Strategy and Risk Management for the Conventional Shallow Water offshore Oil & Gas Engineering Companies to Remain Competitive in the Challenging Market: Reduce Cost, Differentiate or Diversify into Deep-Water, onshore or EPC – Which Way NEL Should Go?

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Abstract

This study's aim is to find the risk factors that impact NEL in India and to derive the risk responses. In this research, questionnaire survey was conducted. Also, in order to find the major risks involved in the project, qualitative analysis was also held. Many levels of management of NEL were interviewed informally with the purpose of identifying the measures that can alleviate these risks. The major risks identified were poor design, administrative government system, the approval procedures that take long time, and inefficient project team. The alleviating strategies were recommended by the proposed research with the purpose of lessening the risks that were found. The approaches recommended by this study were effective partnership with foreign collaborators, reforming the government system, training the project team, optimizing the authorities of project people, implementing the contractor evaluation by means of decision making technique utilizing multiple criteria. The Indian oil and gas industry can taste the success by implementing the improvement measures suggested by this research. With respect to managing the projects in developing nations, there are a number of studies related to the risk management. It is also true that the risk factors differ country-wise and industry-wise. Hence, the Indian oil and gas industry is unique when it comes to deal with managing the risks in this industry. Therefore, this research has the unique importance.

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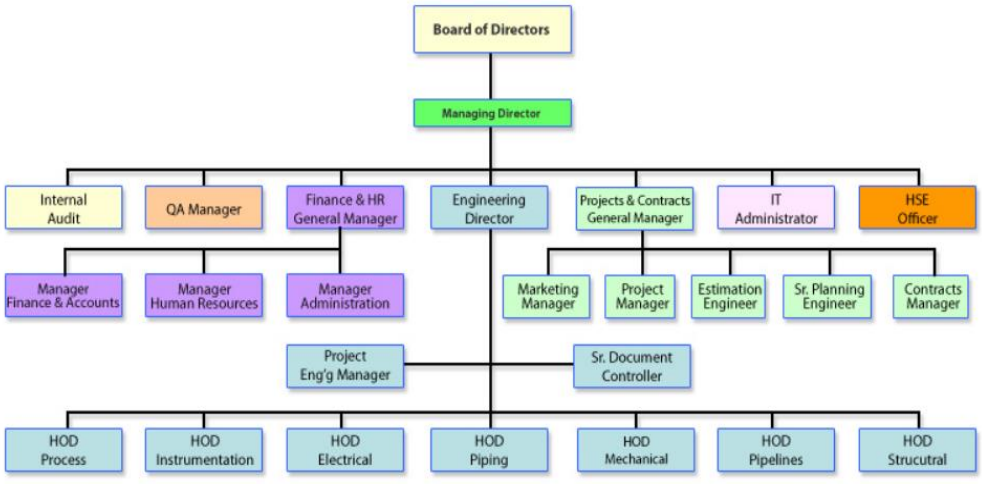
CHAPTER I: INTRODUCTION

In order for NEL Engineering Private Limited, Mumbai (NEL) to sustain competitively in the future periods of energy challenges, this study report aims to suggest the appropriate and suitable strategies. This research throws light on differentiation and diversification into deep water, cost reduction, onshore or forward integration to EPC sector in India.

1.1 Company Overview

In the year 2007, NEL began its operation as an organisation that is completely owned by NPCC Company of Abu Dhabi. NEL offers the services in Design and Engineering for upstream offshore Oil and Gas Industry in India as well as the foreign nations. The strength of NEL is its team of skilled engineers, who are 250 in number. In the Indian Offshore Oil and Gas (upstream) industry, NEL has been recognised considerably. In the history of NEL, the year 2015 is marked by the acquisition of ANEWA Engineering Company in Hyderabad with team of 350 personnel. The domain of NPCC Company, Abu Dhabi, is Engineering, Procurement and Construction. This company offers services in the EPC sector with regard to both Onshore and Offshore Oil and Gas Sectors. In the year 2016, another feather has been added to the cap of NPCC in the form of equity acquisitions of another engineering centre in France that can offer services in deep water.



1.2 Rationale / Background

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Challenges are nothing new to the organisation offering the services in oil and gas industry. Several engineering organisations have been adversely impacted by the low oil and gas prices all over the world. It is not easy to satisfy the stakeholders and survive in this competitive industry. NEL is a flagship company in the domain of shallow water services. Unfortunately, the present market is saturated. The profitability is squeezed by the tough competition. Thus, in order to be sustainable and stay competitive, NEL has to investigate many strategies including offering the new services in various other markets as well. The parent company NPCC desires that NEL should evolve on its own and grow in stature. There are various opportunities for NEL. On an urgent basis, the market forecast for onshore pipelines (Douglas-Westwood, 2017; Prasad, 2017), deep-water (IANS, 2016), and EPC sector in India should be explored. On the Indian eastern coast, many national and global organisations and contractors are operating already in the deep water area. The skill of the employees is not compromised by the company. By periodical training programmes, the company updates its employees of recent technologies in the present market. Such programmes increase the cost overhead of the company. The market of the company has been adversely affected by the regional and local engineering organisations which can provide less man hour rate. Moreover, due to the challenges with respect to the technology, the deep water areas are still unexplored. Strategic investors with the necessary technical expertise are having the opportunities to invest in the nation by partnering with the regional private and public sector organisations (PWC, 2012). As the parent company of NEL is NPCC, a leader in the petroleum industry, other contractors and companies in India, who are the rivals of NPCC hesitate to partner with NEL. The only major client of NEL is ONGC until now. Many opportunities are in sight because of the present local content clauses in the contracts offered by the ONGC as put forth by the Indian government (Oil and Natural Gas Corporation Ltd, 2007). NEL yet relies on the parent company NPCC for the operational funds, though NPCC desires its subsidiary to grow as a stand-alone company. Hence, this study assumes much significance in this respect.

1.3 Aim and Objectives

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The aim of this study is, in order to sustain competitively, to suggest strategies to NEL in the future. The study also focuses on differentiation and diversification into Deep-

water; cost reduction; Onshore or forward integration to EPC sector in India. The following are the objectives:

- To determine the percentage of cost savings that can be achieved with respect to the existing services
- ~~To study how NEL can distinguish itself from its present core competencies~~
- To identify the various factors that ~~supplementary trainings and competencies~~ that are ~~needed~~ required to improve onshore pipelines, deep-water, and EPC services
- To identify whether ~~any~~ organisational structural changes are required at NEL for the adoption of new strategies
- To ~~find out the quantum of investment and to determine the authority that can provide the funds~~identify the managerial implications associated with the adoption of new strategies at NEL
- To determine how NEL can emerge successful in the new services and whether they can be sustainable

1.4 Research Questions

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- What percentage of cost savings can be achieved with respect to the existing services?
- How and where can NEL distinguish itself from its present core competencies?
- What ~~are~~ aspects are required ~~the supplementary trainings and competencies~~ ~~needed~~ to improve onshore pipelines, deep-water, and EPC services?
- Are any organisational structural changes required?
- What are the managerial implications associated with the adoption of new strategies at NEL?
  - ~~will be the quantum of investment? Who can provide the funds?~~

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- When and how can NEL emerge successful in the new services? Can they be sustainable?

1.5 Key Performance Indicators (KPIs)

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- A premium of about 25% to be able to charge on differentiated services
- Cost savings of about 10% on the services that are existing

- Profit of about 15% on the invested capital on the development of new services from the third year

1.6 The Structure of BTP Report

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The below is the chapter scheme of this report:

Chapter I is the Introduction that includes the rationale/background of the study, aim/objectives of the research, and research questions.

Chapter II is the Literature review, which will contain the management concepts that are relevant to the research topic; theories and models; specifically, the strategy, risk, financial, marketing and sustainable development. This chapter will also contain overview on the Indian oil and gas industry.

Chapter III will describe the Research Methodology that has been used in this study, philosophy, approach, strategy, method of data collection and finally data analysis.

Chapter IV will deal with the Analysis and Findings of the data that were gathered for this research.

Chapter V will be the Conclusion and Recommendations that could be drawn for this study.

CHAPTER II: LITERATURE REVIEW

2.1 Introduction

This section aims to cover the concepts of strategy that can be covered within the business plan among offshore oil and gas companies to configure a competitive market. Reduced cost, Differentiation and Diversification among Deep shore, onshore and EPC companies have been shared. This section starts with the definition that is based on risk management and strategic management that has been continuously followed. This information is followed by competitor analysis, market analysis, theories and current overview in this sector. Many local engineering companies are dependent on Indian services due to funds problem, high training cost, less-man hour rate and ability for growth attrition.

2.2 Concepts and definitions

2.2.1 Strategy

The concept of strategy has been adopted from the military and adapted for use in business. A review of what noted writers have to say about business strategy suggests that the adoption was easy because the adaptation was modest. In business, as in the military, strategy bridges the gap between policy and tactics. Together, strategy and tactics bridge the gap between ends and means (Nickols, 2016). Strategy is a rule for making decisions under conditions of partial ignorance whereas policy is a contingent decision (Ansoff, 1965). Business strategy is the broad collection of decision rules and guidelines that define a business scope and growth direction (Maths, 2017).

~~According to Chandler (1962), strategy is the determinant of the basic long-term goals of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals. Per Mintzberg (1979), strategy is a mediating force between the organization and its environment: consistent patterns in streams of organizational decisions to deal with the environment. In accordance with Prahalad and Hamel (1990), strategy is more than just fit and allocation of resources. It is stretch and leveraging of resources As per (Porter, 1996), strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value~~

2.2.2 Risk Management

'A process of understanding and managing the risks that an entity is inevitably subject to in attempting to achieve its corporate objectives is the process of strategy'. For management purposes, risks are usually divided into categories such as operational, financial, legal compliance, information and personnel. One example of an integrated solution to risk management is enterprise risk management (CIMA, 2006).

~~The risk management process can be broken down into two interrelated phases, risk assessment and risk control. Risk assessment involves risk identification, risk analysis, and risk prioritization. Risk control involves risk planning, risk mitigation, and risk monitoring (Boehm, 1989). Each of these will be discussed in this section. It is essential that risk management must be done iteratively, throughout the project, as a part of the team's project management routine.~~

Risk management consists of risk analysis and the handling (mitigation) of risks, including changing the context (Hax, 2010).

2.2.3 Strategic Management

~~The strategic management or strategic planning encompasses long-range plans, new venture management, planning, programming, budgeting, business policy, etc. with greater emphasis on environmental scanning and forecasting and taking into account external and internal factors in formulating and implementing the plans (Rai Technologies, 2017).~~ The term strategic management refers to the process of forming a vision, setting objectives, building a strategy, implementing and executing the strategy and then initiating whatever corrective adjustments required in the vision, objectives and strategy, etc to achieve the objectives (Icmai, 2008).

2.3 Risk Management and Strategic Management in Business

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Risk management is an increasingly important business driver and stakeholders have become much more concerned about risk. Risk may be a driver of strategic decisions. It may be a cause of uncertainty in the organisation or it may simply be embedded in the activities of the organisation. An enterprise-wide approach to risk management enables an organisation to consider the potential impact of all types of risks on all processes, activities, stakeholders, products and services (Ferma, 2011).

2.3.1 Porter strategic business model

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~~Porter (1980, 1985) work is mentioned, but the reviewers' 'tone' seems to question the value of his contributions. Remarks such as 'non specialist' and 'it has become popular to proclaim' are used (Harfield, 2017).~~

~~This locates Porter in the 'positioning school' which advocates strategy formation as an analytic process. This claimed that a change in direction was borne on the 'wind from economics' which blew through the strategic management field during the early 1980s.~~

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Porter's Competitive Strategy (1980) is considered 'a watershed' in the development of strategic management thought, as it meets the needs of both academics and managers who were looking for a 'theory of strategic management' (Porter, 1980b). Even though the analysis of industry and competitors was developed especially for managers in large mature corporations, Porter's generic strategies and five- forces industry framework presented academics with models which could be empirically tested (Miller & Dess, 1993). Porter placed the dynamic relationship between enterprise strategy and industry structure at the centre of his concept of 'competitive strategy'. He presented the possibility of 'selecting' a strategy based on a well-defined 'position' in the economic market-place backed up by 'analysis' rather than 'prescription' (Ansoff, 1965; Rumelt, 1974). Porter says that he was looking for a theoretical context to add to the analysis, as he focused on both content and process called for by both Fahey and Christensen (1986) and (Huff & Reger, 1987). He popularised the Industrial Organization economics model of Structure Conduct (strategy) Performance which claims that forces within the industry determine the conduct of firms, which in turn determines firm performance (Thorelli, 1977; Masson & Quall, 1976).

2.3.2 Resource based strategic model

The approach known as Resource-Based Theory (RBT), which is said to originate from Penrose (1959) of the firm as a coordinated 'bundle' of resources, tackles the question of a firm's goals and strategic behaviour (Barney et al., 2008; Corte & Sciarelli, 1999). If the strategy is 'a firm's theory about how to compete successfully' (Barney, 2002), the source of the sustainable competitive advantage is the capacity to exploit a bundle of resources that the business has at its disposal or has access to, which are valuable, rare and inimitable (Wernerfelt, 1984; Barney, 1991). The organisation, in the widest sense of the term, must

favour the coordination and complete exploitation of the potential of these resources. Mechanisms that block or limit imitative processes (barriers to imitation) play a decisive role. Unique, unrepeatable historical conditions or the availability of systems to protect innovation (patents) combine with conditions of 'causal ambiguity' and 'social complexity'. In some cases, tacit understanding, complexity and specificity of resources can make the causal connection between resources and competitive advantages indecipherable. A business culture, a reputation, and interpersonal relations between managers may be the result of socially complex phenomena and therefore difficult to replicate.

2.3.43 Delta strategy business model

In the conventional best product positioning approach to business strategy, the way to attract, satisfy, and retain the customer is through the inherent characteristics of the product itself. Managers are guided by product economics and measure their success in terms of product share. In contrast, MIT has developed a different model of business strategy based on customer economics called the Delta Model. It is the end result of an exhaustive research project involving over 100 major companies, top corporate executives, and senior Sloan faculty. The Delta Model was designed to identify better ways to compete in a networked economy and advocates an innovative, customer-centric approach to business strategy. In this segment, the current state of critical business thinking and the Delta Model's triangle of strategic options make it possible for executives to craft more creative and effective business plans (Educapro, 2014).

2.4 Risk and Strategic Management and Competitive advantage

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Risk management capability should be thought of as a competitive advantage by organisations that buy or sell outsourced products and services. When assessing a vendor's ability to fulfil a contract, buyers should ask that risk management planning and execution is evident throughout the outsourcing life cycle (Ward, 2017).

The level of risk management depends on project complexity and scope. For example, a purchase order to purchase a commodity would have a lower degree of business risk than crucial business process outsourcing. Project managers should consider the level of risk, as it relates to the kinds of outsourcing in which they are engaged. The following is ESI's outsourcing continuum. For purchasing, buying simple products or services from an external vendor, Project-based Contract is considered as a part of vendor, an agreement to purchase a

specific set of deliverable items at an agreed price and defined schedule. Out-tasking is turning over a narrowly defined function or activity of the business to the external vendor. Selective Outsourcing is turning over an entire function or activity of the business to the external vendor. Business Process Outsourcing is turning over an entire business process to the external vendor.

One roadblock to leveraging risk management as a competitive tool is the lack of a well-defined risk management strategy. In many cases, companies have well-defined strategies for marketing, technology and human resources, but it does not give the same level of strategic diligence to risk management. This is the result of many factors, including poor risk governance, risk management silos, lack of risk ownership and a misconception that risk is simply about buying insurance. On the flip side, companies that leverage their risk management process as a competitive tool have well-defined strategies around managing risk. With a well-defined risk strategy, there are several ways an enterprise can assume a strong competitive advantage to try to minimize these risks or get ready to deal with their consequences.

2.5 Theories on Strategic Management for businesses

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Knowing more about organizations and their behaviour is an important issue in strategic management. Learning about organizations, their origin and evolution is also important for us as individuals. After all, the decisions driving organizations – strategic or not – will influence our life in more than one way. For better or worse, organizations are here to stay. One stream in this perspective addresses the role of strategic management (and therefore of the managers) as focused in the maximization of profits through the development of specialized resources and capabilities (of high quality). This stream opposes the neoclassical view of strategic management as focusing in tactics or plots to create entry barriers to potential competition (Jofre, 2011).

