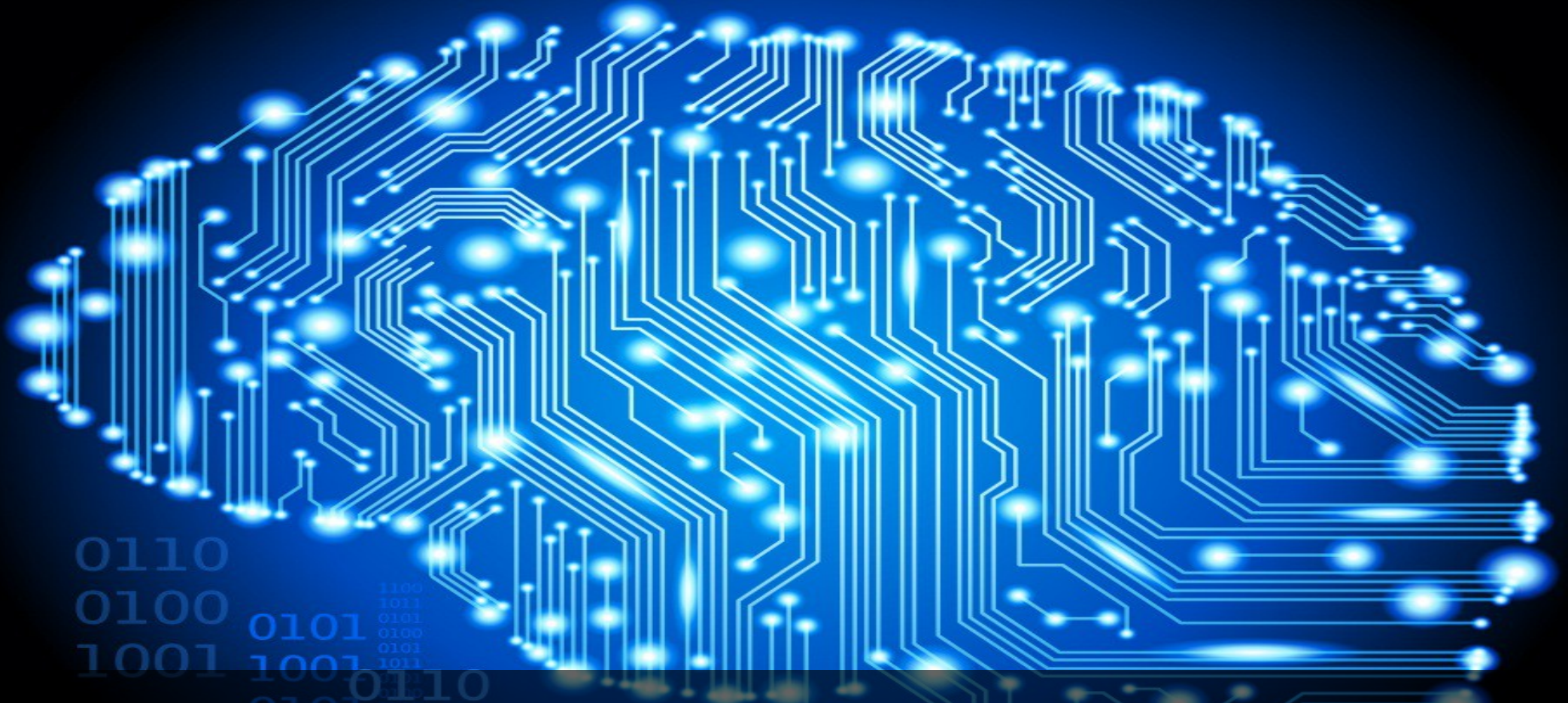


بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the name of Allah, Most Gracious, Most Merciful.

In the name of Allah, Most Gracious, Most Merciful.

In the name of Allah, Most Gracious, Most Merciful.



Predicting impact of risk factors on project cost performance -An Artificial Intelligence Model



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CONTENT OF PRESENTATION

❑ INTRODUCTION

❑ SIGNIFICANCE

❑ CONCEPTUAL MODEL

- PHASE I (Identification of key Risk Factors)
 - SURVEY DESIGN & CONDUCTANCE
 - DATA ANALYSIS
- PHASE II (Project based Data Collection)
 - SURVEY DESIGN & CONDUCTANCE
- PHASE III & IV (Model Development & Validation before Tool Development)

❑ CONCLUSION & FUTURE RESEARCH DIRECTIONS



INTRODUCTION

Research Brief

- The part of my Masters Degree.
- Over all aim to provide industry an Intelligent prediction model.
- To assess the impact of risk factors on project cost performance.

