ORGANIZATIONAL DECLINE AND BANKRUPTCY PREDICTION MODEL FOR THE TURKISH CONSTRUCTION COMPANIES

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

NURDAN EĞİLMEZER ŞAPÇI

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
CIVIL ENGINEERING

JULY 2007

Approval of this thesis:

ORGANIZATIONAL DECLINE AND BANKRUPTCY PREDICTION MODEL FOR THE TURKISH CONSTRUCTION COMPANIES

submitted by **NURDAN EĞİLMEZER ŞAPÇI** in partial fulfillment of the requirements for the degree of **Master of Science in Civil Engineering Department**, **Middle East Technical University** by,

Prof. Dr. Canan Özgen
Dean, Graduate School of **Natural and Applied Sciences** _____

Prof. Dr. Güney Özcebe
Head of Department, **Civil Engineering** _____

Prof. Dr. Talat Birgönül
Supervisor, **Civil Engineering Dept., METU** _____

Assoc. Prof. Dr. İrem Dikmen Toker
Co-Supervisor, **Civil Engineering Dept., METU** _____

Examining Committee Members:

Asst. Prof. Dr. Metin Arıkan
Civil Engineering Dept., METU _____

Prof. Dr. Talat Birgönül
Civil Engineering Dept., METU _____

Assoc. Prof. Dr. İrem Dikmen Toker
Civil Engineering Dept., METU _____

Inst. Dr. Osman Acar
Civil Engineering Dept., METU _____

Caner Anaç
M.Sc. Civil Engineering, İÇTAŞ INC. _____

Date: 25.07.2007

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name : Nurdan EĞİLMEZER ŞAPÇI

Signature :

ABSTRACT

ORGANIZATIONAL DECLINE AND BANKRUPTCY PREDICTION MODEL FOR THE TURKISH CONSTRUCTION COMPANIES

EĞİLMEZER ŞAPÇI, Nurdan
M.S., Department of Civil Engineering
Supervisor : Prof. Dr. Talat Birgönül
Co-Supervisor: Assoc. Prof. Dr. İrem Dikmen Toker

July 2007, 150 pages

Within the scope of this research, factors contributing to the decline and failure in the Turkish construction industry are examined by the aid of a broad literature review and a Delphi Study conducted among respondents selected to be civil engineers who experienced organizational decline and/or bankruptcy throughout their professional lives. Based on the identified factors and their interrelations, Analytical Network Process (ANP) is used to quantify the relative importance of these factors on "Organizational Decline/Bankruptcy of the Turkish Construction Companies". Organizational Decline/Bankruptcy evaluation and prediction model to be used by the construction company managers as a decision support tool is constructed. As a result of the ANP analysis, importance of management competency and companies' intangible resources such as organizational knowledge and its technical and technological capabilities came out to be the most important factors effective on the fate of the company to success or bankruptcy whereas external factors such as economic and political changes; which are effective on all kind of industries commonly, occurred to be the least effective factors that directly affect business failure.

Key Words: organizational decline, bankruptcy, Turkish construction industry

ÖZ

TÜRK İNŞAAT ŞİRKETLERİ İÇİN ORGANİZASYONEL ÇÖKÜŞ VE İFLAS MODELİ

EĞİLMEZER ŞAPÇI, Nurdan
Yüksek Lisans, İnşaat Mühendisliği Bölümü
Tez Yöneticisi : Prof. Dr. Talat Birgönül
Y. Tez Yöneticisi : Doç. Dr. İrem Dikmen Toker

Temmuz 2007, 150 sayfa

Bu tez kapsamında; Türk İnşaat Şirketleri'nin çöküş mekanizmasında etkili olan faktörler geniş bir literatür taraması yapılmak suretiyle irdelenmiş ve profesyonel yaşamlarında "Organizasyonel Çöküş / İflas" yaşamış inşaat mühendislerinden oluşan katılımcı grubunun tecrübeleri ışığında Delphi Çalışması yapılarak incelenmiştir. Belirlenen faktörlere ve aralarındaki ilişkilere dayanarak, bu faktörlerin "Türk İnşaat Şirketlerinin Organizasyonel Çöküş / İflası" üzerinde teşkil ettikleri önemin birbirlerine göre derecelendirilmesinde Analitik Ağ Prosesi (ANP) kullanılmıştır. Şirket yöneticilerinin profesyonel yaşamlarında, şirketlerinin içerisinde bulunduğu durumu değerlendirmek amacıyla karar destek aracı olarak kullanabilecekleri bir "Organizasyonel Çöküş / İflas" modeli oluşturulmuştur. ANP analizi sonucunda yönetimin becerisi ile organizasyonel bilgi ve teknik/teknolojik yeterlilik gibi kaynakların şirketi başarıya ya da çöküş/iflasa götüren en etkili faktörler oldukları ortaya çıkarken, ekonomik ve politik değişimler gibi tüm sektörler için geçerli olan dış kaynaklı faktörlerin inşaat şirketlerinin iflasında en az doğrudan etkiye sahip olan faktörler olduğu belirlenmiştir.

Anahtar Kelimeler: organizasyonel çöküş, iflas, Türk inşaat sektörü

ACKNOWLEDGEMENTS

Firstly, I would like to thank gratefully to Assoc. Prof. Dr. İrem Dikmen Toker, who is the most patient person I have ever seen besides being a perfect supervisor; for her unconditional guidance, support and tolerance which appear at every sentence of this thesis and to Prof. Dr. Talat Birgönül for his realistic approaches and invaluable comments especially to shape the scope formation and data collection stages.

I wish to express my appreciation to Asst. Prof. Dr. Rıfat Sönmez and Mr. Kerem Tanboğa, Mr. Tezcan Öztürk, Mr. Ergin Oral Demirel for the sound advice and many good ideas that they provided.

I am grateful to Asst. Beliz Özorhon for her valuable hours she spent to assist me in understanding ANP Methodology and Superdecisions Software.

I gratefully thank to Mr. A. Kadir Ferahlı for his support in encouraging me complete my thesis.

I have to designate here my special thanks to my dear mother; Mrs. Sabiha Eğilmezer, for her endless support and love I feel in every breath of mine, to my dearest father Mr. Zafer Ziya Eğilmezer for his patience and sacrifice by which I could become a university graduate and a sound person, to my dearest brothers Mr. Nural and Mehmet Eğilmezer, who are lifelong pieces of my soul.

Besides all, I thank by my heart to my beloved husband B. Emrah Şapçı who made me believe that I am that much strong to get over every situation against me, taught me and loved me.

To My Family

TABLE OF CONTENTS

LIST OF TABLES

TABLES

LIST OF FIGURES

FIGURES

LIST OF ABBREVIATIONS

Item	Abbreviation
Analytical Hierarchy Process	AHP
Analytical Network Process	ANP
Chance Factors	CF
Change in economy	CE
Change in politics	CP
Company Specific Chance Factors	CSCF
Decisions	Ds
Difficulty in collecting money from clients	DCMC
Excessive expansion	EE
General Chance Factors	GCF
Lack of Efficiency in Corporate Level Value Chain	LECLVC
Lack of Efficiency in Project Level Value Chain	LEPLVC
Lack of experience and organizational knowledge	LEOK
Lack of Intangible Resources	LIR
Lack of Tangible Resources	LTR
Management Incompetence	MI
Organizational Decline and Bankruptcy	OD&B
Poor change order and claim management	PCOCM
Poor communication	PC
Poor Company Image	PCI
Poor environmental scanning	PES
Poor financial management	PFM
Poor human resources management	PHRM
Poor investment decisions	PID
Poor leadership	PL
Poor monitoring and control	PMC
Poor organization	PO
Poor planning/scheduling	PPS
Poor project risk management	PPRM
Poor quality management and control	PQMC
Poor relations with government and politicians and/or clients	PRGPC
Poor selection / management of suppliers and subcontractors	PSMSS
Poor strategic planning	PSP
Poor technical / technological capability	PTTC

LIST OF ABBREVIATIONS (continued)

Item	Abbreviation
Resources	Rs
Saving non-value adding activities	SNVAA
Scarcity of financial resources	SFR
Shrinkage in construction demand	SCD
Sudden change within the workforce / braindrain	SCWB
Sudden death of the company leader	SDCL
Unsuccessful restructuring/re-organization	URRO
Value Chain	VC
Wrong level of diversification	WLD
Wrong Market Strategies	WMS
Wrong Organizational Decisions	WOD
Wrong Project cost estimation	WPCE
Wrong Project Selection	WPSl
Wrong Project Strategies	WPS

CHAPTER 1

INTRODUCTION

Business failure is a real possibility for construction industry which is not even a topic of acknowledge for other businesses due to the industrial characteristics of construction industry that sharply differ from others. Since construction industry is fragmented, very sensitive to economic cycles and highly competitive due to the ease of entrance for the new comers, the phenomenon is more threatening for the construction industry than most other industries.

As will be appreciated by the reader, success is a phenomenon that everybody involved in it would like to talk about. People love to tell success stories and listen to others' success stories. Failure is commonly not an event that people sincerely talk about. That is why there are many studies conducted on the factors contributing to the success of the organizations whereas there are a few research on the business failure of companies. On the other hand, it is a known fact that the way to reach an uninterrupted success goes through learning of how to prevent faults and overcome them gradually. The situation, which would make this possible, is to be aware of the factors contributing to failure and to be able to take timely preventing actions.

Industrial success of construction companies will be designated by their level of awareness of the internal and external problems combining with their ability to cope with those problems. Corrective action can not be taken if trouble is not known or foreseen. For construction companies understanding the mechanism of failure will be a key factor in avoiding decline and bankruptcy.

This research has two fundamental targets. Firstly, in this research, the factors contributing to the decline and failure mechanism in the Turkish Construction Industry are listed by the aid of a broad literature review and a Delphi Study

conducted among respondents selected to be civil engineers who experienced Organizational Decline and/or Bankruptcy (OD&B) throughout their professional lives. Secondly, by utilizing ANP (Analytical Network Process) and Delphi Study, an OD&B evaluation and prediction model is developed which can be used as a decision support tool by construction professionals while assessing the performance of a construction company under different circumstances related with external factors as well as company specific conditions.

This thesis is formed of five chapters other than the introduction chapter, which is Chapter 1.

Chapter 2 includes the findings of literature review. The chapter includes the definitions of organizational decline as it occurs in literature, including studies of organizational decline, business failure and bankruptcy in every kind of business sectors. In addition, studies specially conducted on the OD&B in construction industry are covered and summarized briefly in this chapter.

Chapter 3 consists of the conceptual OD&B prediction model developed in this study. In this chapter, a hierarchical model is depicted and each factor under the hierarchy is explained in detail by referring to the current body of knowledge in the field of construction management.

Research Methodology is explained in Chapter 4. In this chapter, the reason for choosing ANP as the research method is explained. After a brief explanation about fundamentals of ANP, steps of data analysis and interpretation of findings are discussed.

Chapter 5 lists the research findings. Data analysis results and quantitative OD&B prediction model are presented in this chapter. Model testing results are also depicted in Chapter 5.

Chapter 6 is the conclusions part in which findings of the research are summarized and the striking results are listed. Conclusion also contains the overall evaluation of the research and suggestions for further research studies.

CHAPTER 2

LITERATURE REVIEW

2.1 Definitions of Organizational Decline

Researchers have taken into consideration the "organizational decline" phenomena by looking it from different perspectives.

According to Thompson (1967) organizational structure should be capable of anticipating and adopting large, rapid and hard to predict changes within the environment they are trying to survive. As a result, he defined decline in terms of the inability of an organization to adapt to the rapid changes of its environment.

Till late 1970's and early 1980's, researchers focused on the possible tangible indicators of decline defined by Thompson (1967). The main reason of their focus on the tangible factors related to organizational dimensions was the ease of reaching absolute evidence on these indicators of organizational performance. On the other hand, it was not easy to collect empirical data from the leaders of companies suffering declining performance or financial position. Those leaders were not as enthusiastic as the leaders of growing organizations about talking on organizational events since they could not spend some time with researchers while concerning their own survival (Weitzel and Johnson, 1989). As a result the most commonly used terms in decline literature for the definition of decline were the size of workforce, market share, assets, profits, stock prices, physical capability and number or quality of inputs and outputs. (Greenhalgh, 1983)

In late 1970's and early 1980's, the prevalent mentality on decline in organizations was reconciling "product life cycles" to active life of an organization. In product lifecycle there are four stages which are introduction of the product, growth in sales

of a product and lastly a decline in sales of the product (Kotler, 1980). In this point of view organizational response to external demand for the organization's goods or services, such as reduction in sales was seen as a potential indicator of decline (Weitzel and Johnson, 1989). According to Quinn and Cameron (1983), as in the product lifecycle idea, when an organization reaches its time of maturity it has three possibilities through its future life which are revival or continued maturity or decline.

Researchers including Quinn and Cameron (1983), Adizes (1979), Kimberly and Miles (1980), and Mintzberg (1984) state that organizational decline is directly related to organizational size dimensions and an inevitable stage that will occur through the lifecycle of an organization. In this lifecycle the organization will be formed, will grow by increasing its sales and profit in response to its environment, will reach its maturity stage and will finally go into the declining stage. The process of this cycle was stated by Mintzberg (1984) as: "once established, organizations peak in their service to society and then begin to decline."

Another point of view on the decline phenomena came from Whetten (1980a). He categorized decline as "stagnation" and "cutback". He described stagnation to be specific for bureaucratic, passive and insensitive organizations. When there are a few true competitors and in periods of abundance such organizations stop their activities resulting in loss in revenue. The researcher defined cutback as decrease on total market share which may not necessarily damage the organizations ability to survive and as decrease in its competitiveness which will certainly damage its survival chance. On the other hand, in their study Weitzel and Johnson (1989) started that they are opposed to Whetten (1980b) in his argument showing "cut back" as decline for organizations. According to them cutback can be defined as a temporary adjustment as an appropriate response to the environment and rather than an activity which diminishes long-term viability.

In his study, Greenhalgh (1983) also stated that he agreed with the definition of Thompson (1967). Different from Thompson (1967), in his definition of decline Greenhalgh (1983) accepted the external environment as being stable. Such a point of view of him met an opposition in Weitzel and Johnson's (1989) study where it is clearly stated that the environment of an organization in which it operates is in a state of flux. They also state that decline comes when organizations fail to keep in track with the external environment. But since Weitzel and Johnson (1989) explain that the environments are not stable and the change in them may be slow or rapid, the critical issue for the organization is to define the demands of its environment and develop a proactive or anticipatory response to those changes to remain successful and competitive.

There were also some other researches which can be seen as the counters of the ones defending organizational lifecycle idea. Decline is said to take place at any time through the organization's survival from early stage to its development and maturity in this counter agreement. "Liability of newness" concept of Stinchcombe (1965) focused on the high dissolution rate of new formed organizations. This concept was also proved in the study of Kangari (1988) with the heading "New Business Activity versus Failure Rates" by using the data collected from Dun and Bradstreet, which is a private corporation that maintains a database in various forms, including failures in the construction industry between the years 1978 and 1986. Whereas, Greiner (1972) stated in his study that crisis conditions occur after each expansion period in the evolution of the organization from its inception onwards. According to him, if the organization can pass successfully through these critical periods, it would avoid decline. Lorange and Nelson (1987) also support this study of Greiner (1972) with their study where they stated that a successful period in corporate lifecycle almost always followed by a decline in performance. According to them denial of this reality can make it difficult, if not impossible, for upper management to recognize signs of decline.

By combining all definitions stated by past researches Weitzel and Johnson (1989) presented their own definition in 1989 by calling attention to need for "organizational sensitivity" to present and future conditions. Their redefinition of decline is as follows: "Organizations enter the state of decline when they fail to anticipate, recognize, avoid, neutralize or adapt to external or internal pressures that threaten the organization's long term survival". According to them, organizations go into dissolution when they fail in detecting present and future conditions and taking into account proactive organizational approach.

As stated by Weitzel and Johnson (1989) the empirical study of decline is much more difficult than the study of expansion. Their statement reflects the truth, which can be appreciated by readers since people always much more enthusiastically talk on their successes, whereas failures and faults of individuals are not mostly liked to be revealed. It is almost hard for an individual to accept his own fault.

In the above paragraphs "organizational decline" concept is tried to be examined from different researchers' points of view. Until now, decline in organizations is taken as a general concept valid for all industries. To understand the nature of organizational decline, many studies on the phenomena in different sectors are used as source of information of this research.

For the sake of completeness, from now on researches conducted studies on OD&B particularly for the construction industry will be briefly summarized. The summary table that contains the referred literature on decline of construction companies is presented in Appendix A page 110.

2.2 Decline Literature from Construction Industry

Kangari (1988) can be considered as the first researcher who conducted a comprehensive research on the business failures specifically in construction industry. In his study, he explains the sensitivity of the construction industry in

business failure by its fragmented and competitive nature. Competition in construction industry is higher than many other sectors especially because of ease of entry for the new comers. The goal of his study is to examine the mechanism behind the financial failure of the construction companies.

For this purpose, he used the ten-year business failure data obtained from Dun and Bradstreet Corporation (a private corporation, keeps records on different forms, including business failures in U.S.). His study proves the fact that failure rate in construction industry will increase with the increasing number of active construction companies in a relatively stable and relief environment. Therefore, according to him to indicate the possibility of failure for construction companies, yearly data obtained by looking at the total number of active construction companies should be related to the number of possible failures. As a result, as the best indicator of business failure in construction industry he defined the business failure rate.

According to his findings, the factors affecting the business failure rate of construction companies can be listed as:

1) The amount of construction activity,
2) Interest rates,
3) Inflation,
4) New business activity.

Using these 4 factors, he developed a “macro economic model” to define the probability of construction business failure. The model mainly based on the factors and used statistics.

In his model, failure rate came out to be increasing with decreasing construction activity. There would be lower profit margins leading to negative profits for construction companies and higher risk for business failures due to continued stagnation in activities. Whereas increasing interest rates, which would increase the

cost of borrowed money of a construction company to commence its work, would severely affect the profitability of the construction company. In the same manner of interest rate factor construction cost increase caused by inflation would affect the profitability of the company. Lastly, due to lack of experience and financial reserves, reputation and standard customers will increase the probability of failure for the business just starting operation in the construction industry.
For each of the above-explained factors, Kangari (1988) used various indexes of US, to model his data to predict overall prospect of failure:

1. The Federal intermediate credit bank loan rate as a measure of "Interest Rates"
2. The Construction – Contract Valuation Index by F.W Dodge as a measure of "Construction Activity"
3. The new-home, conventional fixed long-term mortgage rate as a measure of "Interest Rate & Construction Activity".
4. The Department of Commerce's Construction Cost Index as a measure of "Inflation"
5. The number of yearly business starts as a measure of "New Business Activity".

To combine the statistical data, he obtained from "Bankruptcy Statistical Tables 1970-79 and 1983; "Bankruptcy Laws" 1984, "Contractor Bankruptcies Double" 1983, "Moody's Industrial Manual" 1986, multiple regression analysis was performed. The output of the research was a formula to find the "change in failure rate index" by taking into account "Change in new business index", "Change in federal interest bank loan rate index" and "Change in contract value index". Through his analysis, change in construction costs, that is inflation has come out to be ineffective factor on the change in failure rate.

Another study on company failure prediction specifically in construction industry was conducted by Abidali and Harris (1995). The aim of this research was stated by

the researchers as to develop an operational system for identifying construction companies in danger of failure.

For this purpose, they took into account two different perspectives of possible causes of failures of construction companies which were the organization's financial structure and its managerial performance. The two perspectives are examined in a separated manner initially and in the end tried to be combined into a simple approach to predict company failure. The research was based on the idea of a company's failure probability will be higher if its current situation resembles previous failures.

To model financial structure of a construction company, they used the variables derived from the balance sheets and published UK financial accounts of a sample of construction companies which are divided into solvent and insolvent companies of medium or large size. They used discriminant analysis to find the variables that discriminate most between the groups of known "failed" and "solvent" companies. At the end of this process of analysis out of 31 variables initially obtained, the best discriminating variables are used in an equation derived as Z-score by the researches which can be calculated by the formula below:

$$Z = 14.6 + 82V_6 - 14.5V_{17} + 2.5V_{23} - 1.2V_{24} + 3.55V_{25} - 3.55V_{26} - 3V_{30}$$

Where;

V_6 = Ratio of earning after tax and interest charged to net capital employed,

V_{17} = Ratio of current assets to net assets,

V_{23} = Ratio of turnover to net assets,

V_{24} = Ratio of short term loans to earning before tax and interest charge,

V_{25} = Tax trend,

V_{26} = Earning after tax trend,

V_{30} = Short-term loan trend.

According to the findings of this first part of the study, companies with a Z-score between +/- 2,94 is said to be vulnerable. Whereas lower Z score for company accompanying with high number of years it is classified with lower Z scores will likely mean that the company will fail.To reinforce this conclusion reached by looking at the financial structure of a company, a further model that focuses on managerial performance of the company was developed in the second part of their research. In this approach the researches tried to combine and subsequently weigh the wrong managerial judgments of project losses into a single index called A score (Argenti, 1983) to aid Z score for comparison purposes.

To obtain the managerial performance variables, three failed companies were examined deeply as three different case studies. Then a questionnaire was prepared and sent to a number of ongoing firms to identify the occurrence weights of the defects and deficiencies listed, by considering their own companies. The variables are weighted according to the questionnaire findings as Table 2.1 below:

Table 2.1 Weighted Results Obtained from Survey Conducted by Abidali and Harris (1995)

Number	Managerial Factors (characteristics)	Weighting (%)
1	Weak financial director	17
2	Autocratic chief executive	14
3	Lack of engineering skills	12
4	Poor responses to market change	10
5	Senior management staff not experienced in bidding	5
6	Company board comprised persons not working in company	5
7	Chief executive and chairman, same person	2
8	Lack of managerial skills	2
9	Making losses in projects	14
10	Making losses caused by contract claims	7
11	High leverage	5

Table 2.1 Weighted Results Obtained from Survey Conducted by Abidali and Harris (1995) (continued)

12	Making losses caused by overseas contract	5
13	Making losses caused by taking over failing firms	2

A construction company may reach its A-score value by just weighing its current situation and combining the weights shown on the Table 2.1 above. As a result of the survey conducted by Abidali and Harris (1995) in which an A-score comparison was made among at risk and solvent companies an A score value of 50 came out to be the vulnerability limit. A score values greater than 50 indicate risk of failure.