2.5.1 Porter's Theory of Competitive Advantage

In the elaboration of his theory, Porter starts from the following premises (Porter, 1990): The nature of the competition and the sources of competitive advantage are very different among industries and even among the segments of the same industry, and a certain country can influence the obtaining of the competitive advantage within a certain sector of industry; - the globalisation of the competition and the appearance of the trans-national

companies does not eliminate the influence of a certain country for getting the competitive advantage ; a country can offer different competitive advantages for a company, depending on if it is an origin country or a host country; - the competitiveness has a dynamic character (Schumpeter); the innovations have a role of leading force in this permanent change and determine the companies to invest in order not to be eliminated from the market (Misu, 1997). Starting from these premises, Porter identifies a system of determinants which are the basis for getting competitive advantages by the nations.

. Porter divides the production factors into the following categories:

1) Human resources – quantity, the level of instruction, the costs with the labour, the time of working, the attitude to working;

2) Natural resources – abundance, quality, accessibility, the costs with land, water, mineral resources, forest;

3) Knowledge resources – the supply of the scientific, technical and marketing knowledge used for creating and distributing goods and services. This knowledge is located in universities, research institutes, informational system, data banks, commercial associations, and so on;

4) Capital resources – the level and the cost of the capital available for financing the industry, determined by the saving rate of the economy and the structure of the financial national market , which is different from a country to another, although we attend the globalizations of the capital markets;

5) Infrastructure – includes not only the transport systems, post, communications, payment systems and the systems used to transfer money, but also different infrastructure elements that determine the attractiveness of a country regarding the quality of life and work conditions (culture, health) (Frasineanu, 2008).

2.5.2 Resource-Based Theory or View (RBV)

The resource-based view comprises a rising and dominant area of the strategy literature, which addresses the question of an organization's identity and it is principally concerned with the source and nature of strategic capabilities. The resource-based perspective has an intra-organisational focus and argues that performance is a result of firm-specific

resources and capabilities (Barney, 1991; Wernerfelt, 1984, 1984). ~~The essence of strategy is or should be defined by the firm's unique resources and capabilities (Rumelt, 1984). Furthermore, the value creating potential of strategy, that is the firm's ability to establish and sustain a profitable market position, critically depends on the rent generating capacity of its underlying resources and capabilities (Conner, 1991). For Barney (1991), if all the firms were equal in terms of resources, there would be no profitability differences among them because any strategy could be implemented by any firm in the same industry. The underlying logic holds that the sustainability of effects of a competitive position rests primarily on the cost of resources and capabilities utilized for implementing the strategy pursued. This cost can be analysed with reference to strategic factor markets (Barney, 1986b) that is markets where necessary resources are acquired. It is argued that strategic factor markets are imperfectly competitive, because of different expectations, information asymmetries and even luck, regarding the future value of a strategic resource. However, a serious resource based approach omission is that there is not a comprehensive framework that shows how various parts within the organization interact with each other over time to create something new and unique (Nonaka & Takeuchi, 1995). The resource based view (RBV) suggests that competitive advantage and performance results are a consequence of firm specific resources and capabilities that are costly to copy by other competitors (Barney, 1986b, 1986a, 1991; Wernerfelt, 1984; Rumelt, 1987).~~

2.5.3 McKinsey 7S Model

Figure 1: McKinsey 7S Model

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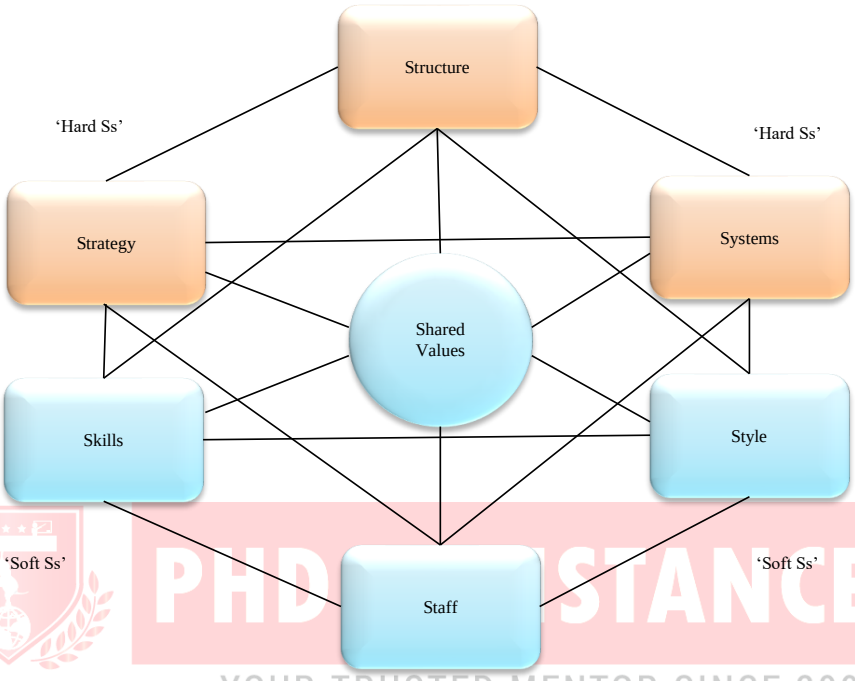

Source: Adopted from Ravanfar (2015)

7s factors in McKinsey model; the seven areas of organization are divided into the 'soft' and 'hard' areas. Strategy, structure and systems are hard elements that are much easier to identify and manage when compared to soft elements. On the other hand, soft areas, although harder to manage, are the foundation of the organization and are more likely to create the sustained competitive advantage. Hard S Soft S are Strategy, Style, Structure, Staff, Systems, Skills, Shared Values • Strategy is a plan developed by a firm to achieve sustained competitive advantage and successfully compete in the market. What does a well-aligned strategy mean in 7s McKinsey model? In general, a sound strategy is the one that is clearly articulated, is long-term, helps to achieve competitive advantage and is reinforced by strong vision, mission and values. But it is hard to tell if such strategy is well-aligned with other elements when analysed alone. So the key in 7s model is not to look at your company to find the great strategy, structure, systems and etc. but to look if its aligned with other elements. For example, short-term strategy is usually a poor choice for a company but if its aligned

with other 6 elements, then it may provide strong results. • Structure represents the way business divisions and units are organized and include the information of who is accountable to whom. In other words, structure is the organizational chart of the firm. It is also one of the most visible and easy to change elements of the framework. • Systems are the processes and procedures of the company, which reveal business' daily activities and how decisions are made. Systems are the area of the firm that determines how business is done and it should be the main focus for managers during organizational change. • Skills are the abilities that firm's employees perform very well. It also includes capabilities and competences. During organizational change, the question often arises of what skills the company will really need to reinforce its new strategy or new structure (Ravanfar, 2015).

2.5.4 Competitor analysis

Depending on the purposes of the competitive analysis, it may also be important to identify potential competitors. The process starts by identifying firms for whom the various barriers to entry to the industry are low or easily surmountable. These may include the following:

- **Technology**: Firms which possess the technologies necessary to operate in an industry to represent one source of potential competitors. Analysis of patent activity frequently signals intentions well prior to actual entrance.

- **Market access**: In businesses where market access is a key factor for success, firms with that access frequently attempt to leverage it by acquiring additional product lines to be sold in that channel or to those customers.

- **Reputation and image**: Brand extension strategies are based on the use of a firm's reputation in one product area to leverage its entry into another.

- **Operating knowledge and skills**: Regional competitors in a business often expand geographically.
- **Costs and Risks**: Creating competitive advantage may require a high level of cost and risk to the firm. Often, a firm will create a branding strategy that "pushes the envelope" and increases risk both in time and in money. However, the brand image that is created is so strong that the customer immediately responds positively. It is

imperative that the brand or image created be aligned with the firm's strategic initiatives and goals.

2.5.5 Market analysis

An obvious definition of a firm's market share might be "that share of the market commanded by a firm's product (or brand)." But this is merely a tautology and not a definition, and therefore does not help us understand market shares. Its basic difficulty lies in the ambiguity of the term market. One normally thinks of a market being a collection of persons (or institutions) that are likely to purchase a certain class of product. For consumer products and services, the market is a group of consumers who are potential buyers of a product or service, such as detergent, air travel, or coffee.

Market research includes defining the problem and research objectives, developing a research plan, presenting the plan, implementing the plan (collecting and analyzing data), and interpreting and reporting the findings. This is the area of marketing where we begin to see science as well as art. This chapter focuses in detail on how to research a market, how to know the competition, and how to leverage that knowledge to improve your business. Pricing - to sell a product for a particular price, value must be created. Value is the consumer's estimate of the product's overall capacity to satisfy his/her needs. When the value placed on a product or service is high, then satisfaction is achieved. Consumers are savvy and will choose based on the level of satisfaction that corresponds with the price. Generally, a "price/quality" relationship exists, where the higher the price, the higher the quality; especially in the case of personal services, consumers will expect a higher level of service if the fee associated with that service is higher relative to other providers of similar services (Abahe, 2017).

Generally, the value chain includes the following activities:

- ✔ Inbound logistics – bringing raw materials into the business.
- ✔ Operations – management of processes to create the product or service for the customer.
- ✔ Outbound logistics – the means for getting the product or service to the customer (for example, distribution systems and shippers to get products into retail stores).

~~✔ Marketing and sales – creating value.~~

~~✔ Service – aligning customer expectations and the performance of the product or service.~~

~~✔ Firm infrastructure – the organization of the firm to maximize service to the customer.~~

~~✔ Human resources management – creating a structure for the people in the firm, which includes recruitment, training, retention, and compensation of employees.~~

~~✔ Technology – using technology to maximize service, thereby enhancing customer value (Abahe, 2017).~~

2.5.6 Ansoff matrix

The Ansoff matrix which is developed by Igor Ansoff is a strategic tool, which relates the marketing strategy of the organisations with its general strategic direction. Furthermore, the matrix denotes the four growth strategies that are alternative in the form of 2X2 matrix or table (Team FME, 2013). The potential alternatives are market development, diversification, market penetration, and product development (Navarra & Scaini, 2016).

Figure 2: Ansoff matrix

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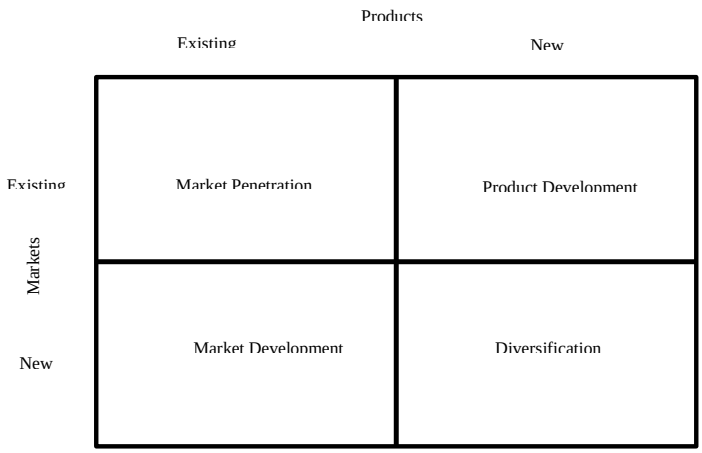

Source: Adopted From Team FME (2013)

~~2.5.7 Net present value (NPV)~~

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~~NPV is the sum of all cash flows (future) which is used to determine the present value. The calculation of NPV is deemed to be effective in projects that are mutually exclusive and are easy to reinvest and assess cash flows. This is calculated using the equation:~~

~~NPV = Cash inflows – Cash outflows or expenditure of Investment~~

2.6 ~~Theories on Strategic Management for businesses~~Strategic Management model for businesses

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Strategic management Model is proposed by Pryor et al. (1998) whereby small business owners or managers understand and utilize elements of Strategic management to manage their business. The Strategic management Model includes a SWOT analysis (i.e., analysing a firm's internal strengths and weaknesses and its external threats and opportunities), as well as mission, vision, values, goals and objectives, strategy formulation and deployment, measurement and feedback, critical success factors, and competitive advantage.

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Strategic Elements Definition:

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SWOT Analysis of internal strengths & weaknesses and external threats & opportunities.

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Mission - Why an organization exists.

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Vision - Where or what an organization wants to be in the future.

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Core Values Principles that people in an organization care about and believe in that influence their behaviour.

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Goals and Objectives - Broad, high-level desired results as well as specific, measurable outcomes necessary to make the vision a reality.

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Strategy Formulation - The plan of how and when to achieve the goals and objectives.

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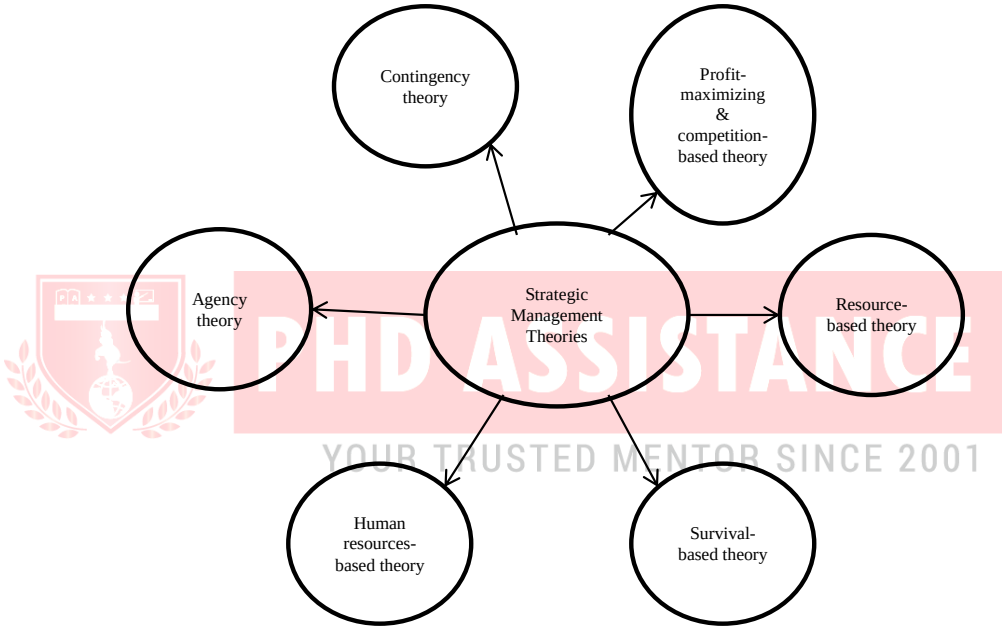
Strategy Deployment or execution of Strategic Plans Measurement & Control - The monitoring and feedback element that answers the questions "How is the organization doing?" and "Are any modifications necessary?"

Critical Success Factors - What an organization has to do right to succeed.

Distinctive Competencies - Unique capabilities that give an organization an advantage over its competitors (Pryor et al., 2010)

Figure 3: Strategic Management Theories



Source: Adopted From Ologbo et al. (2012)

Strategic management is the process and approach of specifying an organization's objectives, developing policies and plans to achieve and attain these objectives, and allocating resources so as to implement the policies and plans. In other words, strategic management can be seen as a combination of strategy formulation, implementation and evaluation (David, 2005; Abdullah, 2005; Hashim, 2005; Mohamed, 2005).

Financial techniques:

Payback analysis:

The payback period is the time required for the amount invested in an asset to be repaid by the net cash flow generated by the asset. It is a simple way to evaluate the risk associated with a proposed project. Johnson (1999) defines the payback period as the expected length of time for aggregate positive cash flows to equal the initial cost, or the time it is expected to take to recover the initial investment. In order to use the technique as a criterion, a cut-off period is specified and all those projects with payback periods shorter than the cut-off period are then acceptable whereas all those with payback periods longer than the cut-off period are not acceptable. Chan (2004) found that over half of the Canadian Municipal Governments that use capital budgeting techniques use the payback period as the primary criterion. In a survey amongst smaller companies (Block, 1997) found that the payback period was preferred by nearly 43% of the companies. A survey amongst the Fortune 500 companies (Burns & Walker, 1997) [Burns R.M. et al (1987)] showed that payback period was not the preferred technique.

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Advantages of Payback Period

i) Its simplicity is an advantage, as it is easy to understand and to explain.

ii) It gives an indication of how long the initial investment will be "at risk" and is therefore an indication of the risk involved in the projects.