Objectives

- To identify and prioritize the key risk factors.
- To develop an intelligent prediction model.
- To develop a user friendly tool for industry after model validation.



INTRODUCTION (Contd.)

Scope and Limitations

- Construction of building projects.
- Contractor as a targeted stakeholder.
- Karachi based projects.
- Only considering the cost impact of risk factors.



SIGNIFICANCE

Problem Statement

Globally Construction industry,

- Had a poor reputation for coping with risk.
- Projects failing to meet deadlines and cost targets.
- Clients, contractors and others have suffered as a result.

(Thompson & Perry ,1995)

In Pakistan,

- Majority of projects suffered from its adverse impact i.e., cost over-run.
- Risk management being relatively novel rarely been researched.

(Choudhry & Iqbal, 2013)



SIGNIFICANCE (Contd.)

Justification

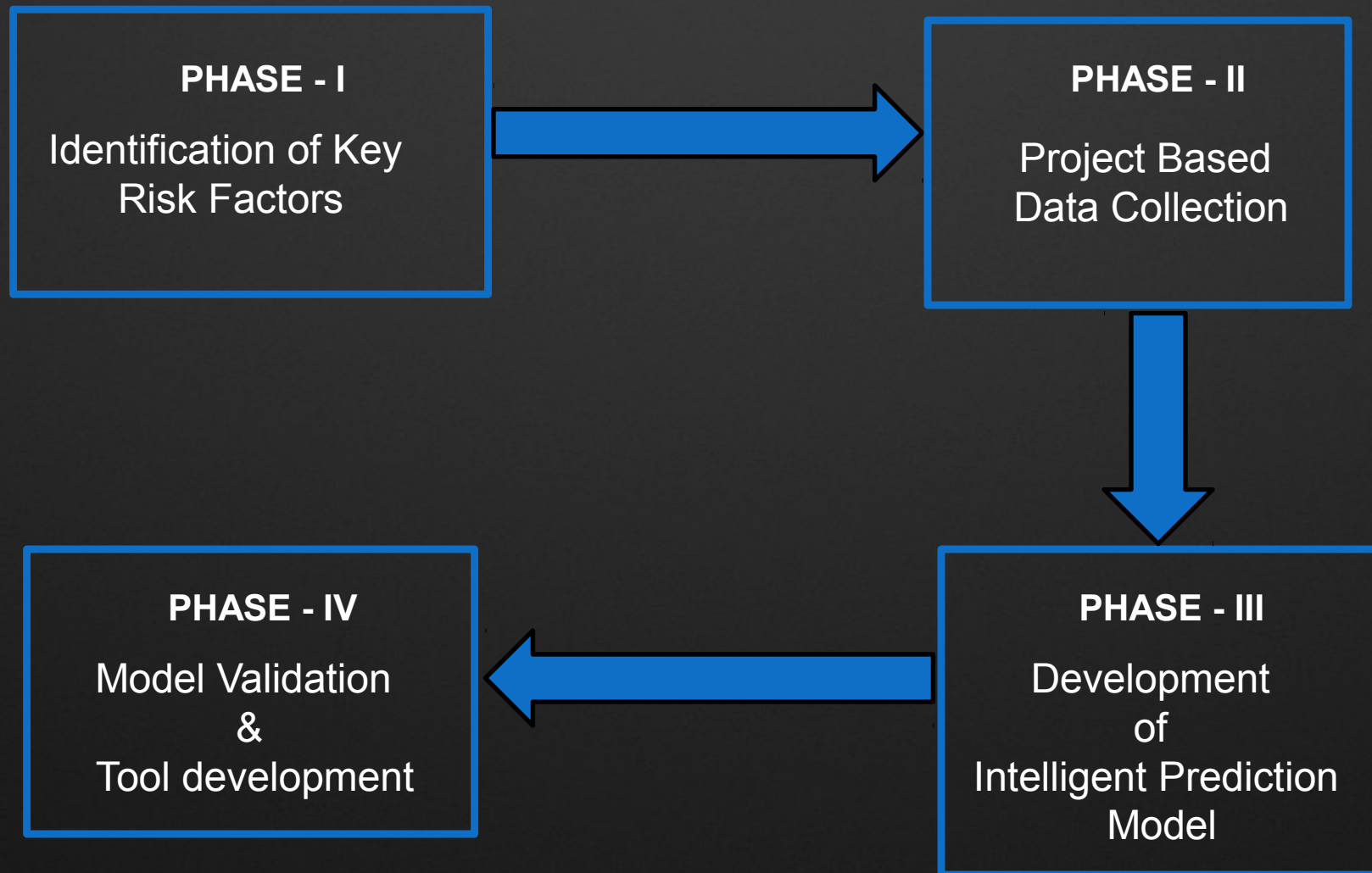
As a consequence,

- Risk management models are virtually non-existent.
- Left to experienced based thumb rules.
- Stakeholders should have a structured mechanism.
- Evaluate a project's vulnerability to cost overrun before it is too late.

So this study intends to develop intelligent prediction model to assess the impact of risks on project cost performance.



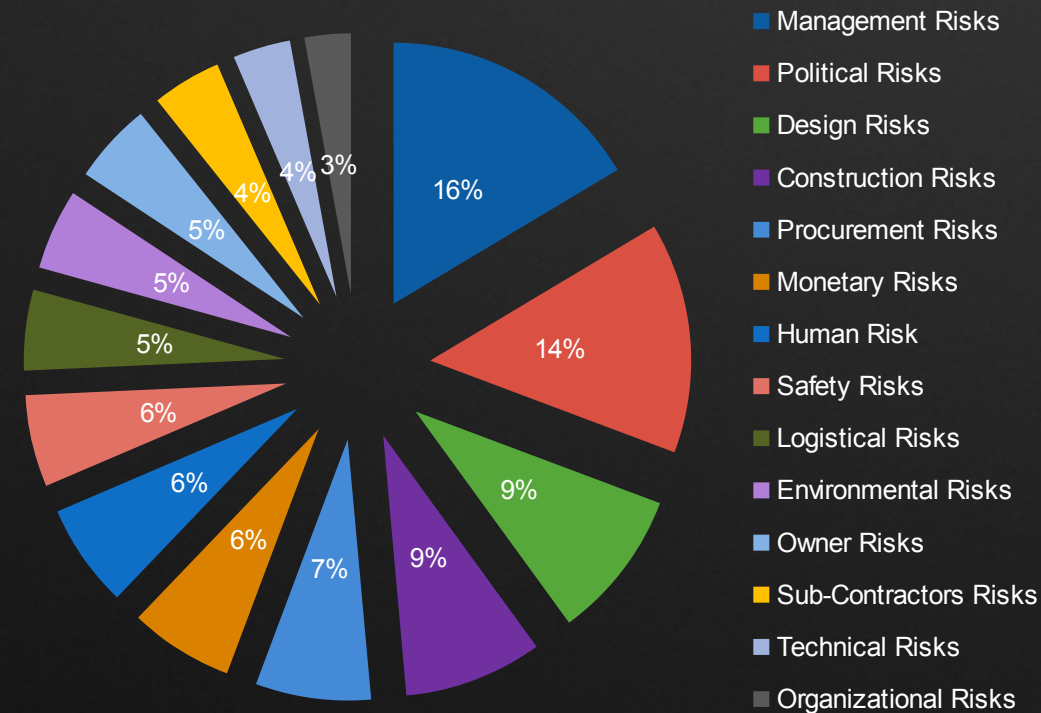
CONCEPTUAL MODEL



PHASE – I Identification of Key Risk Factors

Total 140 risk factors were extracted from different journal & Conference papers & were categorized in 14 different categories. (Skitmore et al , 2010, Zhang et al 2010, Pejman 2010 etc.)