In conclusion of this research, it is said that only a financial indicator found as Z-score value is insufficient to evaluate failure probability of a construction company. For companies come out to be at risk by looking at their Z-score, an A score analysis to reinforce the prediction with managerial performance indicators will be necessary. A score value measures managerial performance quantitatively and than is linked with Z score as follows:

"-" Z score + "A score<50 in 100%" means risk group

"+" Z score + "A score>50 in 100%" means large firms whose strength and reputation will be sufficient to overcome failure risk.

No Z score + "A score >> 50 in 100%" means the company moving down the path to failure.

Most recent study on predicting organizational decline and failure in construction industry was conducted by Köksal and Arditi (2004). As it was the case in the two previous studies, their aim was also to develop a model by which managers of construction companies would evaluate the condition of their company in comparison with business failure.

In this study, it is stated that severity in the financial performance of a construction company will certainly be considered as an indicator of organizational decline. But when the financial crisis is realized, it would be too late to initiate a turnaround. In the light of this basic idea Köksal and Arditi (2004) preferred to use non-financial variables effective on construction company decline in their model.

They reached the variables to form their model by literature review of other studies in the construction industry and other industries as well.

In the study, decline is considered to be taking part in a specific time period consisting of initial decline stage where severity in environmental, operational or strategic conditions that may later translate into financial crisis take part, decline recognition stage in which financial difficulty is realized and the danger of total failure becomes obvious and lastly response stage which consists of activities conducted by the company after the decline is recognized where measures are taken to achieve a turnaround. If it is too late and a turnaround is not possible then the company would file for bankruptcy.

Köksal and Arditi (2004) divided the possible causes of decline under three categories such as 1) External Conditions, 2) Operational Deficiencies and 3) Strategic Mistakes. In their model to predict organizational decline they eliminated the External Conditions factor with the argument of their being uncontrollable by the managers of companies. The external conditions in comparison consisted of general industry conditions such as cyclic nature of business, innovations in project delivery systems, technological changes, shifting consumer preferences, declining market for the company's products, economics (labor problems, natural disasters etc) and politics (regulatory issues and other legislation relating to business in general or that is industry specific). As a result of their model, they focused an organizational factor such as "Organizational Structure", "Human Capital Issues" and "Strategic Posture".

The methodology of the research conducted by Köksal and Arditi (2004) consisted of four parts. The research data was collected by two parallel surveys using the same questionnaire as in the study of Abidali and Harris (1995), one being among the companies filed bankruptcy and the other being among the companies functioning without bankruptcy protection. Research began with a cover letter sent to the respondents in which intend of the study was explained. In the second part respondent information was collected. In the third part respondent companies were requested to determine if the variables of the questionnaire was present or absent in their company and in the last part the respondents were required to rate the condition of their company by weighing their current position in (1-10) (1 very weak – 10 very strong) scale and then to weigh the variables of the questionnaire according to the current position of their company.

After all the data is obtained a factor analysis (principal component analysis) was conducted for the same purpose as in the study of Abidali and Harris (1995) to discriminate and extract among the overall variables weighed to reduce the number of variables according to explained pattern of correlations within them. As a result, a model categorizing the construction companies into three according to their state in the industry as 1) No decline; 2) Initial decline or 3) Advanced decline was derived. To derive the three-part equation of the model multinomial logistic regression was used since the dependent variable of organizational decline would generate the three outcomes stated.

By looking at the summaries of the three outstanding models developed to predict OD&B in construction industry, it can be said that they consider the issue from different perspectives. While in Kangari (1988)'s model is formed on external economical factors, whereas Abidali and Harris (1995)'s model focuses on financial and managerial issues separately, lastly Köksal and Arditi (2004) considers only internal structural factors effective on decline in their model.

From past literature it is obvious that it is the financial crisis which finally leads bankruptcy of a construction company. However, decline signals certainly begin to occur much before the financial deterioration reality appears in accounting documents such as balance sheets.

With the combination of past research, it can be concluded that it will not be sufficient to modelize the organizational failure phenomena of construction companies by just taking into consideration the external factors as in the model of Kangari. Because the factors stated in his model are just to make predictions on the industry specific business failure rates, not to predict a company specific failure rate. At this point, it is obvious that to reach a more company specific prediction, Abidali & Harris (1995) and Köksal and Arditi's (2004) studies can be considered more relevant. But they have their own missing parts that can be observed after a broad literature review on organizational decline and organizational success is conducted. In their cases, they are more focused on the company's internal factors that will affect their success. In all of those researches, chance factors that would have adverse affect on the fate of construction companies are not taken into account.

It may be correct that a company manager cannot change or recover the adverse conditions coming from external environment but extracting those factors totally in a model predicting organizational decline will be an obvious mistake especially for the construction industry with its highly fragmented, very sensitive to economic cycles and highly competitive nature (Kangari, 1988).

Lewin et. al. (1999) put organizational adaptation to the external environment to the central issue in the business research. Many other researchers also emphasize the need for determining the measures to be taken by managers of declining or dissolving organizations within dynamic external conditions (Boulding, 1975; Easton, 1975; Bedeian, 1980; Miles, 1980).

It will be misleading to examine the condition of a construction company in an isolated manner from its environment.

Another point of view that is encountered through literature review on the models of business failure prediction in construction industry is that it can be observed that "Business Failure" is taken as the dependent variable whereas the corresponding causes of it whether organizational or environmental were taken as independent variables. Such an approach is not reflecting the true condition of the possible causes of decline and failure since they are interrelated. For example environmental factors affects the organizational structure of a construction company, as well various organizational causes of failure also interact with each other to some extend.

For the simplest example to this phenomenon of interrelation within the causes of business failure can be given as the one directional interaction between "Change in Economy" which is an environmental factor and "Scarcity of Financial Resources" within the organizational body. To reinforce the existence of such interactions, throughout this research expert opinions is used which will be explained in the outcomes of the research of this study.

Sheppard and Chowdhury (2000) clearly emphasize in their study that a firm's management, its environment and the way the firm interacts with its environment altogether play a determinate role as the three intertwined factors in its ultimate fate.

Lastly, before beginning to explain the model developed in this study it will be useful to state that this study will be the first one conducted to predict organizational decline specifically for the Turkish Construction Industry.

To sum it up, with the model that will be presented in this study it is aimed to overcome the missing parts of previous researches which are explained above and to help the Turkish construction companies to define their organizational situation

CHAPTER 3

CONCEPTUAL OD&B PREDICTION MODEL

3.1 Introduction

To identify the factors effective in OD&B mostly previous literature related to the topic was benefited from.

All factors identified throughout the literature review are listed. By analyzing the sign of their effect on OD&B they are grouped into categories in which factors have similar effect are positioned in the same category. This categorization leaded the top level criteria as follows:

1) VC = Factors effective on the "Value Chain" of the organization
2) Ds = Factors effective on the "Decisions" taken by the organization
3) Rs = Factors effective on the "Resources" owned by the organization
4) CF = Factors effective on the "Chance Factors" occurring and affecting the organizational performance

In the second level of the hierarchy, factors belonged to each criterion listed above also divided into sub criteria to strengthen the logic of the hierarchy. The bottom level factors whose contribution weights to OD&B are examined as the aim of this research are categorized under these sub factors as can be seen in Figure 3.1 "OD&B Model" below.

From this point on, the contribution of each bottom level factor on the OD&B will be explained. As can be seen in Figure 3.1 each factor has a negative meaning in itself, which hinders the success of the organization so that the organization gradually goes into bankruptcy.

3.2 Factors Effective on OD & B

3.2.1 Factors Related with "Value Chain" (VC)

According to Porter (1985), the generic value chain for a single firm comprises of three main elements: its primary activities, its supporting activities, and the margin. Primary activities are those involved in the creation of the product, its sale, and transfer to the buyer as well as after-sales service. Support activities are those, which support primary activities and each other. Three of these – procurement, technology development and human resource management – can be associated with specific primary activities while the fourth, firm infrastructure, supports the entire chain. (Porter, 1985)

Value chain in a construction organization is formed of corporate and project level value chains. Both of them are important for the overall success of the company. Corporate level value chain comprises of the activities that are carried out by the top management of a firm. The corporate level value chain includes all the general managerial activities that are necessary to manage the projects carried out by the company.

Projects are the main competing devices of a construction company. This device has its own value chain. Value creating activities at the project level are those activities that are carried out by the firm to achieve preset objectives of the project. They are basically project management functions that are required for successful completion of construction projects.

By considering these two managerial levels of a company, factors that may affect company's value chain performance at the corporate and project level have been identified as by dividing the VC criteria as:

1.1 Lack of Efficiency in Corporate Level Value Chain (LECLVC)
1.2 Lack of Efficiency in Project Level Value Chain (LEPLVC)

"**Lack of Efficiency in Corporate Level Value Chain**" sub criterion consisted of the factors that hinder effectiveness in the corporate level value chain. The sub criterion consisted of the following elements:

3.2.1.1 Lack of Efficiency in Corporate Level Value Chain (LECLVC)

3.2.1.1.1 Poor Environmental Scanning (PES)

No organization exists in a vacuum. Each company is established in a particular country and region, which is directly effective on its organizational operations and productions. Key environmental effects on the organization can be in different dimensions such as administrative/legal, technological, political, economical and social, cultural contexts, demands and needs of external clients and stakeholders and relations with other pertinent institutions.

For an organization it is vital to keep in track with environmental situation within its own business niche and then beyond it. Lahiri and Renn (2005) state clearly that organizations' fate will be failing to grow, gradual decline and ultimately failure in case they cannot match up to the external changes.

Construction companies should be aware of the opportunities that they must exploit and threats that they should be aware of. Most important areas to be monitored continuously in the business environment are general economic activities such as inflation and availability of funds, governmental investment programs, building laws and regulations, general construction demand, key resources and potential clients and competitors. Construction companies have to face with fierce competitive forces such as low entry barriers, threat of substitute services, weak bargaining positions, high uncertainty and risk involved and high capital requirement of the construction projects and rivalry among existing firms (Porter, 1980; Porter, 1985).

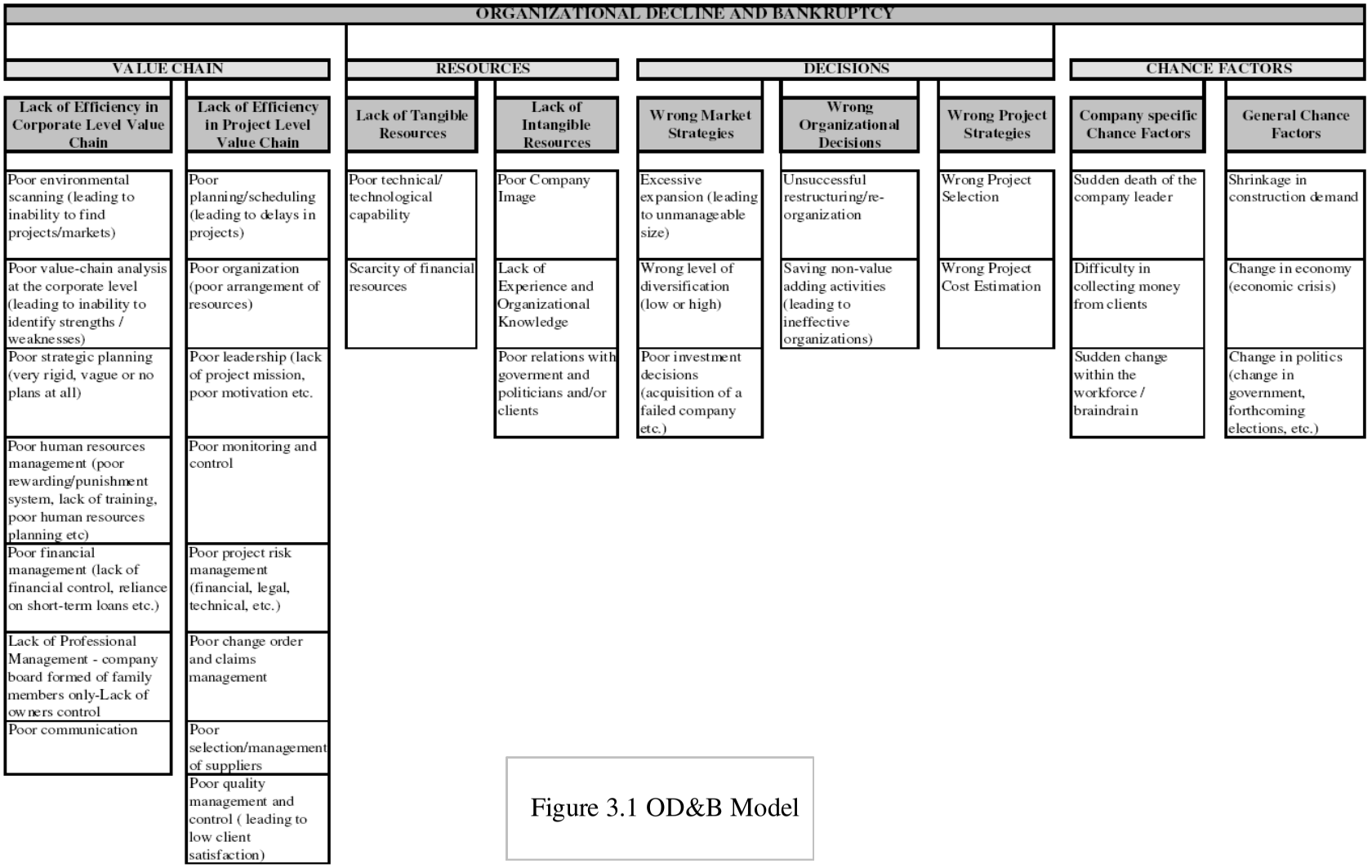


Figure 3.1 OD&B Model

Weitzel and Johnson (1989) state in their study that a company which fails to scan its environment can be accepted to be in its early stages of decline. Lorange and Nelson (1987) count concentrating on the toughest competitors and the most difficult customers as an important factor in avoiding decline. Weitzel and Whitfield (1988) emphasize that since there is no stable environment, external scanning is an organizational necessity for long-term survival.

Especially for the Turkish construction companies monitoring changes in their environment has vital importance to determine market opportunities since fluctuations in industrial demand are common due to macroeconomic instabilities. Additionally, since there are limited governmental funds for major infrastructure and mass housing projects, construction companies should be monitoring the governmental investment plans regularly to catch the opportunities (Dikmen et. al, 2003).

3.2.1.1.2 Poor Value-Chain Analysis at the Corporate Level (PVCACL)

Value Chain of organizations shows the way of how they create values and can be defined as the language of the organization which is utilized in the operations of the organization.

As Warzawski (1996) states a company's ability to plan its operations and conforming the plan in terms of quality, cost and schedule is the measure of performance. It is important for a construction company to be aware of its strengths and weaknesses as well as market opportunities and threats. Their ability to match organizational strengths and weaknesses with proposed strategies will bring success.

Weitzel and Johnson (1989) state in their study that in the very early stages of decline, companies have insufficient methods of internal surveillance. They simply do not make investment on effective periodic reviews of standard operation procedures and routine employee attitude assessments. Such an attitude of

organizations will impede them to identify internal problems and incongruity within the employees.

Although taking remedial action to recover some inefficiencies will be much easier in the early stages of decline and in periods of abundance because of poor value chain analysis at the corporate level they can not even be identified. Those kinds of minor problems tried to be recovered in environmental scarcity and crisis periods become critical and obvious. In such times, the turnover will be more difficult and costly for the organization. As stated by Lorange and Nelson (1987) the dilemma is to catch the weak problematic signals within the organizational structure and operations. They are not seemed to be dramatic enough to make managers take immediate action. For this reason, Lorange and Nelson (1987) recommend the organizations to monitor the weak signals systematically. Such a systematic monitoring will be shaped through an instutionalized value chain analysis, which will in turn help the organization to be prepared to launch appropriate and timely response.

3.2.1.1.3 Poor Strategic Planning (PSP)

Researchers define strategy as a plan of action including the mission, values and policies of an organization to position itself in business to maximize its capabilities against its competitors (Aldrich and Fiol, 1994).

As said by Lorange and Nelson (1987), companies can not reach success with scarcity of clear goals and decision benchmarks.

According to Köksal and Arditi (2004), strategy should have four distinct components which are the scope that defines the business in terms of its customers, resource utilization, competitive advantage and synergy which combines the various organizational parts to create something greater than the total sum.

Well established strategic planning in an exact match with company strengths and environmental opportunity will not only create a common direction to follow in the business practice for each member of the organization but also provide a focused analysis and understanding of existing, emerging and future competitors. (Chinowsky, 2001)

3.2.1.1.4 Poor Human Resources Management (PHRM)

Human resource forms the brain of the organization and allocating the right person for the right job is vital for the successful operation.

While key personnel forms the technique and administrative footing of the organization, lower level employees and workers form the operational footing.

As stated by Weitzel and Johnson (1989), employee commitment is an important factor for successful surveillance and for reversal of decline periods of the organizations. Organizations should supply a uniformed and completely understood overall company mission, goals and strategies within its employees so that they can detect obstacles to the desired outcome and modify their own behaviors to reach the target.

There should be a few training and skill development programs in the organization so that the existing employee performance will be developed in the same direction with the industrial trends and demands.

Organizations should have proper recruiting programs to assure the maintenance of sufficient number of qualified personnel.

Finally, organizational human resource management system should include proper incentive systems to encourage workers to do their best for the organizational wellness and success. Such incentive systems may include salary bonuses, new

carrier opportunities and any additional fringe benefits for the workers. In addition, less appropriate and faulty actions of the employees should be controlled and monitored regularly and remedial action should be taken immediately.

Workers in an organization with a poor human resource management system would seek the chance to leave the organization for better opportunities, which will result in first having an outcome less than their capacity would provide and ultimately loss in knowhow and skilled workforce.

On the other hand, excess personnel especially in managerial levels will hinder effective communication while the information should flow through too many levels. Such a situation will make it difficult to provide quick solutions for control and coordination problems and decrease the success in value creating (Lorange and Nelson, 1987).

3.2.1.1.5 Poor Financial Management (PFM)

Construction companies must always be aware of possibility of business failure. Since the construction industry is fragmented and very sensitive to economic cycles, constant monitoring of their financial condition is a key for their success.

Financial capability in combination with the technical capability is the most important criteria for clients awarding contracts especially in international market.

As stated by Abidali and Harris (1995) failed companies are the ones mostly had weak finance directors who had also a shared responsibility for financial decision-making. For this reason, it is not enough for the finance directors of the construction companies to show accounting skills but also they should possess ability to construct new profitable investment decisions.

Construction companies with an incomplete accountancy system including inadequate cash flow plan or poor budgetary control system will soon consume all of the company resources and will file for bankruptcy. If the financial department of the construction company does not have a cash flow and budget plan, which is updated and reviewed periodically, capital and or asset shortages can not be identified timely. Such a poor financial management will result in a company which is not aware of the income and outcome and can not balance the money in and out of its budget until the debt appear to be much more than the income. When such a situation occurs and shown on the balance sheets it is almost too late for a proper turnover and the company may have to file bankruptcy.

3.2.1.1.6 Management Incompetence (MI)

As explained before to avoid decline, recognizing its early signals and taking corrective action to recover them have utmost importance in decline management. (Lorange and Nelson, 1987; Abidali and Harris, 1995; Köksal and Arditi, 2004). The managers will be the ones who are going to make right decisions at right time against the early signals of decline.

Decline is the process in which internal and external demands are not sufficiently met by the organization accompanied with signals to need for change which are not considered seriously (Levy, 1986). Leaders must be capable of interpreting the regular reports on organizational performance as well as external environmental changes. In addition, their awareness of the current situation is not enough to lead the growth, competitiveness and survival of the organization. They should have the foresight to be ready for possible problems on the organizational performance in terms of sufficient interest or resource to address the deficiency.

The leader should have the sensitivity to anticipate and respond unfavorable conditions whether internal or external. Weitzel and Johnson (1989) state in their

study that organizational leadership's sensitivity to both qualitative and quantitative change is a critical factor in decline recognition.

Starbuck et. al. (1978) point out that success is a danger for the organization because it causes the leaders the sense that their organization is capable of managing any work with its current assets, so that the organization becomes blind to the needs of its relevant constituents. Especially in situations stated by Starbuck et. al. (1978) personal characteristics of the leader affect his interpretation of organizational scanning results.

As explained by Lorange and Nelson (1987), for managers to understand and take the weak early signals of decline seriously is a dilemma in decline recognition. Since this is the situation, leaders should be directly in contact with the organizational value chain creators. Since top management is broadly busy with the administrative issues the lower level management will more likely be aware of the potential danger of decline. If the top management is perceived as to be adverse to change or criticism (Lorange and Nelson, 1987), then lower lever management will hardly put forward their independent opinions on the organization's situation. As a result since there will be a time lag before initial weak signals of decline begin to occur on accounting records and balance sheets, to manage a successful turnover for the company will be more costly and difficult if not impossible than in the time of early signals. Abidali and Harris, (1995) also support this idea in their research. Through the case study, they conducted among three failed company it was observed that "autocratic chief executive" characteristics of management was generally seen as "preservation of a position of sole authority" in them.

In addition, Abidali and Harris (1995) defines chief executive manager and the chairman being the same person for construction companies as a threat since it directly dismiss owner's control on incompatible chief executive. According to them such a situation will have a fostering effect on "tolerance of incompetence" which is

stated as one of the “early warning signals” of organizational decline by Lorange and Nelson (1987).

