as soon as the project ends.

ii. Who should capture lessons learned?

Various institutions and scholars have proposed the persons and/or parties they considered to be in the best position to capture LL. Some of these proposals included the following: -

i. LL should be captured by project participants and key stakeholders.
ii. LL should be captured by project participants under the leadership of the PM.

iii. A trained and skilled person should be appointed to lead and coordinate the capture of LL from the beginning of the project and track them throughout the project.

iv. PM and project teams should capture LL during a project while an LL facilitator is appointed to capture the LL from the project team during an LL meeting.

It was widely assumed that it was the responsibility of the project manager (PM) to ensure that knowledge and experience gained during a project were captured with a view to turning them into LL. Project manager has responsibilities to ensure that the knowledge gained while performing the project culminated in effective lessons learned (King, 2008). These lessons will enable the organization to become more efficient and effective in executing projects from conception to completion.

Department of Health and Human Services, U.S.A. (2006) and Washington State Department of Information (2011) believed that the best persons to capture lessons learned should be the project team and key stakeholders because of their involvement and interest in the project while Goodman (2008) was of the opinion that a specially qualified and available person should capture the LL. Egeland (2009) on the other hand opined that the project manager should capture LL. In another proposal, Haughey (2009) suggested that the PM and project teams should capture LL during project execution while an LL facilitator should be appointed to capture the LL from the project teams during a meeting with them on the subject. Abudu (2010) and NATO (2010) also opined that project teams should capture LL while trained personnel should be appointed to lead the capturing process and track it throughout all stages of the project. Bolt (2011) proposed that a single person to act as coordinator or caretaker of project LL policy should be appointed so that he or she can analyse documented LL with a view to identifying any broader LL that may be applied.

Findings of a survey conducted by Fong and Yip (2006) have suggested that in order to have a better design of LLP, professionals agree that a knowledge manager should be employed to handle lessons learned, since professionals may not have the experience, time or resources to handle such matters, and a dedicated member of staff can help them to develop and maintain the system.

Various reasons were given by the respective proposers to support their prepositions. The proponents of project participants and key participants hinged their proposals on their (project participants and key participants) involvement and interest in the project. Those who opined that a trained individual should be appointed to lead and coordinate the capturing exercise did so because of their conviction that such arrangement will result in a more coordinated and qualitative capture of LL in addition to providing one point of responsibility for the exercise. From whatever perspective the issue is viewed, the need for project stakeholders to ensure that LL are captured accurately and correctly by the most appropriate person and/or parties cannot be overemphasized.

iii. Lessons Learned Capturing/Collection Techniques

Numerous institutions and scholars have expressed many viewpoints on techniques to be adopted in capturing/collecting LL. Heldman (2002), Project Management Institute (2008), Egeland (2009) and LonelyProjectManager (2011) suggested the convening of post project evaluation, wrap-up or LL review meetings at the end of a project for the capture of LL. They opined that during such meetings, the successes, failures and challenges encountered, reasons/causes of the successes/failures as well as how the challenges were handled should be discussed with a view to identifying and documenting LL derivable there from.

Centre for Disease Control (2006), Haughey (2009) and Abudi (2010) suggested the use of identification, tracking and recording lessons throughout a project for the capture of LL while the final compilation was recommended to be done during a LL session at the end of the project. Reich et al (2008) recommended sharing of knowledge by project participants from project beginning, involvement of project teams in reflective thinking and pooling ideas. Other recommendations by these scholars included introduction of timing and techniques to formalize learning, appointment of a LL facilitator to encourage people to express their fears as well as their successes and creative ideas, and creation of project logs to document happenings including LL and critical decisions during a project. Portney (2007) recommended the conduct of post project evaluation review to identify both the techniques and approaches that went well and those that didn't go well as a way of capturing LL. He further suggested the conduct of a stage by stage review of project performance, assuring project participants that the exercise is neither a fault finding mission nor aimed at victimizing anybody and encouraging people to identify what other people did well as well as seeing how they could have handled situations differently, as other strategies that will assist in the effective capture of LL.

In his recommendation on how to capture LL, Nielsen (2010) suggested scheduling of LL sessions at strategic points throughout project duration in addition to instilling LL culture in project teams so that they can capture LL on their own. He also recommended educating project participants on the importance of and how LL should be captured as well as the use of interviews to capture LL where brainstorming was not possible. Sommers (2006) and King (2008) were of the opinion that LL should be captured through meetings as a project

progresses during which questions designed to bring out various interactions and experiences from project teams will be asked with a view to identifying LL.

Lop (2011) suggested the opening of central LL register to document LL as a project progresses, including LL in the agenda of project meetings during project implementation and a post implementation review to discuss what happened during a project as ways of capturing LL. British Council Information Guide (2011) has recommended that story telling technique can also be used in capturing LL. This technique is a way of gathering lessons learned by encouraging project teams to talk about their experiences through stories.

iv. What should be captured as lessons learned?

There were no much differences in what most institutions and scholars recommended to be captured as LL. Issues generally recommended to be captured as LL included what went well and why; what went wrong and why; what could have been done better; actions taken to remedy situations; preventive measures to avoid future problems; things to do to repeat success; things to do to avoid mistakes and advice to future teams (Heldman, 2002; Sommers, 2006; King, 2008; Sommers, 2009; Haughey, 2009; Nielsen, (2010); Abudi, 2010; and Lop, 2011). In addition to the above issues, Sommers (2006) recommended the capture of best practices derived from a project. Centre for Disease Control (2006) suggested the inclusion of clear statement of the lesson, summary of how the lesson was learned, benefits of using the lesson and how the lesson may be used in the future, among the issues to be captured. Other issues recommended to be captured included description of abnormal events that caused deviation from plans, assessment of technical methods and tools used, useful measurement on how much effort was required to create various products

and notes on effective and ineffective quality reviews and other tests including reasons why they worked well or badly (Office of Government Commerce, 2010). King (2008) and Lonely Project Manager (2010) added conflicts experienced during a project, causes of the conflicts and how they were resolved, to the issues to be captured. Nielsen (2010) and Lop (2011) advised captors of LL to ensure that only right and relevant information was captured. Risks that materialised during a project, the adequacy or otherwise of the contingency provisions for those risks and the risks that did not materialised were recommended to be captured by Lonely Project Manager (2011).

v. The Lessons Learned Report.

The next step in lessons learned capturing process is the preparation of lessons learned report. As the name connotes, lessons learned report is a document that contains detailed LL from a project and recommendations on how such lessons will be used for the benefits of project teams and future projects. The purpose of LL report is to bring together any lessons learned during project that can be usefully applied to other projects (Office of Government Commerce, 2010). The report can according to Office of Government Commerce (2010) and LonelyProjectManager (2010) be written from sources such as documents created in the course of project execution like LL register and/or record of LL, check-lists, inter-office communications, activity reports and financial statements.

Lesson learned report was defined by Intelligent Work Place Management (2009) as a collection of thought, ideas and notes for the sole purpose of increasing what was done well and reducing what was not done well. CDC (2006) defined it as a written document detailing the problems encountered during a project or experience and the lessons learned by dealing with those problems.

