

Chapter 3

Research Design

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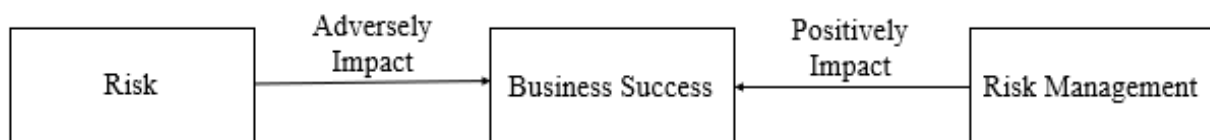
3.1 Background

Having selected the topic of the research Study in Chapter 1 and also confirming the rationale of the need of the same in Chapter 2, the next logical step is to develop the Research Design of the Study. Research takes its course according to the research design. This section covers the basic research framework, research questions, problem statement, research objectives, delimitations of the Study and the Research Methodology. At the beginning, a very broad level understanding was available about the relationships the three constructs have amongst themselves. But more data and insights were required to proceed. To address this, a combination of exploratory research followed by explanatory research was adopted that is unfolded subsequently.

3.2 Basic Research Framework

Figure 3.2.1 below gives the basic research framework that comprises 3 basic constructs – risks, business success and risk management.

Figure 3.2.1: Basic Research Framework



The basic premise of this Study has been that risks adversely impact business success of any EPC organization while risk management positively impacts business success.

The Study was initiated on this basis.

3.3 Research Questions

The Indian thermal power sector is going through a very difficult situation. All organizations connected to this sector, especially the EPC organizations, are struggling. Many have exited the sector and only a few EPC organizations are still in the business. For the business success of these EPC organizations, it is essential to find answers to the following two basic research questions:

1. What are the Critical Risk Factors (CRF) that adversely impact the Business Success of EPC organizations in the Indian thermal power sector and how do they impact?

2. What are the Risk Mitigation Strategies (RMS) that positively impact the Business Success of EPC organizations in Indian thermal power sector?

In order to find answers to the above questions, the Researcher undertook the research problem, **Managing Risks for Sustained Business Success of EPC Organisations working in Indian Thermal Power Sector.**

3.4 Research Objectives

Based on the research questions given in section 3.3, the following two research objectives were developed:

1. (a) to develop the Critical Risk Factors (CRF), (b) to develop the Business Success Indicators (BSI) that define both the Short-Term and Long-Term Business Success, (c) to find the contributions of CRFs under different groups to total risk and (d) to find the impact of Critical Risk Factors (CRF) on the Business Success Indicators (BSI),
and
2. (a) To develop a set of Risk Mitigation Strategies (RMS) and (b) to find the impact of the Risk Mitigation Strategies (RMS) on the Business Success Indicators (BSI).

3.5 Research Design

Adedoyin (2020) said that research is a well-structured inquiry about some phenomenon, for the purpose of ascertaining facts and logical conclusions. Research in social science context is designed for human beings in a society. While the field of natural sciences deals with the study of physical world, social science studies human behaviour, views etc. Research in management is generally comes under the domain of social and sociological science disciplines. Mitchell (2015), said that researchers must decide on the research questions, theoretical perspective to guide the research, key constructs, who/ what/ how/ people/ places/ things to be sampled and which analytical techniques to be employed.

Literature provides different types of research designs and classifications from different perspectives. According to Neuman (2014), type of social research is dependent on the dimensions, applications and the main users of research. This resulted in two types of social researches - basic and applied research. Basic research is also called as fundamental research or pure research and the same is used more in scientific research that primarily focuses on creation of new knowledge and/or enhancement of existing

knowledge. Applied research, on the other hand, is an inquiry conducted to develop solutions to certain real-life problems. Literatures have differentiated these two types of researches. Akhtar (2016), Neuman (2014), Surbhi (2018) and Lancaster Bible College (2021) have given the comparisons of basic and applied researches and the major ones are given in Table 3.5.1 below:

Table 3.5.1: Basic and Applied Research

Basis of Comparison	Basic Research	Applied Research
Purpose / Goal	Create/expand understanding within an area of concern	Find solutions to specific problems
Orientation	Theoretical	Practical
Context	Controlled research environments	Real-life settings
Utility	Universal	Limited to the issues related to research
Scope and Approach	Explores identified gap within a broader area of concern and develop new information	Examines a specific problem within specific subject and develop solutions to the same
Motivation	Knowledge /Curiosity driven	Solution driven
Impact	Academic writing and publications	Direct application in offering solution to the problems

The present Study is in the field of applied research since the topic is very specific and critical to a particular industrial sector and a solution is sought for the organizations getting impacted.