Management incompetence is defined as the lack of knowhow to run the enterprise by Clark (2000). Leaders of construction companies are commonly individuals with a past experience as an engineer or team or department leader. According to Clark (2000), this is not sufficient to ensure a business success. He states that the company leader must satisfy experience in other major activities of business such as finance, purchasing, selling and production. In lack of these, the enterprise will go into a gradual failure. This view of him has a supporting statement on Abidali and Harris’s (1995) model in which lack of engineering skills, defective managerial skills, financial control, marketing and legal skills and lack of experience in bidding and bidding decisions stated to be the common management characteristics of failed companies.

Until now the role of the company leader in realizing decline signal and preventing decline before it takes place is argued. Another focus on the importance of management should be made during the decline management phase of the organizational life cycle.

When the decline cannot be prevented and began to set in the organization, managers face with an unusual situation in which a rapid and sudden shrinkage in their resources encountered. At this point, the leaders become more autocratic as the risk of dissolution gets higher. They began to question the existing technology, look for new opportunities and markets in a reactionary manner (Weitzel and Johnson, 1989). They try to change the “business – as usual” methods (Starbuck et.al., 1978). This is the time where leadership is questioned. Since there is the tendency of the leaders to centralize decision making as an emergency (Smart et. al, 1978; Greenhalgh, 1983), at the particular situation great loyalty to the leadership is asked. Here the past performance of the leaders is important to supply this loyalty. The leaders with lack of managerial experience that is lack of training and knowledge of managing people

effectively will fail in reorganizing the business, which will be crucial for a successful turnaround.

Owner's control is also needed to prevent "neglect and fraud" within the company. According to Clark (2000) neglect involves owners who risks failure by not devoting sufficient attention to the venture. To spend much time on administrative issues he puts in charge of the business a less competent person and as a result, the business fails gradually since the interim manager is not capable enough. On the other hand, fraud defined as intentional deception and misinterpretation to suppliers, customers, financiers or other owners. Fraud may include embezzlement of company assets. Fraud and neglect phenomena also takes part in with %40 rate in failure causes listed by Dun and Bradstreet Corporation between years 1988-1993 (see Table 3.1 below). Fraud and neglect can also be listed in the negative causes of lack of owner's control.

Table 3.1 Causes of Construction Company Failure, 1988 through 1993, from the Dun and Bradstreet Corporation

CAUSES	1988	1989	1990	1991	1992	1993
NEGLECT CAUSES	**2.50%**	**3.70%**	**3.30%**	**2.90%**	**3.90%**	**6.20%**
DISASTER CAUSES	**0.00%**	**1.20%**	**1.40%**	**2.10%**	**4.30%**	**4.90%**
FRAUD CAUSES	**1.10%**	**0.50%**	**0.60%**	**0.60%**	**1.20%**	**1.40%**
ECONOMIC FACTORS CAUSES	**62.50%**	**37.30%**	**46.10%**	**66.80%**	**70.20%**	**36.60%**
HIGH INTEREST RATES	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%
INADEQUATE SALES	4.0%	2.3%	1.9%	1.9%	2.5%	2.2%
INDUSTRY WEAKNESS	12.3%	17.7%	21.8%	27.9%	23.7%	19.5%
INSUFFICIENT PROFITS	22.0%	15.9%	21.2%	36.6%	43.7%	14.6%
INVENTORY DIFFICULTIES	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
NOT COMPETITIVE	1.6%	0.9%	0.8%	0.0%	1.0%	0.3%
POOR GROWTH PROSPECTS	22.5%	0.4%	0.3%	0.4%	0.1%	0.0%
POOR LOCATION	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
EXPERIENCE CAUSES	**9.80%**	**17.80%**	**9.90%**	**1.30%**	**1.60%**	**0.50%**
LACK OF BUSINESS KNOWLEDGE	5.7%	12.0%	8.4%	0.0%	0.3%	0.0%
LACK OF LINE EXPERIENCE	1.2%	2.9%	0.8%	0.2%	0.2%	0.0%
LACK OF MANAGERIAL EXP.	2.9%	2.9%	0.7%	1.1%	0.2%	0.5%
FINANCE CAUSES	**22.40%**	**37.90%**	**37.30%**	**24.50%**	**18.80%**	**47.40%**
BURDENSOME DEBT	4.5%	5.9%	6.7%	10.6%	3.6%	0.3%
HEAVY OPERATING EXPENSES BURDENSOME DEBT	4.5%	%5.9%	6.7%	10.6%	3.6%	0.3%
INSUFFICIENT CAPITAL HEAVY OPERATING EXPENSES	9.2%	12.6%	9.8%	11.1%	13.4%	41.1%
INSUFFICIENT CAPITAL	%8.7%	%19.4%	%20.8%	%2.8%	%1.8%	%3.3%
STRATEGY CAUSES	**1.70%**	**1.60%**	**1.40%**	**1.70%**	**0.90%**	**3.00%**

3.2.1.1.7 Poor Communication (PC)

Communication within an organization may be either horizontal or vertical. Horizontal communication is the communication within a single level in the organizational hierarchy; that is within managerial level, institutional level, etc. Vertical communication on the other hand occurs between different levels including departmental information flow. Both means of communication have utmost importance to maintain the delivery of the right information to the right target at right time.

It is started by Weitzel and Johnson (1989) that in the early stage of decline some barriers on vertical and horizontal communication occur. According to them lower level workers such as customer – service personnel, sales personnel can monitor change in expectations of customers, availability of resources and level of competitive advantage of the company much before than the upper level management. This makes sense since these personnel are the ones directly in contact with the third parties such as the customers and suppliers. Upper management will be aware of the current situation after the severe conditions; if exists, appear on the financial records. That is; lack of effective communication within and between levels will result in observable error, delay, morale problems, and other inefficiencies (Weitzel and Johnson, 1989).

Inefficient and ineffective communication between key members of an organization and lower boundary spanning levels who would probably be having more relevant information on the performance situation of the organization will result the isolation of key members in the decision giving level from realities of internal and external condition of the organization. The resulting lack of information will lead a disagreement between upper level management and middle level managers who are going to implement the given decisions (Dunbar and Goldberg, 1978). The upper level decisions lack of adequate information of the organizational situation would be meaningless to overcome the severe situation and since the reality is known by the

lower or middle level managers to show loyalty to the leadership will become less. Conflict between decision makers and implementing levels would result in gradual dissolution within the organizational hierarchy.

Secondly, "**Lack of Efficiency in Project Level Value Chain**" sub criterion consists of the factors that inhibit efficiency and flexibility in project level value chain.

Construction companies form sub-organizations (organisations at site) free to move internally and dependent on the organization as the outside source of resource and funding for each of the project the company deals with. In this perspective, project execution teams may be taken as small organizations, which have to survive and operate successfully through the project implementation period. As the organizations themselves, projects have their own value chains since each construction project is unique considering its dimension, location, type etc. As stated by Kangari (1988), "the product a contractor builds often controversial, and it requires a substantial production time". The product as a result is under risk for longer period of time through its creation compared with the products of other industries.

Demand of the clients of construction industry can be defined as the timely completion of the project with expected quality and possible most economic solution. Because of these features of construction projects, value chain analysis at the project level consist of crucial set of activities for the proper and successful execution of a project. Importance of factors effective on project level value chain of an organization can be listed as follows:

3.2.1.2 Lack of Efficiency in Project Level Value Chain (LEPLVC)

3.2.1.2.1 Poor Planning / Scheduling (PPS)

Planning and scheduling of the activities which is conducted all through the execution of a construction project will supply the project team to recognize and

understand the nature of the project that they are dealing with. Planning means the completion of a project on paper. For this purpose the planning team should prepare method statements defining particularly how they are going to manage risk carrying activities and seemingly difficult ones. By doing so possible resource needs and shortages and also safety measures should be taken are defined clearly and at the time of implementing of such activities envisioned problems have already been overcome, which would prevent possible time lag between observing the problems and taking remedial action to overcome it.

Scheduling on the other hand will help the project team simply to sequence the activities into a calendar by determining activity durations and critical activity interactions. This will also be helpful in resource utilization planning as well as cash flow arrangement for the organization.

In Chua et. al.'s (1999) study, it is concluded that adequacy of plans and specifications is the most outstanding critical success factor in construction projects.

Poor planning and scheduling will result in uncertainties during tender submissions or other contractual negotiations and as a result will increase the project risk of being over budget, schedule and under quality of the product.

3.2.1.2.2 Poor Organization of Resources (POR)

Resource utilization can be considered as the most important factor in resource management of project. Proper resource arrangement brings higher profit to the organizations by curbing the attrition. Better utilization of resource, which is arranging of the right type of resource for the job means greater operational efficiency and reduced project costs to the organizations.

In the below diagram (see Figure 3.2), East and Liu (2006) categorized construction resource allocation into two as one for large projects and other for small projects. As

indicated in their study resource management is especially critical for construction companies with a single large project (Mosehli and Lorterapong, 1993; Ozdamar and Ulusoy, 1995; Davis and Patterson, 1975) and with several large projects or many small projects (Blismas et. al., 2004)

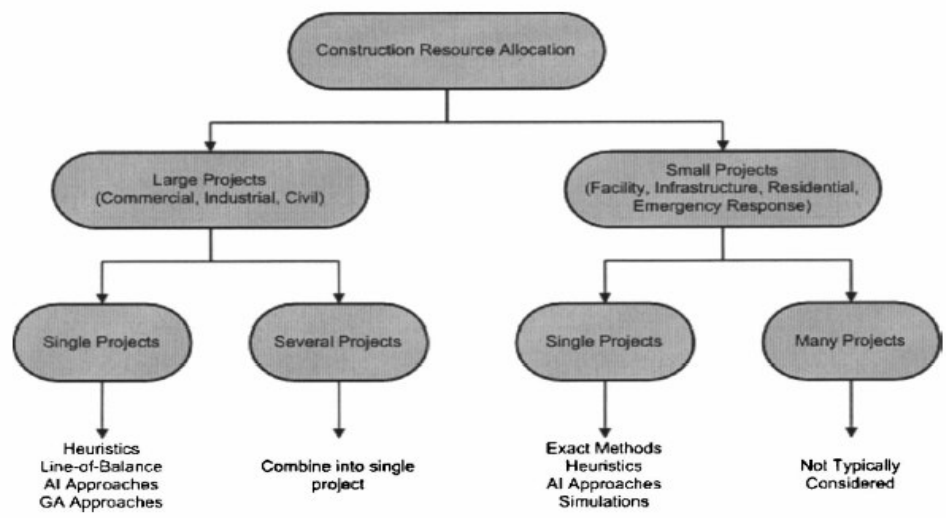


Figure 3.2 Resource allocation Model by East and Liu (2006)

For construction companies with a multi project domain it is critical to plan, control, operate and maintain the execution of a dynamic set of construction projects without consuming the limited organizational resources totally. This needs proper coordination, planning and communication through projects.

On the other hand, resource organization in a single large project tasks in which resources can be used interchangeable should be pre-planned before work execution and the focus of resource management should be on the activity level schedules and the interaction of sequence among the tasks of same resources.

As the complexity and size of the construction project increases production time will be greater and in conjunction the percentage of this time belongs to the resource

supply and arrangement will get longer. Poor resource organization within a single project and between simultaneous projects depending on same kind of limited resource will increase crews' idle hours and in turn reduce their productivity (East and Liu, 2006). Poor resource utilization will increase outsourcing and dependency on third parties in periods of specific resource extinction. This event will cause the procurement of resource more costly. Profit margins of project would become less and successful completion of projects may become impossible due to over budget and excess of completion schedule.

3.2.1.2.3 Poor Leadership (PL)

Hubbard (1990) puts project management action in a key position for the success of a project. The activities should be supplied by the project leadership for the successful execution of a project can be listed as: efficient and effective communication, effective and efficient control and feedback systems execution, troubleshooting, effective coordination between third parties, effective decision making and timely monitoring (Belout, 1998; Chan et.al., 2002).

Project manager can be defined as the person who is effectively in charge of the project and has sufficient authority, personality, and reputation to ensure that everything needs to be done for the benefit of the project is done.

Effective project management for successful completion of the construction project will certainly be directly related the leadership's competence and authority (Jaselskis and Ashley, 1991; Chua et.al., 1999).

Since the project leader should be the key person between different parties such as suppliers, contractor's labors, clients, subcontractors etc., he should satisfy effective coordination among the parties. He should develop a common goal of understanding among the project participants (Baker et. al., 1983; Larson, 1995; Chua et. al., 1999) so that loyalty to the project by all parties will be supplied till the end of the project.

Project leader should also in some means supply motivational factors other than contractual incentives and business relationship among project participants (Diekmann and Girard, 1995). For the workforce implementing the activities, taking all kinds of measures for their health and safety by various training sections and supplying all necessary equipment will be a good motivation agent. Such a care of the employer would make them understand how much their health and safety itaken into consideration by the project management. As they feel that they are considered to be important they will work more deliberately while accident and work hazard rate through project implementation will be reduced. This will in some manner reduce possible project delays.

3.2.1.2.4 Poor Monitoring and Control (PMC)

Monitoring in a construction project execution includes observing of the work done and comparing the conducted work with the planned to be completed work at a specific time. On the other hand, control includes actions to be taken to achieve planned schedule to positively affect future activities. (Nahapiet and Nahapiet, 1985; Chua et. al, 1999). Monitoring and control in a construction project execution involves reporting on budget and schedule, performance control meetings and site inspections.

Construction control meetings are necessary among the contractor workforce as well among all project related parties to become aware of the expectations and possible problems that is or will be encountered in project implementation period (Chua et. al., 1999; Chan et. al., 2002).

Ineffective monitoring and control will lead reduced amount of information flow among the project participators which will in turn result in delays in problem recognition, delays in project completion date as well loss in profit for the contractor because of the delay penalties.

3.2.1.2.5 Poor Project Risk Management (PPRM)

The idea of risk management is an important and integral part of project management. (Simon et. al. 1997)

It is required for construction projects to balance the risk factors with particular contractual, financial and operational requirement. In order to achieve this aim construction companies should develop their own system of risk identification and analysis just to be utilized in the project preparation and execution periods.

The part of risk management before starting of project activities should be conducted during bid preparation as project risk analysis. During this phase, effective risk management program requires contract reviews and insurance facilitation. As stated by business professionals risk is transferable. In many cases, ultimate loss is transferred to the insurer by means of conventional insurance. To benefit from insurance, the prime contractor should be totally aware of the contractual requirements and risks undertaken with the contract, and possible construction risks. Proper risk management should be adapted by past experience. However, relying on only historical performance will not be sufficient to catch overall risk due to the uniqueness of construction projects as well as the rapid change in the construction industry. This fact makes it mandatory for the organizations to combine the experience with a structured approach through which project objectives are clarified, nature of the uncertainties identified, effective communication systems are introduced, decision-making is improved, effective risk control measures are introduced on a systematic knowledge of risk history. Eliminating project risks will need a detailed study of the project and a definition of how the project's success will be measured. (Cano and Cruz, 2002)

Understanding the project will need gathering and summarizing any existing information about the project such as revenue, operational cost and project geographical location. It is important for the successful completion of a project to be aware of the technical, financial and legal issues that may cause stagnation through project execution. Undertaking a project without a proper risk examination would be

catastrophic for construction companies due to incapability of technology, poor cash flow and not pre-considered tax burdens and regulations in the project country.

3.2.1.2.6 Poor Change Order and Claims Management (PCOCM)

During project implementation period, it is certain that there would be demands coming from the client, which may be partly or completely out of contract scope. This means that the cost of these activities is not included in the contract price. As well, some hindering events may occur against the timely and properly execution of some of the construction activities, such events may be completely out of the contractor's control.

This kind of events should be reported to the consultant agent and to the owner in a timely manner. With these reports contractor should carefully declare his claim for additional time for the lost one for the project execution and additionally present change order reports to take the cost deserved.

Project management should give contractual claims proper attention. They should supply all necessary documentation to be reported as soon as any event causing claims occur. After the claim is resolved between all related parties relevant change order should be issued for the contractor to gain what is deserved. Accumulated claims without a proper solution will result in liquidity shortages for the contractor's side and will lead negative profit at the time of project completion. (Abidali and Harris, 1995)

3.2.1.2.7 Poor Selection and Management of Suppliers and Subcontractors (PSMSS)

Selection and management of suppliers and subcontractors and creating a global optimization of their activities are the topics of construction supply chain management (O'Brien, 1998).

Construction supply chain management is the process of planning, implementing and controlling the operations of the suppliers and subcontractors with the purpose of satisfying customer requirements as efficiently as possible. Vrijhoef and Koskela (1999) state the main tools of successful construction management as "Just-in-time" (JIT) delivery and logistics management.

Supply chain management promises the companies to cerate a perspective on their production activities, which will supply a better understanding of their production costs and capabilities.

Subcontractor and supplier production costs comprise a large portion in the total project cost. Properly held management of these third parties will in turn bring cost reductions and increase the speed of work execution. This idea is supported by Bertelsen's (1993) study in which it is proved that poor supply chain management will increase the project cost by 10%. O'Brien et. al. (2002) also agree with Bertelsen (1993) and as an addition state that a similar affect will be on project duration.

Selection of right subcontractor and suppliers for a particular project is another critical issue for successful completion of the project. Any change in the suppliers and subcontractors during the project execution will cause losses in workforce, equipment and time.

Selection process will include weighing up the importance of value for money, quality, reliability and service based on the project priorities and objectives. Having a strategic approach in supplier and subcontractor selection will also help companies to understand possible needs of potential customers. This will in turn provide more satisfied clients and increased industry reputation.

3.2.1.2.8 Poor Quality Management and Control (PQMC)

For construction industry, quality of the product can be defined as the fitness to purpose and can be reached by providing a product (building) that properly serves the purpose stated by the client and bears pre-set features.

Quality control in construction industry should supply fitness to client's quality requirements, time limitations and targeted project cost. First of all, required quality standards defined by the client should be understood clearly. Secondly, appropriate construction methods, equipments, materials and personnel should be employed according to the targeted quality. Thirdly, it is important to construct the building right at the first time. Lastly, a long term quality control should be established by developing a quality management culture.

Quality management system of a construction company should take into consideration all of the stakeholders since construction industry is a multidisciplinary one. Additionally, the system should identify and map the company's key processes and it should help the company market its business and stay competitive by defining the way to monitor and improve ongoing business performance.

Recently many clients in construction industry require contractors to define and show formal evidence of their quality management capability as a condition of their tendering documents and contract documents. Because of possible rework operations and its consequent costs and time overruns, clients are intolerant to poor quality. As a result, clients impute the quality costs on the contractor by strict contractual items. This means that any lack in quality management and control system of the contractors work execution would result in extension of project cost with the addition of "failure costs (cost of demolishing and rebuilding, cost of production time, delays), appraisal costs (cost of inspection and testing) and prevention costs (cost of providing better designs, more training to reduce failure costs, more maintenance" (Warzawski, 1996).

Better quality assurance and control also can be used as a competitive strategy of differentiation. This can be reached in two different ways. First is achieved by supplying higher quality of the finished work. This can be achieved only if it the quality standards are not strictly limited by contract such as design/build contracts. Second one is valid when the quality standard of the product is well defined. In this case, the contractor can give more value to the client by stricter conformance to specifications, tighter tolerances, and fewer faults and blemishes which will result in increase in client satisfaction by fewer repairs and lower maintenance costs (Warzawski, 1996).

3.2.2 Factors Related with "Resources" (Rs)

Second criterion in the top level of the research model is "Resources". Resources in a construction company can be classified as tangible and intangible assets. In the research model, effect of company resources on OD&B is handled by considering these two type of resources. As a result, "Resources" criteria divided into two as:

2.1 Lack of Tangible Resources (LTR)
2.2 Lack of Intangible Resources (LIR)
Tangible resources of a construction company are its technical and technological capability and its financial assets.

Insufficient technical and technological capability includes not having experienced technical personnel such as technicians, engineers, skilled labor and necessary construction equipment to execute an undertaken project. Without necessary technical and technological capability, it is not possible to complete a construction contract successfully.

To supply necessary cash flow for project execution the company should possess sufficient financial assets and credit facilities.

3.2.2.1 Lack of Tangible Resources (LTR)

3.2.2.1.1 Poor Technical / Technological Capability (PTTC)

Dikmen et al. (2005) concluded in their research that besides experience, technical resources and their effective usage within the construction company such as effective IT systems are key determinants of organizational effectiveness for construction companies.

New construction technologies today allow the construction companies to construct more component systems in factories rather than on site. Like this utilization of technology in advance leads labor, material and also time savings. For example, employment of prefabricated structural elements, tunnel forms, and high strength concrete would lead considerable cost savings and therefore price reductions (Warzawski, 1996).

Cost saving will increase the profit of the contractor whereas price reductions will increase the probability of being awarded for new projects.

Additionally technology usage in a proper extend will bring a competitive advantage to construction companies in a manner of faster project completion which is a definite value to the client. When a contractor completes a project before its due date, the idle and unproductive time of the owner's investment will be reduced and he will gain his expected return (Warzawski, 1996).

As Lorange and Nelson (1987) state in their study technical innovation especially in a growing niche will provide companies in charge an "extraordinary competitive advantage" whose returns are heavy demand, no in-kind competition and high profitability.

After all these findings of different researchers, it can clearly be stated that construction companies with poor technical/technological capability will fall behind of its competitors through their race in construction industry. Their profit margin will become smaller and smaller through their decline and in the end they will be thrown out of business.