Internal rate of return (IRR):

The internal rate of return (IRR) is a measure of the return generated by a project. The internal rate of return (IRR) is defined as that rate of discount that causes the present value of the projected future project cash flows to be exactly equal to the initial cost of the project**.**

The IRR is therefore the rate that will satisfy the following equation (Johnson,1999):

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$$I_0 = \sum_{t=1}^{n} \frac{CF_t}{(1+IRR)^t}$$

where:

I_0 = Initial Project Cost.

CF_t = Net Cash flow in Year t.

IRR = Internal rate of Return.

n = Expected number of Years of Project Life.

To use the IRR as a decision criterion, one has to compare the IRR to the company's minimum attractive rate of return (MARR). The IRR rule states that the company must not accept a project if its IRR is less than the company's MARR.

The MARR is often set equal to the opportunity cost of capital, which is defined as the rate of return offered by the other alternative comparative investments.

IRR is a very popular decision criterion. A survey amongst the Fortune 500 companies (Burns & Walker, 1997) showed that 84% of the companies use IRR as a decision criterion in capital budgeting.

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Advantages of Internal Rate of Return

i) The IRR takes all the project cash flows into account. It therefore addresses the shortcoming of the payback methods where the projected cash flows after the payback period are ignored.

ii) The IRR takes the timing of the cash flows and therefore the time value of money into account.

Break-even analysis:

Break-even analysis is to some extent just an extension of sensitivity analysis. In sensitivity analysis, one examines the effect of changes in variables on the decision criterion, whereas in break-even analysis one wants to establish the specific parameter value at which point the project becomes unattractive. For example, if the decision criterion is the net present value (NPV), a parameter's break-even point will be that value where the NPV becomes zero and beyond which the project becomes unacceptable (Linstrom, 2004).

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~~2.5.7~~ Net present value (NPV):

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NPV is the sum of all cash flows (future) which is used to determine the present value. The calculation of NPV is deemed to be effective in projects that are mutually

exclusive and are easy to reinvest and assess cash flows. This is calculated using the equation:

NPV = Cash inflows – Cash outflows or expenditure of Investment

Profitability index (PI):

Profitability index is defined as the ratio of benefits discounted over the discounted costs. It is further the evaluation of profitability investment and is used to compare with the profitability of other investments that are similar and are deemed to be under consideration. The measurement of profitability index is one of the ways of measuring and quantifying the proposed investment's efficiency wherein it further expresses the net present value for an expense incurred initially equal to a monetary unit. It is used to characterise the relationship between investment funds and the net present value which generates the volume of net present value. Profitability index is calculated using the equation,

$$PI = \frac{VAN + Io}{Io} = 1 + \frac{VAN}{Io}$$

Where,

'VAN' is the net present value, I_0 depicting the initial investment based on monetary units,

2.7 Strategic Human Resource Management (SHRM), Information Management and knowledge Management

Although the traditional administrative and compliance-based activities still form an essential part of HRM, a strategic approach is now being widely adopted in HRM (Hyland & Verreault, 2003)which can be regarded as Strategic Human resource management. SHRM is the "linking of human resources with strategic goals and objectives in order to improve business performance and develop organisational culture that foster innovation, flexibility and competitive advantage" (Jain, 2014, p. 6). Holbeche (2009) suggested that SHRM enabled the HR department to explore HR's role in supporting business strategy, which provided one avenue for demonstrating its value to the firm. Therefore, building a link between organisational strategic planning and HR planning is the significant contribution of

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the field of SHRM. Boxall and Purcell describe strategic HRM as being concerned with explaining how HRM influences organisational performance. They also argue that strategy is not the same as strategic planning because strategic planning is the formal process that takes place, usually in larger organisations, defining how things will be done. A strategy, by contrast, exists in all organisations – even though it may not be written down and articulated – and defines the organisation's behaviour and how it attempts to cope with its environment. Strategic HRM is the overall framework that determines the shape and delivery of the individual strategies, systematically linking people with organisations by integrating HRM strategies into corporate strategies (Boxall & Purcell, 2003).

However, practitioners and clients in the oil and gas sector also agree that issues of technology, process, people and content must be addressed to achieve success (McKenna et al., 2006). In this regard, Information management comes into the play which is the act of foreseeing the integration of wide paper and computer based information that are derived externally ranging from several sources to support business functions[1]. According to Smith and Farquhar (2000), an organisation must have "good enough" technology to manipulate the collected information and make progress, especially in the transitional business environment of today. Odell et al. (2000) noted that to achieve bottom-line success more attention must be paid to the other issues. Experience in a number of organisations has shown that no more than one third of the knowledge management budget should be devoted to technology. The basic organisational unit of knowledge management is the community practice, which is a group of personnel who share a common area of expertise and who search for solutions to common problems (Brown & Gray, 1995). KM makes the most of the organisation's collective knowledge and the expertise of its employees and business partners (Ribeiro, 2009). Considerable research has suggested that KM is a critical factor for creating new technologies and products (Nonaka & Takeuchi, 1995b; Argote et al., 2003). King (2008) in agreement with Knogh et al. (2002) highlight the impact of KM on a firm's organisational performance. They suggest that organisational performance can be improved when employees communicate by sharing and utilising best practices, lessons learned, experiences, insights, as well as by creating new knowledge.

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[1] https://www.researchgate.net/publication/228617437_Interrelationship_between_document_management_information_management_and_knowledge_management

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From the aforementioned inferences, it is deemed that when the strategies of SHRM are processed in an efficient manner, it leads to the creation of an organisation with highly competent managers who will deliver productively. However, the appropriate use of SHRM strategies and the creation of value to achieve competitive advantage also rely on the use of organisational learning, Information management and knowledge management[2].

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2.87 Oil & Gas sector- Market review

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The oil and gas industry comprises two parts: 'upstream'— the exploration and production sector of the industry; and 'downstream'—the sector which deals with refining and processing of crude oil and gas products, their distribution and marketing. Companies operating in the industry may be regarded as fully integrated, (i.e. have both upstream and downstream interests), or may concentrate on a particular sector, such as exploration and production, commonly known as an E&P company, or just on refining and marketing (a R&M company). Many large companies operate globally and are described as 'multi-nationals', whilst other smaller companies concentrate on specific areas of the world and are often referred to as 'independents'. Frequently, a specific country has vested its interests in oil and gas in a national company, with its name often reflecting its national parenthood. In the upstream sector, much reliance is placed upon service and upon contractor companies who provide specialist technical services to the industry, ranging from geophysical surveys, drilling and cementing, to catering and hotel services in support of operations. This relationship between contractors and the oil companies has fostered a close partnership, and increasingly, contractors are fully integrated with the structure and culture of their clients (Square Space, 2017).

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OPEC describes itself formally as a permanent, inter-governmental organisation which was created in September 1960 by five founding members; Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. More recently, in 2007 Angola was admitted to OPEC and Ecuador ended its suspension, re-entering the cartel. Today's OPEC thus comprises 12 members. OPEC's Charter Headquartered in Vienna, Austria OPEC's objective from the start has been 'to coordinate and unify petroleum policies among member countries in order to secure fair and stable prices for petroleum producers; an efficient, economic and regular supply of petroleum to consuming nations; and a fair return on capital to those investing in the

[2] http://www.ijeeee.org/Papers/069-Z0052A10029.pdf

industry'. Through the early years of the organisation, limited co-ordination between the members and the ongoing dominance of the international oil companies (IOCs) meant that OPEC's influence on oil markets and pricing was modest. Indeed, the presence of the IOCs through production concessions in many member countries meant that OPEC's ability to influence production quantities was somewhat limited. However, angered by the low price of oil in the early 1970s and a belief that the production policies used by the international majors were resulting in minimal returns for the countries within whose borders crude reserves lay, the member countries started to renationalise their oil assets and flex their collective strength. Moves by Libya to oust BP in 1971 were soon followed by similar initiatives amongst other producing nations. In a world dependent upon oil, OPEC had suddenly realised its power (Deutsche Bank and Research, 2013).

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In India, the oil and gas sector contributes to more than 15 per cent of the nation's GDP. The economic growth if the nation is directly associated with the demand for energy wherein 7 per cent of the growth is expected to increase the consumption of India's per capita energy from 560 kgoe to 1,124 kgoe. The upstream segment comprises of organisations which are engaged in the production and exploration activities wherein the opportunities for organisations in this segment are rising (IBEF, 2013).

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~~2.8 Strategic and risk management in Oil & Gas sector~~

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~~Board in organisations implement Risk Management Policy for the Company including identification therein of elements of risk, if any, which in the opinion of the Board may threaten the existence of the Company. The main objective of this policy is to ensure sustainable business growth with stability and to promote a pro-active approach in reporting, evaluating and resolving risks associated with the business. In order to achieve the key objective, the policy establishes a structured and disciplined approach to Risk Management, in order to guide decision on risk related issues. The aim of the policy is not to have risk eliminated completely from Company's activities, but rather to ensure that every effort is made by the Company to manage risk appropriately to maximize potential opportunities and minimize the adverse effects of risk (Opal India, 2016).~~

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~~Understanding which companies are strongly positioned and which are weakly positioned is an integral part of analyzing an industries competitive structure. The best technique for revealing the market position of the industry competitors is strategic group~~

~~mapping. A strategic group consists of member with similar competitive approaches and position in the market. The procedure for constructing strategic group map is straight forward:~~

- ~~Identify the competitive characteristics that differentiate firms in an industry, typical variable are number of products and profit.~~
- ~~Plot the firms on a two variable map using pairs of differentiating characteristics.~~
- ~~Assign firms that fall in about the same strategy space to same strategic group.~~
- ~~Draw a circle around each group, making a circle proportional to size of a group's respective share of total industry sales.~~

CHAPTER III: RESEARCH METHODOLOGY

3.1 General Introduction

The present research considers both primary and secondary data for achieving the aims and objectives of the study. For primary data collection, semi- structured interviews and questionnaire based survey were conducted wherein for the secondary data, previous researches, literature and reports were examined to perform internal and external analysis.

3.2 Primary Data collection

3.2.1 Research design

Selecting an appropriate research design is essential for any research to acquire a concept of data collection and limitations of the study including time constraints and resources. Research design refers to the structuring the research activity that involves the data collection in ways which are most likely to obtain the research objectives. An appropriate method should be chosen for collecting the adequate data in order to achieve the research objective. Research methods (Creswell, 1994; Bell, 1996; Punch, 2005) divide the research into two important methods, qualitative and quantitative, both involve primary type of data collection. Merriam (2009) explained qualitative research as an approach in which several people are involved along with their perceptions of research that were assigned distinct meaning on the basis of the experience of individuals and covers non-numerical data (Saunders *et al*., 2009). Creswell (2011) expressed quantitative research as any data procedure or collection for data analysis that employs numerical data. As the present research aims to explore a novel phenomenon via answering open-ended questions, a qualitative methodology is a suitable method (Saunders *et al*., 2012, p.163) to obtain the study objective. Whenever a social phenomenon is to be examined, a qualitative research methodology could be used which aims to understand the implications in the society and the manner the social world operates (Hancock *et al*., 2009) . Since the present study is based on the strategy and risk management for the conventional shallow water offshore oil & gas engineering companies, a ~~qualitative~~ mixed research design ~~approach~~ incorporating both qualitative and quantitative component is suitable.

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3.2.2 Research philosophy

The research philosophy is essential to collect and examine the adopted primary data. The philosophy also presents the concepts of how the world is perceived and in which way the problem is to be found out (Saunders *et al*., 2012, pp. 126-129). There are two types of research philosophy applied in research by assuming the social reality including positivism and interpretivist (Perry, 1995). The positivism views the social world as an external to individuals and interpretivist views the objectives of thought as words independent of external factors (Bryman & Bell, 2011, p. 22). The first method is based on the beliefs of universal laws and neglects the subjective interpretations. This method involved quantitative approach as a result of the test theories and also try to find a casual relation between control and predictor (Holloway & Wheeler, 2002, p. 5).In this regard, the present study adopted both positivist and interpretivist approach, ~~which is appropriate philosophy for~~ since both qualitative and quantitative research ~~as the knowledge is personally~~ designs are ~~experienced~~used.

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3.2.3 Research Approach

Saunders *et al*. (2012, p.144) explained that the connection between research and theory can be approached in various types. However, in research there are two types of research method incorporated including- deductive and inductive method. Deductive approach is conducted by a hypothesis which is generated by previous studies and tested by applying survey method and it is called as a top-down method (Gabriel, 2013; Saunders et al., 2009). The inductive method is applied with the intension of creating theory on the relation of observations and results obtained via data collection which is called as a bottom-up method (Bryman & Bell, 2011, 4). According to Bryman and Bell (2011, p.13), an inductive approach was used in qualitative research and a deductive approach for quantitative research. In this case, the present study attempts to explore strategy and risk management for the conventional shallow water offshore oil & gas engineering companies to remain competitive in the challenging market. Hence both inductive and deductive approaches ~~is~~ are more appropriate. ~~to this research.~~

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3.2.4 Target population and sample size

According to Gay & Airasian, 2003 fixing an appropriate target population is also an important step. A study population is a group to whom the researcher plans to use her or his

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research results i.e. the target population of the study whose members are the people to be researched. In this study, the target group consists of top management personnel of conventional shallow water offshore oil & gas engineering companies in order to obtain the study objective. Therefore, managers, HR and employees of conventional shallow water offshore oil & gas engineering companies were chosen for the qualitative interviews and quantitative survey.

3.2.4.1 Sampling technique

The sampling technique is considerd on the basis of strategy, access, and representativeness (Bryman, 2012). As per Patton (2002), sampling technique depends on four questions namely,

- What an investigator needs to examine
- Why she or he needs to examine
- What kind of sources he or she wants to research
- How the results would be utilised (Cohen & Manion, 1994).

Based on the above queries, purposive sampling technique is applied in the present study. This type of sampling would show the researcher to cross check whether they meet the criteria for eligibility on the basis of objectives (Easterby-Smith *et al*., 2012, p. 228). However, for the quantitative survey, convenience sampling is used to select the participants and administer the questionnaires.

3.2.4.2 Data collection methods

There are two kinds of data collection which include primary and secondary data (Creswell, 1998). In this research, interview method is used as primary data collection method and internal and external analysis is involved in the secondary data collection.

The following section reveals the interviews in educational research and their procedures.

3.2.5 Interviews

As per the statement of McKernan (1996), interviews are one of the most efficient methods for collecting the data because it is carried out through face to face and requires

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direct verbal association between respondent and researcher. Top management personnel from conventional shallow water offshore oil & gas engineering companies are selected as the interviewees to collect the data.

3.2.5.1 Procedures for preparing for the interviews

As the interviews are conducted efficiently and smoothly, the procedures were executed in two main stages, firstly interview question preparation and selection and secondly the preparation for conducting interviews.

3.2.5.2 Selecting interview questions

The interview questions are chosen on the basis of collected past studies with respect to the strategy and risk management in ONGCs. This was decided to design interview questions on the organisation of the interview and shape of the data collection. Once questions are framed, approval from the supervisor is obtained from more discussions and advice. After confirmation from a supervisor, an interview guide is developed which consists of a list of topics covered relying on the context of literature.

3.2.5.3 Conducting of the interviews

After preparation of interview questions, the semi-structured interview was performd through a face-to-face interview via prior appointment and this is the final step in the interview.

3.2.5.4 Validity and reliability in interviews

A successful research depends on suitable methods, and the two main aspects researchers generally seek for are validity and reliability. The study followed the criteria of evaluation as described by Lincoln and Denzin (2005) in order to validate the trustworthiness and credibility of the interview guide and the complete research. It supports to analyse the credibility, dependability, transferability and conformability of semi-structured interview guide (Lincoln & Denzin, 2005). There are some steps are considered to validate the above criteria. Primarily, the interview guide was generated on the basis of past researches previously conducted (Labuschagne & Brent, 2006; Taylor, 2008; Anon, 2006; Gareis *et al.*, 2009; Turner, 2010; Silvius & Schipper, 2009; Silvius *et al.*, 2010). In the second step, those studies were cross-checked with supervisors. Finally, to increase the validity of the research,

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the pilot study may be conducted among 1-2 participants (Quinlan, 2011). In order to analyse the accuracy of the data obtained, member checking was performed with participants, where the interview subjects are described and further requests whether they agreed with summarizing statements.