From the research design point of view, Akhtar (2016) gave four basic types of research design – exploratory, descriptive, exploratory and experimental as explained below:

1. Exploratory research: According to Akhtar (2016), it is the primary stage of research where the objective is to get more insights to formulate a problem for

accurate investigation or for developing and testing hypothesis. Exploratory research is used to investigate a problem which is not clearly defined. Here, the researcher starts with a general idea and uses exploratory research to identify issues, that can be taken up for further study. Marlow (2005) defines exploratory research that generates insights into an issue and develops questions to be investigated for more extensive studies.

2. **Descriptive research:** Akhtar (2016) says that descriptive research answers the questions – what, who, where, how and when. It is widely used in the physical and natural science as well as in social sciences in socio-economic survey. Both quantitative and qualitative data can be gathered from a descriptive approach (Babbie, 2010; Babbie & Mouton, 2010; Struwig & Stead, 2001). However, descriptive studies focus more on quantitative data where large numbers of participants are involved.
3. **Explanatory research:** According to Akhtar (2016), hypothesis in explanatory research states the relationship between two or more variables. Explanatory studies focus on finding the ‘why’ aspect of co-relationships (McNabb, 2010). Strydom (2013) says that explanatory research tends to be deductive and thus quantitative in nature. Its intention is to generate data about relatively large numbers of cases making use of statistical analysis in the interpretation of the data (Adler & Clark, 2008:14-15). An explanatory study can also be inductive; thus, it may involve gathering qualitative data as well.
4. **Experimental research:** Akhtar (2016) says that experimental research is used to test a causal relationship under controlled environment. Here, the conditions are not allowed to change while experiment is going on. In experimentation, various types of evidence are controlled so that the alternative hypothesis can be tested, and causal relationship may be found out.

Again, from the point of type of information needed, there are two basic types of research – quantitative and qualitative. Research designs discussed above are quantitative in nature. Kabir (2016) indicated the need for data collection for the research and some of the primary data collection methods proposed by him are – questionnaire, interviews, focus group discussion (FGD), survey, case studies etc. He observed that it takes much less time to collect secondary data compared to primary data. Secondary data can be obtained for two different research types – Quantitative:

census, housing, electoral statistics and other related databases and Qualitative: semi-structured and structured interviews, focus group discussions, field notes, observation records etc. With the advent of electronic media and internet, the availability of secondary data has become even more easier. It can be obtained from published printed sources, books, journals/periodicals/e-journals, magazines, newspapers, websites, weblogs, government/ public sector records and notifications etc.

Looking at the various research designs and methodologies available, it was decided, in consultation with the supervisors, to adopt a combined approach of exploratory and explanatory research.

This Study has three basic constructs, as discussed earlier – risk, business success and risk management. A broad level idea about these constructs and their relationships were known at the beginning of the Study. To bring in more clarity and insights to firm up the objectives, boundary conditions, develop research hypotheses and decide on the detailed research approach, exploratory research was initiated through Pilot Study as a method of obtaining primary data. In parallel, data were also obtained from the secondary sources like literature review, risk map and case studies. Data obtained from both these primary and secondary sources helped the researcher to firm up the concepts and set a proper direction to the research. At the end of the exploratory phase, researcher was ready with the research hypotheses and the steps to be followed for the explanatory phase. Subsequently, the Study moved into the explanatory phase where survey questionnaire was prepared and final survey was conducted to obtain data for analysis, hypotheses testing and find relationships amongst the three constructs. This was followed by major findings, discussions and recommendations.

3.6 Delimitation of the Study

- This Research Study is delimited to EPC Organizations working in Indian Thermal Power Sector and building large size (coal: multiple units of 600/660/800/1000 MW size, gas: 200/400 MW and higher size) grid connected plants. Captive and small size power plants as well as oil fired power plants are excluded in the Study.
- Survey proposed required excellent knowledge, experience and understanding of EPC Business as well as the Indian Power Sector. In view of this critical requirement, Judgement sampling was adopted in survey of professionals