3.2.2.1.2 Scarcity of Financial Resources (SFR)

As stated by Weitzel and Johnson (1989) scarcity of financial resources is a critical limiting factor for a company's possible courses of action. Lack of a strong financial director, inadequate cash flow plan and poor budgetary control system can be counted as the possible reasons, which force the company into scarcity in its financial resources. (Abidali and Harris, 1995)

To conduct a construction project the companies will need an initial investment in facilities, knowledge, labor, equipment and so on. The stronger financial position that a construction company has, the higher risk going through higher returns can be taken since it will enjoy a higher credibility and reputation among its clients and suppliers. It is correct for competitive bidding case of the Turkish companies racing in domestic or foreign market. To be accepted as a qualified bidder for construction projects to be awarded through tendering, sufficiency of financial capability declaration is a prerequisite for interested bidders. That is financial situation of a company is a very important strategic asset for the company.

Companies facing scarcity in the financial resource will have a bad image among the third parties. Suppliers and creditors will hesitate in doing business with such companies. Since clients will not rely on their timely delivery of the project, it will become hard to take over new projects.

Another possible outcome of scarcity in financial resources of a company is possibility of loosing its higher and middle level workers. Because of inadequate

financial income, the company may go into workforce reduction such as involuntary leave, forced early retirement and involuntary transfers. Additionally key personnel would leave because of the threatening cost-saving measures taken such as pay freezes, pay cuts and demotions (Warzawski, 1996). This situation will result in know-how loose within the company which will reduce its competitive advantage indirectly due to financial shrinkage.

3.2.2.2 Lack of Intangible Resources (LIR)

3.2.2.2.1 Poor Company Image (PCI)

There is a variety of events that may taint an organizations image such as scarcity of financial resources (Salancik and Meindl, 1984), losing its prestigious executives (D'Aveni, 1989), illegal acts of key personnel (Kleinfield, 1985).

One of the most important negative effects of tainted company image is the "negative reactions" by the exchange partners (clients, subcontractors, consultants, suppliers, credit facilities etc.). Spread of the news on the tainted image of an organization would cause them to end their relationship with the organization (Sutton, 1990). D'Aveni (1989) proved by his study with 57 bankrupt firm that departure of a prestigious executive is one of the most important reasons of support withdrawal of key strategic partners of an organization. According to his findings since the executives with an elite educational background is thought to be the one who keep the firm alive, it is believed by the exchange partners that without him the company will be in trouble in its survival.

Sometimes, some of the exchange partners would not have the choice of disengaging from the organization with a poor image because of some contractual obligations or friendship relations with the firm owner. To explain this kind of situation Scott (1987) provides two simple examples one is a supplier who should continue selling goods to a bankrupt firm due to its contract and second one is a vice president who

cannot resign despite a good job offer since he is a close friend of the owner. Both of them are willing to get rid of the organization with a poor image but for some reasons can not. At this point, there occurs reduction in the quality of participation, that is they partly leave the tainted organization. For example, the supplier would send defective material to the organization.

Another point stated in the Scott's (1987) study is that bargaining power of the exchange partners will be increased against the organization with a tainted image. Since there will be less parties that will voluntarily work with the organization, some exchange partners will use the firms unfavorable image for better exchange relationship for their sides. When the corresponding pool of exchange partner reduces, the company will be dependent on a few of them (Pfeffer and Salancik, 1978) which will lead higher prices demanded by suppliers and vice versa for clients.

Goffman (1959) states in his study that; a stigmatized person is not welcomed by its environment. This is also an accepted situation for the organizations. Organizations with tainted image will be rejected by the third parties like persons carrying a contagious disease. As a simple example the managers of an organization with a poor image will try to leave the company as soon as possible because their image will be tainted further which will end their future career.

3.2.2.2.2 Lack of Experience and Organizational Knowledge (LEOK)

Cowie (1989) defines experience as "knowledge or skill acquired from seeing and doing things". Experience is gained through the life of an organization as the product of its learning process (Arrow, 1962). According to Kolb (1984), knowledge is created through the transformation of experience within learning process.

Organizational learning includes the learning mechanism of a group of people working to achieve a common goal and sharing a common vision. (Fu et.al, 2003). By using organizational learning within an organizational culture, companies gain

better knowledge and understanding, which improves their actions (Fiol and Lyles, 1985).

Experience gained through systematic learning provides the organization identifying the path going through success as well solving problems, which would result in failure. (Fiol and Lyles, 1985). Supporting this fact, De Geus (1988) suggests learning faster than competitors do as the only way to sustain competitive. Another point of view on the issue appears Grant's (1991) study where the researcher states that established and experienced firms keep a competitive advantage over new comers through organizational routines developed from experience.

Fu et. al. (2003) divides the contractor's experience into two as construction experience and bidding experience. As it will be appreciated by readers, construction experience of contractors mainly come from previously completed projects. Construction experience provides the contractors a familiarization to jobs of repetitive nature, better work planning and organization, more efficient safety precautions and environmental provision (McNeill and Clark, 1966; Olomolaiye et.al., 1998; Ostwald, 2001).

Bidding experience is also important to remain competitive in the Turkish construction industry where bidding is the most common method in contract awards. Fu et. al. (2003) state in their study that contractors that have poor bidding performance will eventually go out of business. Bidding experience will be the key in performance enhancement through tendering processes.

Lack of organizational knowledge and experience will result in deficiencies in taking proactive measures for upcoming potential troubles. An educated workforce work "smarter and more efficiently" on the other hand poor organization knowledge and experience will hinder "better client solutions" and as a result hinder growth of the organization in the construction industry which has a very competitive nature with low profit margins (Chinowsky, 2001).

3.2.2.2.3 Poor Relations with Government, Politicians and / or Clients (PRGPC)

Especially in the Turkish construction industry good relations with clients or government is an important criterion in undertaking new projects (Dikmen et.al., 2003).

As it is known, Turkey is a developing country and the major client of infrastructure, superstructure and mass housing projects constituting the largest portion of construction projects to be awarded to contractors is the government. For this reason, construction companies keeping in good touch with government representatives would probably be informed for new coming government supported projects and will have more time to be prepared for their tenders.

At another aspect, failing to conform to regulations of government will cause adverse implications on construction companies such as criminal charges, construction delays, productivity loss, higher insurance premiums, potential liability suits as well as reduced morale of the employees. Poor relations with government would also result in raised questions of the legitimacy of the construction companies will affect their relationships with future clients, sureties, subcontractors and suppliers. Their ability to obtain resources such as equipment, capital, material, labor, know-how etc. will be reduced (Kale and Arditi, 1998). Client satisfaction in construction works is the best reference in taking new jobs from the same clients and other possible new clients. Poor relations with clients or government will reduce the number of projects awarded to construction companies and the company which can not take over new projects would have to declare bankruptcy.

3.2.3 Factors Related to "Decisions" (Ds)

Effect of decisions taken in a construction company was considered to be in market base, organizational base and lastly project base. Decision criterion took its place in the research model as follows:

3.1 Wrong Market Strategies (WMS)

3.2 Wrong Organizational Decisions (WOD)

3.3 Wrong Project Strategies (WPS)

3.2.3.1 Wrong Market Strategies (WMS)

3.2.3.1.1 Excessive Expansion (EE)

Organizational expansion can be in different directions. Organization may choose one of the following growth strategies, which are entering into new geographic regions where it has not been active before, taking part in international activities, entering into project whose type may be considered new for the organization etc. (Warzawski, 1996).

Growth strategies will require an expansion in parallel direction with inner and outer resource base of the organization. This means that it is important for an organization to define its ultimate capacity through expansion.

On the other hand, excessive expansion takes place when the organization will not be capable of managing its new dimension because of limited or totally consumed resources. As stated by Weitzel and Johnson (1989) excessive or inappropriate expansion that depletes organizational resources may reduce the organization's survival chance especially under environmental shortage. According to them low level of support from external environment as well as lack of internal slack resources to meet expansion of the organization will catalyze the speed and depth of decline.

Abidali and Harris (1995) categorized over trading factor as one of the managerial level decision making error that leads failure of construction companies. According to their research, the reason behind this kind of business failure is the organization's faster expansion than its funding resources permit. In such a case companies try to increase their asset base to supply for expansion by relying on loans. When the cash

flow from new project will not be as on time as estimated to be, the company will begin to loose equity and as a result would declare its bankruptcy.

As can be appreciated expansion does not always means prosperity. Business owners expect promising sales for guaranteed funding together with their current growth to insure their survival. Since expansion brings increased expenses and overhead costs an unexpected decrease in demand for organizational product for example due to economic crisis will lead to “stagnant excesses in inventory” and “unpaid excesses” which in turn will create a potential for insolvency.

3.2.3.1.2 Wrong Level of Diversification (WLD)

Diversification can be thought as one of the growth strategies for construction companies. Diversification can be in different manners such as entry into new locations or regions where the companies were not active before, entry into new types of construction projects and engaging in new types of activities (Warzawski, 1996). In dictionary diversifications is explained as “to extend business activities into disparate fields” or “to distribute investments in order to average risks of loss”.

Diversification in construction industry may occur due to the owner’s seeking new challenges, client demands, new market opportunities or reducing financial risk.

By economists, it is not advised for the construction company owner’s to see diversification as a new challenge since he is bored or tired of his routine. In this case, diversification will probably increase risk; it is better for the organization to keep its core business. Sometimes perceived market opportunities seem too much attractive for the construction companies; for example, when mass housing begins to make high profit, the company owner may want to increase his profits by using his skills to meet the market need although he was dealing with other sector of construction industry. The possible risk of such diversification is that companies going after new market opportunities may become distracted from focusing on their primary business and their profit gain dreams may result in loss.

Diversification is also engaged for spreading risk among several differential investments to protect company's financial assets. This means putting the profit gained from primary business into other opportunities. Construction companies have been conservative on keeping all their profits back into the main business through history. This common understanding has its own risk at down cycle periods when everything is at risk. Diversifying investment into other areas will reduce the risk of economic fatality because of downturn in one area. On the other hand it is always a better idea to concentrate on the areas in which the company has an industrial understanding. It is also important to arrange the timing of diversification through new investments. Since approximately three-quarters of all new business fail in the first year, and about half of those that survive will fail within the first five years, it will not be a good idea to start a new business at the time when the company's core business is suffering down, which would in turn be increasing the company's risk (Trellis, 2005).

The common risk of diversification being vertical, horizontal and geographic or in other business is the risk of failure in the core business. Since it is a known fact that a major cause of business failure is lack of management focus on key objectives, trying to run more than one business concurrently will make management focus scattered and ineffective (Trellis, 2005). As a result, it can be concluded that decisions of diversification is certainly related with identifying demands of the construction company. Level of diversification that is needed and can be toleranced and supported by the company is a vital decision through diversification process. Its being at a lower or higher level than required will increase the risk of company failure.

3.2.3.1.3 Poor Investment Decisions (PID)

Freier (1990) suggests in his empirical observation that "over the past 20 years, the minimum company size required to compete successfully in the most industry segments has been steadily increasing". Freier's this suggestion is also correct for construction companies for whom growth is a vital element of business survival.

Companies can grow either by making more investments on their own internal values or they may acquire an external firm. Acquisition of an external firm being cheaper and quicker than the other growth alternatives such as internal development or strategic alliances has been a more preferred method for construction companies. On the other hand, in their study it is also stated that the relation level and fit of the acquired business with the lasting business of the company play a decision-giving role for possible income resulting from acquisition. Cultural fit within the combined companies designated the magnitude of the economic gains from the investment (Choi and Russel, 2004). Another point of view on the issue is stated by Abidali and Harris (1995) as the fatal effect of acquisition of a potentially failing firm. They state that "a company may unfortunately take over a firm and later find a hidden difficult financial situation resulting in disaster if the acquired firm fails" (Abidali and Harris, 1995).

3.2.3.2 Wrong Organizational Decisions (WOD)

3.2.3.2.1 Unsuccessful Restructuring / Reorganization (URRO)

One of the major causes of organizational decline is the manager's tendency to commit present course of action. The policies of the organizational activities included in the value chain have been formed the establishment of the organization and have been being shaped by years of experience. This policies have been the real source in the past performances which in case justifies the usefulness of the ongoing culture (Sturbuck et.al., 1978).

On the other hand as stated by Weitzel and Johnson (1989) there is not a stable environment for any organizations. Changing environment will certainly demand some changes within the organizational course of action.

Major reorientations are needed for companies in the way of organizational decline going to bankruptcy to recover their situation. Organizational restructuring and

reorientation includes a complete change in organizational strategy, structure, personnel and ideology (Hedberg et.al, 1976).

One of the common mistakes on restructuring is the understanding of gradual change. In gradual change, new comers will mostly be assimilated by the cohesiveness of the former management. Weitzel and Johnson (1989) state that because of the time constraints of duration between decline and bankruptcy, rapid change is critical.

According to Tushman et. al. (1986) a complete "frame – breaking" change is strictly required to reverse decline but they add this idea another fact that there is not a rule as all reorganizations will be successful.

For a successful turnaround, the goals of the recovery should be set clearly by the organization. These goals should aim a long-term survival (Katz and Kahn, 1978; Weitzel and Johnson, 1989), that is they should be the basis for strategic renovations (Hirshhorn, 1983).

Singh (1986) emphasizes another possible cause of unsuccessful reorganization as the high stress level with which poor performing organizations faced. According to him since such organizations are susceptible to risk taking, they conduct the restructuring without a comprehensive internal and external analysis.

3.2.3.2.2 Saving Non-Value Adding Activities (SNVAA)

As Starbuck et. al. (1978) state in their study excessive commitment to present course of action has a high degree contribution to organizational inaction. Construction industry is a highly competitive and dynamic industry. This being the case construction companies should examine the suitability of their value chain rings to the changing environment.

Especially when the present course of actions involved in the formulation of the company and when they are justified by past successes, a blind commitment to these actions occurs within the company (Weitzel ad Johnson, 1989). Besides, existence of leaders with the lack of knowledge, insight or know-how to cope with a dynamic environment will increase conservativeness within the company against change.

This type of conservativeness will result in saving activities, which do not add value to the company any more. Non-value adding activities will also consume organization's resources and will decrease the importance to be given to more value adding activities, which as a result will lead ineffectiveness. To reach success the construction companies should be aware of the internal factors that hinder their speed of success.

Schendel et. al. (1976) list three cures of organization decline as "the new leadership, diversification through product development and acquisition, and divestment of failing lines and divisions". As stated by the researchers getting rid of "failing lines and divisions" will increase organizational efficiency and effectiveness.

3.2.3.3 Wrong Project Strategies (WPS)

3.2.3.3.1 Wrong Project Selection (WPSl)

Selecting the correct project in which a contractor would gain profit is a major handicap faced in construction industry.

As a result of the case study, they have conducted among failed construction companies, Abidali and Harris (1995) concluded that most of the failed construction companies had undertaken large projects requiring high level of inventory and technical industrial construction. Overseas contracting had also come out to be one of the reasons of failure of construction companies involved in their study. They say that although working abroad seemed to be a good opportunity for large construction

companies possibility of lacking in managerial control in an unfamiliar environment stands as a big risk factor besides this opportunity. Undertaking a project whose requirements can not be supported by the contractor will lead failure of the project and loss of main resources of the company.

It is very common in construction industry to see contractors filing bankruptcy because of wrong project selection.

3.2.3.3.2 Wrong Project Cost Estimation (WPCE)

Common source of errors in construction cost estimating are misunderstanding the plans and specifications provided, using wrong wage rates for resources, using incorrect units of measure, including poorly maintained machinery or equipment, failure to visit project site, failure to review the bids of subcontractors, over/under looking items, inadequate or excessive overhead charges (Thomas, 1991).

Wrong project cost estimating can be in two different directions, which are over estimating and underestimating. Both of them result in loss for contractors.

Vast majority of the projects are obtained through competitive bidding in construction industry (Fu et.al., 2003). In Turkey bid award criteria is commonly "lowest bid price". Due to this reason, over estimating the project cost will result in losing bids and since the company could not obtain new jobs, it would go out of business soon. On the other hand if the project cost is underestimated by the construction company, it will lose profit or lose its own capital to complete the project under contract. If the company needs the profit of a project it has undertaken to pay back his loans and if additionally the project cost came out to be underestimated by the company, the debt could not be paid back.

It is a widely seen event for construction companies to take bank credit to invest in projects, since construction projects need high capital investment in the beginning of the project. In case the company would not gain the profit it has estimated to take the

project, it will loose money from its own budget to pay back its debt if it is lucky enough. If the company cannot pay his debt back, it will have to file bankruptcy.

3.2.4 Factors Depicted as "Chance Factors" (CF)

Not always predictable factors affect the construction company's destiny. Sometimes occurring of some events, which are not under control of the company may be effective on the organization's future. Considering this issue, as the last criterion of the research model "Chance Factors" effective on OD&B of a construction company are categorized. This criterion is examined in combination of two factors namely:

4.1 Company Specific Chance Factors (CSCF)
4.2 General Chance Factors (GCF)

Possible effects of company specific chance factors on the organization's fate can be classified as follows:

3.2.4.1 Company Specific Chance Factors (CSCF)

3.2.4.1.1 Sudden Death of the Company Leader (SDCL)

This factor is especially effective in companies having Autocratic Leadership. In addition to this feature of the company if the leader was the person who formed the company and provided a successful past performance, leader's role in the existence of the company becomes crucial. Especially in such companies sudden death of the company leader results in dissolution within the company body when there has been a high level of commitment to the leader by the workers and when the reason why the experienced key personnel preferred to work with the company has just been their good relationship with the leader. In this case; when the leader disappears, the key personnel would begin to look for new and better job opportunities.

Departure of the key personnel after their leader will weaken the devotion of the lower level employees to the company, which will in turn weaken the organization's survival chance (Weitzel and Johnson, 1989).

Most of the Turkish construction companies are directed by autocratic chief executive who acts as both chief executive and the chairman. Such an unfortunate characteristic has found out to be an apparent reason of failure of most of the failed companies by Abidali and Harris (1995).

3.2.4.1.2 Difficulty in Collecting Money from Clients (DCMC)

This factor can said to be as a self-explanatory one. A construction project requires investment made by the contractor who undertakes it. The investment is thought to be taken back with its profit by the completion of the project. As a common method, contractors borrow money from creditors for the initial investment especially for the execution of the projects without advance payment. It is vital to pay the loan taken from the creditors back timely. If the client does not pay the invoices issued by the contractor in time due to some economical reasons such as filing bankruptcy, the contractor can not pay back to his debtors. In such a case, the contractor will have to pay the loans back with its own capital if it has enough assets.

Money collected from client may also be used to finance the project staff as a whole. The company which can not take its money from the client would have difficulty in paying the salaries of its employees engaged particularly for that project. Such a situation will become more dramatic when the company's own capital is invested in some other projects. In such a case it would not have the chance of supporting the problematic project financially. This capital shortage within the project will cause a chaos within the workforce. When the situation lasts long, the project staff would begin to leave the job site and would go to court to take what they have deserved for their work. Such an event would appear in media and would badly affect the reputation of the contractor. Another disadvantage of this event will be the difficulty

in collecting skilled labor for the contractor for his new projects if it is lucky enough to survive in the construction market.

3.2.4.1.3 Sudden Change within the Workforce / Braindrain (SCWB)

Braindrain phenomenon is defined as "the exit of employees who hold any skill, competency, or personnel attribute that may be considered to be a highly needed and valuable organizational asset" by Rosenblatt and Sheaffer (2000). Braindrain is an obvious threat to organization's success in its activities all through its lifecycle. But especially in crisis and declining periods when the company needs more talented employees carrying the know-how of recovery, braindrain will be damaging for company's survival chance. Typical symptoms causing braindrain in crisis or decline periods can be summarized by considering the studies of different authors as financial distress, declining morale, shrinkage in carrier opportunities within the company, ineffective company structure, and ignored call for change of the employees (Becker, 1974; Drew, 1994; Greengard, 1993; Merry and Brown; 1986; Mone, 1994; Whetten, 1980a; Whetten, 1980b).

In such conditions first of all the most talented and marketable employees tend to leave the company. Their leaving triggers secondary level cohorts to leave the company, which will as a result begin a braindrain cycle spirals within the organization (Sheaffer et. al., 1998).

Braindrain affects current and also feature organizational outcomes. Departure of marketable staff weakens the organization and escalates decline. Barney (1991, 1997) and Corner (1991) state in their studies that human capital is much more significant for companies than their current market positions. The idea is supported by Pennings and Goodman (1977) in their study where they point out that loss of human capital will lead to firm to dissolution.

More than these, braindrain has unique costs on the organization. Levine (1984) summarizes such costs as recruitment, selection and training of replaced employees, indirect cost for treatment of survivors' demoralization. Cascio (1991) emphasizes in his study that cost of replacing strong performers will be greater than weaker ones.

Secondly, possible effects of general chance factors on the organization's fate can be explained as below:

3.2.4.2 General Chance Factors (GCF)

3.2.4.2.1 Shrinkage in Construction Demand (SCD)

As stated by Cameron and Zannuto (1983), any erosion in the environmental niche of an organization will certainly result in stagnation for itself also.

Niche stagnation may occur as a basic shift in the environment, which may appear as an alteration in public expectations or preferences for the organization's service or products. Such a shift may be caused due to influences on market demand such as a technological breakthrough capable of altering the core technology in the niche.

Such changes may cause obstructions for organizational access to important resources or potential clients (Weitzel and Johnson, 1989).

This reality is common for all industries as well as for construction industry. This point of view is supported by Kangari's (1988) study where he states that "continued decreases or stagnation in construction activity should ultimately result in increases in business failures."

3.2.4.2.2 Change in Economy (CE)

As stated by Kangari (1988), construction industry contains more risk than its counterparts in other industries especially because of the contraversiality of the product built and its substantial production time.

Construction industry is highly sensitive to economic cycles such as economic crisis. Change in general economic factors such as change in interest rates or inflation directly affect survival of construction companies.