Goodman (2008) has suggested that lessons learned report should be factual, objective and avoid assigning culpability and/or apportioning blames to individuals and organisations. He further recommended that negative personal comments about people and/or organisations should be kept out of the report. He also opined that a LL report should be unambiguous and easy to understand. Integrated Workplace Management System News (2009) has suggested that LL report should be made up of executive summary, project details, lessons learned, recommendations and conclusions.

2.3.2.4 Storage of Lessons Learned

Lessons Learned form an important part of an organization's knowledge so it is important to make sure that they are available to future projects by indexing and archiving them (Nielsen, 2010). Larger organizations may have a project management office that will retain and archive all the necessary LL documentation but where this is not available, it should be ensured that the document is held centrally and can be easily accessed.

Lop (2011) was of the opinion that many lessons learned from projects may disappear soon after the projects, never to be seen again if there was no effective storage system. There should therefore be an internal knowledge management system devoted to storing project lessons learned documentation so that project managers may easily retrieve and apply the lessons contained therein to new projects. Documentation and preservation of lessons learned and experiences should be conducted both during a project and immediately after completion because memories fade, personnel change jobs, and detailed accounts of lessons and experiences are quickly forgotten if not written down and preserved (Goodman, 2008).

Creation of a system for storage and retrieval of LL was very important (Haughey, 2009). Midha, (2005) has suggested that Lessons learned may be stored in a searchable database or even in a sophisticated knowledge repository that could be searchable by key project attributes (such as name, type, size, phase, functional area, and key words), easily accessible, web-based, and secure. He further opined that having a single LL repository for an organisation has several benefits which included quick and easy identification of pattern of similar problems, easier for practitioners to look and search one common repository as opposed to searching many, easier to update and maintain and better utilization of resources. Sommers (2006) has recommended that easily accessible repository for documented LL and best practices which might be a database, website, or even a simple document should be created. He added that it doesn't have to be fancy to be effective.

Storage of LL should focus on issues related to categorization, indexing, formatting, and structure. Nielsen (2010) has opined that LL can be categorized in a variety of ways such as by project phase, by project function (e.g. programming, unit testing, system testing), by project group (systems analysts, programmers, quality assurance testers), by process, etc. Under this proposal each lesson may be captured under more than one category. To keep the material well organised, a system that uniquely identifies each LL should be put in place so that readers can easily spot ones that fall into more than one category. This type of approach can be easily supported by using folders in a file system, one per category or index, and filing a copy of the LL in each applicable folder. The LL should be categorised, filed, and made available regardless of what filing system is used.

2.3.2.5 Dissemination of lessons learned

Dissemination is one of the most important elements of LLP. It focuses on issues relating to the distribution and use of LL. Many institutions and scholars have written on dissemination of LL in view of the importance of the subject. SELL (2003) have stated that documented lessons learned information was of little benefit if it was not shared and used while NATO (2010) in its lessons learned handbook opined that the value of a LL process could only be realised when the information generated by the process was available to the people who needed it, when they needed it. Office of Government Commerce (2010) was of the opinion that LL report should be viewed as information that can be shared although some areas may need to be kept confidential.

Effective dissemination of lessons learned means that the right people get the right information in a timely manner and in the right format while the purpose of a dissemination strategy was to ensure that lessons learned from evaluations and project completion reports reach target audiences (United Nations Environment Program, 2011). Dissemination methods should be as efficient as possible to facilitate accessing and using the information. According to SELL (2003), the greater the diversity of the user community of LL, the greater the range of options required to effectively disseminate lessons learned information. For example, while electronic sharing via internet may be preferred by a manager responsible for overall planning and implementation of a cleanup effort, the same method may have virtually no use for a field worker who does not use a computer. That worker may benefit much more from a periodic notice on a bulletin board or a conversation during a brown bag lunch, they added.

Various ways of disseminating of lessons learned have been suggested by institutions and scholars. Cowles (2004) has stated that LL dissemination can be achieved through pushing lessons i.e. (sending out new information to individuals as it became available) to potential users via list servers, continuous lessons learning, training, mentoring, program reviews, after-action reviews, project retrospectives and periodic revisions to organisational policies and guidelines. Midha (2005) was of the opinion that lessons can be periodically disseminated to project teams through e-mail notifications, organisational meetings, organisational newsletter, etc. NATO (2010) has suggested disseminating LL through sending out new information to individuals as it became available, requiring individuals to regularly check to see if new information was available, within a community via forums, working groups and direct communications, training and tools that support the sharing of lessons and information such as databases and knowledge repositories. United Nation Environment Program (2011) has recommended two approaches to dissemination of LL. These approaches included allowing interested users to retrieve information from past experiences on specific issues in a concise summarised way whenever they deem it useful and directly communicating lessons learned formulated in the latest evaluation and project completion reports to various audiences. This will familiarise audiences with evaluation findings soon after the evaluation took place.

Dissemination of LL has many benefits. If documented and disseminated properly, LL provide powerful methods of sharing ideas for improving work processes, operation quality, safety, cost effectiveness, etc. and helps improve management decision and worker performance (Centre for Disease Control and Prevention, 2006). Bringing information to practitioners, increasing the chance of someone in a project team to apply a relevant lesson,

encouraging everyone to submit to and retrieve lessons from the knowledge pool, allowing for informal scrutiny of lessons from peers and permitting further improvisations and innovations of lessons were some benefits of LL dissemination enumerated by Midha (2005). LL information sharing according to NATO (2010) generates organisational knowledge, yields better results in both business and military environments and leads to an enduring improvement in organizational performance. United Nation Environment Program (2011) has identified that disseminating lessons learned will help stakeholders take the right decision to succeed in a project; ensure that the same mistakes are not repeated at the cost of project effectiveness and help minimize delays in implementation. Other benefits identified included risk identification and management, as well as reducing the knowledge gap that can happen due to change of personnel.

It may however be worthy to mention that in spite of the tremendous benefits of disseminating LL, NATO (2010) has stated that not everyone was motivated to share LL. Commonly expressed reasons for not sharing LL according to the organisation included the belief by some people that sharing negative experiences creates embarrassment and/or blame, it was not worth sharing until a solution was found and sharing information was a risk as information obtained by enemy could be used to exploit opponents' weaknesses. Other reasons usually advanced for not disseminating LL included lessons can only be learned by doing, documenting experiences was a waste of time, the lessons were classified and we cannot change that to share them.

2.3.2.6 Challenges in Adopting Lessons Learned Practices

A review of many studies conducted on LLP by Grahams and Thomas (2007) has identified a number of challenges encountered in the conduct of lessons learned practices. Some of these challenges included the following: -

i. Poor organizational culture,
ii. Lack of top management support,
iii. Lack of dedicated resources such as staff, time and money,
iv. Poor ICT infrastructure;
v. Lack of time to capture and use learning experiences;
vi. Capture of LL at the end of the project when many people have moved on;
vii. Loss of insight due to lime lapse between lesson and recording;
viii. Failure to uniformly document LL in a useful manner;
ix. Lack of proper classification system;
x. Difficulty in integrating LL with existing operations and procedures;
xi. Difficulty in sharing lessons between experienced and inexperienced individuals;
xii. No motivation or perceived benefits for individual employees;
xiii. Failure to deliver lessons when and where they are needed;
xiv. Need for people to internalize LL and apply them at work; and
xv. Difficult to measure and communicate benefits.