S. No.	Risk factors Categories	Number of Risks Factors
1.	Design Risks	13
2.	Procurement Risks	10
3.	Construction Risks	12
4.	Safety Risks	08
5.	Monetary Risks	09
6.	Logistical Risks	07
7.	Management Risks	23
8.	Environmental and Natural Risks	07
9.	Political and Legal Risks	20
10.	Sub-Contractors Risks	06
11.	Human Risk	09
12.	Technical Risks	05
13.	Organizational Risks	04
14.	Owner Risks	07
Total		140



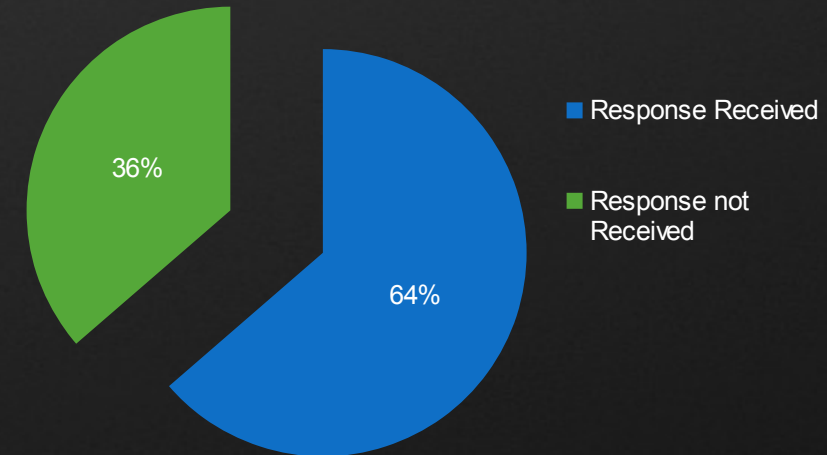
PHASE – I Identification of Key Risk Factors (Cont.)

Survey Design And Conductance:

- Questionnaire survey was designed for prioritization of risk factors.
- The questionnaire includes two sections,
 - **Section A:** Respondent's Information
 - **Section B:** List of 140 Risk factors

Experts with minimum work experience of minimum 15 years in the local construction industry were selected.

Respondents Approached	Response Received	Response Percentage
22	14	63.6%



Response of Survey 1

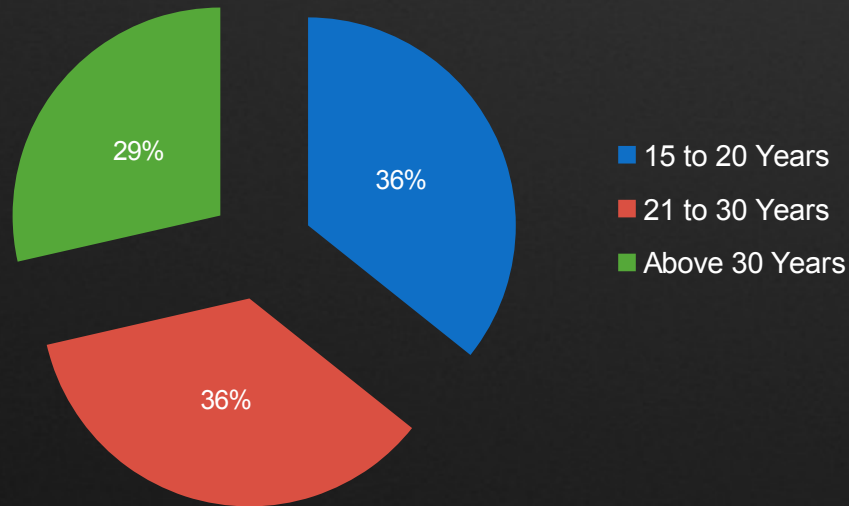


PHASE – I Identification of Key Risk Factors (Cont.)