As stated several times in this study before, borrowing money to commence a project is almost a rule of thumb in construction business. Any unexpected rise in the interest rates at which company has borrowed money may have a severe effect on the profitability of the companies. While borrowing money cheaply with low interest rates will prevent negative profit out of the project, paying it back in charge of sudden rise of the interest rates may force the company to file bankruptcy since unpaid debt has come out to be much higher than the expected return. Additionally the impact of project delays and late payments that hurt the cash flow cycle will be more severe in combination of raised interest rates and inflation due to economical changes (Kangari, 1988).

3.2.4.2.3 Change in Politics (CP)

Change in politics will affect the overall economy of the country. Effects of economical changes on construction industry are mentioned before. Other than economic changes, change in politics may have more direct effects on the construction companies.

As mentioned before, since Turkey is a developing country most of the construction project opportunities are infrastructure and mass housing projects awarded by the Government. Politicians may decide to allocate fewer budgets for the construction works and to invest in other industry divisions, which will in case reduce the number of potential job opportunities dramatically for construction companies.

For example, for a specific company awarded profitable projects by the government using its good relations with the politicians, forthcoming elections would be a disadvantageous event in case of change in politics.

Another point of view should be considered under this heading is change in governmental regulations. Stricter regulations affecting construction industry such as stricter health and safety regulations in job sites and stricter environmental regulations may also increase cost of construction and decrease the profitability of the project.

Changing political relations between the contractor's home country and his clients' or suppliers' countries in a negative manner would also create a disadvantageous situation for the contractor against its foreign competitors.

CHAPTER 4

RESEARCH METHODOLOGY

The current research consists of six stages whose main headings can be listed as:

1) Literature survey
2) Conceptual model formation
3) Determination of the Research Method
4) Data Collection
5) Data Analysis
6) Discussion of findings

The first two stages namely the literature review and the conceptual model formation levels have already been explained in the previous chapters. The conceptual model, mainly the hierarchical structure, is depicted in Figure 3.1.

4.1 The Research Methodology

In the model, there are various factors effective on "OD&B" and they are classified in a hierarchical interaction. Due to these facts, the methodology to be used is needed to be effective in analyzing the data on a hierarchical interaction. Such methodologies used excessively to reach a targeted decision by analyzing multiple factors effective on the decision are called collectively as multivariate decision making tools.

Recently most commonly used multivariate decision making tool in analyzing the hierarchically classified data was Analytical Hierarchy Process (AHP) which was developed by Thomas L. Saaty (1980). AHP structures the multivariate decision making problems into a hierarchical structure and analyze the factors contributing to

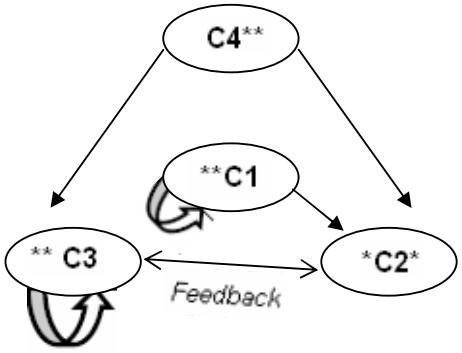
the problem systematically within the hierarchy to determine the priorities of the factors relative to each other. In doing so, the most important feature of AHP is that it accepts that there is no interaction among the factors located in the same level of the hierarchy; that is, the model does not take into account the influences among the same level elements.

Whereas in real life the factors affecting the multivariate decision-making problems interact each other and to reach a more realistic result this interaction should be encountered. The model which allows this requirement of multivariate decision-making problems was again developed by Thomas L. Saaty (1996) which was called Analytical Network Process (ANP). With this new tool the obligation of analyzing decision-making variables into a strict one direction hierarchy was defeated. ANP allows the researcher to analyze his data by considering the interaction among the factors of same level. The power of ANP lies in its use of ratio scales to capture all kinds of interactions and make accurate predictions to make a better decision. The ANP can be considered as the first mathematical theory that makes it possible to deal with all kinds of dependence and feedback systematically. ANP is used mainly to extend AHP to case of dependence and feedback again by use of the "supermatrix" approach introduced in Thomas Saaty's (1980) book on AHP.

The ANP is formed of two parts. The first one includes a control hierarchy or network of criteria and sub criteria that controls the interactions in the system under study. The second is the network of influences among the elements and the clusters. The network is different from criterion to criterion and a supermatrix of limiting influence is computed for each control criterion. Finally, each of the supermatrices is weighted by use of the priority of its control criterion and the results are synthesized through addition for all of the control criteria.

Feedback network in ANP has inner and outer dependences. In the network, a component may influence other elements in the same component which is called as the inner dependence and those in other components which is called as the outer

dependence with respect to each of several properties (see Figure 4.1). In the end of the analysis, it is desired to determine the overall influence of all the elements.



Arc from component C4 to C2 Indicates the outer dependence of the elements with respect to C2 on the elements in C4 with to a common property.

Loop in a component indicates inner dependence of the element in that component with respect to a common property.

Figure 4.1 Inner and Outer Dependence in Feedback Network in ANP

AHP shows the interactions in a one directional structure, whereas ANP allows the user to take into account more complicated interactions within the decision levels. This feature of ANP aids to solve problems, which can not be modeled in to a single direction hierarchy. The difference between a hierarchy and a network can be seen in Figure 4.2, given below:

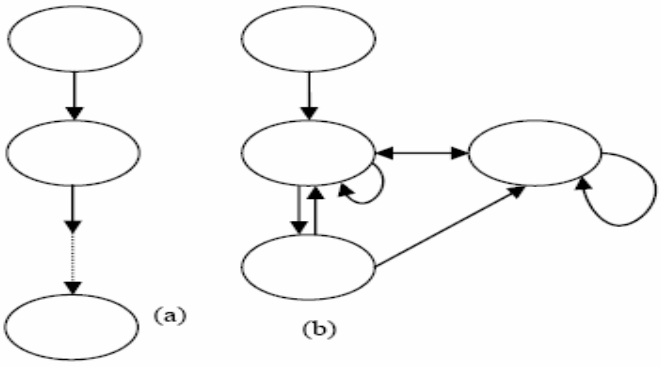


Figure 4.2 (a) hierarchy ; (b) network

The most applicable tool to analyze the model of the study has come out to be ANP because of the hierarchical network of the research model and the existing interdependencies between top level criteria and the lowest level factors. The interdependency is validated by the comments taken from the respondents, which would be explained in the next chapter of interpretation of results.

The fundamentals of the Analytic Network Process (ANP) could be found in Saaty (1996). In brief, ANP model consists of the control hierarchies, clusters, elements, interrelationship between elements, and interrelationship between clusters.

Control hierarchies consist of the top level criteria that involves in decision making. Control hierarchy provides overriding criteria for comparing each type of interaction in the network. In the OD&B model of the research, the control hierarch is the hierarchical relationship which can be seen in Figure 3.1. The determination of relative weights in ANP is based on the pairwise comparison as in the standard AHP (Saaty, 1980). With respect to any criterion pairwise comparisons are performed in two levels, the element (factor) level comparison and the cluster level comparison

Elements (factors) are the entities in the systems, which interact with each other. In complex system, which contains a great number of elements, it would be very time consuming to measure relative importance of each element with every single element in the system. Instead, elements that share similar characteristics are usually grouped into *cluste*r. Clusters in the OD&B model are the higher level criteria which are namely VC, Ds, Rs and CF for their subfactors and these subfactors are clusters for lowest level factors.

4.2 The Steps of ANP in Multivariate Decision Making

Step 1: Definition of the problem and model formation: In this step the decision making problem should be clearly identified and should be put into a hierarchical

network model. Interactions among model factors can be obtained by brainstorming or by asking the ideas of some decision-makers.

Step 2: Forming pairwise comparison matrices and priority factors: Like AHP, in ANP the factors effective on the decision-making problem are subjected to pairwise comparison process by which the priority weights of the factors are determined. The decision-makers answer the pairwise comparison questions of two factors to identify their contribution to the decision problem relative to each other. In ANP, to identify this relative contribution of the factors decision-makers use a priority ranking values table, which can be seen in Table 4.1 below:

Table 4.1 Ratio Scale of ANP (Adapted from Saaty, 1980)

Intensity of Importance	**Definition**	**Explanation**
1	Equal importance	Two activities contribute equally to the objective
3	Moderate importance	Experience and judgment slightly favor one activity over another
5	Strong importance	Experience and judgment strongly favor one activity over another
7	Very Strong or demonstrated importance	An activity is favored very strongly over another, its dominance is demonstrated in practice
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation

As in the case of AHP, pairwise comparisons are conducted through a matrix in ANP as well. The local priority vector is obtained by solving the equation:

$Aw = \lambda_{max} X w$, where;

A = the pairwise comparison matrix

w = eigenvector of the matrix

λmax = the maximum eigenvalue of A

Saaty (1980) recommends using normalization algorithm in approximate solution of "w" eigenvector.

Step 3: Supermatrix formation : The determination of relative weights mentioned above is based on pairwise comparison as in the standard AHP. The weights are then put into the supermatrix that represents the interrelationships of elements in the system. The general form of the supermatrix can be described in Figure 4.3 below.

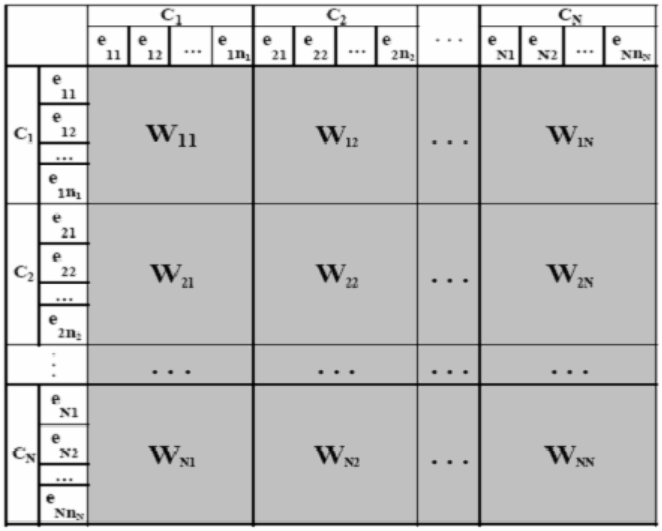


Figure 4.3 General Form of Supermatrix

Where C_N denotes the N^{th} cluster, e_{Nn} denotes the n^{th} element in the N^{th} cluster, and W_{ij} block matrix consists of the collection of the priority weight vectors (w) of the influence of the elements in the I^{th} cluster with respect to the j^{th} cluster. If the i^{th} cluster has no influence to the j^{th} cluster then $W_{ij} = 0$. The matrix obtained in this step is called the initial supermatrix.

The general structure of the supermatrix is similar to Markov Chain Process (Saaty, 1996). To obtain global priorities in a system including dependency among its factors, local priority vectors are placed in the columns of a matrix known as

supermatrix. The supermatrix is a fragmented matrix and each matrix part in it shows the interaction between two factors in a system.

The relative long term influences of the factors on each other are identified by weighing the supermatrix. To equalize the priority weight at one point, $(2k+1)^{th}$ weight of the supermatrix has to be calculated. The value of "k" is an arbitrarily chosen large number. The new matrix obtained after the weighing process is called the limit supermatrix.

As stated earlier, the pairwise comparison is performed in two levels. The eigenvector obtained from cluster level comparison with respect to the control criterion is applied as the cluster weights. This results in a matrix whose each columns sums to unity. If any block in the supermatrix contains a column that every element is zero, that column of the supermatrix must be normalized after weighting by the cluster's weights to ensure the column sum to be unity. The concept is similar to Markov Chain (Saaty, 1996) that the sum of the probabilities of all states equal to one. This matrix is called the stochastic matrix or weighted supermatrix.

The weighted supermatrix is raised to limiting power such as Equation (1) to get the global priority vectors. (Piantanakulchai, 2005)

$$\lim_{k\to\infty} W^k \quad \text{.....Equation (1)}$$

If the supermatrix has the effect of cyclicity, there may be two or more N limiting supermatrices. In this case, the Cesaro sum is calculated as in Equation (2) to get the average priority weights.

$$\lim_{k\to\infty}\left(\frac{1}{N}\right)\sum_{i=1}^{N} W_i^k \quad \text{.....Equation (2)}$$

Step 4: Choosing the best alternative: With limited supermatrix the priority weights of the alternatives or the factors in comparison are defined. In choosing the best

alternative problems, the alternative appearing to have the highest priority is thought to be the best alternative, whereas in effectiveness determination problems the factor carrying the highest priority value is decided to be the most important factor for the decision making problem in consideration.

4.3 ANP Applications in Construction Management

ANP, being a comprehensive decision making tool, have been utilized by many researchers as the analyzing tool for complicated multivariate decision making problems. Dikmen et. al. (2005) used ANP in their study on international market choice, whereas Dağdeviren et. al. (2005) formed a model to identify total work load level of employees by ANP. Niemira et. al (2004) made use of ANP in their study of forecasting financial crisis. Chen and Wong (2005) utilized ANP in developing a model for environmentally conscious construction planning. As a last example of ANP utilization in literature, Cheng and Li's (2005) study on project selection in construction industry by ANP can be indicated.

4.4 Data Collection

4.4.1 Introduction

Research data which is used in ANP is obtained with the aid of respondents. As briefly stated before, respondents were preferred to be experienced civil engineers who had encountered OD&B through their career in construction industry.

Brief information on their industrial experience can be found in Table 4.2.

To form a common understanding on the research topic, all of the respondents were contacted separately in their offices and was given a brief information about the aims and contents of the study. During the first visit, they were provided with the first step "Data Collection Form". They were requested to list the factors that affected their

own experience of OD&B before they examine the research model presented in the attachment of Data Collection Form Step 1 (see Appendix B page 112).

Table 4.2 Brief Information about the Sectorial and Bankruptcy Experience of the Respondents

Respondent	Age	Current Title	Years of Experience	Experenced in:	Organizational Decline &Bankruptcy Experience:
A	38	Asst.Prof. Dr.	17 years	Site Planning and Cost Control, Planning Engineering of 6 years, Research and Consultancy of 17 years	In 1996 – As being the site planning and cost control manager of X-Y JV in Ankara – Turkey
B	34	Project Management Consultant	13 years	Construction Planning, Cost Control, IT and Quality Management of 17 years	In 1996 – As being a planning engineer of a luxury mass housing project in a reputable construction company in Ankara – Turkey
C	47	Project Coordinator	19 years	Preject Coordination, Planning and Business Development of 19 years	In 2002 – As being the planning coordinator in the construction branch of a reputable holding in Ankara – Turkey

Respondent A experienced organizational decline in a general contracting company working in industrial projects. As he stated their fault was trying to undertake a number of different size projects simultaneously in the aim of gaining maximum profit in short time. He mentioned that ultimate attention should be given to environmental scanning in project selection. Project risks should be properly identified and necessary precautions should be decided before the project is undertaken. He also mentioned the importance of the qualified personnel allocation within the organization since scarcity in qualified personnel will lead poor company image as he said. Respondent A's company was unsuccessful in selecting new projects. The company was just interested in the profit margins of the projects rather than their suitability for the company's capacity and capability. The claim management practices were also poor. Trying to undertake more projects that it can manage resulted in excessive expansion and improper claims management resulted in cost overruns since proper attention had not been given through the bidding phase to

the project risk. As a result, some of the projects were resulted in failure and the company image was tainted. It took years for the company to improve its company image within the industry. The company was able to recover as it was lucky enough to finance itself after long decline years.

Responded B experienced bankruptcy resulted from a single project taking place in Ankara-Turkey, in a middle sized luxery housing company at which he was employed as the planning engineer. The project was also a mass housing project where the company was an experienced one. There was no diversification or excessive expansion or a solid strategic mistake. The company's fault was relying on short term loans. In reality, such an action can not be considered as a mistake or fault. It is rule of thumb for the construction companies conducting their own project or commencing a project without some advance payment to take bank credit or loans from different suppliers to initiate and process their works till any earning from the project start to appear in their balance sheets. This time, a chance factor affected the fate of the project and as a result fate of the company. Economic crises occurred in Turkey. Inflation rates and as a result the credit rates increased sharply so that the company was charged to pay back much more than it borrowed. Due to economic crisis demand for mass housing declined and as a result, construction activity decreased. By that particular time, the company could not find new clients for its products and additionally faced with difficulty in collecting money from their present clients.

Respondent C experienced bankruptcy in a commonly known large government supported superstructures company, which is a part of a holding, as the projects planning manager. Respondent C emphasized that the company had already proved itself in superstructures projects in the domestic market and when the managers decided to diversify in another sector within the construction industry, it looked as a good strategic decision for expansion of the company. By that time being blinded with success and the profit earned from the works completed, the managers thought that they have enough capacity to undertake more challenging projects. They decided

to run before walking properly and decided to diversify extensively with this strategy. The company undertook a road construction work in Tajikistan in 2002 at a value of 35 Million $ without know-how of road construction and a machinery park. The company returned the real world and understood the difficulties of the situation after the contract was sign. It was true that the project was a good opportunity in the company's professional life due to its big size but there were so many things about the construction that were not taken into consideration before the contract was signed. The first problem occurred in the time of mobilization, which took two and a half month since the transportation distance has come out to be much more than the decided value. As a result, huge construction machines had to be transferred to site in longer distances than estimated, resulting in high transportation costs which were not considered in the cost estimating phase of the project . This unforeseen situation on the site transportation had obvious adverse affects on the project cost and schedule . The second problem occurred soon which was about the labor force. Responded C emphasized strongly the importance of good market research while giving market entry decisions. He stated that especially in some countries including Afghanistan and Tajikistan it was really different to find skilled labor. The third problem of the project occurred due to poor productivity of workforce. Since a harmony between workers can not be achieved, requirements of teamwork could not be met which is a crucial issue for successful completion of a construction project. The project manager was changed 5 times and this affected the overall productivity. As a result of cost increases due to labour and transportation costs, the company tried to reduce total cost by decreasing the quality of the materials and subcontractors allocated for the project, which in turn reduced the quality of the product and resulted in delay of construction works. As a result, the project was transferred to another company. The economic crises in Turkey contributed to the decline of the overall holding and managers thought that it was better to file bankruptcy of their construction division and they stopped the active life of the construction company by transferring the resources devoted to the construction division to other divisions that are making profit. By experiencing such a decline, Respondent C emphasized the crucial

importance of market, environment and capacity examination and their match for the construction companies in selecting projects.

The reason to request the respondents to explain their own experience in OD&B was to examine the real situation and to see whether the reasons of decline and bankruptcy stated by the respondents match with the factors listed in literature. This was such a self-check within the research method.

The method used for the purpose of data collection is the Delphi Method which is a method based on a structured process for collecting and distilling knowledge from a group of experts by means of a series of questionnaires empowered with controlled opinion feedback (Adler and Ziglio, 1996).

4.4.2 The Delphi Method

Wissema (1982) defines the Delphi method as a mono-variable exploration technique for forecasting. The method enables an objective discussion among experts by preventing any social interactive behavior among them, which can not be eliminated in normal group discussions. The method is widely used to generate decisions and forecasts in technology, education and other fields (Cornish, 1977). Additionally it allows group communication among experts geographically dispersed (Adler and Ziglio, 1996). In the base of the technique, there is a series of questionnaires delivered through a group of experts. These questionnaires are designed to elicit and develop individual responses to the problems posed and to enable the experts to refine their views as the group's work progresses in accordance with the assigned task.

In the original Delphi process, the key elements are (1) structuring of information flow, (2) feedback to the participants, and (3) anonymity for the participants.

For the purpose of data collection at this stage, a "Data Collection Form" was designed. The form constituted of four parts each of which was prepared according to the data obtained by the previous one, except the first part, which was to introduce the scope of the research to the respondents. The usual problems of group dynamics are thus completely bypassed. Fowles (1978) describes the following ten steps for the Delphi method:

1. Formation of a team to undertake and monitor a Delphi on a given subject.
2. Selection of one or more panels to participate in the exercise. Customarily, the panelists are experts in the area to be investigated.
3. Development of the first round Delphi questionnaire
4. Testing the questionnaire for proper wording (e.g., ambiguities, vagueness)
5. Transmission of the first questionnaires to the panelists
6. Analysis of the first round responses
7. Preparation of the second round questionnaires (and possible testing)
8. Transmission of the second round questionnaires to the panelists
9. Analysis of the second round responses (Steps 7 to 9 are reiterated as long as desired or necessary to achieve stability in the results.)
10. Preparation of a report by the analysis team to present the conclusions of the exercise (Günaydın, 2006)

4.4.3 Steps of Data Collection Form

4.4.3.1 Data Collection Form Step 1

Data Collection Form Step 1 was prepared as the introduction part for the respondents who will participate to the study with their industrial experiences. The form consisted of two parts. Data Collection Form Step 1 can be seen in Appendix B page 112.

In the first part, there was a brief explanation of the research scope and methodology. In this part, a brief summary of the research steps that the respondents were requested to be involved was provided so that they will be aware of the work load they would bear till the end of the data collection part of the research.

In the second, part of the first step data collection form, there were two questions. In the first question the respondents were provided with the hierarchy diagram (see Appendix B page 117) which was prepared as the result of the literature review. In the question they were requested to examine the hierarchy diagram and make any substructions or additions where they thought necessary. In the second question, the respondents were needed to determine the factors in the lowest level of the hierarchy diagram that influence each other.

To make their work easier they were provided with a Pairwise Relation Decision Matix (Appendix A page 118). The matrix was formed of the lowest level factors as the column and the row elements. In the matrix, for each row element it was asked to the respondent whether the row element was effective on the column element. The matrix was provided as partially filled with plus signs. The plus signs were required to be placed to the intersection of a row element and a column element where the row element is effective on the column element. To interpret the matrix filling, an example that can be seen below was privided to the respondents.

Example 1:

Pairwise Relation Decision Matrix	**A**	**B**	**C**
A		+	+
B			
C	+		

Interpretation of the matrix: According to the matrix above, row element A is effective on the column elements B and C. Row element B is not effective on any of

the column elements, whereas the row element C is effective on the column element A only.