2.3.2.7 Benefits of Application of Lessons Learned Practice

The foregoing literature review has made it possible to identify some of the benefits derivable from the application of lessons learned practice as mentioned by the numerous academics, public institutions and international organisations that addressed the subject such as Heldman, (2002); Cowles (2004); Carillo (2005); Midha (2005); Fong and Yip (2006); Sommers, (2006); Centre for Disease Control and Prevention, (2006); Grahams and Thomas (2007); King, (2008); Sommers, (2009); Egeland, (2009); Haughey, (2009); Abudi, (2010); NATO (2010);Neilson, (2010); Ibrahim and Kolo (2011); Lop, (2011) and Symonds, (2011). The benefits included but were not limited to the following: -

i. Promotion of recurrence of desirable outcomes such as delivering projects on time and within budget, delivering high quality products/services, higher customer and user satisfaction, etc.;
ii. Avoidance of the recurrence of undesirable outcomes;
iii. Acquisition of knowledge by project participants;
iv. Allows project participants to assemble different experiences and draw coherent conclusions;
v. Allows project participants to consult each other to know the outcome of their performance;
vi. Improvement in management decision and project teams' performance throughout the duration of the project;
vii. Development of best practices and success criteria for future projects;
viii. Provision of good feedback and useful information to project team for future engagement;
ix. Documentation of project-specific issues that may be beneficial to technical support team after handing over;
x. Provision of useful project information that can be used at the operation and maintenance stages;
xi. Development of an effective method for sharing ideas on how to improve project delivery;
xii. Avoidance of the occurrence of the same problems and repetition of the same mistakes in future projects;
xiii. Enhancement of Organisational Learning and Continuous Improvement Processes;
xiv. Enable project teams to better manage the subsequent phases of a project and to plan future projects more efficiently and collaborate better with other organisations through the capture and transfer of learning from a previous phase or projects; and
xv. Prevent knowledge loss due to time lapse in capturing the knowledge as a reasonable percentage of knowledge retained by human memory depletes over time.

CHAPTER THREE

RESEARCH METHODS

A combination of extensive literature review on PPP and LLP, semi-structured interviews with people with experience in PPP implementation in Nigeria and in-depth case studies of two PPP projects in Nigeria was used to conduct the study. The actual field work started with the semi-structured interview after which detailed case studies of two PPP projects were conducted. The data generated from the above processes was then analysed and discussed after which conclusions were drawn.

3.1 SEMI - STRUCTURED INTERVIEWS

This was one of the research methods used to conduct the study. Its selection was due to its provision of triple opportunities of allowing a researcher to prepare ahead of time, allowing interviewees the freedom to express their views in their own terms and ability to produce reliable, comparable data (Robert Wood Johnson Foundation, 2008). The use of semi structured interviews also provided opportunities for establishing both answers to the asked questions and reasons for the answers, selection of specific people to interview and discussion of sensitive issues with the interviewees. The decision to conduct case study after the interview was another reason for using this research method because semi–structured interviews are particularly well suited for case study research (Hancock and Algozzine, 2006). The interviews were held with 6 (six) personnel from two client organisations and two concessionaires who have collectively participated in 19 (nineteen) PPP projects. Information on the organisational distribution of the interviewees and the number of projects each participated in is given in table 1.

Table 1. Organisational Distribution of Interviewees

S/N	Interviewee	Type of Organisation	Number of Projects Involved
1	A	Concessionaire	2
2	B	Client	5
3	C	Client	4
4	D	Client	1
5	E	Client	3
6	F	Concessionaire	4

Source: Semi Structured Interviews

The interviews which were guided by list of pre-set questions (Appendix 1) always started with introductory sessions. The interviewees were briefed on the subject of the study, purpose of the interviews, the intended use of the interview data and measures taken to ensure confidentiality and anonymity during these sessions. The introductory session was followed by simple questions such as job title; position in the organization; responsibilities and number of projects the interviewee had participated in with a view to setting the interviewee in an interview mood.

The interviews then proceeded with broad open-ended questions on how the under listed issues related LLPs were handled in the projects they have participated.

i. Number and names PPP projects they have participated in and the roles they played in the projects;
ii. Their level of awareness of the LLP concept;
iii. Their perception about desirability and usefulness of LLPs in PPP projects;
iv. How successes and challenges/problems were handled in the projects they participated;
v. LL Identification and Capture in the projects they participated;

vi. LL Storage in the projects;

vii. LL Dissemination in the projects;

viii. Challenges faced in the conduct of LLPs in the projects they participated ; and

ix. Suggestions on how best to identify, capture, store and disseminate LL in PPP projects in Nigeria with a view to enhancing effective delivery of such projects.

Responses to the questions were allowed to guide flow of the conversations throughout the interviews.

3.2 CASE STUDY

This is another research method used in the conduct of this study because it provides much more information than what is available through other means in addition to allowing a researcher to present data collected from multiple methods such as interviews, documents review and observations (Yin, 2003, Hancock and Algozzine, 2006 and Neale, et al, 2006). Yin, (2003) and Barley, (2006) have also stated that the use of this method is appropriate for use in situations like the ones associated with this study where literature on the study area is still largely underdeveloped and little information exists on the subject. The opportunities for exploring additional questions by the act of investigating a topic in detail (Hancock and Algozzine, 2006) offered by case study were also considered when the decision to conduct the case study was made.

3.2.1 Case Study Design

Since the study focused on evaluating LLPs in PPP projects in Nigeria, the case study design used to conduct it (this study) was explanatory case study design that has the primary purpose of determining how events occur and which ones may influence particular outcomes (Hancock and Algozzine, 2006). Findings from the semi – structured interviews

were subjected to further detailed and in-depth investigations through case studies of two PPP projects. This development has therefore made this case study a multi-case study. A multi-case study was conducted because it allows for cross-case comparison and generalisation based on observation of pattern as well as from triangulation of data, interviews, histories and theories (Barkely, 2006 and Cools et al, 2011).