3.2.5.5 Analysis of the interview

Data analysis is very crucial for any research. The main reason is that the chief goal of data analysis is as per Merriam (1998) is to end with reasonable generalisations and conclusions on the basis of the predominance of data. Data analysis in interviews needs to be clear on the first steps of collected data. Therefore, after data collection, recording and notes have been transcribed on the same day and further analysed whether the data is up-to-date (Merriam, 1998; Marshall & Rossman, 1989). . Initially, data is transcribed by typing digital transformation of all recordings manually and the field notes. Secondly, all the conversations acquired at the time of interview are typed and converted into a Word document (Colaizzi, 1978, p.59). Finally, the textual data is categorized as per themes and sub-themes on the basis of literature review (Rossman & Rallis, 1998, p.171). Still, there is a logical sequence of research questions and literature review; data is recorded and coded several times. This process is conducted by utilising the computer software program such as QSR Nvivo software. Nvivo software is used as a teaching tool wherein various types of documents could be kept in a single destination and are connected together to enhance easy access. The progress of an idea from its inception could be mapped using Nvivo software (Walsh, 2003) . Moreover, content analysis was also conducted.

3.2.6 Questionnaire based survey

In addition to the qualitative instrument, the quantitative questionnaire is used as an additional instrument to acquire the perceptions of the participants in a numeric manner. Though numerical data is collected, only descriptive statistics and percentage analysis is performed to understand the intention of the employees at NEL towards cost differentiation and diversification of services in the organisation. The sample size selected for the survey is 27 wherein the samples include Senior Engineers, Managers, Head of Departments, Business Unit Head - Engineering Director, Managing Director and Board of Directors.

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3.3 Secondary data- Internal and external analysis

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Internal and external analysis were performed using SWOT and PESTLE analysis.

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3.3.1 SWOT analysis

SWOT analysis is a classical strategy tool which is performed by using four main areas such as strengths, weaknesses, opportunities, and threats (Grant, 1998; Dyson, 2004).-In the present research, through the analysis of the organisation's prospects and its new business environment, SWOT analysis is performed.

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Figure 4: SWOT Strategy analysis framework

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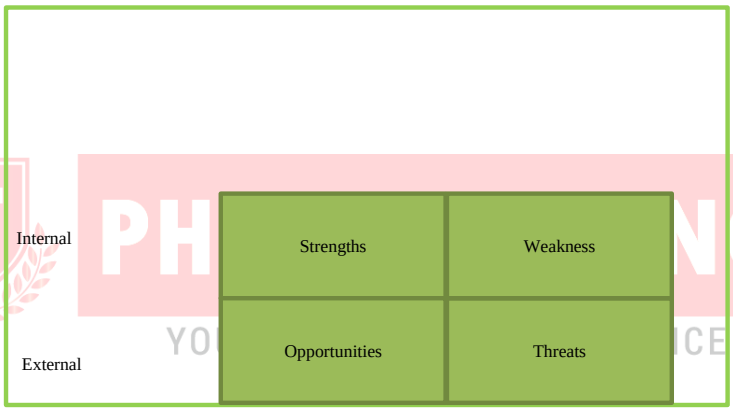

Source: Adopted From Team FME (2013)

3.3.2 PESTLE analysis

The PEST analysis involves political, economic, socio-cultural, and technological factors in its framework. The framework is made of four segments. The first indicates the political factors that are related to the conducting analysis. The second, third, and fourth segments find out economic, sociocultural, and technological aspects. These segments applied to evaluate the target company's strategies while conducting strategy analysis (Johnson & Scholes, 1993). PESTLE analysis led the researcher to examine the external factors that affect NEL LTd to achieve competitive advantage.

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3.4 Summary

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The present chapter has discussed the adopted methodology and the field work procedures. Further, this chapter explains the reason for executing a qualitative approach to gather and analyse the primary research data. A semi-structured interview was conducted to achieve an in-depth understanding of the participant's views on the strategic and risk management on the conventional shallow water offshore oil & gas engineering companies to remain competitive in the challenging market. The interview and survey ~~was~~ were conducted over a period of XX months with respect to gaining cooperation and rich and elaborated data from respondents. The secondary data was collected by performing internal and external analysis. The internal and external analysis performed by incorporating SWOT and, PESTLELE~~, Porter's five force, Boston consulting group (BCG) matrix and Blue ocean strategy~~ analysis. The collected data are represented and discussed in upcoming chapters.

CHAPTER IV: DATA ANALYSIS AND FINDINGS

4.1 Introduction

The present chapter is the compilation of the data analysis which were performed using qualitative and quantitative data analysis tools. Both qualitative and quantitative research were conducted to acquire the perceptions of key personnel at NEL ltd towards product differentiation, diversification, and cost optimisation to be followed at the organisation.

4.2 Qualitative Analysis

4.2.1 Introduction

In this chapter, the researcher provides the results of the qualitative data. The data was first entered in text format and exported into the NVIVO software. The sample size taken for the study is 6 respondents. This chapter elaborates about what risk management strategies are adopted by NEL towards mitigating critical or high risks, other barriers to risk management at NEL, organisation's motive towards learning and training for new changes in NEL employees regarding the adoption of new services or venturing into new areas in business, where and how NEL can differentiate with its current core competencies. Organizational structural changes are required for NEL to include new changes, what additional competencies and trainings are required to develop Deep-water, Onshore pipelines and EPC services, venturing into deep water services that require additional investment to be attracted, quantum of investment and who will finance and how and when NEL will be successful in new services.

Theme 1: Unavailability of risk management strategy

When all the six respondents were asked about the risk management strategies in place, four out of the six respondents responded in negative, i.e., there was no risk management procedure. Three of these four respondents said that the engineering director of their firms would be consulted for the project risks. While dealing with the risks, man-hour costs, time/schedule, and resources would be suitably adjusted. They also stated that the top management would also play the role in taking care of other risks. The respondent # 6 (that is fourth respondent who responded in negative) stated that NEL would have to develop risk management procedure and risks worth up to 1 million USD would be handled by NEL

engineering director and higher risks are handled by risk managers and right committee in NPCC, Abu Dhabi.

The following are the excerpts that substantiate the above inference.

"....There is no Risk Management procedure available. We normally take care of Project risks by consulting our Engineering Director….[Resp 1] ...There is no Risk Management procedure available. We normally take care of Project risks by consulting our Engineering Director…[Resp 2] ...There is no Risk Management procedure available. We normally take care of Project risks by consulting our Engineering Director…[Resp 3] ...NEL will have to develop Risk Management Procedures. Currently Engineering Project related risks upto 1 million USD are managed by NEL Engineering Director…[Resp 6]"

Theme 2: Adoption of risk management strategy

When enquired about the risk management strategy adopted in the organisation, two respondents out of six respondents answered positively. They voiced that they were developing risk management procedure in line with according to ISO-31000, 2009 and Enterprise Risk Management Framework based on COSO. Presently, the risks related to projects are managed by the procedures of ISO-9001 quality management system. Moreover, they told that other risks would be taken care of by many insurances and bonds. Higher risks would be managed by NPCC, Abu Dhabi.

The excerpts underneath will substantiate the inference.

"...We are developing Risk Management Procedure in line with ISO-31000, 2009 and Enterprise Risk Management Framework based on COSO ... Higher Risks are managed by NPCC, Abudhabi...[Resp 4] ...We are developing Risk Management Procedure in line with ISO-31000, 2009 and Enterprise Risk Management Framework based on COSO ... We have also various insurances and bonds to take care of other risks…[Resp 5]"

Theme 3: Barriers to risk management at NEL

The respondents were questioned about the barriers to the risk management at NEL. All the six respondents answered that there was no barrier to the risk management. Two of the six respondents felt that the fear was existent among the employees to measure the risks. Moreover, the risk might cause losing a project, or change of loss in the project, in case risk

was not accounted. Other respondents stated that risk procedures in accordance with ISO 31000:2009 and COSO would be developed, while the present risks were managed by NPCC.

The above inference is evident from the below fragments.

"...No. There is no Risk Management Procedure available at NEL. Hence, there is a slight fear among employees to quantify risk ... [Resp 1] ...No...[Resp 2]...No. There is no Risk Management Procedure available at NEL. Hence, there is a slight fear among employees to quantify risk…[Resp 3] ...No barriers. Risk procedure complying with ISO 31000:2009 and COSO framework will be developed for common understanding. ... [Resp 4] ...No barriers. Risk procedure complying with ISO 31000:2009 and COSO framework will be developed for common understanding…[Resp 5] ...No barriers. Risk procedure complying with ISO 31000:2009 and COSO framework will be developed for common understanding ….[Resp 6]"

Theme 4: Motive towards learning and training

The respondents of the interview were asked about the motive towards the learning and training for the new changes. All the six respondents responded positively. They all concurred that in order to earn the profit and stay competitive in the market, the learning and training were essential.

The below are the excerpts of their replies.

"....To remain competitive in the market and earn profit...[Resp 1]...To remain competitive in the market and earn profit...[Resp 2]...To remain competitive in the market and earn profit...[Resp 3]...To get sustainable competitive advantage and profit...[Resp 4]...To get sustainable competitive advantage and profit...[Resp 5]...To get sustainable competitive advantage and profit...[Resp 6]..."

Theme 5: Type of training needed for the NEL employees

When queried about the kind of training required for the NEL employees, the respondents of the interview concurred that the training was necessary for Subsea Flow Assurance, Pipeline Buckling Analysis, FEM Analysis, softwares like ABAQUS and OLGA. They also stated that the knowledge transfer was required for the deep water and onshore pipeline services. They demanded a new setup for the EPC, since there was no expertise.

They were also planning to add in future the streams like Business Development, Projects & Contracts, Procurement, Construction, Estimation, QA/QC Project Management Consultancy, Risks / Risks Committee and HSE.

Following excerpts will substantiate the inference above.

"...Subsea Flow Assurance, Pipeline Buckling Analysis, FEM Analysis, softwares like ABAQUS, OLGA. Knowledge Transfer from NPCC, PRINCIPIA, other external experts for deepwater ...[Resp 1]…. Knowledge Transfer from NPCC, PRINCIPIA, other external experts for deepwater and Onshore pipeline services ...[Resp 2]… For EPC, complete new setup is required, Knowledge transfer, Joint partnerships, Consortium with other companies / contractors is very much required ….[Resp 3]… while planning from "Engineering" to "EPC" based business, certainly we will plan to add streams such as Business Development, Projects & Contracts, Procurement, Construction, Estimation, QA/QC Project Management Consultancy and HSE ….[Resp 4]…. Training and Expertise is required in all...[Resp 6]"

Theme 6: Differentiating parameters over the competitors

The respondents in the interview were asked about the factors that were differentiating NEL from its competitors. They stated that NEL would offer Subsea Flow Assurance, Pipeline Buckling Analysis, Finite Element Analysis, Animations, Structural and Pipeline Integrity Analysis services, and FEED. They were of the opinion that these services could not be offered by other competitors. The strategies like pricing, proximity to the client, venturing into other markets abroad, expertise of the people at NEL, modern and well-equipped engineering centre and software were all the differentiating factors.

The above inference can be seen in the below excerpts:

"...NEL can develop with little investments, services like Subsea Flow Assurance, Pipeline Buckling Analysis, Finite Element Analysis, Animations, Structural and Pipeline Integrity Analysis services, FEED ...[Resp 1] ... Personal touch with client is also another aspect NEL can use as differentiation...[Resp 2]… NEL, unlike competitors, has executed all Projects well within the Cost, Schedule, and Resources with zero accidents, no compromising on Quality ...[Resp 3]… Pricing Strategy, and proximity / close location with Client companies also may help NEL to differentiate….[Resp 4] …. NEL can also go in other markets abroad where there is no competition due to its low cost compared to foreign

companies….[Resp 5] …. NEL can use its Product /Services, Price, Promotion, Place, People its unique Processes and Past track records as Physical evidence to differentiate against the competitors...[Resp 6]..."

Theme 7: Need for organisational structural changes

The respondents were queried about whether any change in the organisational structure would be required in order to accommodate the new changes, all the six respondents concurred positively. They felt that the major structural changed would be needed for deepwater and Onshore Pipelines and EPC.

The below are the excerpts.

"...Yes, for deepwater and Onshore Pipelines. Major Organisational changes are required for EPC...[Resp 1]...Yes, for EPC...[Resp 2]...Yes, for deepwater and Onshore Pipelines. Major Organisational changes are required for EPC...[Resp 3]...Yes, for EPC...[Resp 4]...Yes, for deepwater and Onshore Pipelines. Major Organisational changes are required for EPC...[Resp 5]...Yes, for deepwater and Onshore Pipelines. Major Organisational changes are required for EPC...[Resp 6]..."

Theme 8: Additional trainings for deep water, onshore pipelines, and EPC

When the respondents of the interview were asked about the additional competencies required in the areas of deep water, onshore pipelines, and EPC projects, they respondents opined that the entire mind-set of the employees had to change who were working in EPC and specialised engineering projects. Moreover, they felt that training in the areas of technical knowledge, time management, effectiveness, efficiency, digital technologies, contract management, quality, health, safety, environment, internet, etc is necessary.

Excerpts of the interview are as below:

"...Already informed earlier. We need to change the total mindset of employees working on Specialised Engineering and EPC services….[Resp 1]…]...Already informed earlier...[Resp 2]...Already informed earlier...[Resp 3]… Apart from Technical Knowledge, Time Management, Effectiveness and efficiency related trainings, Digital Technologies, Contract Management, Quality ….[Resp 4] …….Already informed earlier. We need to change the total mindset of employees working on Specialised Engineering and EPC services

....[Resp 5] ... Technical, behaviour, Finance, Project Management, Quality, Risk Mangement, Health, Safety, Environmental, Internet, related trainings...[Resp 6]..."

Theme 9: Maximum per cent of cost saving achievable with existing services

When the six respondents of the interview questioned about the maximum cost saving that can be achieved with the existing services, 16.7% of the respondents said that 30% of cost saving was possible; 33.3% of the respondents opined that 25% of cost saving was possible; 33.3% of the respondents were of the opinion that 20% of the cost saving was possible; and 16.7% of the respondents told that 15% of the cost saving was possible.

Theme 10: Whether deep water projects require organisational changes

When all the six respondents were asked if any change was required organisational structure for the implementation of deep water changes, majority of the respondents (66.7%) felt that there was a need; however, 33.3% of the respondents were of the opinion that there was no need to change the organisational structure.

Theme 11: Whether deep water projects need additional investment

When asked if any additional investment would be needed for the deep water services, all the six respondents concurred positively. They felt that more investment should be made for the purpose of training, softwares, external consultants, and partnership with group company PRINCIPIA in Paris, France. Two of the six respondents said that such investment could be made by the NEL itself and no external credit was needed. One respondent told that NEL would be supported by NPCC in such cases.

The below are the excerpts from the interview.

"...Yes, additional Investments are required ...[Resp 1]…. for training, softwares, external consultants, partnering with group company PRINCIPIA in Paris, France...[Resp 2]...Yes, additional Investments are required for training, softwares, external consultants, partnering with group company PRINCIPIA in Paris, France...[Resp 3]… the same can be arranged by NEL from its accumulated Profits. No external credit is required...[Resp 4] … Yes, additional Investments are required and the same can be arranged by NEL from its accumulated Profits. No external credit is required...[Resp 5] ...The parent company NPCC

wants NEL to develop and grow as a reputed specialised independent Engineering Company, worldwide. Any funds if required by NEL will be made available by NPCC...[Resp 6]..."

Theme 12: Quantum of investment and authority to finance

When queried about the quantity of investment needed for the projects and the authority to finance such projects, the respondents of the interview responded that 1.0 million USD to 1.5 million USD would be required for engineering services like deep water projects, 0.500 million USD for onshore pipeline services and differentiated engineering services each. Two of the six respondents said that EPC would cost from 100 to 150 million USD, while three respondents opined that EPC would cost 50 to 75 million USD. Two of the six respondents had no idea about the authority to finance the projects and guessed that NPCC could be the authority. Three respondents opined that NPCC would finance such projects and financing from the banks would also be possible. One respondent said that NEL could finance project worth up to 1.5 million USD and the rest by NPCC.

The below are the excerpts.