As can be seen in the example elements were not examined for influence on itself. Such parts were shown as gray color in the matrix.

The most important criteria that the respondents were requested to take into account in filling the matrix was to decide the column elements which were directly influenced by the row element. Indirect influence will not be presented by plus sign.

The first step data collection form was submitted to three respondents whose industrial profiles can be seen in Table 4.2.

The aim of the "Pairwise Relation Decision Matrix" was to determine the interaction diagram among the top level criteria. From the interaction among bottom level factors top level interaction diagram was targeted to be reached. To determine the interaction among the factors was the requirement for the ANP application.

ANP requires the factors to be compared with each other to determine their relative weights with respect to the target element, which is OD&B in this research. By determining the factors that had interactions on each other, the number of matrix to be prepared to compare pairwise priority weights will be reduced since the matrix was just prepared for the ones having interactions on each other, other than preparing them for each factor individually. Since the respondents were busy people in the industry, it was crucial for the sake of the research progress to decrease the time they would spend on each step of the form leading to their taking part in each step without giving up and being more concentrated on the form steps.

After the answers of the respondents were collected, their answers were compared with each other. The aim was to reach a consensus among their answers. For the influence decisions that there were no consensus among the respondents, a second

cycle Delphi study was conducted. This time respondent answers were collected into one matrix. As a result of this 2 step cycle factors directly effective on each other had come out to be as Appendix B "Pairwise Relation Decision Matrix".

In Appendix B page 119, on "Pairwise Relation Decision Matrix" red painted matrix elements are symbolizing the consensus among the respondents the dark yellow parts are symbolizing the consensus of two of them and light blue parts are symbolizing the effect occurrence between related factors just one of them. And with the agreement of the respondents it is decided that the influences having rating from two or three of the respondents will be taken into account in preparing the influence diagram which shows the top level interactions within the hierarchy model and ones with a rating taken from only one respondent will be discarded. Resultant influence diagram will be interpreted in Chapter 5.

4.4.3.2 Data Collection Form Step 2

Second stage of the data collection form can be seen in Appendix B page 120. To prepare this stage the data collected in the first step was used. According to the results of the "Pairwise Relation Decision Matrix" conducted as 2 Delphi Cycles by which factors interrelated with each other are identified, new matrices were prepared.

On the matrices, the factor placed in the top left corner was called as the parent element. The parent element was the factor that the factors placed as the top and left edges of the matrix affect. In the matrix, edge factors will be compared with each other according to their relative weight of influence on the parent element. The procedure was also defined in the second step of ANP in section 4.2 page 63.

Respondents were required to fill the matrices according to the given priority rating values in Table 4.1.

At this point, it would be beneficial for the sake of understanding the process to give a brief example how the respondents were asked to fill the "Pairwise Priority Decision Matrices" (See Appendix B page 126).

Respondents were required to answer the following question:
1) Given a criterion (parent element); which element has greater influence (is more dominant) with respect to the criterion?

As an explanation to clarify the process, see the example below:

Example 2:

Given a matrix as below:

A	**B**	**C**
B		
C		

Asked question is : Given A as the parent element what is the influence of B relative to C with respect to A?

A	**B**	**C**
B		**1/3**
C		

The answer of this question is supplied to be "1/3". Here "1/3" means that element C is "a bit more effective" than element B on the parent element A (since it is stated in Table 4.1 that 3 = moderate importance).

In the interpretation of 1/3, the numerator, which is 1, is the weight of row element with respect to the column element and the interpretation for the denominator, which is 3, is vice versa. The fracture defines the direction of influence. That is, when the numerator is greater it means that the row element is having a greater

influence on the parent element than the column element, where the situation is vice versa for the greater denominator case. Here and from now on with "direction of influence" the greater influence of the row or the column element on the parent element is referred.

As can be seen in the example above and in the priority decision matrices shown in Appendix B page 126, the gray colored parts in the matrices were not required to be filled by the respondents. It is obvious since influence of B relative to B, as well as influence of C relative to C with respect to A will be "1", that is having the same priority. On the other hand influence of C relative to B with respect to A will be the reciprocal of the influence of B relative to C, that is the value will be "3" which is the reciprocal of "1/3".

As a result of the second step of the data collection form, relative priorities of each factor with respect to a parent element were defined according to Table 4.1.

After answers were obtained from the three respondents, the data collected was tried to be put into logic. For this purpose, mainly the arithmetic mean values of the data entered by the respondents to the matrices were used. Mean value approximation was useless when an agreement could not be reached among the respondents on the direction of influence of the elements. To explain the approximation, see the example matrix taken from the combined respondent answers below:

Example 3:

Table 4.3 Example Matrix for Mean Value Approximation

PSP	PVCACL	MI	PC
PVCACL		**3, 1/5, 1/9**	**3, 4, 5**
MI			**1/3, 7 , 9**
PC			

In the Table 4.3 the numbers in the matrix separated by commas are the values obtained from the different researchers for the same comparison element. For example, in “3, 1/5, 1/9” presentation which is the comparison of “PVCACL” & “MI” with respect to “PSP”, Respondent A commended that “PVCACL” has moderately more important effect on “PSP” than “MI”. On the other hand, Respondent B thought that “MI” was strongly more effective on “PSP” than “PVCACL”. And lastly Respondent C was in consensus with the Respondent B on the direction of influence but he commended that “MI” was extremely more effective on “PSP” than “PVCACL”.

As can be seen in the second row third column element of the matrix two of the respondents thought that “MI” factor is more effective on “PSP” parent element than “PVCACL” factor one whereas the other one thought vice versa.

In the second row forth column, it can be seen that all of the respondents agreed that “PVCACL” factor is more effective on “PSP” parent element than “PC” factor; but their comments on the weight of the influence were different than each other.

When the latter case was in consideration where all of the respondents agreed on the direction of influence, resultant value could be taken as simply taking the mean value of the weights, that is(3+4+5)/3 = 4, that is the combined value will be taken as “4” in this case.

Nevertheless, for the former situation this method would not work since there was not an agreement on the direction of influence among the respondents. The possible reason of the conflict may be due to the misunderstanding of the respondents on the meaning or scope of the factors in consideration. To overcome this confusion in the third step of Data Collection Form Second Cycle of the Delphi Study was arranged. In addition, this Delphi Study Questionnaire formed the Data Collection Form Step 3.

4.4.3.3 Data Collection Form Step 3

The aim of the Delphi Study in the Data Collection Form Step 3 was to reach a consensus among the respondents for the parts of disagreement in the answers of the Data Collection Form Step 2, by supplying more clarified explanation on the factors.

In this third step, matrix elements for which the direction of influence was not agreed by all of the respondents were extracted. To be clearer, the matrix elements were transformed into a questionnaire format and then submitted to the respondents (See Appendix B page 140). For Example 3 matrix in Table 4.3, in second row third column element, the question in the questionnaire would be as follows:

Question : Considering "Poor Strategic Planning" as the parent element, two of the respondents were agreed that "Management Incompetency" was more effective on the parent element than "Poor Value Chain Analysis at the Corporate Level" while one of the respondents stated the opposite. In this case should the decision of the majority be taken into account? If not, what is your opinion on the issue?

For the answers where no consensus on the factor comparison was achieved among the respondents (for example when the answer appeared as "1/3, 1, 4", which means Respondent A thought the column element is more effective than the row element, Respondent B thought that they have equal effect, whereas Respondent C said that row element is more effective on the column element on the parent element), it was requested from the respondents to review their answer by considering the answers provided by the other respondents. This time, they were required to denote their own reason why they choose such a direction of influence between the factors with respect to the parent element.

After the responses of the third step were collected, answers collected from the respondents were synthesized. The synthesis was combined with the answers of the second step and revised final Pairwise Priority Comparison Matrices were obtained.

4.5 Data Analysis

Data analysis in ANP is conducted through a matrix called “supermatrix”. As stated before, the supermatrix is formed of small matrices, in this research the supermatrix formation is conducted by combining the matrices, which were obtained from the steps of the data collection form. To combine obtained Pairwise Priority Comparison Matrices into single supermatrix; software, which is designed to apply ANP called “Superdecisions”, was utilised. To use the program in the analysis, first of all the network hierarchy model of the research was entered into the program as shown in Figure 4.4.

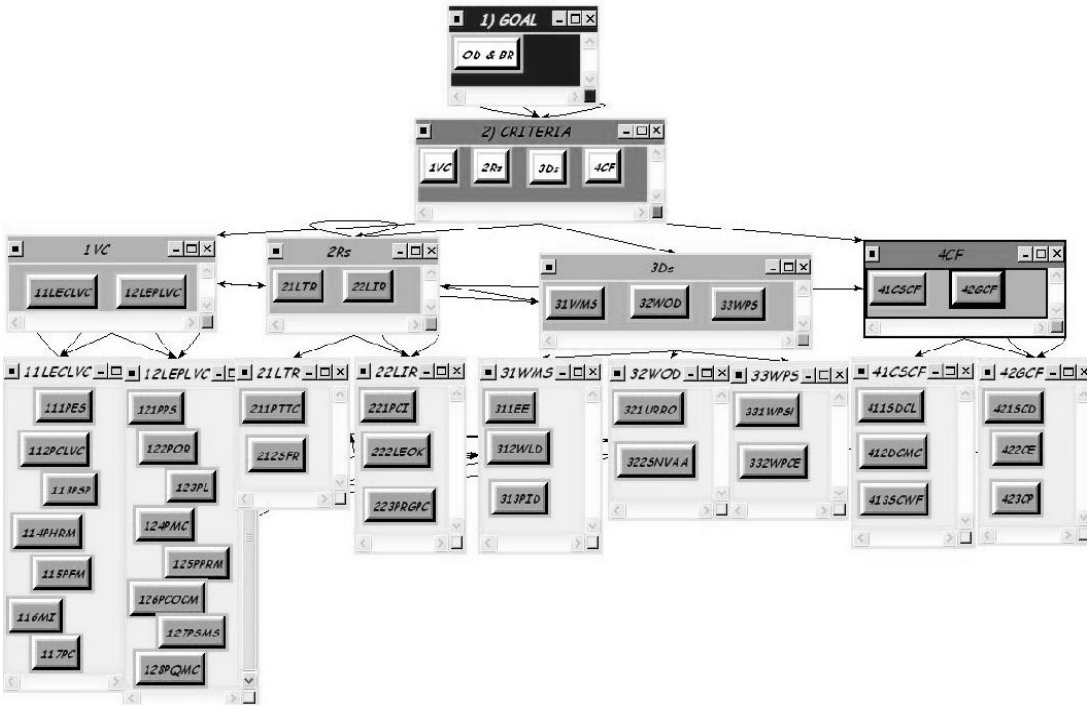


Figure 4.4 Network Hierarchy Model out of Superdecisions Software

After the hierarchy was entered, the following step was to explain the software which of the sublevel factors interacted with the others.

In the software language, there are “clusters” and “nodes”. Clusters are the factors within the network, which have effective sub factors under it, whereas nodes are the corresponding sub factors. Seeing Figure 4.4 taken from the software screen, it can be stated as an interpretation that “1) GOAL” is the cluster of “OD&B” node as well “2Rs” is the cluster of “21LTR” and “22LIR” nodes.

To identify the interaction between factors, the software asks the user to select one node as a potential parent node and examine all the clusters in turn to determine if they have nodes that the parent node either influences or is influenced by to select its children nodes in that cluster. In this research the latter one (that is “influenced by”) is preferred to describe the influences into the software since the pairwise influence decision matrices were prepared based on this comparison type.

The links between the parent nodes and their children nodes in each cluster were created and the comparison sets of the nodes are prepared. As nodes were linked through clusters, the related clusters were linked automatically by the program. The tricky part here was to make sure that “influences” or “influenced by” question was posed in a consistent way throughout the network.

After the influence directions among the nodes in the network were defined, the following step was to enter the quantitative priority data obtained as a result of the 2^{nd} and 3^{rd} stages of the Data Collection Form.

The software allows entering this data in several different ways. Two most applicable of them are the matrix form and the questionnaire form. In the latter one, two nodes or clusters are compared in a questionnaire format, which can be seen in Figure 4.5 below where the parent node was indicated as the heading of the questionnaire:

As can be seen in the Figure 4.5, there are some priority values on the questionnaire indicating which one of the compared nodes is how many times more important than the other with respect to the parent element.

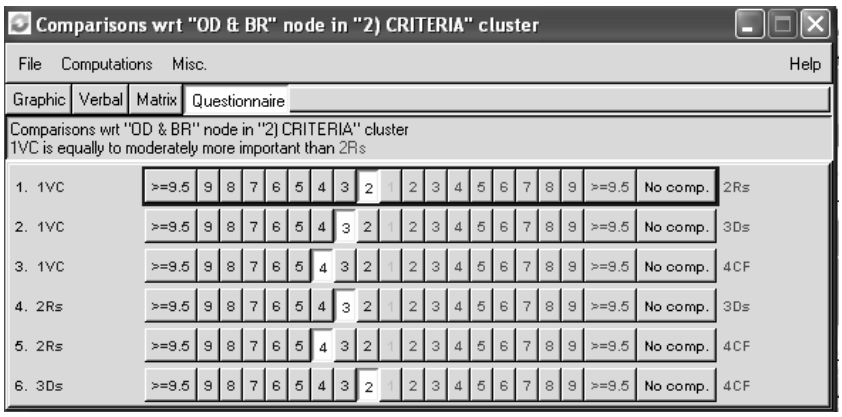


Figure 4.5 Questionnaire Form in Superdecisions

Since throughout the study the priority matrices were obtained, for the sake of simplicity and efficiency, instead of this questionnaire format the matrix format is used in data analysis in this research. The matrix form used can be seen in the Figure 4.6 givenbelow:

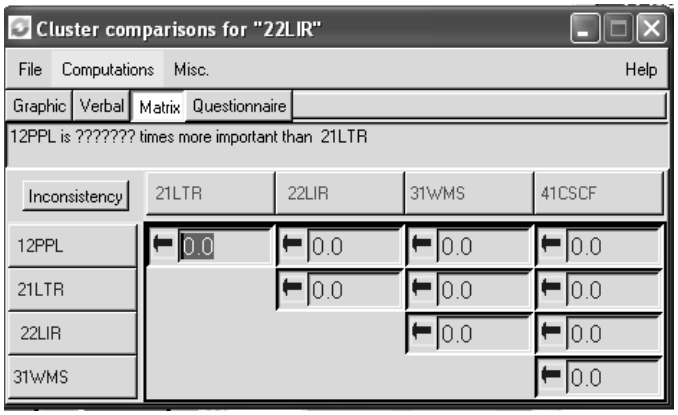


Figure 4.6 Matrix Format in Superdecisions

The software asks you whether your comparison is complete for a particular matrix or not. When the data entry for a particular matrix is over, to be directed to the following matrix in the analysis "Yes" button should be ticked in the program menu as in the Figure 4.7 below:

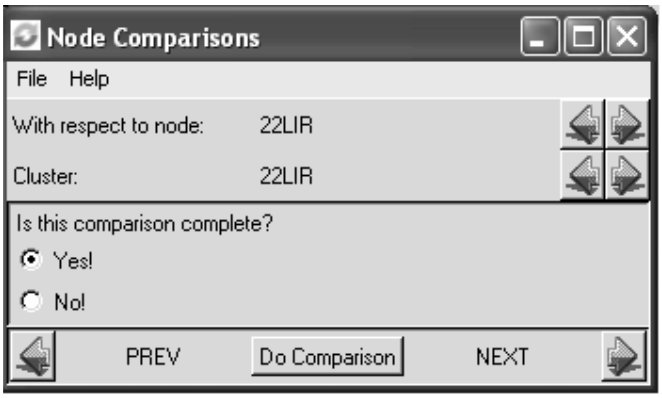


Figure 4.7 Node Comparison in Superdecisions

After all of the priority matrices were filled with the data obtained through data collection, the network was ready to be analyzed.

According to the entered row data, the program prepares the supermatrix. The supermatrix at this initial state is called "unweighted supermatrix". Each vector taken from a paired comparison matrix is a part of the column of the unweighted supermatrix representing the impact with respect to the control criterion of the elements of that component listed at the top of the matrix.

All the clusters (in our model secondary level elements) were pairwise compared according to their influence on a given cluster with respect to the control criterion (related top level criterion in the particular comparison). This yielded a vector of priorities of the impact of all the clusters on the given criterion. Each component of a vector was used to weight all the elements in the block of column priorities of the

supermatrix corresponding to the impact of the elements on that cluster. The process was repeated for all the clusters in the network by Superdecisions software resulting in a weighted supermatrix.

In each block of the supermatrix, a column was either a normalized eigenvector with possibly some zero entries, or all of its elements were equal to zero. In either case, it was weighted by the priority of the corresponding cluster on the left. If it was zero, that column of the supermatrix must be normalized after weighing by the cluster's weight. This operation was equivalent to assigning a zero value to the cluster on the left when weighing a column of a block with zero entries and then re-normalizing the weights of the remaining clusters.

The weighted supermatrix was then column stochastic from which the limiting supermatrix was derived. Limiting supermatrix was the limit matrix of the weighted supermatrix in which all columns included the same values. These values also meant the result of the analysis; that is the priorities of the network elements.

It worth mentioning that during the evaluation process of the priorities some inconsistencies may occur. Consistency index gives an indicator to evaluate the inconsistency level in the evaluation steps. The consistency index depends on the maximum eigenvalue of the matrices obtained from pairwise comparisons and the number of elements in comparison. The formula used to obtain the inconsistency index was as follows:

$CI = (\lambda max - n) / (n - 1)$; where:

CI = Consistency Index
λmax= maximum eigenvalue of the corresponding matrix
n = number of elements to be compared

For the sake of proper decision-making, this value should be less than “0.1” (Saaty, 1996).

The software also calculated the CI values for each comparison matrices and showed the value on top of each matrix as follows:

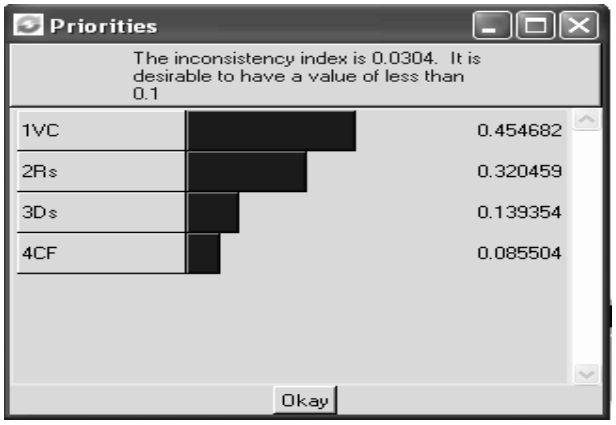


Figure 4.8 CI Representation in Superdecisions

Superdecisions prepares the weighted and the limit supermatrices simultaneously which includes a really time consuming calculations when it is done manually. In program reportings priority lists for the data loaded is also supplied.

After the limiting supermatrix was reached, the data analysis process came to an end. As a result for each factor in the network the priorities with respect to their contribution to “OD&B in the Turkish Construction Industry” were defined.