The studied projects were the Bayero University Kano (BUK) Build-Operate-and Transfer (BOT) Hostel and Kanawa Economic City Projects. The processes adopted in conducting the studies included selection of the case study design, identification of sources of data, design of instrument for data collection, actual data collection and analysis of findings. Each case study started with collection of basic information on the project and issues related to LLPs from primary project information sources such as files, reports, minutes of meetings, agreements and memorandum of understanding. Follow up semi-structured interviews were then held with representatives of both the clients and concessionaires/developers and other project participants on the LLPs related issues listed below. These issues were singled out for the interviews because they were considered to be the core components of LLPs.

i. Perception of the parties to the project on the desirability and usefulness of application of LLP in the procurement of the projects;
ii. Level of awareness of parties to the project about LLP;
iii. How successes and challenges/problems were handled in the studied projects;
iv. LL Identification and Capture in the projects;
v. LL Storage;
vi. LL Dissemination; and
vii. Challenges faced in the application of LLP in the execution of the projects.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 FINDINGS FROM SEMI STRUCTURED INTERVIEWS

Findings from the interviews have indicated that though all the interviewees perceived LLPs as desirable and useful, their perceptions on the desirability and usefulness of the application of LLPs in PPP projects differed. It was also established that the interviewees have different levels of awareness on LLPs and these differences clearly manifested themselves in the manners they answered questions on the LLP concept. It was also discovered that the interviewees' level of awareness on LLP could not have enabled them to conduct LLPs effectively in their projects. A table containing information on the interviewees' levels of awareness on LLPs and their perceptions on the desirability and usefulness of the application of LLPs in PPP projects is given on pages 41 – 42 while appraisal of LLPs in the procurement of the projects followed thereafter in section 4.1.1.

The interviews have further revealed that the conduct of LLPs was not formalised in any of the projects in addition to discovering that different approaches were adopted in conducting LLPs in the projects due to lack of a standard template and/or framework on the conduct of LLPs. The findings have also highlighted that LLPs were either incorrectly or not fully conducted in all the projects. This implied that both the interviewees and the projects did not enjoy the full benefits derivable from the conduct of LLPs. It was further discovered that none of the interviewees' organisations has a KM strategy for the capture, storage, application, reuse and dissemination of project knowledge even though several studies have

according to Robinson *et al* (2010) recognized the need for such strategy to accelerate learning and develop capacity in PPP/PFI projects.

Table 2 Interviewees' Levels of Awareness and Perceptions on Application of LLPs

Interviewee	Level of Awareness on LLP	Perception on Application of LLPs in PPP Projects
A	The interviewee has heard about and come across/read documented LL and was reasonably aware of some aspects of the LLP concept.	The interviewee's limited knowledge in LLPs made him to regard application of LLPs in the procurement of PPP and other projects in Nigeria as very desirable and extremely useful due to the potentials of improved project performance derivable from such application.
B	This interviewee has neither read or come across documented LL before this study but has only heard about it casually. Enlightenment on the concept before proceeding with the interview made the interviewee to realise that they had actually been conducting some aspects of LLPs as part of project monitoring.	This interviewee considered the conduct of LLPs as very desirable and extremely useful after being enlightened on the concept particularly in view of the effects the aspects of the LLPs they conducted produced on the performance of their projects.
	Has never come across or	The benefits of the LLP concept learnt

C	read documented LL from any project before this study but has read about the LLP concept.	from literature on the concept made this interviewee to perceive the application of LLPs as very desirable and extremely useful in the enhancement of effective delivery of PPP projects in Nigeria.
D	Has come across/read documented LL from a project and read about the LLP concept and was aware of many aspects of the concepts.	The knowledge acquired by this interviewee from the documented LL literature on LLPs have made him to perceive the application of LLP in the procurement of PPP projects in Nigeria as extremely useful and desirable.
E	Has also come across/read documented LL from a project and heard about LLP but was not fully conversant with the various aspects of the concept.	His limited knowledge on the concept has made him to perceive the application of LLPs in the procurement of PPP projects as desirable and very useful.
F	Has also come across/read documented LL from a project and heard about LLP but lacked knowledge in some LLP processes.	Perceived application of LLPs in the procurement of PPP projects as desirable and very useful as result of the knowledge he acquired from the documented LL.

Source: Semi Structured Interviews

4.1.1 Appraisal of LLPs in the Procurement of the Interviewees' Projects

Appraisal of how the eleven basic LL activities namely handling of successes, handling of challenges/problems, LL identification, LL validation, LL verification, LL capture, LL report, LL storage, LL classification, LL indexing and LL dissemination were conducted in the procurement of the projects was undertaken with a view to evaluating LLPs in the projects. Findings made by the study from the semi – structured interviews on how the eleven basic LL activities were conducted in the interviewees' projects have revealed that not all the project participants conducted the basic activities in accordance with requirements of the LLP concept as per the narrative analysis below.

4.1.1.1 Handling of Successes in the Projects

The interviewees handled successes achieved in the projects differently as analysed below. Interviewees A, B, C, D, and E responded that successes were just acknowledged and celebrated without being documented in the projects they participated. This was a major shortcoming in the manner LL activities were conducted in the projects as successes achieved and reasons for the successes are supposed to be documented with a view to identifying LL there from. The non documentation of successes achieved in the projects implied that observation which according to NATO (2010) is the basis of LLPs and analysis were not conducted in these interviewees' projects. This in effect meant that the participants have missed the two opportunities of knowing whether the successes just met the expected outcome or have exceeded them and identification of LL from the successes derivable from the conduct of observation and analysis (NATO, 2010). The non documentation of successes achieved in the projects which is a major requirement of the LLP concept also suggested that not all relevant information related to LL activities were

documented. This implied that the use of LL identified from these projects to conduct LLPs may not produce the desired results. Documenting all relevant information about a lesson is the backbone of LLP (Nielsen, 2010). Moreover, Lop (2011) was of the opinion that information related to LL is worthless if it is incomplete. The project participants have lost the benefit of learning how to replicate the successes by not documenting them and reasons for the successes. Investigators should seek reasons for successes recorded in projects as much can also be learnt from projects that meet or exceed initial expectations (Goodman, 2008).

Successes were only documented in accordance with the LLP concept in interviewee F's project. The interviewee reported that successes achieved and reasons for the successes were documented in his projects. As soon as an activity was successfully accomplished, it was documented with the identified reasons for the success by the appropriate stakeholder with a view to identifying LL there from, he added. This implied that observation and analysis were conducted in respect of successes achieved in this interviewee's projects and all the benefits associated with the conduct of the two processes as highlighted above were enjoyed by the participants of the projects. LL identified from these projects will therefore be more effective in LLPs than those of interviewees A, B, C, D, and E where the non documentation successes and reasons for the successes have eroded the value of the LL capturing exercise (Lop, 20011). The documentation of the successes and reasons for the success also provided opportunity to the projects participants to learn how to replicate the successes as a lot can be learnt from projects that meet or exceed initial expectations (Goodman, 2008).

4.1.1.2 Handling of Challenges/Problems Encountered in the Projects

Challenges/Problems encountered were documented in almost all the projects. What differed from project to project were how and what were documented. Interviewee A said that problems were overlooked and this is contrary to the LLP concept which stipulates that challenges/problems encountered in the procurement of a project should be documented together with their root causes, remedial action taken to remedy the situation, the party that handled the situation and preventive measures to avoid future problems (Nielsen, 2010). The non documentation implied that observation and analysis were not conducted on challenges/problems encountered in these projects. The conduct of observation would have according to NATO (2010) enabled the project participants to address questions such as "what happened?"; "why did it happened?" and "how did it differ from what was expected?" while analysis would have provided opportunity to the participants to ensure that the observed issue was significant (as it had made a real impact), valid (because it was factually and technically correct) and applicable because it had identified something that eliminated the potential for future failures or reinforced a positive result (Weber and Aha 2002). The non documentation also implied that vital information related to LL capture was overlooked in the projects and this eroded the value of the exercise. Overlooking and skimming over vital information in the capture of LL erodes the value of the exercise (Lop, 2011).