"....1.0 million USD for Deepwater, 0.500 million USD each for Onshore Pipelines and Differentiated Engineering services ...[Resp 1]... ...less than 0.750 Million USD for all Engineering Services, for EPC, around 100 million USD. No idea about Finance, must be NPCC...[Resp 2]...around 1.0 million USD for engineering services, for EPC about 150 million USD. NPCC has to arrange finance...[Resp 3]...1.5 million USD for Deepwater, 0.500 million USD each for Onshore Pipelines and Differentiated Engineering services... NPCC will arrange finance, some financing possible from the banks...[Resp 4]... For EPC, guess 50 to 75 million USD. NEL will arrange finance from its profits for all engineering services up to 1.5 million USD. for EPC, NPCC will arrange finance, some financing possible from the banks...[Resp 5]... NEL will arrange finance up to 1.5 million USD rest by NPCC. Engineering services like deepwater will cost 1.5 million USD, onshore pipeline (0.5 million USD) ...[Resp 6]"

Theme 13: Success of new services

When asked about the success and sustainability of the new services, two of the six respondents felt that deep water and onshore pipeline would take 3 years, while one respondent said that 4 years would be needed. Three respondents felt that EPC would take

from 5 to 7 years. Two respondents felt that new services would take 3 to 5 years to be successful. All the respondents felt that sustainability would depend on striving for competitive advantage, the way NEL would react to the market, optimisation of the costs, and factors like geopolitical, economical, technological, environmental, and legal.

The below are the excerpts.

"...We will have to develop strategy and strictly follow it to be successful. Cost Optimization and Differentiation will take less than one year….[Resp 1] … May need joint ventures with other companies or contractors partnering with our group company PRINCIPIA in Paris, France. Cost Optimization and Differentiation will take less than Six months to one year….[Resp 2] .....We will have to develop strategy. It will take minimum 3 to 5 years to be successful in new services. Yes, it will be sustainable as long as we remain competitive...[Resp 3]… Cost Optimization and Differentiation will take less than one year. Deepwater, Onshore Pipelines around 3 years. EPC 5 to 7 years. Yes, it will be sustainable, we will have to constantly look out for ways to optimize our costs…[Resp 4] … It will take minimum 3 to 5 years to be successful in new services. Yes, it will be sustainable as long as we remain competitive….[Resp 5] … It should take 3 to 4 years to be successful. We will have to continuously remain competitive. Yes it will be definitely sustainable….[Resp 6]

4.3 Quantitative Analysis

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In the present research, in addition to the qualitative interviews, the researcher has collected quantitative data using survey based questionnaire. The questionnaire is administered to the Senior Engineers, Managers, Head of Departments, Business Unit Head - Engineering Director, Managing Director and Board of Directors. The questionnaire based survey was conducted to acquire the perceptions of the management personnel and the chief technical staff regarding strategy that needs to be followed at NEL, cost savings percentage, ways of optimising cost, cost differentiation, cost diversification, partnership to be made, the revenue target for the organisation, investment requirements, changes in organisational structure, risk management and so on. Some of the important results acquired from the quantitative analysis are provided in this section and are as follows:

Figure 5: Strategy required at NEL

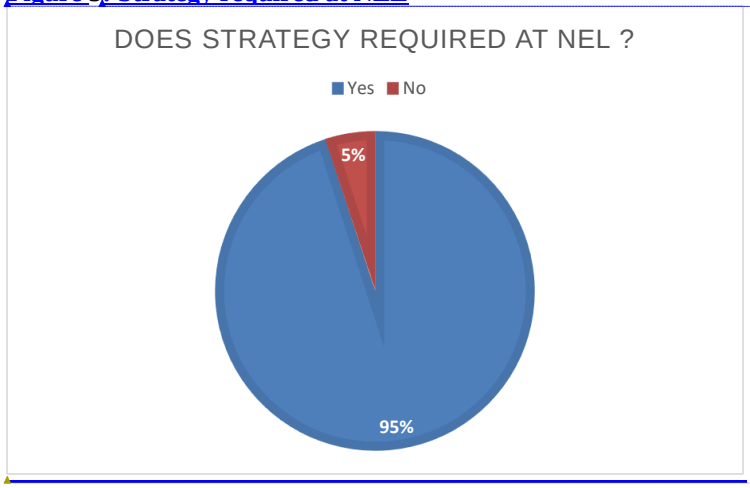

Table 1 : Strategy required at NEL

Does Strategy required at NEL ?	
Yes	95%
No	5%

Among the 27 respondents. 95 per cent have stated that they require a strategy at NEL to achieve competitive advantage whereas the rest (5 per cent) have stated 'No'.

Figure 6: Type of Strategy

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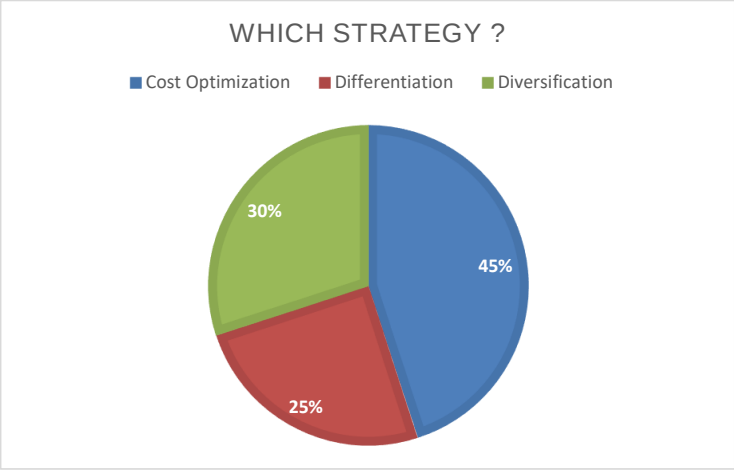

Table 2: Type of Strategy

Which Strategy ?	
Cost Optimization	45%
Differentiation	25%
Diversification	30%

Among the 27 respondents. 45 per cent have stated cost optimisation could be a viable strategy for NEL whereas 25 per cent opted for differentiation and 30 per cent for diversification.

Figure 7: Cost savings

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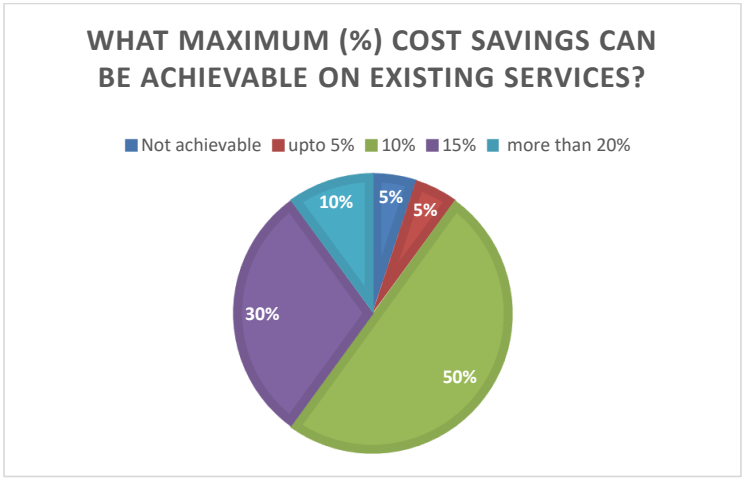

Table 3: Cost savings

What maximum (%) cost savings can be achievable on existing services?	
Not achievable	5%
upto 5%	5%
10%	50%
15%	30%
more than 20%	10%

Among the 27 respondents, a maximum of 50 per cent participants stated that 10 per cent of savings can be achieved from the existing services whereas the least per cent (5 per cent of the participants) stated only up to 5 per cent could be achieved.

Figure 8: Cost optimisation

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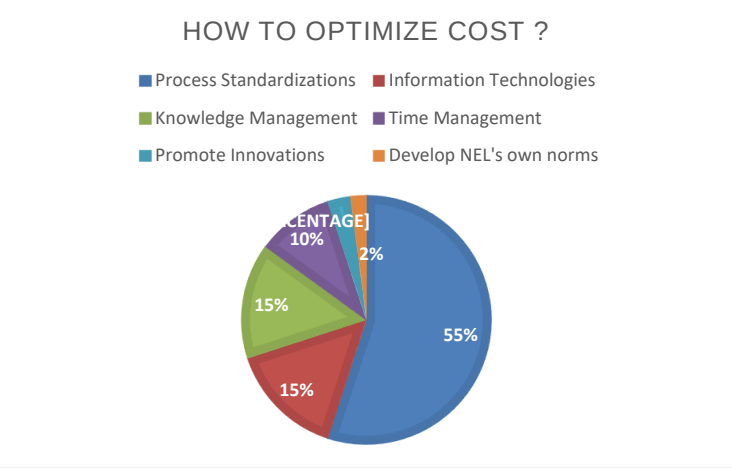

Table 4 : Cost Optimisation

How to Optimze Cost?	
Process Standardizations	55%
Information Technologies	15%
Knowledge Management	15%
Time Management	10%
Promote Innovations	3%
Develop NEL's own norms	2%

Among the 27 respondents, a maximum number of respondents (55 per cent) stated Process Standardizations as a way to optimise cost.

Figure 9: Product differentiation

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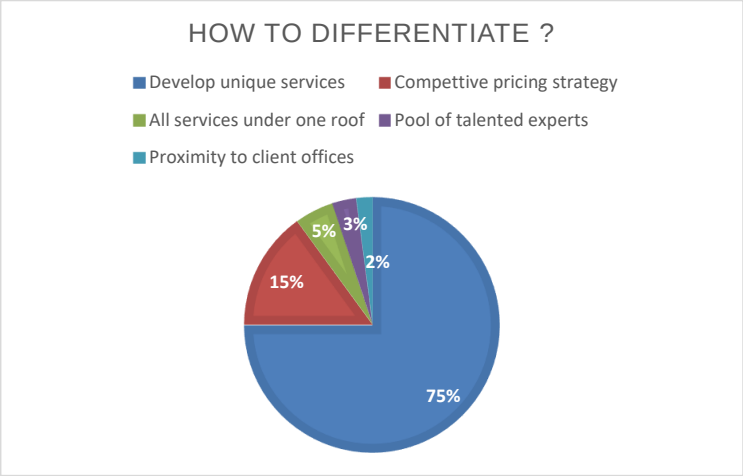

Table 5: Product differentiation

How to Differentiate ?	
Develop unique services	75%
Competitive pricing strategy	15%
All services under one roof	5%
Pool of talented experts	3%
Proximity to client offices	2%

A maximum of 75 per cent of the total respondents (n=27) stated the development of unique services as the way for product differentiation.

Figure 10: Unique services

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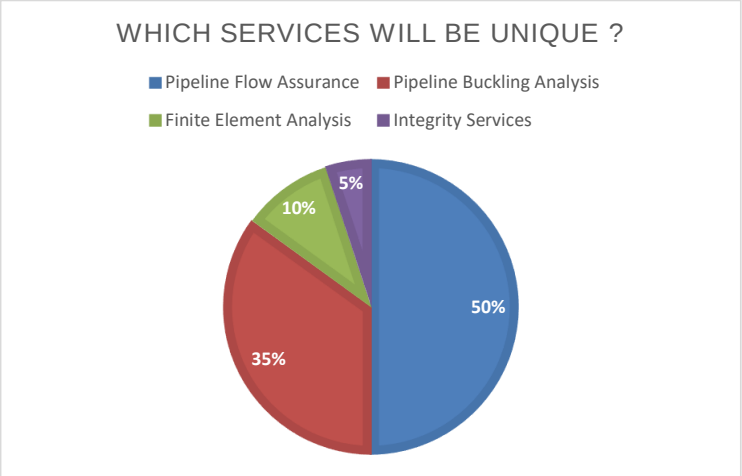

Table 6: Unique services

Which services will be unique?	
Pipeline Flow Assurance	50%
Pipeline Buckling Analysis	35%
Finite Element Analysis	10%
Integrity Services	5%

When questioned about the unique services for NEL, a maximum number of respondents (50 per cent) stated pipeline flow assistance whereas the rest opted for pipeline buckling analysis (35 per cent), Finite Element Analysis (10 per cent) and integrity services (5 per cent).

Figure 11: Product diversification

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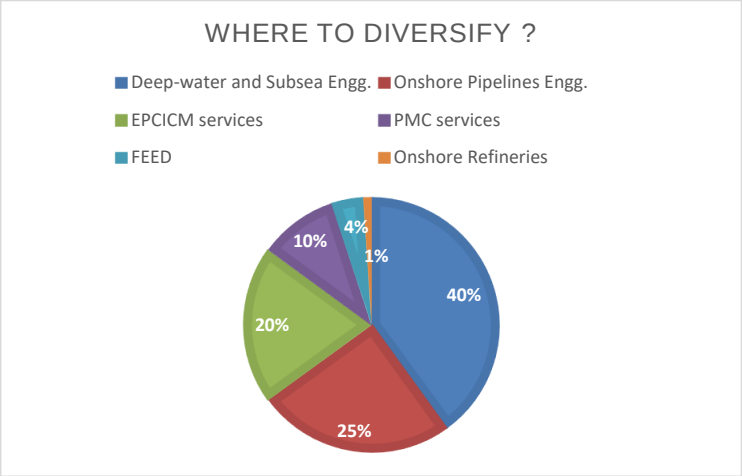

Table 7: Product diversification

Where to Diversify ?	
Deep-water and Subsea Engg.	40%
Onshore Pipelines Engg.	25%
EPCICM services	20%
PMC services	10%
FEED	4%
Onshore Refineries	1%

Among the 27 participants, 40 per cent have stated Deep-water and Subsea Engineering as a product diversification that could be made whereas the rest stated Onshore Pipelines Engineering, EPCICM services, PMC services, and FEED Onshore Refineries.

Figure 12: Type of EPCICM projects

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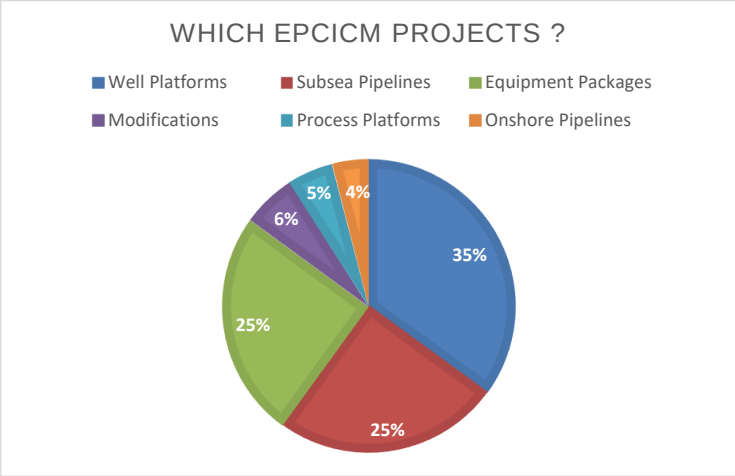

Table 8: Type of EPCICM projects

Which EPCICM Projects ?	
Well Platforms	35%
Subsea Pipelines	25%
Equipment Packages	25%
Modifications	6%
Process Platforms	5%
Onshore Pipelines	4%

Among the 27 participants, a majority of 35 per cent revealed Well platforms as a type of EPCICM project that could be adopted. However, other projects of EPCICM include Subsea Pipelines (25 per cent), Equipment Packages (25 per cent), Modifications (6 per cent), process Platforms (5 per cent), and Onshore Pipelines (4 per cent).