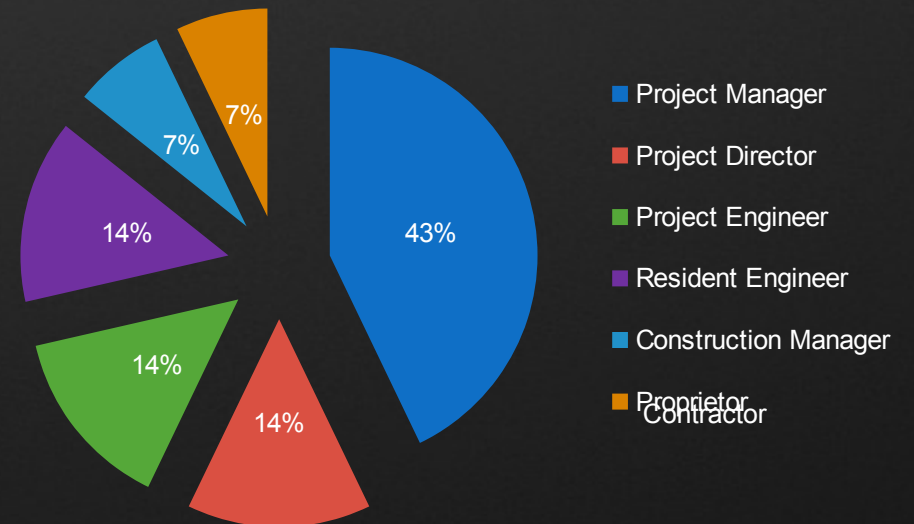
Data Analysis

Analysis of Section A:

Experience of the Respondents



Designation of the Respondents



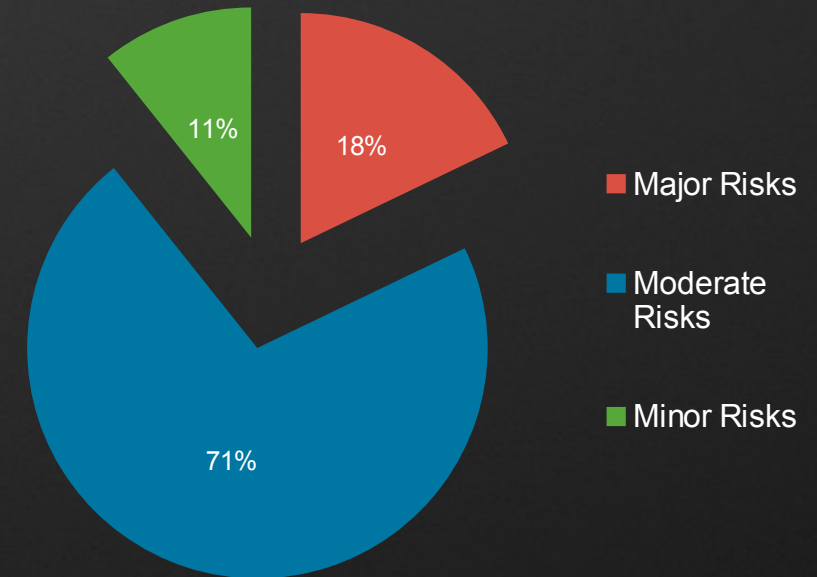
PHASE – I Identification of Key Risk Factors (Cont.)

Analysis of Section B:

Based on Severity & Frequency ratings ,Risk factors were classified as Major Moderate & Minor Risks.

Major Risks	Moderate Risks	Minor Risks
25	100	15

Source (Erik W. Larson, Clifford F. Gray, *Project Management: The Managerial Process*, fifth ed.)



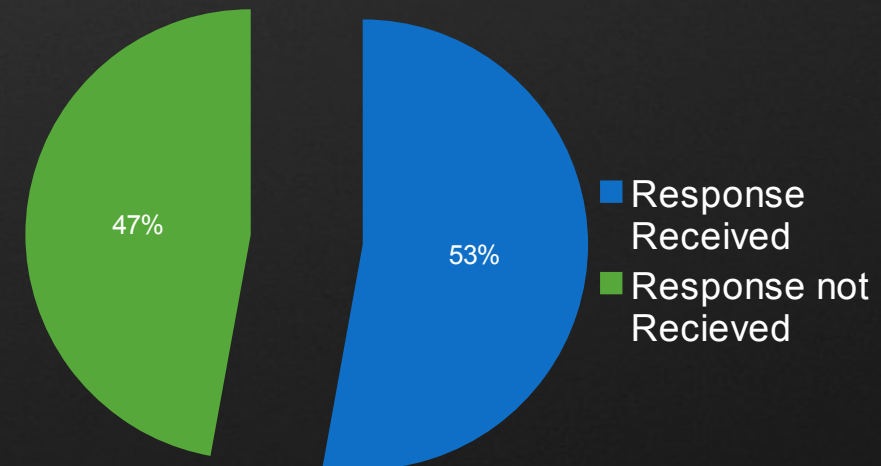
PHASE II- Project Based Data Collection

Design of Survey:

- Project based data collection is being done using a structured survey in this phase of study.
- The questionnaire contains 4 sections .
 - **Section A:** Respondent's Information
 - **Section B:** Project Detail
 - **Section C:** Risk factor Detail
 - **Section D:** Additional Information