Interviewees D, E, and F said that challenges/problems at any stage of the project procurement were documented together with their identified causes by appropriate project participants after which such record was forwarded to the appropriate management level for remedial action and determination of the appropriate party to handle the situation.

Interviewees B and C on their part reported that challenges/problems encountered in their projects were analysed to determine their root causes. The documentation of the challenges/problems and their analysis indicated that observation and analysis were conducted in respect of the challenges/problems and these made it possible for the projects' to enjoy all the aforementioned benefits associated with observation and analysis in addition to identifying appropriate actions to take to remedy the situations in their projects in addition to learning how to avoid a repeat of the problem. LL capturing teams must analyse an event and reasons for the event in order to avoid mistakes or repeat successes (Nielsen, 2010)

4.1.1.3 Sources of LL in the Projects

Findings from the study have revealed that positive and negative experiences were identified as major sources of LL by all the interviewees but that not much attention was given to LL identification in almost all the projects. In fact while LL were supposed to be identified from experiences encountered in the project procurement, the actual experiences were referred to as LL in most of the projects.

It was also established that LL were identified from different activities in the projects. Only interviewees A and D identified LL in accordance with the LLP concept which requires the identification of LL from successes achieved and reasons for the successes as well as challenges/problems encountered, their root causes and how they were resolved i.e. from positive and negative experiences. The use of LL from these projects have therefore enabled the projects to gain from the benefits of improved performance offered by LLPs in addition to providing opportunity for learning how to avoid repeating mistakes and replicating successes to the project participants. LLP aims to capture the positive and

negative aspects of projects in order to learn from the experience thereby avoiding the repetition of mistakes which can be costly and damaging to the reputation of the company handling the project (Carrillo, 2005).

Interviewees B and C reported that LL were identified from challenges/problems encountered while interviewees E and F said that LL were identified from only challenges/problems encountered, their root causes and how they were resolved. This development reduced their LL activities to the capture of only negative experiences which according to Cowles (2004) usually lead to reduced effectiveness and missed opportunities to improve project performance. Limiting the identification of LL from only challenges/problems also denied the project participants the opportunity to know how successes were achieved with a view to promoting their recurrence in future stages of the projects and/or future projects. The purpose of lessons learned practice/exercise is to share and use knowledge derived from experience to promote the recurrence of desirable outcomes and preclude the recurrence of undesirable outcomes (Department of Health & Human Services, United State of America, 2006).

4.1.1.4 LL Capture and Documentation

LL were discovered to be captured and documented by different persons at different times. Interviewees A, E and F reported that LL were captured by project manager and/or other project participants as soon as they occurred due to the fact that LL are best captured by project participants and key stakeholders due to their involvement and interest in the projects (Washington State Department of Information, 2011). In these projects, as soon as an event occurred, it was analysed to determine its causes and implications on the projects after which LL there from were identified and immediately captured. This development

ensured that everything is captured and avoided the possibility of forgetting some experiences encountered during the projects (Reich et al, 2008).

In the case of interviewee B who said that LL were verified and captured as soon as they occurred and after major work or inspection by project participants, the LL were verified before been captured. The verifications were done to ensure that the LL met set standards. Verification allows an organization to tailor its LL repository according to the standards it sets for itself (Cowles, 2004). Capture of the LL as soon as they occurred and after major work or inspection enabled the projects' participants to document every detail about the LL as LL captured at the end of a project may be lacking in detail due to time lag between the occurrence of the lesson and when it was recorded (Carillo, 2005).

Interviewees C and D on the other hand revealed that LL were verified and captured as soon as they occurred and at the end of the project by project manager and other project participants. According to Portny (2007) and Project Management Institute (2008), the capture of LL at the end of projects allowed the projects participants to get the most effective inputs while the verification enabled them to ensure that the LL met set standards.

It was however discovered that an LL Report that would have given a summary of the LL, how the lessons were learned, recommendations on how the LL were to be used and benefits of using the LL was not written in any of the projects. This implied that the LL identified in the projects were not brought together for the purpose of usefully applying them to these and other projects (Office of Government Commerce, 2010). All other benefits associated with the LL Report were also not enjoyed in the procurement of the projects the interviewees participated.

4.1.1.5 LL Storage

There were no established systems of storing LL in all the projects. Records of what were referred to as LL could only be found in project files, project reports and/or minutes of meetings. This development was contrary to the LLP concept which stipulates that there should be an internal knowledge management system devoted to storing project lessons learned documentation so that project managers may easily retrieve and apply the lessons contained therein to new projects. Creation of a system for storage and retrieval of LL was very important (Haughey, 2009). Moreover Memories fade, personnel change jobs, and detailed accounts of lessons and experiences are quickly forgotten if not written down and preserved (Goodman, 2008).

Interviewee A reported that LL were stored in project files while B and D said that LL were stored in project files, project reports and minutes of meetings. Interviewees E and F however reported that LL were stored in project reports and minutes of meetings. The interviewees revealed that when any event that has the potential to produce LL occurred in any of these projects, the event was analysed to identify its root cause and impact on the project after which a report on the event containing details of the event, its root cause and impact on the project was presented to appropriate project meeting for deliberations on how to handle the situation. At the end of the meeting appropriate decision on how best to address the event were taken and LL there from identified. These LL were then recorded as part of the minutes of the meeting and/or project reports. Appropriate files were in some instances opened to store these documents containing the LL i.e. minutes of meetings and/or project reports. The storage of such documents ensured that the LL were not lost. Many LL from projects disappear never to be seen again if they are not stored (Lop, 2011).

These methods of storage however make it difficult for some project participants and other people to access and benefit from the LL in view of the fact that only certain class of people could readily have access to the above mentioned project documents as opposed to a single or special LL storage system.

Only interviewee C revealed that special knowledge repository was used to store LL. In this case all identified LL were stored in a special knowledge repository dedicated to issues related to knowledge management. Having a single LL repository for an organization has several benefits which included quick and easy identification of pattern of similar problems, easier for practitioners to look and search one common repository as opposed to searching many, easier to update and maintain and better utilisation of resources (Midha, 2005).

It was also found out that LL were not categorized, classified, and indexed according to various subjects or formatted in any of the projects. This is quite contrary to the requirements of the LLP concept. Lessons Learned form an important part of an organisation's knowledge so it is important to make sure that they are available to future projects by indexing and archiving them (Neilson, 2010).

4.1.1.6 LL Dissemination

Different means were said to be used to disseminate LL in all the projects except one where no LL was disseminated. Even where the LL were said to be disseminated, project participants in most cases used methods convenient to them to do so. There were also no standard formats for LL dissemination in all the projects.