Figure 13: NEL share in EPCICM services

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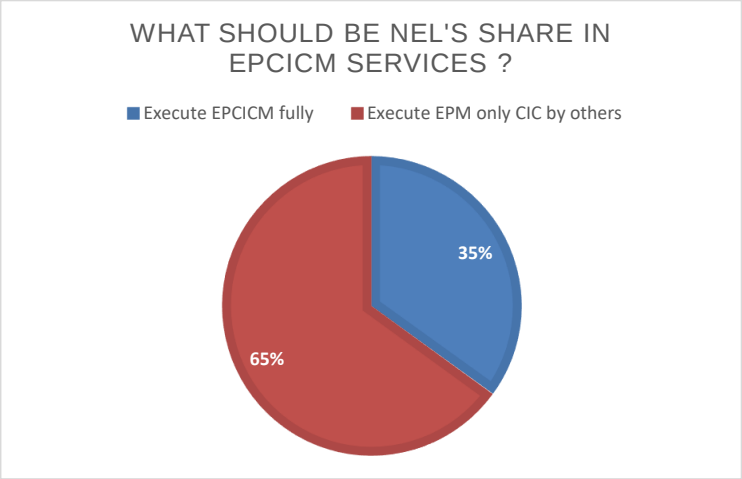

Table 9: NEL share in EPCICM services

What should be NEL's share in EPCICM services ?	
Execute EPCICM fully	35%
Execute EPM only CIC by others	65%

Among the 27 participants, 65 per cent have stated that EPM should be executed by NEL and CIC by other organisation. However the rest (35 per cent) have stated that EPCICM can be fully executed by NEL

Figure 14: Partner with NEL

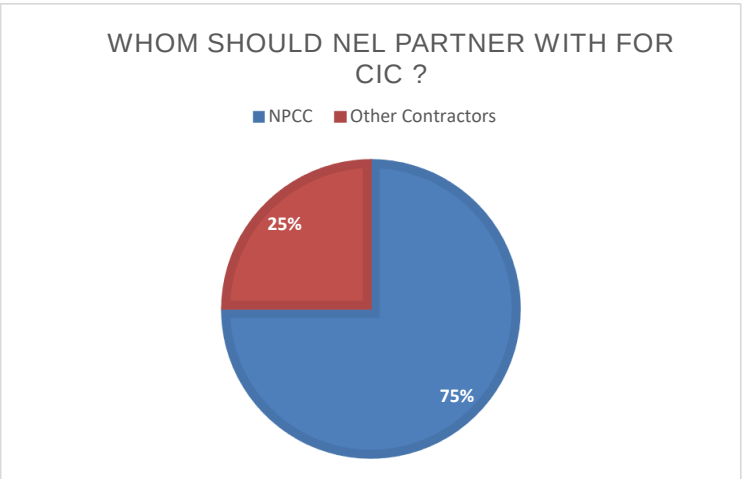

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Table 10: Partner with NEL

Whom should NEL partner with for CIC ?	
NPCC	75%
Other Contractors	25%

Among the 27 participants, a maximum of 75 per cent participants stated NEL should partner with NPCC for CIC whereas the rest have opted for other contractors.

4.4 Summary

The chapter examined the collected data wherein both qualitative and quantitative data analysis were performed. The researcher who has acquired qualitative data from interviewing key personnel at NEL Ltd transcribed the same, and them coded and analysed the data based on themes. Furthermore, the survey based questionnaire was also used wherein the data collected from 27 participants were analysed. Only percentage analysis was performed with the collected data from the survey and the processed information were depicted in pie charts. However, only important findings from the quantitative researcher were provided in the chapter whereas the rest were added as supplementary information in Appendix H.

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CHAPTER V: DISCUSSION AND CONCLUSION

5.1 ~~Discussion and Conclusion~~Summary of findings

The present research is an attempt to examine the ways of achieving competitive advantage for NEL Ltd in the future with a clear view of establishing a base in India. NPCC Engineering Pvt Limited (NEL) Mumbai being a subsidiary of NPCC Abu Dhabi was formed as a joint venture of National Petroleum Construction Company (NPCC) Abu Dhabi and Arcadia Shipping limited Mumbai in the year 2007 wherein the organisation began operations as a separate entity in the year 2015. Though the company has been identified as one among the pioneers in the Indian Offshore Oil & Gas industry, the organisation is aspiring to function independently in the Indian sub-continent without any intervention from its parent nation even in terms of investment. Hence, new strategies need to be developed which became the premise for the present research. In this regard, the researcher conducted both quantitative and qualitative research instruments to collect the perceptions of key personnel in the NEL Ltd wherein the qualitative research instrument was based on the following major themes; risk management, training, need for structural changes, cost savings and investment.

Participants during qualitative interviews have stated the lack of a risk management strategy in the organisation and the development of ISO-31000, 2009 and Enterprise Risk Management Framework based on COSO. No barriers were found for the implementation of risk management systems. Furthermore, the participants have stated the importance of traning and development which are deemed important. In addition, the type of training required for NEL employees was also inferred by the respondents and product differentiation aspects were also stated by the respondents. The main differentiations include Subsea Flow Assurance, Pipeline Buckling Analysis, Finite Element Analysis, Animations, Structural and Pipeline Integrity Analysis services, FEED. Furthermore, the need for making organisational changes was emphasised by the participants during the interview. In addition to the qualitative research, the researcher also utilised the quantitative research instrument to acquire the perceptions of the key personnel at NEL wherein the findings are depicted in Chapter 4. These findings are in line with the findings acquired from the qualitative interviews which led the researcher to examine the financials involved.

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5.2 Analysis of Financials

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Against the backdrop of information that were acquired from the analysis of responses from the interviews, the researcher further examined the prospects of achieving competitive advantage through the analysis of financials. Projections were made for the new projects in addition to the conventional shallow-water engineering projects which include Specialized Differentiated Engineering Projects, Deep-water and Subsea (SURF) Engineering Projects, Onshore Pipeline Engineering Projects, Pipeline and Structural Integrity Projects and miscellaneous projects. The project mix was changed with the conventional projects comprising 60 per cent of the project mix and the rest 40 per cent by other aforementioned new projects. The details of the financials with respect to projections in the revenue, manpower and planned man-hours are provided in the Appendix. The generation of revenue planned revealed that every year, the total revenue generated by the new projects will surpass the revenue generated by conventional shallow water engineering projects (Appendix D).

5.32 Limitations to the research and Recommendations

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Though the oil and Gas sector have the increasing the demands, the firms may have some of the drawbacks by not focusing on the communication between the stakeholders and continuous flow of information between them, strong relationships between the oil company and oil operator, lack of transparency that affects the efficiency of the workers. NEL failed to provide the examples of ideal situations from lessons learnt, growing demand of FPSOs, technological advancements and fluctuation of price are the major issues focussed by the NEL. Strict environmental regulation and emission of CO_2 encourages the use of biofuels and forms the source for the emergence of new and cleaner renewable energy sources such as wind power, solar power, hybrid and electric cars in the market. It increased the natural gas market.

5.3.1 Managerial implications

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Whilst there are several benefits in adopting new techniques in the oil and natural gas industry, there are several managerial implications for NEL which might hinder its growth trend. One major implication is the need for skilled manpower which is important in the oil

and natural gas industry. A report by [3] revealed that the projections for manpower in the oil and natural gas industry demand for increase in the oil and natural gas professions. In addition, in the Indian sub- continent, one main requisite of oil and natural gas corporations is to attract and retain skilled labour since employees in the oil and natural gas sector are attracted by overseas organisations which pay huge remuneration. Though manpower requirements are constrained to some extent through the adoption of technological advancements, still there exists the need for skilled labour in some scenarios where machine intervention is impossible, Furthermore, experienced labourers were lost every year due to retirement. Hence, NEL should look into the ways of managing skilled labour and should strategize them to retain professionals. This hence requires the implementation of Strategic Human Resource Management system at NEL ltd.

In addition, in the Indian context the new tax called 'goods and services tax (GST)' is an extra additional cost incurred to the oil and natural gas organisations since they should comply to both current tax and the GST tax framework. This affects almost all segments such as piped natural gas and hence NEL should look into the ways on how the organisation could become competitive despite increasing taxes.

Furthermore, for the management of information and knowledge in the organisation, NEL should invest in ample state of the art software resources such as ERP solutions which could aid proper communication of information. Furthermore, they should promote innovations and digitisation to achieve better financial benefits.

5.3.2 Recommendations for future researches

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The present research has a limited scope since it examined the importance of implementing new projects at NEL ltd to achieve competitive advantage in India. Though the research on the whole examined the ways of improving financial growth through a qualitative research, a quantitative research is warranted which should generally cover the details on achieving competitive advantage in the Indian oil and natural gas industry. Whilst the present research focuses on the ways of achieving competitive advantage in the select organisation, a quantitative research could be conducted which should collect information from participants

[3] http://www.ey.com/Publication/vwLUAssets/HR_challenges/$FILE/HR_challenges_in_the_Indian_oil_and_gas_sector.pdf

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belonging to various oil and natural gas companies in India so that an extensive view could be acquired. Furthermore a strategic plan is recommended to be devised by NEL to reach its business objectives wherein the plan is ~~as follows~~provided in Appendix I.~~:~~

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~~Appendix~~APPENDICES

1. APPENDIX A - PROPOSAL

2. APPENDIX B - RESEARCH PLANNING LOGS

Stages/ Activities of the research	June , 2017	July , 2017	August, 2017	September, 2017	October, 2017
Topic selection					
Assessment of previous researches					
Market analysis					
Conducting interviews					
Writing the dissertation- Literature review, Methodology and Introduction					
Analysis of collected data					
Interpreting					

collected data					
Writing the discussion					
Submission of dissertation					

3. **APPEN~~DIX~~DIX - C - INTERVIEW TRANSCRIPTS**

4. **APPENDIX D - FINANCIALS - PROJECTED KPIS**

i. D1) Cost Optimisation

ii. D2) Differentiation - (to show 25% premium can be charged for differentiated services)

PORTFOLIO - PROPOSED PROJECT MIX
Conventional Shallow-water Engineering Projects
Proposed Specialized Differentiated Engineering Projects
Proposed Deep-water and Subsea (SURF) Engineering Projects
Proposed Onshore Pipeline Engineering Projects
Proposed Pipeline and Structural Integrity Projects
Proposed Miscellaneous

~~ii.~~

iii. D3) Diversification

- D3.1) Deepwater

Investments / Expenses Particulars	Estimated Investments / Expenses (Million INR)				
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Capital Investment	-	-	-		
Specialized Training (10 Engineers)	₹ 9.61	₹ 0.00	₹ 0.00		
Pipeline Buckling and FE Analysis software - ABAQUS (2 licenses)	₹ 5.00	₹ 0.00	₹ 0.00	₹ 0.00	₹ 0.00
Pipeline Flow Assurance software - OLGA (1 license)	₹ 10.00	₹ 0.00	₹ 0.00		

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Animations software - 3dsMax (1 license)	₹ 0.50	₹ 0.00	₹ 0.00
External Experts (6 nos) for 1 Year	₹ 110.74	₹ 0.00	₹ 0.00
Other Expenses			
Wages Payable	₹ 18.00	₹ 22.68	₹ 27.78
Office Rent	₹ 5.11	₹ 6.44	₹ 7.88
Training	₹ 0.63	₹ 0.79	₹ 0.96
Computer	₹ 1.00	₹ 1.26	₹ 1.54
Softwares	₹ 2.00	₹ 2.52	₹ 3.09
Marketing / Advertising	₹ 1.00	₹ 1.26	₹ 1.54
Travel	₹ 1.00	₹ 1.26	₹ 1.54
Utilities /Misc. Expenses	₹ 0.60	₹ 0.76	₹ 0.93
Other Expenses	₹ 0.50	₹ 0.63	₹ 0.77
Initial Capital Investment	₹ 135.85	₹ 0.00	₹ 0.00
Total Expenses	₹ 29.83	₹ 37.59	₹ 46.05

- D3.2) Onshore Pipelines

Investments / Expenses Particulars	Estimated Investments / Expenses (Million INR)				
	1st Year	2nd Year	3rd Year	4th Year	5th Year
Capital Investment					
Specialized Training (10 Engineers)	₹ 3.20	₹ 0.00	₹ 0.00	₹	
External Experts (4 nos) for 6 Months	₹ 18.46	₹ 0.00	₹ 0.00	₹	
Other Expenses					
Wages Payable	₹ 18.00	₹ 22.68	₹ 27.78	₹	
Office Rent	₹ 5.11	₹ 6.44	₹ 7.88	₹	
Training	₹ 0.63	₹ 0.79	₹ 0.96	₹	
Computer	₹ 1.00	₹ 1.26	₹ 1.54	₹	
Softwares	₹ 2.00	₹ 2.52	₹ 3.09	₹	
Marketing / Advertising	₹ 1.00	₹ 1.26	₹ 1.54	₹	
Travel	₹ 1.00	₹ 1.26	₹ 1.54	₹	
Utilities /Misc. Expenses	₹ 0.60	₹ 0.76	₹ 0.93	₹	
Other Expenses	₹ 0.50	₹ 0.63	₹ 0.77	₹	
Initial Capital Investment	₹ 21.66	₹ 0.00	₹ 0.00	₹	
Total Expenses	₹ 29.83	₹ 37.59	₹ 46.05	₹	

- D3.3) EPC (to show 15 % profile after 5 years possible)

OPTION 1 Full EPCICM contract by NEL as SINGLE Entit

Investments / Expense Estimate:	25 million USD	50 million USD	75 million USD	100	150
Investments / Expenses Particulars	Estimated Investments / Expenses (Million INR)				
	1st Year	2nd Year	3rd Year	4th Year	5th Year
OVERALL PROJECT TARGETs (in terms of Total BID Value)	₹ 881.15	₹ 1,762.30	₹ 2,643.45	₹ 3,524.60	₹ 5,286.90
EXPECTED PROFITs	₹ 24.23	₹ 48.46	₹ 145.39		
TOTAL EXPECTED UPFRONT CAPITAL REQUIRED	₹ 660.86	-	-	-	-
	-	-	-		
PROJECT COSTs	-	-	-		
General (Projects + Sub-Contract Services)	₹ 72.09	₹ 144.19	₹ 204.27		
Engineering (Detailed + Construction + As-built)	₹ 72.09	₹ 144.19	₹ 204.27		
Procurement (Services + Manufacturing + Delivery)	₹ 648.85	₹ 1,297.69	₹ 1,838.40	₹	
Onshore Fabrication and Loadout	₹ 0.00	₹ 0.00	₹ 0.00		
Transportation	₹ 0.00	₹ 0.00	₹ 0.00		
Offshore Works (Installation + Modification)	₹ 0.00	₹ 0.00	₹ 0.00		
	-	-	-		
Initial Capital Investment	₹ 660.86	-	-		
Total Exepenses	₹ 793.03	₹ 1,586.07	₹ 2,246.93	₹	

OPTION 2 Joint Venture / Consortium - EP & M by NEL CIC by others

Investments / Expense Estimate:	25 million USD	50 million USD	75 million USD	100	150
Investments / Expenses Particulars	Estimated Investments / Expenses (Million INR)				
	1st Year	2nd Year	3rd Year	4th Year	5th Year
OVERALL PROJECT TARGETs (in terms of Total BID Value)	₹ 1,602.09	₹ 3,204.18	₹ 4,806.27	₹ 6,408.36	₹ 9,612.54
EXPECTED PROFITs	₹ 80.10	₹ 160.21	₹ 480.63		
TOTAL CAPITAL	₹ 2,000.00	-	-		
	-	-	-		
PROJECT COSTs	-	-	-		
General (Projects + Sub-Contract Services)	₹ 76.10	₹ 152.20	₹ 216.28		
Engineering (Detailed + Construction + As-built)	₹ 76.10	₹ 152.20	₹ 216.28		
Procurement (Services + Manufacturing + Delivery)	₹ 684.89	₹ 1,369.79	₹ 1,946.54	₹	
Onshore Fabrication and Loadout	₹ 380.50	₹ 760.99	₹ 1,081.41	₹	
Transportation	₹ 76.10	₹ 152.20	₹ 216.28		

Offshore Works (Installation + Modification)	₹ 228.30	₹ 456.60	₹ 648.85	
Initial Capital Investment	₹ 2,000.00	₹ 0.00	₹ 0.00	
Total Exepenses	₹ 1,521.99	₹ 3,043.97	₹ 4,325.64	₹

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APPENDIX E - ~~Company Brochure~~COMPANY BROCHURE

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~~5.~~ APPENDIX F: SWOT ANALYSIS

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From the analysis through SWOT, the strengths of the NEL are obtained. The following factors are considered as the strengths which can support and help the organisation for further improvement. Since NEL has the reputed name in Domestic market, it gained a substantial recognition in the offshore oil & gas industry in India and Middle East. It has the excellent track record of performance in project implementation, since it is located in Mumbai and it becomes the very close to the main Client ONGC. The Diversified services portfolio helps the organisation to manage multiple engineering disciplines. It follows the one stop Engineering, Procurement and Construction (EPC) solution to upstream offshore oil & gas industry. NEL employed the highly skilled and experienced human resources, exposed to state-of-the art technologies in project execution. The company got the ISO 9001 - 2008 quality certification from the Indian government and added a feather to its strength. The company is always looking to provide the high brand equity among shareholders and high credit ratings as the indicative of the confidence of lenders. In-house training facility offered by the company that assists the development of the sector. State-of-the-art IT infrastructures and other facilities supported NEL to access the high-end engineering software for the purpose of accessing the upstream offshore oil & gas industry. Finally, the low production cost compared to the other multinational companies in this sector makes it as one of the competitive industries in India.