Survey Conductance:

Targeted Audience	Response Received	Response Percentage
70	37	52.8%



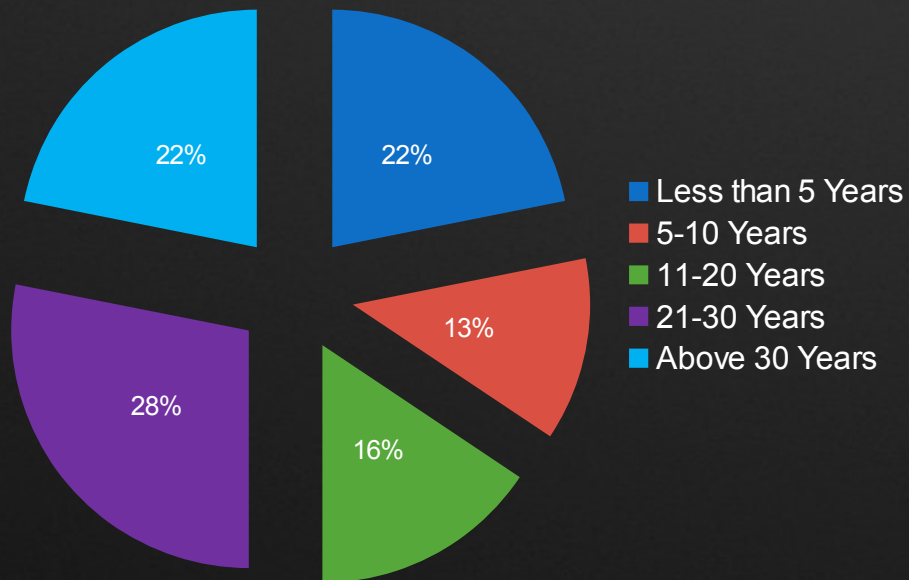
Response of Survey 2



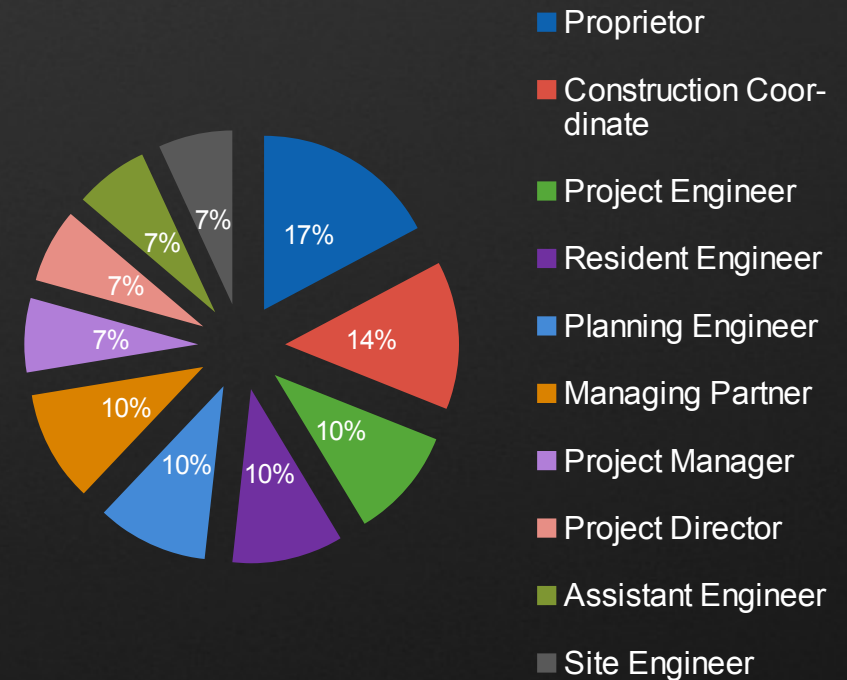
PHASE II- Project Based Data Collection (Cont.)