Interviewee A said that LL were not disseminated at all and this development can be said to have negated some of the purposes of conducting LLPs in the project. SELL (2003) have stated that documented lessons learned information was of little benefit if it was not shared and used while NATO (2010) in its lessons learned handbook opined that the value of a LL process could only be realised when the information generated by the process was available to the people who needed it, when they needed it. The non dissemination can also result in ineffective decisions and repeating same mistake in the course of the project procurement. Disseminating lessons learned will help stakeholders take the right decision to succeed in a project; ensure that the same mistakes are not repeated at the cost of project effectiveness and help minimise delays in implementation (United Nation Environment Program 2011).

Interviewees B and C revealed that LL were disseminated through formal and informal discussions between relevant stakeholders, regular project meetings, and E – mails to and from relevant stakeholders. The use of different and diverse methods to disseminate LL in these projects has the advantage of effectively covering all the diverse stakeholders of the projects in the LL dissemination because the greater the diversity of a user community of LL, the greater the range of options required to effectively disseminate LL information (SELL 2003). For example while top management staff may prefer E – mail, the same method may not be useful to an average field worker and labourers who do not use computer. These and many other categories of workers may benefit much more from a periodic notice on a notice board, formal and informal discussions, and briefing during project meetings as well as post project review sessions (where all activities conducted during the project are reviewed and LL from the activities disseminated to appropriate stakeholders). The use of diverse means to disseminate LL in these projects enabled all the

stakeholders to know the LL from the projects and how to apply them both during the projects and in future ones with a view to repeating successes and avoiding the repeat of the same mistakes (Carillo, 2005).

Interviewee D however reported that regular project meetings and post project review sessions at the end of the project were used as avenues for disseminating LL. Disseminating LL through only regular project meetings and post project review session at the end of the projects meant that not all the project participants/stakeholders were covered in the LL dissemination because not every participant or stakeholder could have attended such occasions or have access to records of their outcomes. Some project participants could have even left before the end of the projects.

Regular project meetings and formal/informal discussions were used to disseminate LL in interviewee E's projects while F revealed that only formal and informal discussions were used to disseminate LL. The methods used to disseminate LL in these projects might not have effectively disseminated the LL information to the diverse stakeholders of the projects as some stakeholders may not be involved in either the regular project meetings or formal and informal discussions. This development meant that the methods used to disseminate LL in the projects may not be efficient enough to facilitate easy access and use of the LL by all the projects' participants and/or stakeholders. Dissemination methods should be as efficient as possible to facilitate easy access and use of LL (SELL, 2003). It therefore implied that LL from these projects may not have been accessed and used for the improvement of their performance and those of other projects by all the projects' participants and/or stakeholders.

4.1.1.7 Level of LLPs Application in the Projects

The level of LLPs application in the projects was determined on the basis of the assessment of the foregoing appraisal on how the interviewees conducted the eleven basic LL activities in their 19 respective projects. The correct and full conduct of each of the eleven basic activities was weighted as 1 while an incomplete and/or incorrect conduct attracted an appropriate lower weighting. The full and correct conduct of the eleven basic LL activities has a total weighting of 11 or 100% level of LLP application. The levels of LLPs application in the interviewees' 19 projects based on the assessment of how the eleven basic LL activities were conducted were as given in table 3.

Table 3 Levels of LLP Application in the Projects

Interviewee	Handling of successes	Handling of Challenges	LL Identification	LL Validation	LL Verification	LL Capture	LL Report	LL Storage	LL Classification	LL Indexing	LL Dissemination	Total Weighting
A	0	0	1	0	0	0.5	0	0.6	0	0	0	2.1
B	0	0.3	0.75	0	1	1	0	0.7	0	0	1	4.75
C	0	0.3	0.75	0	1	1	0	0.6	0	0	1	4.65
D	0	1	1	0	1	1	0	0.7	0	0	0.8	5.50
E	0	0.75	0.5	0	0	1	0	0.7	0	0	0.50	3.45
F	1	1	0.5	0	1	1	0	0.7	0	0	0.5	5.2
Total	1	2.35	2.5	0	4	5.5	0	4.0	0	0	3.8	25.65

Source: Semi Structured Interviews

4.1.1.8 Challenges Encountered in the Conduct of LLPs in the Projects

Different challenges were identified as constraints to the conduct of LLPs in the projects by the interviewees. A summary of the major challenges identified as constraints to the conduct of LLPs by each interviewee is given in the table below.

Table 4 Challenges to the Conduct of LLPs Identified by Interviewees

Interviewee	Challenges Identified
A	Lack of adequate knowledge on the LLPs concept and its importance to effective project delivery by most of the project participants. Most of the project executing organisations gave little or no attention to knowledge management.
B	Most of project participants knew very little about the LLP concept, processes associated with it and its influence on project performance. Leadership's indifference to the conduct of LLP in projects.
C	Leadership's indifference to the conduct of LLP in projects. Lack of organisational culture that encourages knowledge management.
D	Lack of adequate knowledge on the LLPs concept on the part of project participants. Non allocation of resources specifically for the conduct of LLPs by many organisations. Most of the project executing organisations did not have any

	arrangement for knowledge management.
E	Project participants did not have adequate knowledge on LLP.
	No resources were set aside for the conduct of LLPs.
	Leadership's indifference to knowledge management and its associated benefits to effective project delivery.
F	Poor organisational culture of the project executing companies.

Source: Semi Structured Interviews

4.1.1.9 Suggestion on how best to Conduct LLPs in PPP Projects in Nigeria

Suggestions offered by the interviewees on how best to conduct LLPs in PPP project in Nigeria with a view to achieving effective delivery of the projects are contained in the table below.

Table 5 Suggestions on how best to Conduct LLPs in PPP Projects

Interviewee	Suggestions Offered
A	There should be a template with which stakeholders can capture, store and disseminate LL.
B	Project participants should at the close of a project mandatorily review the entire project and produce an LL report.
C	Some project staff should be dedicated to specifically monitor and capture LL and document same in a logbook form for storage and use when the need arises.
D	The Infrastructure Concession and Regulatory Commission (ICRC) should make feedback on all projects by executing Ministries, Departments and Agencies (MDAs) mandatory. The ICRC should be responsible for capturing and documenting LL.
E	All challenges and successes should be documented. Project staff should be trained on LLP. Efforts should be made to ensure or bring about harmony in the procurement and implementation of PPP.
F	The cause of LL should be identified as soon as it occurs and most importantly be disseminated among all parties involved in the partnership with a view to providing possible and best ways to enhance project delivery.

Source: Semi Structured Interviews

4.2 CASE STUDY FINDINGS AND ANALYSIS

Two PPP projects were investigated to evaluate lessons learned practice (LLP) therein and determine the level of LLP application in their procurements. The findings of the investigations and their analysis are given in sections 4.2.1 and 4.2.2 while a cross- case comparison of the findings from the case studies followed thereafter in section 4.3.