SWOT helped us to find the areas where the company needs to concentrate and where it is lagging when compared with the other oil corporations. In the process of decision making, there is a cross-sectional perspective functional orientation hampering cross-functional perspective in decision making. There is no standard strategy in place to follow and no Man-hours norms of NEL's own (inherited from NPCC) and is the main basis of the business. This may cause operational ineffectiveness, inadequate deployment of a strong

knowledge management system that could assist in improving efficiency and effectiveness in all aspects of the business, hierarchy for decision making that affects responsiveness, no expertise in Deep water; FPSO; onshore; subsea equipment technologies, gaps in HR systems, no holistic and strategic HR management system, high attrition rates among employees, absence of Digital Technology and customer relationship software to quickly understand the needs of the customer, lack of experienced and dedicated persons for marketing, business highly connected and vulnerable to Oil & Gas prices, no franchise for the industry outside India and Middle East. Effective use of websites, technology, media communications and social networking from offices affects the company and pulling it backwards from the success. NEL has to depend upon NPCC Abu Dhabi for decisions, as it is perceived as low end production house for NPCC. NEL had no broad customer portfolio and no direct client on its own. Codes, standards, and software are shared from NPCC.

Figure : SWOT analysis

Strengths	Weaknesses
- heavy investment and strong focus on oil & Gas Company - increasing efficiency of processes, reducing flow problems etc., which has resulted in improved production - Robust production capabilities - strong financial performance - strong acreage position coupled with its integrated business operations - strong market reputation	- Less focus on offshore and deep water projects
Opportunities	**Threats**
- Increasing energy demand in global as well as the domestic Indian market - Strategic acquisitions of national and overseas exploration blocks and oil and gas properties and similar agreements will help increase its revenues	- Geopolitical risks especially from the international sanctions on Iran - the second largest petroleum exporter to India can push up oil prices, increase India's import oil bill and thus affect its businesses severely. - Subsidy burden - A highly competitive market with numerous private players - global economic scenario and political and economic volatility

Source: Author, 2017

NEL can take advantages over the huge opportunities in the Indian and Middle East sectors in coming years. Favourable government policies and operational innovations

provides the new way of doing the business in the untapped market around the world. Entering into the new technologies such as deep water, LNG, subsea equipment, onshore refineries, CBM, shale oil and gas technologies, drilling rig designs etc. may increase the customer base within India and around the world, joint ventures, and acquisitions with other companies in high-end technology areas.

But some of the factors may affect the growth of the industry. They are the stringent environmental norms in the future that may add to the cost. Emergence of natural gas in the energy mix will change the business in coming years. Joint ventures of foreign players with Indian companies to get access in the Indian market. OPEC and world Geopolitics play dominant role in fixing Oil & Gas prices which in turn fluctuate projects investments. Oil & Gas reserves depletion in shallow water requires exploring deep water and other previously inaccessible areas, which requires new technology. One-sided Government policies and contract clauses are the low entry barriers in the business and the threat of substitution.

APPENDIX G: PESTLE ANALYSIS

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In the present study, PESTLE analysis was conducted to present strategy and risk management for the conventional shallow water offshore oil & gas engineering companies to remain competitive in the challenging market.

The PEST analysis on the company provided with the following results.

Figure: PESTLE Analysis

Political	**Economic**	**Social**
- No policy for oil consumption - Government of India supports selling hydrocarbon reserves to private companies; however, more emphasis is upon domestic companies (Ashish et al., 2014). **Status**: Unfavourable	- Fuel price inflation has a significant impact on the nation's GDP. Hence oil and natural gas corporations in the nation have better prospects of achieving great financial benefits. **Status**: favourable	- Indian is one among the most populous nation and hence the demand for oil in the domestic market will increase every day. Hence social factors support NEL to operate in the nation and might make an impact in India. **Status**: favourable
Technological	**Legal**	**Environmental**
- India is a developing nation wherein it supports vast Research and Development scenarios especially in cases of businesses that improve the GDP of the nation. Hence technological factor favours NEL Ltd - NEL Ltd is making continuous strides to perform R&D and its operations in India will be favoured **Status**: favourable	- Pollution has become a major problem in the Indian sub-continent wherein the nation is looking forward for new renewable technologies. Legally, some states are implementing strategies to cut carbon emission. This might become disadvantageous for NEL Ltd but might not have a major impact **Status**: Unfavourable	- Carbon emission is a serious issue in a developing nation like India; if new environmental policies are implemented in the future with respect to constricted vehicle usage, reduced usage of fuels and so on, it might have adverse effects on oil and natural gas corporations **Status**: Unfavourable

The political factors play a great role, influencing the petroleum industry. The governments' control on the hydrocarbon reserves allows them to sell the concessions to different companies or to the companies in which the governments have vested interests. This allows government to give exclusive rights to particular companies to produce and explore the reserve within a particular area over a particular time horizon. This naturally lets the government favour their domestic companies rather than their international or foreign counterparts (Ashish et al., 2014).

Also the various political decisions on cleaner energy are also going to significantly impact the petroleum industry,.and have adverse effects on the growth of the company. However, inflation has a very significant impact on the oil industry, not only the domestic but the international economy too has a very direct effect on the oil industry's development. The unemployment rate in India also has an effect on the petroleum industries as the unemployment rate slows economic growth leading to substantial decrease in the GDP (Ashish et al., 2014). In addition to GDP, the other factor that significantly affects the industry is the value of dollar, the currency in which oil is traded internationally. As the value of dollar falls, the companies push the price of the oil so that they get at least the same price of the oil as before. Socio cultural factors directly affect the life styles, values and beliefs of societies where the companies operate. These factors in turn cause the raise for demand of alternate clean energy, which in turn might affect the industry (Ashish et al., 2014).

From the analysis through the PESTLE analysis, we find that the government controls the hydrocarbon reserves that cover 75% of world reserves and they have the authority to control the Oil & Gas prices, FDI Liberalization that augments growth. On the other hand, the government restricts the growth of the oil and gas company. Government regulations and increasing influence of NGO's in the Largest Democracy that supports the growth but they are affected by the global conflicts, terrorism and crime in the country. Stable Indian Government focuses on oil production growth and spends hundreds of Billions on Deep water reserves.

India is one of the world's fastest growing economies with the growth rate of 7.3%. India is the fourth largest consumer of energy in the world with the large energy supply and demand gap - Imperative E & P activities are significant in discovering the oil -shrinking of

petroleum reserves. Reserves depletion causes the large capital requirements. Oil & Gas Fluctuating prices, unemployment - highly sidled people available, ONGC monopoly, joint ventures, consortium with foreign companies, mergers, acquisitions and divestments and rate of mitigation, US dollar exchange rate fluctuation or US Economy have a huge impact on the Indian economy.

It is possible to reach more and more oil that was previously too expensive. Technological development has a significant advantage over companies. Since India's technological environment is rapidly changing, activities related to oil & gas are driven extremely through the modern technology. The updated technologies are useful in exploiting the unconventional resources at ultra-deep water, gas, coal bed methane extraction technologies. On the whole, the PESTLE analysis revealed that NEL ltd has equal chances of getting better financial results in the nation as well as will be challenged by certain specific factors.

APPENDIX H: QUANTITATIVE ANALYSIS

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The researcher conducted a questionnaire based survey with 27 participants and collected data. The important results were added to the main document whereas the supplementary results are added in the appendix here:

Figure : Premium Rates to charge

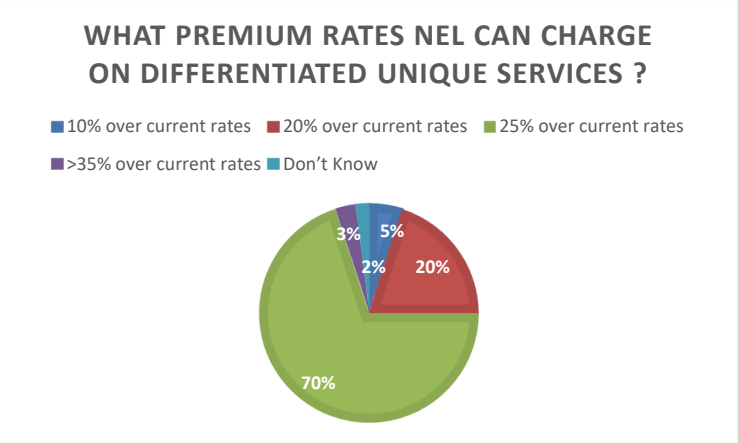

Table : Premium Rates to charge

What premium rates NEL can charge on differentiated unique services ?	
10% over current rates	5%
20% over current rates	20%
25% over current rates	70%
>35% over current rates	3%
Don't Know	2%

Figure : Engineering revenue target for 5 years

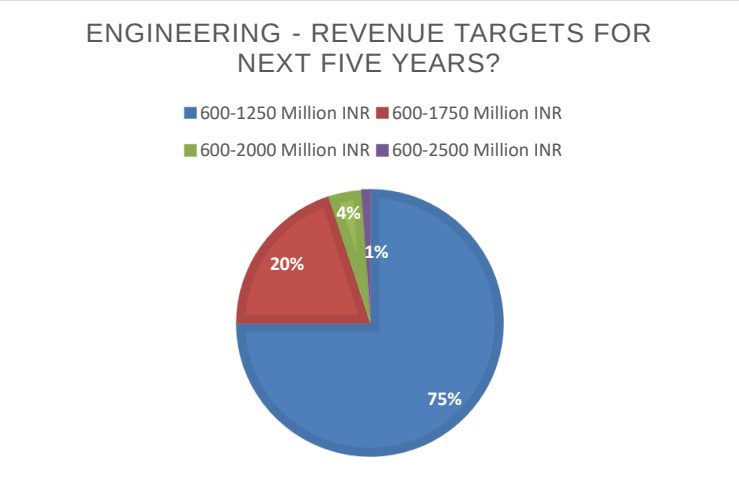

Table : Revenue target for 5 years

Engineering - Revenue targets for next five years?	
600-1250 Million INR	75%
600-1750 Million INR	20%
600-2000 Million INR	4%

600-2500 Million INR	1%

Figure: EPC revenue targets for next 5 years

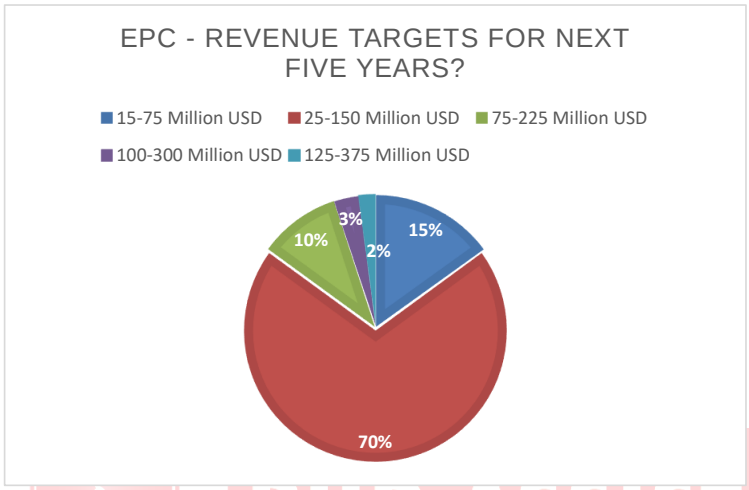

Table: EPC revenue targets for next 5 years

EPC - Revenue targets for next five years?	
15-75 Million USD	15%
25-150 Million USD	70%
75-225 Million USD	10%
100-300 Million USD	3%
125-375 Million USD	2%

Figure : Minimum Bid value target for EPC projects

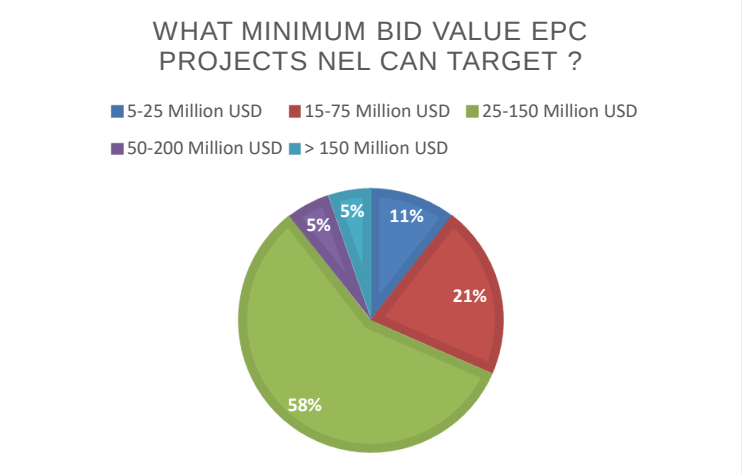

Table : Minimum Bid value target for EPC projects

What minimum BID value EPC Projects NEL can target ?	
5-25 Million USD	10%
15-75 Million USD	20%
25-150 Million USD	55%
50-200 Million USD	5%
> 150 Million USD	5%

Figure : initial upfront capital investment required for Engineering

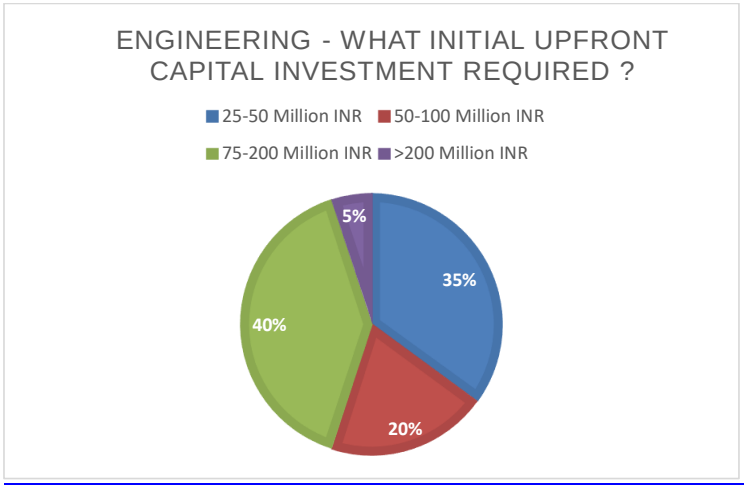

Table: initial upfront capital investment required for Engineering

Engineering - What initial upfront capital investment required ?	
25-50 Million INR	35%
50-100 Million INR	20%
75-200 Million INR	40%
>200 Million INR	5%

Figure: Initial upfront capital investment required for EPCICM

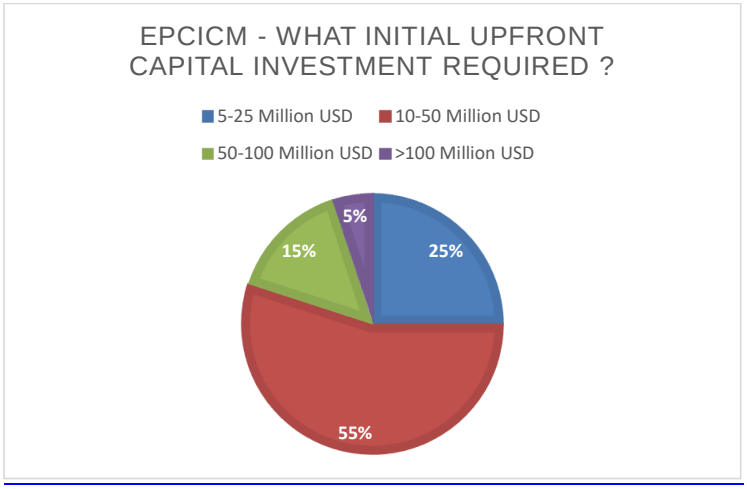

Table : Initial upfront capital investment required for EPCICM

EPCICM - What initial upfront capital investment required ?	
5-25 Million USD	25%
10-50 Million USD	55%
50-100 Million USD	15%
>100 Million USD	5%