CHAPTER 5

RESEARCH FINDINGS

5.1 Interpretation of the Results

As a result of the Data Collection Form Step 1 including its Delphi Study (see Chapter 4.4.3.1) the influence diagram among the top level factors have come out to be as in Figure 5.1 given below:

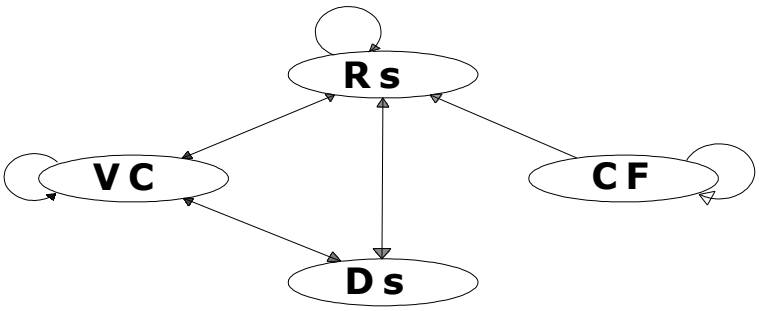


Figure 5.1 Influence Diagram

After all of the "Data Collection Form Steps" are completed, results obtained are combined and the data obtained are entered into "Superstructures Software" as explained, in Chapter 4. The output weighted and limiting supermatrices calculated by the Superdecisions software and resultant priorities are listed according to the supermatrices. The resultant priorities of the factors have been calculated as follows:

Table 5.1 Weights Calculated for the Top Level Clusters

No	Code in ANP Structure	Top Level Cluster Name	Limiting
1	VC	Value Chain	0,4547
2	Rs	Resources	0,3205
3	Ds	Decisions	0,1393
4	CF	Chance Factors	0,0855

Table 5.2 Weights Calculated for the Secondary Level Clusters

No	Code in ANP Structure	Secondary Level Cluster Name	Limiting
1	11LECLVC	Lack of Efficiency Corporate Level Value Chain	0,8838
2	12LEPLVC	Lack of Efficiency Project Level Value Chain	0,1162
3	21LTR	Lack of Tangible Resources	0,2489
4	22LIR	Lack of Intangible Resources	0,7511
5	31WMS	Wrong Market Strategies	0,2966
6	32WOD	Wrong Organizational Decisions	0,6126
7	33WPSt	Wrong Project Strategies	0,0908
8	41CSCF	Company Specific Chance Factors	0,8535
9	42GCF	General Chance Factors	0,1465

Table 5.3 Weights Calculated for the Lowest Level Factors

No	Code in ANP Structure	Lowest Level Factor Name	Limiting
1	111PES	Poor Environmental Scanning	0,0681
2	112PVCACL	Poor Value Chain Analysis at the Corporate Level	0,0983
3	113PSP	Poor Strategic Planning	0,0855
4	114PHRM	Poor Human Resource Management	0,0508
5	115PFM	Poor Financial Management	0,0658
6	116MI	Management Incompetency	0,5941
7	117PC	Poor Communication	0,0374
8	121PPS	Poor Planning and Scheduling	0,2641
9	122POR	Poor Organization of Resources	0,0616

Table 5.3 Weights Calculated for the Lowest Level Factors (continued)

10	123PL	Poor Leadership	0,4667
11	124PMC	Poor Monitoring and Control	0,1422
12	125PPRM	Poor Project Risk Management	0,0091
13	126PCOCM	Poor Change Order and Claims Management	0,0069
14	127PSMS	Poor Selection & Management of Supply Chain	0,0232
15	128PQMC	Poor Quality Management and Control	0,0261
16	211PTTC	Poor Technical and Technological Capacity	0,7252
17	212SFR	Scarcity of Financial Resources	0,2748
18	221PCI	Poor Company Image	0,1175
19	222LEOK	Lack of Organizational Knowledge	0,6920
20	223PRGPC	Poor Relations with Clients &/ Government	0,1905
21	311EE	Excessive Expansion	0,1041
22	312WLD	Wrong Level of Diversification	0,2576
23	313PID	Poor Investment Decisions	0,6383
24	321URRO	Unsuccessful Restructuring – Reorganization	0,6667
25	322SNVAA	Saving Non-value Adding Activities	0,3333
26	331WPSl	Wrong Project Selection	0,6207
27	332WPCE	Wrong Project Cost Estimation	0,3793
28	411SDCL	Sudden Death of the Company Leader	0,1026
29	412DCMC	Difficulty in Collecting Money from the Client	0,6215
30	413SCWF	Sudden Change within the Workforce	0,2760
31	421SICD	Shrinkage in Construction Demand	0,3239
32	422CE	Change in Economy	0,4611
33	423CP	Change in Politics	0,2150

By multiplying the limiting weights of secondary level clusters with the limiting weights of their related top level cluster the relative weights of effectiveness of them on OD&B goal was calculated as follows:

Table 5.4 Weighted Rates of Secondary Level Clusters to OD&B

No	Code in ANP Structure	Cluster Name	Limiting	Weighted Rates to OD&B
1	**1VC**	**Value Chain**	**0,4547**	-
1.a	11 LECLVC	Lack of Efficiency Corporate Level Value Chain	0,8838	0,401882
1.b	12 LECLVC	Lack of Efficiency Project Level Value Chain	0,1162	0,052818
2	**2Rs**	**Resources**	**0,3205**	-
2.a	21LTR	Lack of Tangible Resources	0,2489	0,079779

Table 5.4 Weighted Rates of Secondary Level Clusters to OD&B (continued)

2.b	22LIR	Lack of Intangible Resources	0,7511	0,240721
3	**3Ds**	**Decisions**	**0,1393**	-
3.a	31WMS	Wrong Market Strategies	0,2966	0,041322
3.b	32WOD	Wrong Organizational Decisions	0,6126	0,085331
3.c	33WPS	Wrong Project Strategies	0,0908	0,012647
4	**4CF**	**Chance Factors**	**0,0855**	-
4.a	41CSCF	Company Specific Chance Factors	0,8535	0,072978
4.b	42GCF	General Chance Factors	0,1465	0,012522

By using the values in Table 5.1 and Table 5.4, limiting priorities of lowest level factors according to their effectiveness on OD&B was calculated as depicted in Table 5.5.

To explain how the values in the Table 5.5 were calculated, an example is presented below;

Example 4:

In this example, the procedure followed to reach the influence weights of the lowest level factors on the OD&B is clarified by explaining the calculation of the influence weight of MI on OD&B.

To calculate the influence proportion of MI on OD&B, the direction of path to be tracked will be from the lowest level of the hierarchy model to the top level by using the weights of each level calculated by the Superdecisions software and depicted in Tables 5.1, 5.2 and 5.3.

In the hierarchy, MI is the subfactor of LECLVC, which is the sub-level of VC highest level criterion. For the application of the explanation in the above paraghraph, the influence weight of MI in LECLVC is needed first. The value can be taken from Table 5.3 as 0,5941, which means that influence of MI on LECLVC with respect to the other subfactors under LECLVC is 59,41%.

Secondly, influence weight of LECLVC in VC criteria is needed. The value can be taken from Table 5.2 as 0,8838, which means that 88,38% of the problems in value chain of an organization emerge from lack of efficiency in the corporate level value chain analysis.

As the last step to reach OD&B, influence weight of VC in OD&B is required. The value appears to be 0,4547 in Table 5.1, which means that problematic value chain of an organisation has a 45,47% contribution in its OD&B.

To exemplify the above explanation see Figure 5.2 given below:

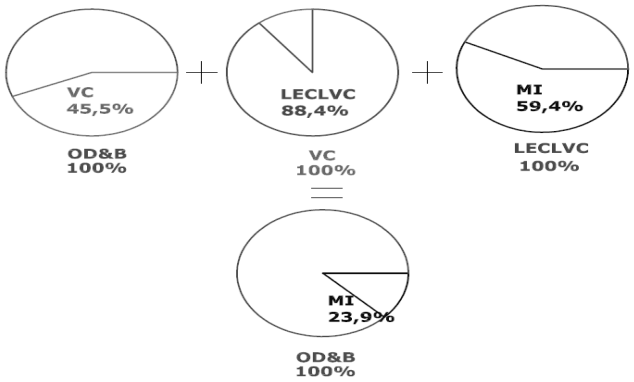


Figure 5.2 Example 4

As a result, to calculate the influence weight of MI on OD&B the following formulation should be utilised:

MI in OD&B= % MI in LECLVC x % LECLVC in VC x % VC in OD&B

= 0,594 x 0,884 x 0,455

= 0,239 = 23,9 %

By conducting this calculation for each of the lowest level factors, Table 5.5 is oblained.

Table 5.5 Ranking the Priorities of Lowest Level Factors According to Their Effectiveness on OD&B

No	Code in ANP	Factor Name	Normalized to OD&B
1	116MI	Management Incompetency	0,2388
2	222LEOK	Lack of Organizational Knowledge	0,1666
3	211PTTC	Poor Technical and Technological Capacity	0,0579
4	321URRO	Unsuccessful Restructuring – Reorganization	0,0569
5	223PRGPC	Poor Relations with Clients / Government	0,0459
6	412DCMC	Difficulty in Collecting Money from the Client	0,0454
7	112PCLVC	Poor Value Chain Analysis at the Corporate Level	0,0395
8	113PSP	Poor Strategic Planning	0,0344
9	322SNVAA	Saving Non-value Adding Activities	0,0284
10	221PCI	Poor Company Image	0,0283
11	111PES	Poor Environmental Scanning	0,0274
12	115PFM	Poor Financial Management	0,0265
13	313PID	Poor Investment Decisions	0,0264
14	123PL	Poor Leadership	0,0247
15	212SFR	Scarcity of Financial Resources	0,0219
16	114PHRM	Poor Human Resource Management	0,0204
17	413SCWF	Sudden Change within the Workforce	0,0201
18	117PC	Poor Communication	0,0150
19	121PPS	Poor Planning and Scheduling	0,0140
20	312WLD	Wrong Level of Diversification	0,0106
21	331WPSI	Wrong Project Selection	0,0078
22	124PMC	Poor Monitoring and Control	0,0075
23	411SDCL	Sudden Death of the Company Leader	0,0075
24	422CE	Change in Economy	0,0058
25	332WPCE	Wrong Project Cost Estimation	0,0048
26	311EE	Excessive Expansion	0,0043
27	421SICD	Shrinkage in Construction Demand	0,0041
28	122POR	Poor Organization of Resources	0,0033
29	423CP	Change in Politics	0,0027
30	128PQMC	Poor Quality Management and Control	0,0014
31	127PSMS	Poor Selection & Management of Supply Chain	0,0012
32	125PPRM	Poor Project Risk Management	0,0005
33	126PCOCM	Poor Change Order and Claim Management	0,0004

5.2 Testing of the Prediction Model

After the results in Table 5.5 were obtained, it was required to test the applicability of the result with case studies. For this purpose, a questionnaire was prepared and sent to the respondents (see Table 4.2). This time it was requested them to answer the questions for the company's which they work for currently. Two of them

answered the questionnaire. The questionnaire form can be seen in Appendix B page 148.

In the form as the first question the respondents are required to evaluate their company relative to OD&B in 1 to 5 scale in which 5 means very close to bankruptcy and 1 means bankruptcy is not a question for the company in its distant future. After ranking their company's situation with respect to bankruptcy in 1-5 scale, the respondents are requested to rank the lowest level factors as their presence and/or applicability in their company again in 1-5 scale (where 1 means the company is strong enough for the factor in consideration, whereas 5 means the company is too weak for the factor in consideration).

Respondent ranks for the factors are multiplied with the values in Table 5.5 to obtain the resultant value came from the model. The respondent's own rankings and the model calculations can be seen in Table 5.6 below:

Table 5.6 Model Evaluation

Respondents	Own Ranking	Model Result	Diffrence (%)
Respondent A	2,5	2,47	0,81
Respondent B	3,5	3,29	5,78
Respondent C	NR	NR	NR

Where;

NR: No Response

Difference (%): $\frac{(\text{Own Ranking} - \text{Model Result})}{\text{Model Result}} x100$

For Respondent A model error was 0,8 % whereas for Respondent B error of the model is 5,8 %. Relative error can be obtained by application of more case studies. Any person working in construction industry may evaluate his/her own company by

giving weights in 1-5 scale, where 5 means very close to bankruptcy and 1 means bankruptcy is not a question for the company in its distant future and by using the factor weights in Table 5.5.

5.3 Comparison of the Results with the Previous Literature

As opposed to the study of Kangari (1988) financial factors resulting in bankruptcy appeared after management related issues. It is not surprising since financial scarcity is also occurring because of the managerial faults (Abidali and Harris,1995).

As expected by the light of literature review management related factors have come out to be taking their places in the first raws of the list in Table 5.5.

By looking at the first 15 factors with respect to their contribution to OD&B in the Turkish construction companies, it can be concluded that they are all related to the managerial issues within the organization. As explained in the literature review part, managerial factors are one of the two most important factors emphasized in the decline literature where the other one being the financial factors.

In Köksal and Arditi (2004)'s study conducted among American construction companies first five factors ranked with respect to their effectiveness on organizational decline were specialization, standardization, advanced managerial practice, advanced construction technologies and manager's work experience. This study showed the importance of these factors for fate of the Turkish construction companies as professional management, organizational knowledge, technical/ technological capability, value chain analysis appeared in the first ten of the list. By looking at the highest level in the hierarchy model, factors related to the value chain of the organization occurred to be the most effective ones in OD&B. This outcome was also supported by Köksal and Arditi (2004)'s study in which they presented defining competitive advantage and ability to activate competitive advantage as the

top two factors effective on OD&B of construction companies. To define competitive advantage, proper value chain analysis at the corparate level is necessary as an addition to adequate strategic planning. Whereas, in their research managerial practice occurred as the third most important factor effective on OD&B, which appeared in this study as "Management Incompetency" and came out to be the most effective factor influencing OD&B. This is the case since incompetent management would also hinder proper value chain analysis at the corporate level.

On the other hand, ranking within the lower level factors of the "Resources" criterion, effect of intangible resources occurred to be three times more then effect of intangible resources. This makes a contradiction with the work of Kangari (1988), since he declared the economic situation of the construction companies as the most effective factor in their survival.

Although literature on the organizational success of construction companies experience and organizational knowledge appears among the most important factors, decline literature does not focus on the issue as much as the success literature. Although some of them mentioned importance of experience (Köksal and Arditi, 2004; Abidali and Harris, 1995 and Kangari, 1988), they did not conclude that the issue is among the most effective factors on OD&B. In this research conducted for the Turkish construction companies specifically, lack of experience and organizational knowledge appeared to be the second most effective factor in decline or bankruptcy. This is not surprising for construction companies in Turkey, where the main client is the government and the main construction projects to be awarded are infrastructure projects. As a result, getting experienced in the particular projects will bring the company a competitive advantage since they will become familiar with the client needs and will supply client satisfaction.

Another point of view that since the projects are awarded through competitive bidding for the Turkish construction companies by getting knowledge and

experience in domestic and international bidding structure, they would gain a strategic advantage to be awarded for new projects. (Dikmen and Birgönül, 2003)

As supported by Katz et. al. (1978) and Weitzel and Johnson (1989) for a successful turnaround the goals of the recovery should be set clearly by the organization in decline to prevent bankruptcy. Goals should be set for long term survival, that is they should be the basis for strategic renovations (Hirshhorn, 1983). Since this is the case, there is no place for gradual change within the organizational body in the limited time interval between decline and successful recovery. Reorganization and restructuring should be conducted rapidly (Weitzel and Johnson, 1989) and in parallel direction with the long term goals. Since reoarganization and restructuring seemed as important for a successful turnover it is not surprising the factor to appear as the forth most important factor for OD&B in this study.

As supported by the literature review, chance factors have come out to have relatively weaker effect on OD&B in the Turkish construction industry. Additionally effect of the general chance factors came out to have similar importance rate as wrong project selection. As a result, it can be concluded that although in many of the bankruptcy examples of the Turkish construction industry the reason for decline was seem to be wrong project/market selection, there is lack of professional management and organizational knowledge hidden behind those obvious reasons. That is why in this study respondent answers were in the direction to place the latter two in the first two rows of the list. This can also be stated as the reason why project related factors were placed mainly in the second half of the list where poor selection / management of supply chain within a project, poor project risk management and poor change order and claims management appeared to be the last three factors in Table 5.5.

CHAPTER 6

SUMMARY AND CONCLUSION

In this research, the factors effective on the OD&B of the Turkish construction companies are examined. This thesis had two fundamental targets. The first one is to find out the factors that affect OD&B of the Turkish construction companies and create a conceptual model which can be used for performance assessment. The second target was to provide a prediction model to be used by the professionals working at the managerial level in the Turkish construction industry, which would aid them to evaluate their companies' current situation with respect to bankruptcy.

To reach the first target, a broad literature review was performed. After the factors effective on OD&B were identified through literature survey, it was time to put the findings into a logical hierachy interaction diagram. For this purpose, the respondent participation was needed. The factors were put into a logical hierarchy and the hierarchy diagram was presented to the respondents. They were requested to examine the applicability of the diagram to the Turkish construction industry. After the hierarchical diagram was finalised according to the valuable suggestions and comments of the respondents, all the factors came out to be effective on OD&B were grouped and checked for possible interactions. To reach the second target of the research a Delphi Study was utilised among the respondents whose suggestions and comments helped to identify the interactions within the hierarchy and level of contribution of each factor to OD&B . Finally, ANP is used to quantify final ratings and it was applied to 2 test cases where promising results are obtained regarding its reliability as a prediction tool.

The findings can be summarised as follows:

- "Management Incompetence" factor resulted to be the most effective factor in OD&B of the Turkish construction companies which is also supported by

the previous literature findings and respondent comments. As the multidisciplinary nature of the construction industry is considered, this result is not surprising since leading mechanism should be that strong to supply the uniformity and harmony among all the participants.

- "Lack of Organizational Knowledge" factor also came out to be the second most effective factor in OD&B of the Turkish construction companies. This is also a foreseen result since systematic experience of the organization is its key in successfully completing projects that are undertaken. In addition, by utilizing this organizational knowledge, companies can create a competitive advantege for themselves in the bids through cost reductions, which are the main project awarding method in Turkey.
- As can be seen in the sequence of Table 5.5, the factors grouped under the "Resources" criterion came out to occur in upper levels. "Lack of Organizational Knowledge" considered above is one of this factors. As well "Poor Technical & Technological Capabilty" which means the company is not keeping hot track with the new developments in the industry which makes it to loose competitive advantage in terms of longer project duration, increases project cost and poor quality, appeared as the 3rd item in the table. "Poor Relations with Clients and/or Governmet", which decreases the company's chance to be awarded new project and to become aware of the new project opportunities especially in Turkey where the major client of the large infrastructure or mass housing projects is the government, came out to be 5th in the table. Additionally, "Poor Company Image", which can be described as the loss of company reputation within the industry resulting in loss of supplier, credit and client, occurred to be 10th out of 33 factors. As a result the "Resources" that the company owns can be considered as the most effective factor while deciding on its position to OD&B.
- A generalisation can be made as that the most effective criteria on the OD&B in the Turkish contruction industry came out to be "Poor Value Chain at the Corporate Level" and "Lack of Intangible Resources".

- Unsuccessful Restructuring and Reorganization appeared to be the 4th most effective factor on OD&B. It is crucial for the companies to make a reorganization, which includes a sharp and total change. If they prefer a gradual change as a restructuring then the old trends would strongly make the new comers to behave like them so there would be no chance of the new comers to survive since old ones were the ones being adopted within the organization. Such kind of an approach will accelerate failure and hinder a successful turnaround for the companies in decline.
- Surprisingly factors related to project management that are placed under the criteria "Poor Value Chain Analysis at the Project Level" appear in the later portions especially in the third portion of the list. Although there are numerious construction companies experienced decline and/or bankruptcy just because a single large project failure, project related factors did not get enough credit from the respondents. This result seems as a contradiction between the failure experience of the respondents. Their failure experiences mostly based on a single unsuccessful project as explained in Chapter 4.4.1. It can be concluded from this result that although they experienced failure in single large projects, they thought that the problem was not wrong project management but it was wrong project decisions in the project undertaking stages.
- By considering the above explanation on project related issues, it is not surprising to see the factors under "Decisions" criteria in the second ten of the Table 5.5. Factors under "Wrong Organizational Decisions", "Wrong Project Strategies" and "Wrong Market Strategies" criteria form the second ten of the Table 5.5 respectively.
- The factors categorised under chance factors came out to be the least effective factors since they are placed in the last ten of the Table 5.5. The result is supported by the literature since the past researches on OD/B of construction companies preferred simply to discard the chance factors in their prediction models. However, by looking at the Table 5.5, it can be concluded that "Company Specific Chance Factors" came out to be as

important as “Lack of Tangible Resources” in their contribution to OD&B. This seems as a contridiction with the past literature and this research, where past literature emphasizes the importance of tangible resources while discarding chance factors.

- The reason for the “Genaral Chance Factors” to be placed in the lowest part of the Table 5.5 may be due to the respondents think that they will affect every industry so that they can not be taken as the major factors effective on the OD&B of construction companies in Turkey.

This study can be seen as a pioneer in the Turkish construction industry since a similar study has not been conducted specifically for Turkey. In this research it is aimed to collect the necessary data to form an OD&B prediction model for the Turkish construction companies to evaluate their position to bankruptcy by using the case study sheet completed by the respondent for the purpose of model evaluation or by just ranking their companies as explained in Chapter 5. The model was tested for only two cases because of the time limitations, which is not enough to evidence the applicability of the model. Here this situation is declared as the shortcoming of the model. More case studies could be conducted as an improvement on the resarch model to evidence its applicability.

Although the depth of hierarchy diagram, which is obtained by a comprehensive literature review and comments of the respondents, the ANP process is totally subjective and supported by the contribution of three respondents. To overcome this subjectivity, Delphi Study is conducted among the respondents by explaining the comments of other respondents and requesting them to re-evaluate their comments. Increasing the number of respondents would supply a more objective data in the end.

The Analytic Network Process (Saaty, 1996) is the most comprehensive framework that allows one to include all the factors and criteria, tangible and intangible that has bearing on making a best decision. It provides a way to input judgments and

measurements to derive ratio scale priorities for the distribution of influence among the factors and groups of factors in the decision. Since it allows including the interaction among the factors within the factors in the same level appearing in the same or different sub-factors of a higher-level criteria, it was the best model that would be utilized in analyzing the research data. The ANP allowed analyzing the research model in a hierarchical structure containing inner interdependencies, which was crucial to reach the most comprehensive and correct result.

Although ANP is the most suitable tool in data analysis of this research, it provided some difficulties during the data collection period for both the researchers and the respondents. It was tiring to prepare Pairwise Priority Comparison Matrices, likewise it took long time of the respondents to answer the matrix questions which prevented the researchers to conduct the data collection part among a higher number of researchers. Experienced civil engineers are busy people and the researchers were able to reach only three of them who would like to devote their valuable time in a scientific research in the Turkish construction industry. As a conclusion of this study, it can be stated that ANP is not a practical tool for a multivariate decision giving problems containing more than two levels of hierarchy and relatively high number of lowest level factors, which was 33 in this study.

Although the model is constructed specifically for the Turkish construction industry, the hierarchy diagram is obtained from literature review of the OD&B papers of several types of industries worldwide. As a result, by some minor changes on the diagram and related revisions on the data collection steps whose details can be found in Appendix B, the model can be improved for all industries in different countries.

REFERENCES

Abidali, A. F., and Harris, F.,1995, A methodology for Predicting Company Failure in the Construction Industry, *Construction Management and Economics*, 13, 189-196

Adizes, I., 1979, Organizational passages: Diagnosing and treating life-cycle problems of organizations, *Organizational Dynamics*, 8 (Summer), 3-25

Adler, M. and Ziglio, E., 1996, *Gazing into the oracle*, Jessica Kingsley Publishers: Bristol, PA.

Aldrich, H. E., Fiol, C. M., 1994, Fools rush in: The institutional context of industry creation, *Academy of Management Review*, 19, 645-670.

Argenti, J., 1983, Predicting Corporate Failure, *Accountant Digest*, No.138

Arrow, K. J., 1962, The economic implications of learning by doing, *Review of Economic Studies*, 29, 155–73.

Baker, B. N., Murphy, D. C., and Fisher, D., 1983, *Factors affecting project success*, Project management handbook, D. I. Cleland and W. R. King, eds., Van Nostrand Reinhold, New York, 669–685.