4.2.1 Project A: 38No. Blocks of 100 Room Students' Hostels at BUK

The project was part of the Nigerian Universities Students' Hostels Development Scheme on BOT basis initiated by the Federal Government of Nigeria in 2002 under the coordination of Federal Ministry of Housing and Urban Development, Abuja. It involved the provision of 38no 100 rooms hostel blocks under a tripartite agreement between Bayero University Kano (referred to as the promoter in the agreement), 38no Developers and two financiers (referred to as Sponsors) namely Urban Development Bank of Nigeria (UDBN) and Petroleum Financial Corporate Limited, Abuja (PFCL). The financiers were selected by the Federal Ministry of Housing and Urban Development.

According to guidelines issued by the Technical Committee on Students Hostel (2004) set up by the Federal Ministry of Housing and Urban Development, the University provided land, layout and other designs, Bills of Quantities and other appropriate documents/reports while the Developers were to construct the hostels with their funds or through loans to be secured from either Urban Development Bank of Nigeria and Petroleum Financial Corporate Ltd. The developers were according to the guidelines expected to operate, maintain and manage the hostels for 25 years after which they would transfer their ownerships (of the hostels) to the University. A Memorandum of Understanding on how to

recover the loans to be granted to the Developers for the project was on the other hand signed between the Promoter and the Sponsors.

Investigations revealed that some developers started works with their own funds in May 2005 on the understanding that funds for the project were to be made available by the two financiers by mid July 2005. It was however discovered that up to December 2008 when one of the financiers wrote to inform the university why they were not able to provide the funds not a single kobo was made available to the developers by any of the financiers. The financiers informed the university that they were not able to make funds available to the developers because their foreign partners (Petroleum Finance Corporate, U.S.A. and Petroleum Finance Corporate, China) who were to provide the funds wanted to be assured that the first civilian to civilian political transition in Nigeria was going to be successful in view of the non resolution of the presidential election petition by the supreme court at the time. This problem stalled the project and made even the few developers that used their funds to commence works to abandon the site. Works at the project site which took up in 2005 with a period for completion of twelve months were at the time of this study found to have been abandoned at various stages of completion

4.2.1.1 Appraisal of LLPs in Project A

Findings from preliminary discussions with some of this project's participants on LLPs have revealed that they have never heard of the LLP concept before. The participants who included client's representatives and developers/their representatives have also not come across or read documented LL from any project. These discoveries led to the enlightenment of the participants on the LLP concept after which they appreciated the desirability and usefulness of the application of LLPs in the procurement of all projects.

Further investigations on LL activities in the project after the enlightenment found out that the conduct of LLPs was not formalised in the project and the only activity related to the eleven basic LL activities undertaken in the project was the preparation of periodic progress reports indicating successes recorded and challenges/problems encountered for presentation to monthly review meetings at Federal Ministry of Housing and Urban Development (FMHUD), Abuja. This activity which was a part of LL capture and documentation process was not undertaken in accordance with the LLP concept which requires the capture of successes and reasons for the successes; challenges/problems encountered; how the challenges/problems were handled and their impact on the project (Milton, 2009). This discovery which clearly indicated that only a part of one of the eleven basic LL activities was conducted showed that the project has only a weighting of less than one out of eleven while the level of LLP application in the project procurement was below 1/11 or 9.1%. This conclusion was made because as highlighted on page 53 the full and correct conduct of each of the eleven basic LL activities has a weighting of 1 while the full and correct conduct of the eleven activities was weighted 11 and made to stand for 100% level of LLP application.

The above findings were clear indicators of incorrect and incomplete conduct of LLPs in the procurement of this project. The discoveries of lack of awareness and knowledge on LLPs by the project participants have confirmed one of the findings from the semi – structured interviews which gave lack of knowledge in the LLPs concept by most PPP project participant as a major challenge hindering the effective conduct of LLPs in the projects. The incorrect and incomplete conduct of LLPs in the project has also corroborated

another finding from the interviews which showed that LLPs were either incorrectly or not fully conducted in the projects.

The project participants have lost the opportunity to share and use knowledge derived from experience to promote the recurrence of desirable outcomes and preclude the recurrence of undesirable outcomes (Department of Health & Human Services, United State of America, 2006) in this and other projects procurement by not conducting LLPs. The conduct of LLPs in the project procurement could have also enabled them to explore how issues and impediments that confronted other parties that executed a project under a PPP arrangement and how they addressed them to move the project forward (Aecom Consult 2007) with a view to learning how to handle similar situations in their project.

4.2.2 Project B: Kano Economic City

The Kano Economic City Project is located at Dangwauro village right on the intersection of Kano – Zaria and Kano – Maiduguri (Eastern by pass) road in Kumbotso Local Government Area. The project was at the time of this study being procured under a PPP arrangement between Kano State government, Integrated Development and Investment Services Limited (IDIS) and a consortium of foreign and domestic banks, with Oceanic Bank as the lead financier.

Some of the facilities expected to be provided by the project when completed included among others a five-star hotel; residential and industrial estates; a shopping mall; a world trade centre; a retail market consisting of 5,500 lock-up shops; warehouses; cinema halls; conference facilities; fuel and fire stations; a maintenance building; trailer park with total capacity of 400 trailers; administration building; police station; banks; restaurants;

hospital/clinics; public toilets, etc. Some of the facilities would under the agreement be operated and managed for 25 years by the developer after which they would be transferred to Kano State Government while others would be sold to interested buyers on completion.

Findings from the study of this project showed that the first phase of the project comprising of road and associated civil works commenced in April 2008 and progress smoothly until some challenges that led to suspension of works at the project site were encountered. The major challenges that led to the suspension were the inability of the leading financier, Oceanic Bank, to meet its obligations and its recent declaration as a distress bank by the Central Bank of Nigeria. The declaration negatively affected the operations of the bank including the funding of this project.

4.2.2.1 Appraisal of LLPs in Project B

Initial investigations on LLPs in this project indicated the project participants were not aware of the LLP concept. The client's and concessionaire's representatives consulted during the study said that they have never come across or read documented LL from any project before. These revelations further confirmed findings from the semi-structured interviews on lack of adequate knowledge in the LLP concept by many project participants and necessitated the need for the enlightenment of the participants on the LLP concept before proceeding with further investigations. The enlightenment made them to appreciate the usefulness of the application of LLP in the enhancement of effective delivery of PPP and other projects. They also admitted that many issues in the project would have been handled more effectively if they were aware of the LLP concept before. The concept could have guided them on how to documented knowledge gained from experience to address the issues, they added.

Investigations after the enlightenment found out that the conduct of LLPs was not formalised in the project in addition to indicating that no LLP related activity was undertaken in the course of the project procurement except documentation of challenges/problems encountered for presentation to site meetings. Even this documentation that can be said to be part of LL capture and documentation process was not done in compliance with the LLP concept which stipulates the capture of challenges/problems encountered; how the challenges/problems were handled and their impact on the project (Milton, 2009). This finding which indicated that only part of one of the eleven basic LL activities was observed has like in the hostel project showed that the project has a weighting of less than one out of eleven while the level of LLP application in the project procurement was below 1/11 or 9.1%. This conclusion was made because as highlighted on page 53 the full and correct conduct of each of the eleven basic LL activities has a weighting of 1 while the full and correct conduct of the eleven activities was weighted 11 and made to stand for 100% level of LLP application.