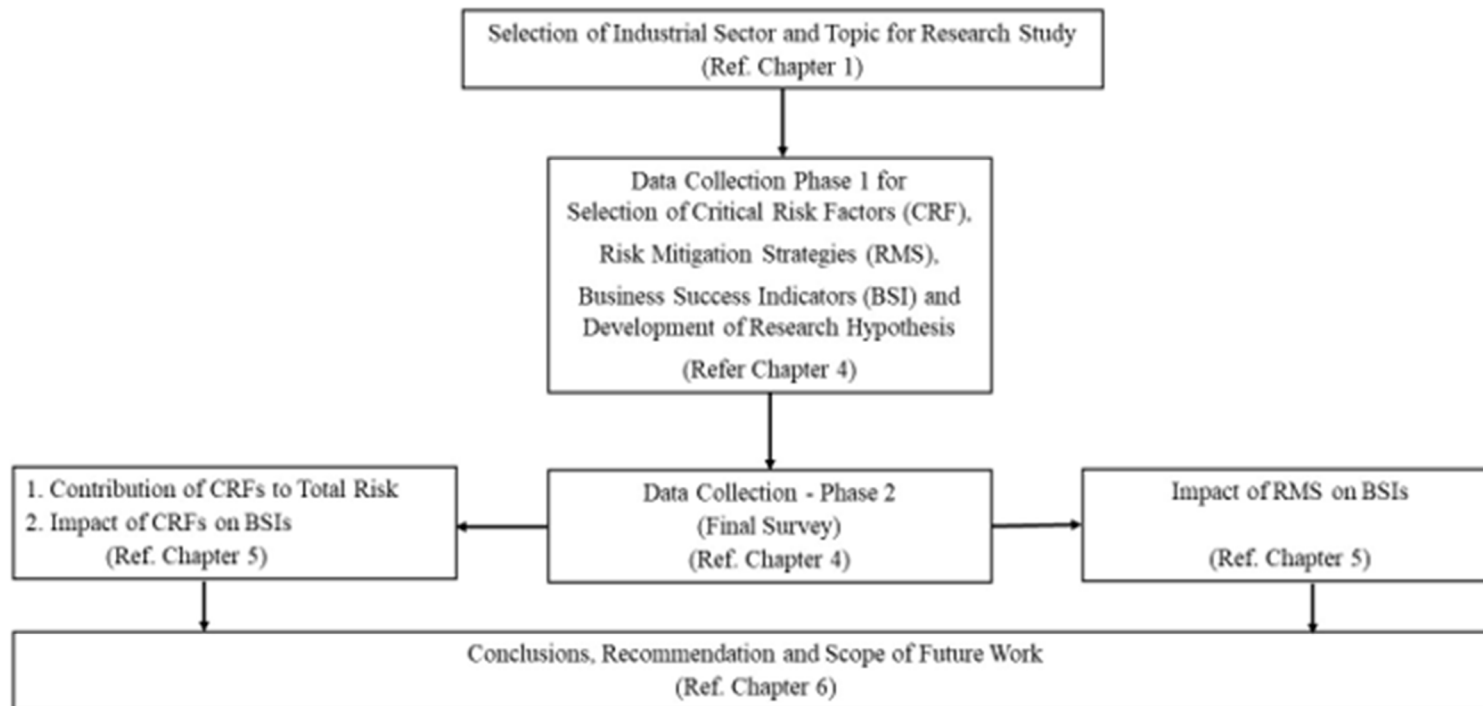
having minimum 10 Years' experience and above for both Pilot Study and Final Survey.

- Valid survey feedback received from 266 people from EPC Power Sector. While many of them were from L&T Group of Companies, around 17% professionals from Tractebel, DCPL, Mitsubishi, GE Power, Thermax, Doosan, Toyo, Sohar Power, ABB and other organizations also participated.
- While this Study has briefly discussed on Business Continuity and Disaster Recovery, it does not take into consideration the extra-ordinary external risks like impact of hostile take-over, mergers & acquisitions, liquidation of the organization, sudden closure of all existing operations etc.

3.7 Research Methodology

Figure 3.7.1 given hereinafter depict the Research Methodology adopted in carrying out this Study.

Research Methodology



Abbreviations

CRF: Critical Risk Factors
BSI: Business Success Indicators
RMS: Risk Mitigation Strategies

Figure 3.7.1

3.8 Summary

This section discussed on the research design to be followed looking at the problem. It has adopted a combination of exploratory research followed by explanatory research. Research Methodology as given in Figure 3.7.1 has been the guiding light till the end of the Study. It will be clearer as one go through this thesis as how more data and insights were gathered and Study moved ahead.