Analysis of Section A:

Experience of the Respondents



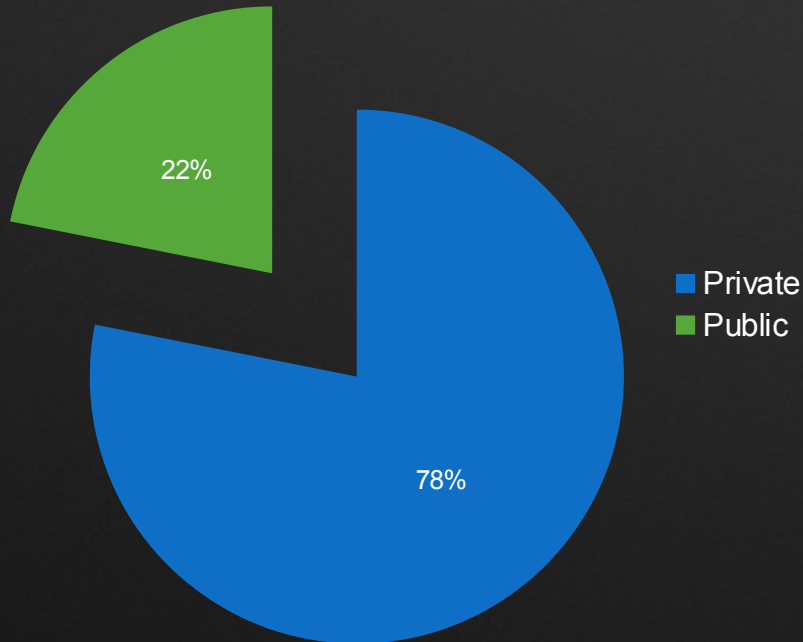
Designation of the Respondents



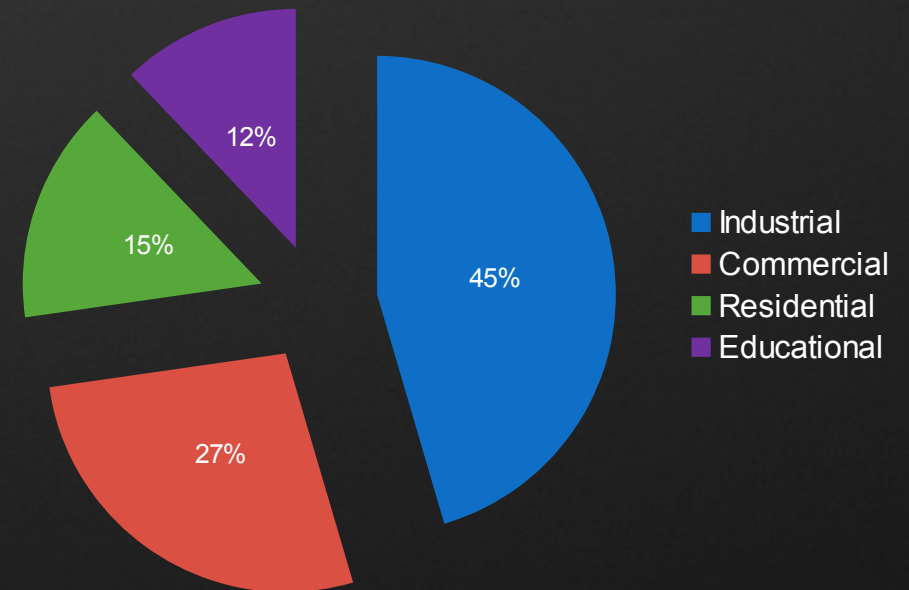
PHASE II- Project Based Data Collection (Cont.)

Analysis of Section B:

▪ Type of Clients



▪ Type of Projects



PHASE III- Development of Intelligent Prediction Model

Expectation from Intelligent techniques

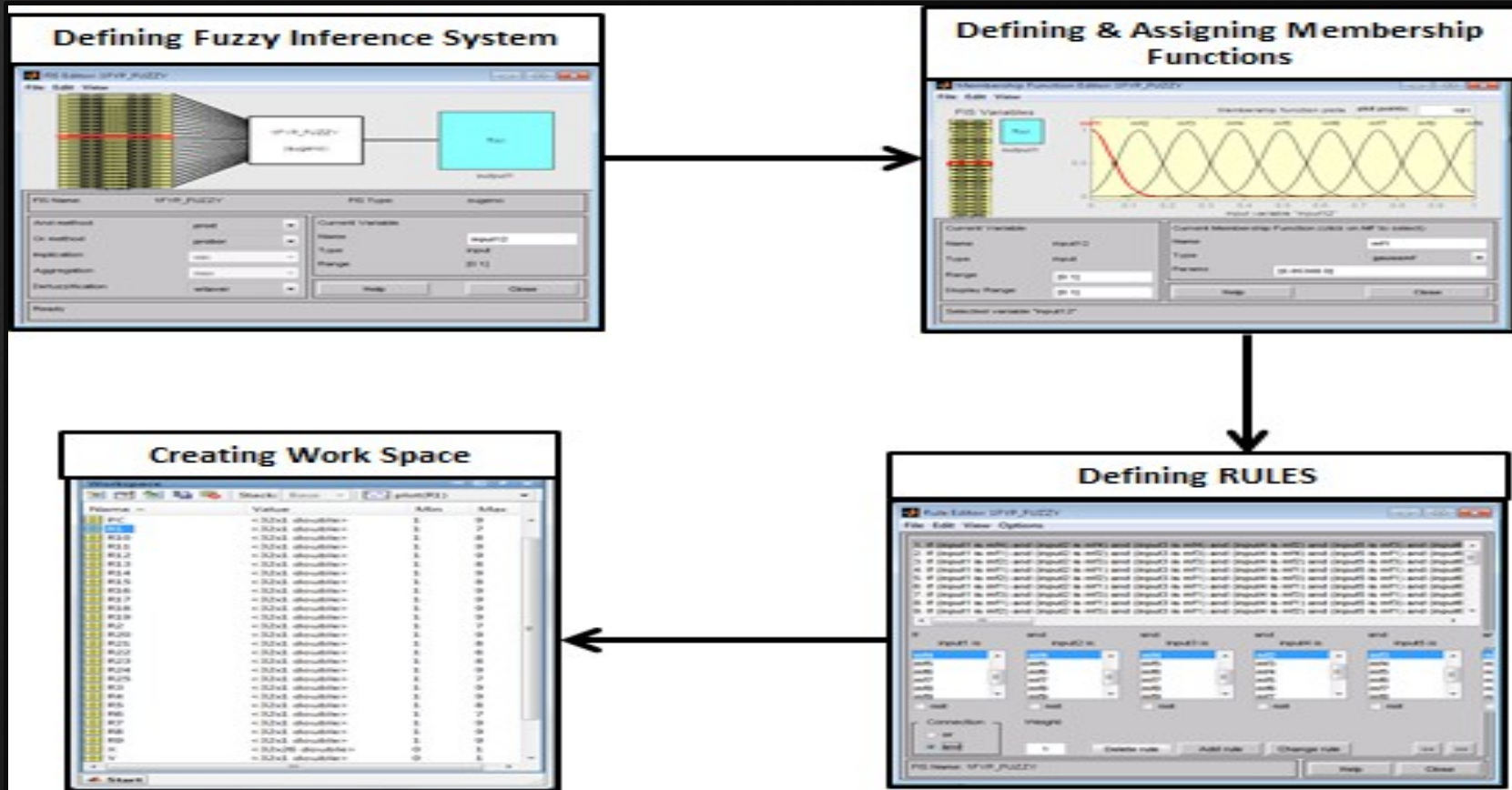
- Critical literature review from *(Cioffi, D.F. et al 2009)* concludes limited research on impact of risks on project objectives, i.e. time, cost and quality.
- Artificial intelligence attempts to understand intelligent entities as well as construct them.
- Computers with human-level intelligence would have a huge impact on our everyday lives. *(Russell, S. & Norvig, P. 1995)*.



PHASE III- Development of Intelligent Prediction Model (Cont.)

Snapshot Of Model Development

Prediction Model



PHASE IV- Model Validation & Tool development

- ❑ Phase-4 of study will includes the validation of prediction model developed in phase 3.
- ❑ Validation will be done through new data samples.
- ❑ After validation of model is being done then the model will be converted in to user friendly tool in order to assist industry practitioners.



CONCLUSION & FUTURE RESEARCH DIRECTIONS

Conclusion

- At present Phase I has been completed and results in identification of 25 major risk factors.
- For phase II data collection is in progress and up till now 37 projects data have been gathered.
- After completion of Phase II, Phase III & then Phase IV will be started in order to provide industry with intelligent prediction model.

Future Research Directions

- This study focuses only cost impact of risk factors. How ever similar sort of models can be developed in other key areas of construction project management like Schedule Performance, Quality Performance , Safety Performance .



THANK
YOU