Figure : Organisational structure changes- Enginerring

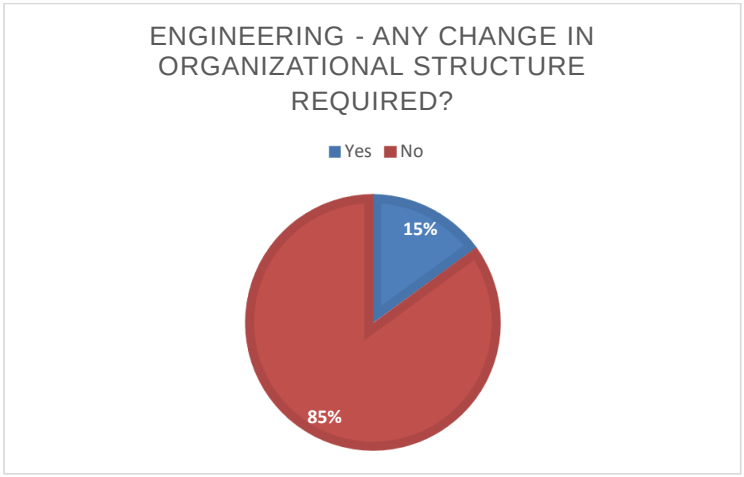

Table : Organisational structure changes- Enginerring

Engineering - Any change in Organizational Structure Required?	
Yes	15%
No	85%

Figure : Organisational structure changes- EPCICM

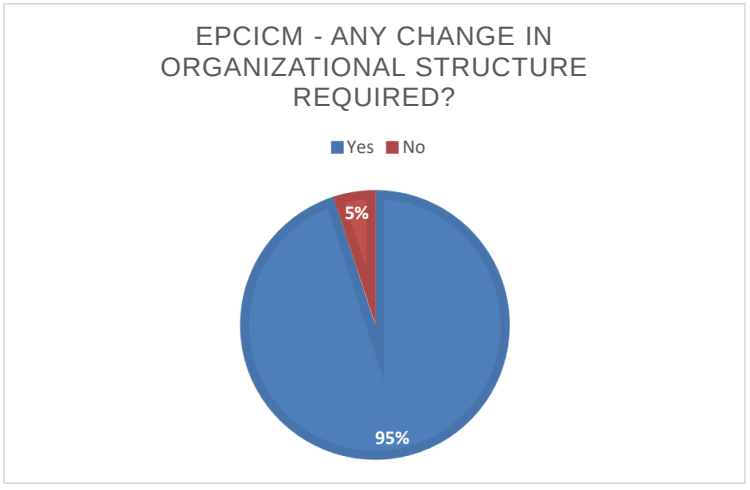

Table : Organisational structure changes- EPCICM

EPCICM - Any change in Organizational Structure Required?	
Yes	95%
No	5%

Figure : Competencies and Trainings required for Deepwater (SURF) Engineering

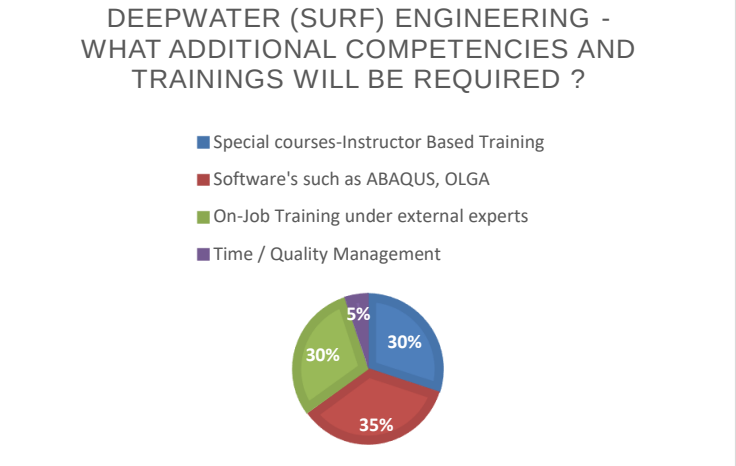

Table : Competencies and Trainings required for Deepwater (SURF) Engineering

Deepwater (SURF) Engineering - What additional Competencies and Trainings will be required ?	
Special courses-Instructor Based Training	30%
Software's such as ABAQUS, OLGA	35%
On-Job Training under external experts	30%
Time / Quality Management	5%

Figure : Competencies and Trainings required for Onshore pipeline Engineering

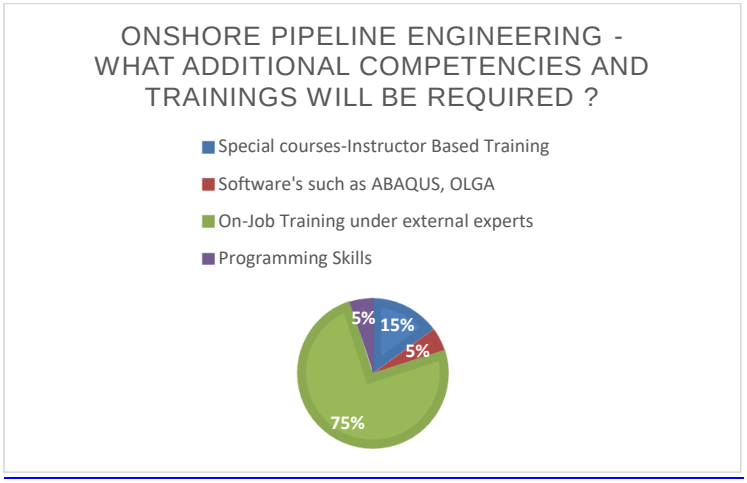

Table : Competencies and Trainings required for Onshore pipeline Engineering

Onshore Pipeline Engineering - What additional Competencies and Trainings will be required ?	
Special courses-Instructor Based Training	15%
Software's such as ABAQUS, OLGA	5%
On-Job Training under external experts	75%
Programming Skills	5%

Figure : Competencies and Trainings required for EPCICM

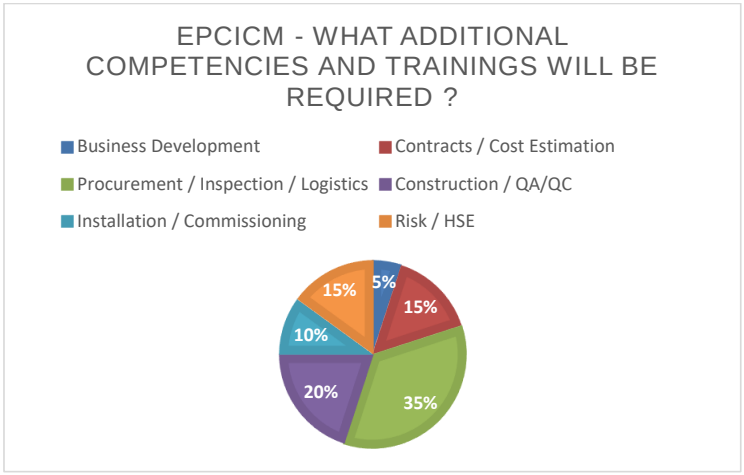

Table : Competencies and Trainings required for EPCICM

EPCICM - What additional Competencies and Trainings will be required ?	
Business Development	5%
Contracts / Cost Estimation	15%
Procurement / Inspection / Logistics	35%
Construction / QA/QC	20%
Installation / Commissioning	10%
Risk / HSE	15%

Figure: NEL success in Engineering and EPC services

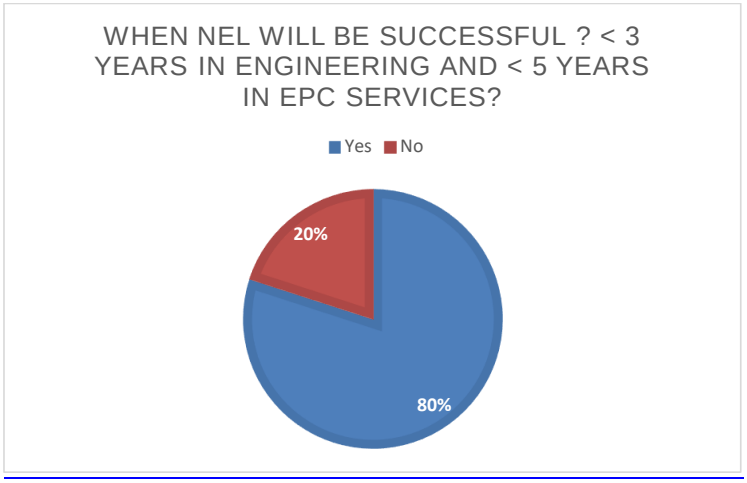

Table: NEL success in Engineering and EPC services

When NEL will be successful ? < 3 years in Engineering and < 5 years in EPC Services?	
Yes	80%
No	20%

Figure: Financing for NEL's specialised engineering services

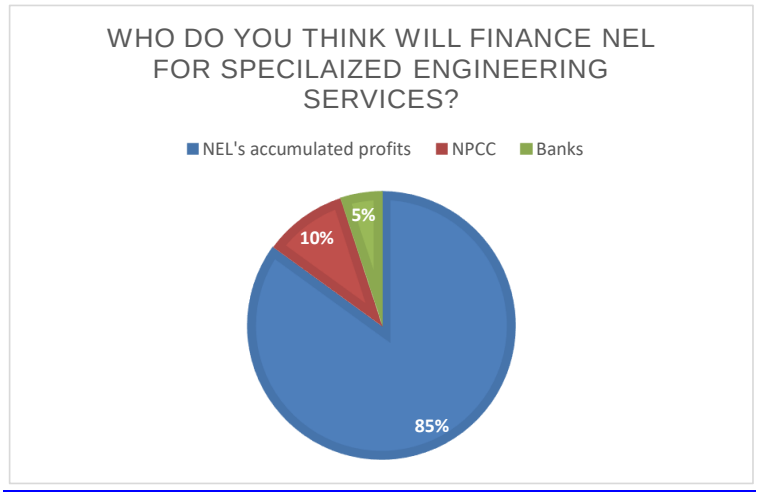

Table: Financing for NEL'S specialised engineering services

Who do you think will Finance NEL for specilaized engineering services?	
NEL's accumulated profits	85%
NPCC	10%
Banks	5%

Figure: Financing for NEL'S EPCICM services

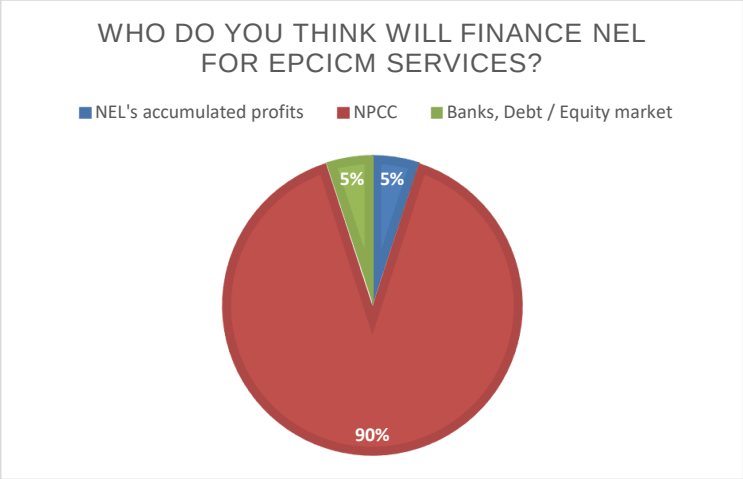

Table: Financing for NEL'S EPCICM services

Who do you think will Finance NEL for EPCICM services?	
NEL's accumulated profits	5%
NPCC	90%
Banks, Debt / Equity market	5%

Figure : Risk management for NEL

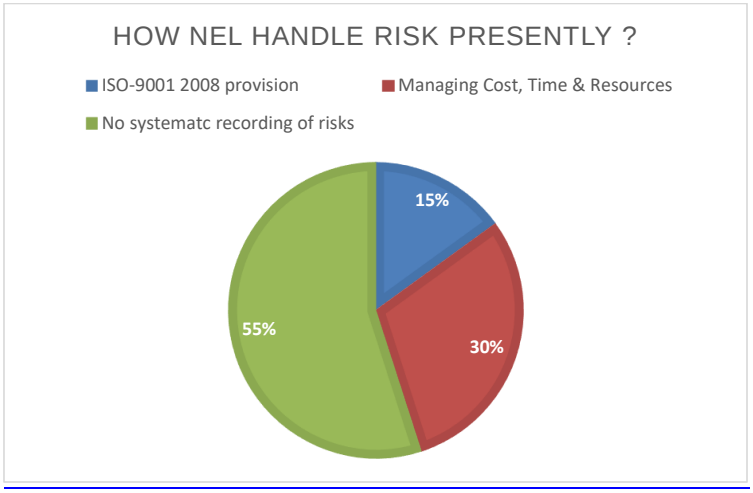

Table : Risk management for NEL

How NEL handle Risk Presently ?	
ISO-9001 2008 provision	15%
Managing Cost, Time & Resources	30%
No systematc recording of risks	55%

Figure : Mixture of projects for risk mitigation

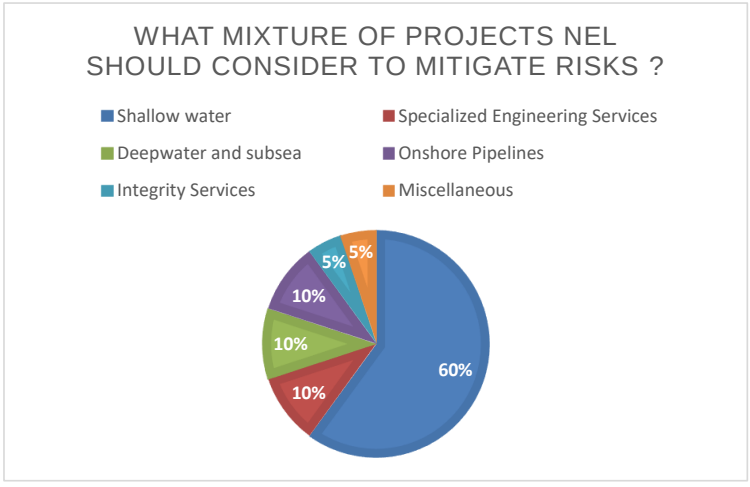

Table : Mixture of projects for risk mitigation

What mixture of projects NEL should consider to mitigate risks ?	
Shallow water	60%
Specialized Engineering Services	10%
Deepwater and subsea	10%
Onshore Pipelines	10%
Integrity Services	5%
Miscellaneous	5%

Figure : Achieving sustainability

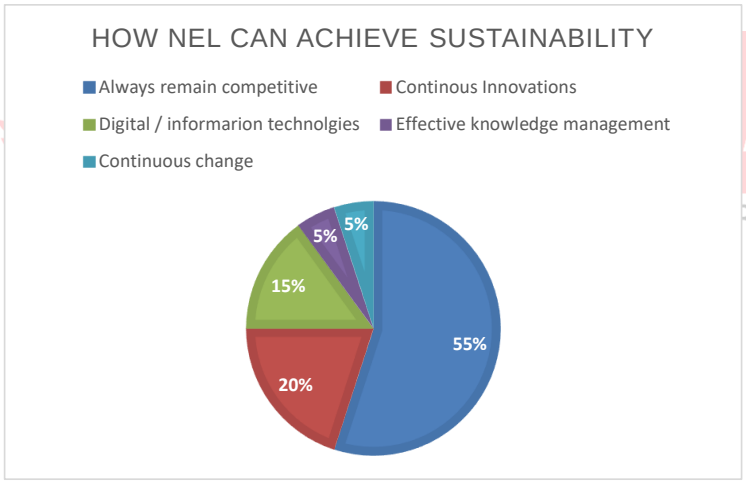

Table : Achieving sustainability

How NEL can achieve sustainability	
Always remain competitive	55%
Continous Innovations	20%
Digital / informarion technolgies	15%

Effective knowledge management	5%
Continuous change	5%

APPENDIX I: STRATEGIC PLAN

Company Name: NEL Ltd
Prepared by: _____
Dated: _____

1. Where were we in the PAST?

- Onshore Oil and Gas Industry

2. Where are we in the PRESENT?

- Onshore and offshore Oil and Gas Industry

3. Where should we go in the future? (Vision)

- Deep Water Oil and Gas industry

4. Mission statement

- To improve the base of the subsidiary organisation to become a standalone firm

5. Values

- The organisation aspires to involve in deep water oil and gas extraction
- New training programmes are developed to empower employees on deep water oil and gas operations

6. Critical obstacles

- Financial obstacles
- Need for skilled labour

8. Long term goals

- Become a top organisation in the oil and gas industry specific to the deep water segment

9. Short term goals

- Partner with firms to achieve competitive advantage

10. Benchmarks for success

- Achieving improved productivity every 3 months
- Increase in manpower

1.1 Monitoring and revising the plan

Every 3 months

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