The non conduct of other LLPs activities implied that LLPs were incorrectly and not fully conducted in the project procurement and this according to (Fong and Yip, 2006) resulted in missing the benefits of proper sharing, capture and reuse of knowledge which minimises the risks of reinventing the wheel, repeating costly mistakes and many other benefits by the project participants. The participants were also not able to review events and activities during the project in addition to losing the potential to improve the outcome of the project (Graham and Thomas, 2007) due to the incorrect incomplete conduct of LLPs.

4.3 CROSS – CASE COMPARISON OF FINDINGS FROM THE TWO STUDIES

Both projects took off successfully and progressed smoothly until some challenges/problems that led to their abandonment were encountered. The major challenges that led to the abandonment of the two projects were similar in nature. The Hostel project failed because the appointed financier failed to provide funds for its procurement as agreed while the Economic City project failed due to the financier's inability to continue funding the project after some level of progress have been attained. Lack of adequate contingency provisions in the financing arrangement to cater for any possible shortcoming of the financiers was common to the two projects. The conduct of LLPs was also not formalised in the two projects. The level of LLPs application in both projects was below 9.1% as only a part of one of the eleven basic LL activities was undertaken in each of them. LLPs were incorrectly and not fully conducted in the projects and the projects' participants have not heard about the LLP concept or come across/read documented LL from any project before this study.

Failure of the two projects due to problems of the same nature could be attributed to the incorrect and incomplete conduct of LLPs in the projects because if lessons were genuinely learned from various experiences and/or past projects, then the same mistakes would not be repeated in different projects (Midha, 2005 and Symonds, 2011). Information gathered from LLPs could have informed the participants what others did to develop and implement PPP projects, noting both the opportunities and challenges encountered in the execution of the projects. A study conducted by Aecom Consult (2007) has discovered that application of LLPs in PPP projects will explore the reasons why the sponsoring agency decided to pursue the project under a PPP arrangement, the structure of the arrangement, the nature of

project financial and delivery responsibilities, as well as the issues and impediments that confronted members of the PPP teams and how they addressed them to move the projects forward.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF MAJOR FINDINGS

The following major findings were made from the study:

i. Both the interviewees and participants of the two studied projects perceived the conduct of LLPs in PPP projects in Nigeria as desirable and useful in enhancing the effective delivery of the projects.

ii. The level of knowledge of both the interviewees and participants of the two studied projects in the LLP concept could not have enabled them to conduct LLPs effectively.

iii. There was no framework and/or standard template for the conduct of LLPs in PPP projects.

iv. The conduct of LLPs was not formalised in any of the projects.

v. LLPs were either incorrectly or not fully conducted in both the interviewees' and the two studied projects.

vi. The levels of application of LLPs in the interviewees' and the studied projects were 12% and below 9.1% respectively.

vii. None of the organizations that participated in both the interviewees' and the two studied projects has a KM strategy for the capture, storage, application, reuse and dissemination of project knowledge such as LL.

viii. The two studied projects failed due to the inability of their respective financiers to finance the projects in accordance with terms of the financing agreements.

ix. Insufficient knowledge in LLP concept on the part of the respondents, lack of knowledge management strategy for the capture, application and sharing of project knowledge by the participating organisations and lack of framework and/or standard template for the conduct of LLP were identified as major challenges affecting the conduct of LLPs in the projects.

5.2 RECOMMENDATIONS

The following recommendations are hereby made with a view to improving the level of application of LLP in PPP projects in Nigeria.

i. A Framework and/or a Standard Template on LLP should be developed by relevant stakeholders such as ICRC, Bureau of Public Procurement, Professional Bodies, the Academia and other relevant institutions.

ii. Knowledge Management Strategy supported by appropriate tools for the effective capture, application and sharing of project knowledge including LL should be developed by PPP participating organisations and/or other relevant stakeholders such as ICRC Bureau of Public Procurement, Professional Bodies, the Academia and other relevant institutions.

iii. The ICRC and other relevant stakeholders should carry out sensitisation campaign on the importance of conducting LLPs in the procurement of PPP and other projects through advertisements, seminars and workshops.

5.3 RECOMMENDATION FOR FURTHER RESEARCH

In spite of the fact this study has identified some of the challenges that hindered the effective conduct of LLPs in the studied projects, further studies on the identification of all possible challenges that could hinder the effective conduct of LLPs and how to overcome them in the procurement of PPP projects in Nigeria were recommended. This recommendation is made in view of the important contributions the conduct of LLPs could make to the effective delivery of PPP and other projects in Nigeria.

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APPENDIX I: QUESTIONNAIRE

QUESTIONS THAT GUIDED SEMI-STRUCTURED INTERVIEWS ON EVALUATING LESSONS LEARNED PRACTICES (LLPS) IN PPP PROJECTS IN NIGERIA.

A. Questions for Semi-Structured Interviews with People who have experience in PPP implementation in Nigeria.

1. How many PPP projects have you and/or your organization participated in?
2. Please mention them.
3. In what capacity did you and/or your organization participated in the project?
4. Have you ever come across or read documented lessons learned from PPP or any other project before now?
5. What is your level of awareness of the lessons learned practice concept?
6. What is your perception about the desirability and usefulness of the application of lessons learned practice to the enhancement of effective delivery of PPP projects in Nigeria?
7. What was the perception of other parties to the project about the usefulness of application of lessons learned practice?
8. How were successes achieved in the course of the project handled?
9. How were challenges/problems encountered in the project(s) handled?
10. Were any lessons identified from the above two experiences (11 and 12)?
11. What were the sources of lessons learned in the project (s)?
12. How were lessons identified in the project (s)?
13. How were the identified lessons handled?

14. What challenges were encountered in the identification, capture, storage and dissemination of lessons learned in the project?
15. Please advise on how LL should be best identified, captured, stored and disseminated in PPP projects in Nigeria with a view to enhancing the effective delivery of such projects.

B. Questions for follow up interviews with Representatives of Parties to Studied Projects.

1. Were you opportune to read or come across documented lessons learned (LL) from past PPP or any other project before, during or after this project?
2. What is your general impression and/or perception about the desirability and usefulness of the application of lessons learned practice (LLP) in PPP or any other project?
3. How were major stage by stage successes recorded by your organization in the course of the project handled?
4. Can you please give me a rundown of how major challenges/problems encountered at the various stages of the project were handled?
5. What were the major sources of LL in the project?
6. How were LL identified in the project?
7. How were the identified LL handled by your organisation?
8. What challenges/problems were encountered in documenting, storing and disseminating LL by your organization in the course of the project?
9. Does your organization have an established system of application of LLP?
10. How were LL identified by various parties to the project handled collectively and what challenges were encountered in the management of such LL?

11. How, do you think, can application of LLP in PPP projects in Nigeria be improved?
12. Generally speaking, how should LL be captured, stored and disseminated in PPP projects in Nigeria with a view to creating maximum positive impact on such projects?