Barney, J.B., 1991, Firm resources and sustained competitive advantage: a comment, *Journal of Management*, 7, 99-120

Barney, J.B., 1997, *Gaining and Sustaining Competitive Advantage*, Addison-Wesley, Reading, MA

Becker, G., 1974, *The Economic Approach to Human Behavior, Schooling, Experience and Earning*, National Bureau of Economic Research and Colombia University Pres, New York

Bedeian, A. G., 1980, *Organizational Theory and Analysis*, Hinsdale, IL: Dryden Press

Belout, A., 1998, Effects of Human Resource Management on Project Effectiveness and Success: Towards a New Conceptual Framework, *International Journal of Project Management*, 16(1), 21-26

Bertelsen, S., 1993, *Byggelogistik I og II, mIterialstyring i byggeprosessen (Construction logistics I and II, materials-management in the construction process, in Danish),* Boligministeriet, Bygge-og Boligstyrelsen, København

Blismas, N., Sher, W., Thorpe, A., and Bladwin, A., 2004, A typology for clients multiproject environments, Construction Management and Economics, 22(4), 357–371

Boulding, K. E., 1975, *The management of decline*, Change, 64 (June), 8-9

Cameron, K. S., and Zannuto, R., 1983, Matching managerial strategies to conditions of decline, *Human Resource Management*, 22, 359-375

Cano del A., de la Cruz M.P., 2002, Integrated Methodology for Project Risk Management, *Journal of Construction Engineering and Management*, Vol. 128, No. 6, December 473–485

Cascio, W.F., 1991, *Costing Human Resources*, The Financial Impact of Behaviour in Organizations, Kent: Boston

Chan, A.P.C.,Scott, D, and Chan A.P.L, 2002, Factors Affecting the Success of a Construction Project, *Journal of Construction Engineering and Management*, Vol. 130, No. 1, February, 153-155

Chan, A. P. C., Scott D., and Lam, E. W. M., 2002, Framework of Success Criteria for Design/Build Projects, *Journal of Management Engineering*,18(3), 120-128

Chen Z., Wong C.T.C., 2005, EnvironalPlanning: Analytical Network Process Model for Environmentally Conscious Construction Planning, *Journal of Construction Engineering and Management*, Vol. 131, No.1, 92- 101

Cheng, E.L.W., Li, H., 2005, Analytic Network Process Applied to Project Selection, *Journal of Construction Engineering and Management*, Vol. 131, No. 4, April, 459–466

Chinowsky, P. S., 2001, Successful Directions PM Publishing Atlanta – Construction management practices are slowly changing, *Leadership Management and Engineering*, April, 17–22

Choi, J., Russel, J.S., 2004, *Economic gains around mergers and acquisitions in the construction industry of the United States of America (online),* http://www.engr.wisc.edu/cee/faculty/russell_jeffrey/005.pdf (Date of visit: 06.07.2007)

Chua, D. K. H., Kog, Y.C., Loh P.K., 1999, Critical Success Factors for Different Project Objectives, *Journal of Construction Engineering and Management ASCE*, June, 142-150

Corner, K.R., 1991, A historical comparison of resource-based theory and five schools of thoughts within industrial organizations economies: do we have a new theory of the firm?, *Journal of Management*, 17, 121-154

Cornish, E., 1977, *The study of the future*, World Future Society:Washington, D.C.

Cowie, A. P. (ed.), 1989, *Oxford Advanced Learners' Dictionary of Current English*, Oxford University, Oxford

Dağdeviren M., Eraslan E., and Kurt M., 2005, A Model to Determine Overall Workload Level of Workers and its Applications. J. Fac. Eng. Arch. Gazi University, Vol.20, No.4, 517-525

D'Aveni, R.A., 1989, Top Managerial Prestige and Organizational Bankruptcy, *Organizational Science in Press*

Davis, E. W., and Patterson, J. H., 1975, A comparison of heuristics and optimum solutions in resource constrained project scheduling, *Management Science*, 21, 994–955

De Geus, A.P., 1988, Planning as Learning – Harward

Diekmann, J. E., and Girard, M. J., 1995, Are contract disputes predictable?, *Journal of Construction Engineering and Management ASCE*, 121(4), 335–363.

Dikmen, I., Birgönül M. T., 2003, Strategic Perspective of Turkish Construction Companies, *Journal of Management in Engineering*, Vol. 19, Issue 1, 33-40 (January 2003)

Dikmen, I., Birgönül, M. T., and Kızıltaş, S., 2005, Prediction of Organizational Effectiveness in Construction Companies, *Journal of Construction Engineering and Management ASCE,* February, 252-261

Drew, S.A., 1994, Downsizing to Improve Strategic Position, *Management Decision*, 35, 4-11

Dunbar, R.L.M., and Goldberg W.H., 1978, "*Crisis development and strategic response in European corporations*" in C.F. Smart and W.T. Stanbury (eds.), Studies in Crisis Management: 139-149. Toronto: Butterworth

East, E.W, and Liu, L.Y., 2006, Multiproject Planning and Resource Controls for Facility Management, *Journal of Construction Engineering and Management*, Vol. 132, No. 12, December 1294–1305

Easton, A., 1975, *Managing for Negative Growth: A Handbook for Practitioner*, Reston, VA: Reston Publishing

Fiol, C. M. and Lyles, M. A., 1985, Organizational learning, *Academy of Management Review*, 10(4), 803–13

Fowles, J., 1978, *Handbook of futures research*, Greenwood Press: Connecticut.

Freier, J.L., 1990, *Successful corporate acquisitions: a complete guide for acquiring companies for growth and profit*, Prentice- Hall, Inc., Englewood Cliffs, N.J.

Fu, W. K., Drew, D. S. and Lo, H. P., 2003, Competitiveness of inexperienced and experienced contractors in bidding, *Journal of Construction Engineering and Management*, Vol. 129, No. 4, July/August, 388-395

Goffman, E., 1959, *The presentation of self in everyday life*, New York: Doubleday

Grant, R.M., 1991, The resource based theory of competitive advantage implications for strategy formulation, *California Management Review*, 3313, 114-135

Greengard, S., 1993, Don't rush downsizing: plan, plan, plan, *Personel Journal*, Nov., 65-75

Greenhalgh, L., 1983, "*Organizational Decline*"in Samuel B. Bacharach (ed.), Research in the Sociology of Organizations, 2: 231-276. Greenwich, CT: -JAI Press

Greiner, L. E., 1972, Evolution and revolution as organizations grow, *Harvard Business Review*, 50(4), 37-46

Gunaydın, M.H., 2006, *The Delphi Method (online),* http://www.optimizationgroup.com/upside/og-gunaydin-delphi-312102.pdf (Date of visit : 04.07.2007)

Hedberg, B.L.T., Nystrom P.C., and Starbuck W.H., 1976, Camping on seesaws: Prescriptions for a self-designing organization, *Administrative Science Quarterly*, 21, 41-65

Hirshhorn, L., 1983, *Cutting Back*, San Francisco: Jossey – Bass

Hubbard, D. G., 1990. Successful Utility Project Management from Lessons Learned, *Project Management Journal*, 21(3), 19-23

Jaselskis, E. J., and Ashley, D. B., 1991, Optimal allocation of project management resources for achieving success, *Journal of Construction Engineering and Management ASCE*, 117(2), 321–340.

Kale S., and Arditi D., 1998, Business Failures: Liabilities of Newness, Adolescence, and Smallness, *Journal of Construction Engineering and Management*, Vol.124, No: 6, November/December, 0458-0464

Kangari R., 1988, Business Failure in Construction Industry, *Journal of Construction Engineering and Management*, Vol. 114, No. 2, 172-190

Katz, D., and Kahn, R.L., 1978, *The Social Psychology of Organizations*, 2nd ed. New York: Wiley

Kimberly, J. R., Miles, R.H., and Associates,1980, *The Organizational Life Cycle*, San Francisco: Jossey-Bass

Kleinfield, N.R., 1985, Job Shame: Corporate Scandals Take Toll on Workers, *San Jose Mercury News*, July

Kolb, D. A., 1984, *Experiential Learning: Experience as the Source of Learning and Development*, PTR Prentice Hall, New Jersey
Kotler, P., 1980, *Marketing Management*, Englewood Cliffs, NJ: Prentice-Hall

Köksal, A., and Arditi, D.,2004, Predicting Construction Company Decline, *Journal of Construction Engineering and Management ASCE*, November/December, 799-807

Lahiri, S., Renn, R.W., 2005, *Organizational Decline and the Impact of Environmental Challenges of the 21st Century (online),* http://www.midwestacademy.org/Proceedings/2005/papers/LahiriRenn_ob102.doc (Date of visit: 02.07.2007)

Larson, E., 1995, Project partnering: Results of study of 280 construction projects, *Journal of Management and Engineering*, ASCE, 11(2), 30–35

Levine, C.H., 1984, Retrenchment, human resource erosion, and the role of the personel manager, *Public Personel Management Journal*,13, 249-263

Levy, A., 1986, Second-order planned change: Definition and conceptualization, *Organizational Dynamics*, 15(1), 5-20

Lewin, A.Y., Long, C.P., and Carroll, T.N., 1999, The Coevolution of New Organizational Forms, *Organization Science*, 10(5): 535-550. Reprinted in Central Currents in Organization Studies, Stewart Clegg (Editor), Sage Publications, Volume 8, pp 328 – 347

Lorange, P., and Nelson, R.T., 1987, How to recognize and avoid organizational decline, *Sloan Management Review*, Spring: 41-48

McNeill, T. F., and Clark, D. S., 1966, *Cost Estimating and Contract Pricing*, American Elsevier Publishing Company, Inc., New York.

Merry, U., Brown, G.I., 1986, *The Neurotic Behaviour of Organizations*, Gardner Press: New York

Miles R.H., 1980, "*Findings and implications of organizational lifecycle research: A commencement*" in John R. Kimberly, Robert H. Miles and associates (eds.), The Organizational Lifecycle, 430-450, San Francisco: Jossey – Bass

Mintzberg, H., 1984, Power and organization life cycles, *Academy of Management Review*, 9, 207-224

Mone, M.A., 1994, Relationships between self-concepts, aspirations, emotional resoponses, and intent to leave a downsizing organization, *Human Resource Management*, 33, 281-298

Mosehli, O., and Lorterapong, P., 1993, Near-optimal solution for resource-constrained scheduling problems, *Construction Management and Economics*, 11, 293–303

Nahapiet, J., and Nahapiet, H., 1985, *The management of construction projects—Case studies from the USA and UK*, The Chartered Institute of Building, U.K.

Niemira M.P., Saaty T.L., 2004, An Analytical Network process Model for Financial Crisis Forecasting, *International Journal of Forecasting*, 20, 573-587

O'Brien, W. J., 1998, *Capacity Costing Approaches for Construction Supply-Chain Management*, Ph.D. dissertation, Stanford University

O'Brien, W.J., London, K., and Vrijhoef, R., 2002, Construction Supply Chain Modelling: A Research Review and Interdisciplinary Research Agenda, *Preceedings IGLC-10 (August)*, Gramado, Brazil

Olomolaiye, P. O., Jayawardane, A. K. W., and Harris, F. C., 1998, *Construction Productivity Management*, Addison Wesley Longman, Essex.

Ostwald, P. F., 2001, *Construction Cost Analysis and Estimating*, Prentice Hall, New Jersey.

Ozdamar, L., Ulusoy, G., 1995, A survey on the resource constrained project scheduling problem, *IEEE Trans.,* 27, 574–586

Pennings, J. M., and Goodman, P. S., 1977, *New perspectives on organizational effectiveness*, Jossey-Bass, San Francisco

Pfeffer, J., Salancik, G.R., 1978, *The external control of organizations: A resource dependence perspective*, New York, Harper and Raw

Piantanakulchai, M., 2005, *Analytical Network Process Model for Highway Corridor Planning*, ISAHP 2005, Ph.D., Honolulu, Hawaii, July 8-10, 2003

Porter, M., 1980, Competitive Strategy, *Free Press*, New York

Porter, M., 1985, Competitive Advantage: creating and sustaining superior Performance, *Free Press*, New York

Quinn, R. E., and Cameron, K., 1983, Organizational Life Cycles and Shifting Criteria of Effectiveness: Some Preliminary Evidence, *Management Science*, 29(1), 33-51

Rosenblatt, Z., Sheaffer, Z., 2000, "*Ethical problems in downsizing*" in the Organizational Crisis: Downsizing, Restructuring and Privatization. Burke, R.J., Cooper, C. (eds.). Blackwell: Malder, Mass; 132-150

Saaty, T. L., 1980, *The analytic hierarchy process*, McGraw–Hill, New York.

Saaty, T. L., 1996, *Decision making with dependence and feedback: The analytic network process*, RWS Publications, Pittsburgh.

Salancik G, and Meindl J., 1984, Corporate attributions as strategic illusions of management control, *Administrative Science Quarterly*, 29, 238–254.

Schendel, D., Patton, R.G., and Riggs, J., 1976, Corporate turnaround strategies, *Journal of General Management*, 3, 171-181

Scott, W.R., 1987, *Organizations: Rational, natural, and open systems*, Englewood Cliffs (2nd ed.), NJ: Prentice Hall

Sheaffer, Z., Richardson, B, and Rosenblatt Z., 1998, Early warning signals management : a lesson from the Barings crisis, *Journal of Contingiencies and Crisis Management,* 6, 1-22

Sheppard, J.P., Chowdhury, S.D., 2005, Riding the Wrong Wave: Organizational Failure as a Failed Turnaround, *Long Range Planning*, 38, 239-260

Simon, P., Hillson, D., and Newland, K., 1997, PRAM — Project risk analysis and management guide, *Association for Project Management*, High Wycombe, U.K.

Singh, J., 1986, Performance, slack and risk taking in organizational decision making, *Academy of Management Journal*, 29: 562-585

Smart, CF., Thompson W.A., and Vertinsky I., 1978, "*Diagnosing Corporate Effectiveness and Susceptibility to Crisis*" in C.F. Smart and W.T. Stanbury (eds.), Studies in Crisis Management: 57-96. Toranto: Butterworth.

Starbuck, W.H., Greve, A., and Hedberg, B.L.T, 1978, "*Responding to crisis*" in C.F. Smart and W.T. Stanbury (eds.), Studies in Crisis Management, 111-136, Toronto: Butterworth

Stinchcombe, A.L., 1965, "*Social structure and organizations*" in J.G. March (ed.), Handbook of Organizations: 142-193. Chicago: Rand McNally

Sutton, R. I., 1990, *Organizational Decline Process: A social psychological perspective, Research in Organizational Behaviour*, Vol. 12, 205-253, Copyright by JAI Pres Inc.

Thomas, P.I., 1991, *Construction Cost Estimating: Common Sources of Errors (online),* http://www.builderspace.com/features/construction-cost-estimating.html (Date of visit: 04.07.2007)

Thompson, J. D., 1967, *Organizations in Action Social Science Bases of Administrative Theory*, New York : McGraw-Hill

Trellis, A., 2005, *Why diversify: Diversifying your business can cut your risk – or raise it (online),* http://findarticles.com/p/articles/mi_m0MOR/is_2_15/ai_n13628547 (Date of visit : 05.07.2007)

Tushman, M. L., Newman, W.H., and Romenalli, E., 1986, Convergence and upheaval: Managing the steady pace of organizational evolution, *California Management Review,* 29(1): 29-44

Vrijhoef, R., and Koskela, L., 1999, *Roles of Supply Chain Management in Construction*, Proceedings IGLC-7, 26-28 July 1999, University of California, Berkeley, CA, USA

Warzawski, A., 1996, Strategic Planning in Construction Companies, *Journal of Construction Engineering and Management ASCE*, June, 133-140

Weitzel, V., Johnson, E., 1989, Decline in Organizations: A Literature Integration and Extension, *Administrative Science Quarterly*, 34(1)

Weitzel, W., Whitfield, M.B., 1988, *Environmental scanning and organizational survival*, Unpublished paper, College of Business Administration, University of Oklahoma

Whetten, D. A., 1980a, Organizational decline: A neglected topic in organizational science, 1980b Sources, responses and effects of organizational decline, *Academy of Management Review*, 5, 577-588

Wissema, J.G., 1982, Trends in technology forecasting, *R & D Management*, 12(1), 27-36

Table A Summary of the OD&B Literature Examined

No:	Researchers	Year	Research Title	Research Methodology	Findings
1	Kangari	1988	Business Failure in Construction Industry	Industrial Survey Statistics - Multiple Regression Analysis	Factors Effective on BF: - Economic Factors (bad profit, high interest rates, loss of market, no customer spending, no future), -Experience (management incompetence, lack of experience), -Others (inadequate sales, difficulty in collecting money from the clients, fraud and neglect within the company, disasters, assets and capital)
2	Abidali & Harris	1995	A methodology for predicting company failure in the construction industry	Industrial Survey, Case study Survey, Multivariate Discriminant Analysis, Questionnaire	Factors Effective on Company Failure: -Financial Situation (profitability, financial leverage, activity/net asset turnover, liquidity, trend measurement), -Managerial Situation (autocrative chief executive, the same person as CEO and chairman, lack of strong financial director, defective managerial skills, incomplete accountancy system, defective bidding system, poor marketing system, reliance on short term loans, over-trading, losses in projects)
3	Köksal & Arditi	2004	Predicting Construction Company Decline	Literature review, Questionnaire, Multinominal Logistic Regression	Factors Effective on Company Decline: -Organizational Structure (vertical communication, horizontal communication, decentralization, formalization, specialization, dependence on third parties, advanced managerial practice, advanced construction techniques) - Human Capital Issues (manager's education, manager's work experience, manager's business knowledge, manager's managerial experience, representation of outside members in the company board) - Strategic Posture (defining the scope, resource utilization, defining company's competitive advantage, ability to activate company's production market, diversification of the company's product market, diversification of company's production portfolio, level of self-performance)
4	Lahiri & Renn	2005	Organizational Decline and the Impact of Environmental Challenges of the 21st Century	Literature and Industrial Review	Attributes to Current Business Environment: -Globalization, - Rapid Technological Change, - Outsourcing, - Hyper competition

Table A Summary of the OD&B Literature Examined
(continued)

No:	Researchers	Year	Research Title	Research Methodology	Findings
6	Jaafari	2000	Construction Business Competitiveness and Global Benchmarking	Literature Review based on people and organizational improvement	Critical Success Factors in building a last longing Construction Business: -Leadership, strategy and empowerment, - Organizational factors (management structure, effective and efficient communication system, customer orientation, quality management), - Training preferable education, - Creativity, - Proactive management, - Information technology, -Performance measurement and benchmarking
7	Sutton	1990	Organizational Decline Process : A Social Psychological Perspective	Industrial and Literature Survey	Reasons to Decline: - Tainted organizational image, - Lost financial resources, - Workforce reduction, - Imminent organizational Death
8	Lorange & Nelson	1987	How to Recognize - and Avoid- Organizational Decline	Industrial and Literature Survey	Causes of Decline: - Decline, Entrapment, Self-deception, - Hierarchy orientation, - Cultural Rigidity, - Desire for acceptance, conformity, - Too much consensus and compromise Early Warning Signals of decline: -Excess Personnel, - Tolerance of incompetence, - Cumbersome administrative procedures, - disproportionate staff power, - Replacement of substance with form, - Scarcity of clear goals and decision benchmarks, - Fear of embarrassment and conflict, - Loss of effective communication, - Outdated organizational structure
9	Dikmen, Birgönül & Kızıltaş	2005	Prediction of Effectiveness in Construction Companies	Literature Review, Questionnaire Study, ANN (artificial neural network)	Factors Effective on Organizational Effectiveness: -Frequency of JV, - Effectiveness of information flow, - Level of organizational learning, - Strength of culture, - Ability to benefit from market opportunities, - Adaptability/flexibility, - Technical capabilities, - Financial Capabilities, - Experience
10	Kale & Arditi	1998	Business Failure : Liabilities of Newness Adolescence, and Smallness	Industry Survey, Statistics	Influence of - Gaining legitimacy, - Organizational Learning, - Company Size and - Turbulence and Strategic Implications on Business Failure in Construction Companies
11	Weitzel &Johnson	1989	Decline in Organizations : A Literature Integration and Extension	Literature review	Steps of Organizational Decline: - Blinded, - Inaction, - Faulty, - Crisis, - Dissolution

APPENDIX B

Data Collection Form Step I

ORTA DOĞU TEKNİK ÜNİVERSİTESİ

FEN BİLİMLERİ ENSTİTÜSÜ

İNŞAAT MÜHENDİSLİĞİ BÖLÜMÜ

YAPIM YÖNETİMİ ANADALI

YÜKSEK LİSANS TEZİ KAPSAMINDA
1. AŞAMA BİLGİ TOPLAMA FORMU

Tez Danışmanı : Prof. Dr. Talat BİRGÖNÜL

Tez Danışmanı : Doç. Dr. İrem DİKMEN

Tezi Hazırlayan : İnş. Müh. Nurdan EĞİLMEZER

1. ÖNSÖZ : Tezin Kapsamı ve Amacı

Değerli katılımcı;

Bildiğiniz üzere inşaat sektörü müşteri, tedarikçi, taşeron, müteahhit vb. gibi birçok partinin birlikte uyum içerisinde çalışmalarını gereken dinamik bir sektördür. Bu güne kadar sektör içerisinde inşaat şirketlerinin organizasyonel başarısını etkileyecek faktörler üzerinde yerli ve yabancı araştırmacılar tarafından birçok araştırma yapılmış ve yayınlar sunulmuştur.

Takdir edersiniz ki başarı her zaman üzerinde konuşulmak istenilen bir husustur. Kişiler başarılarını anlatmayı ve başarı hikayeleri dinlemeyi severler. Ancak bilinen bir gerçektir ki başarıya ulaşmanın yolu kademeli bir şekilde de olsa nasıl hata yapılmayacağını öğrenmekten geçer. Bunu mümkün kılacak olan da başarısızlığa neden olan faktörlerin bilincinde olmak ve gereken önlemleri zamanında almaktır.

Ancak yine takdir edersiniz ki, başarısızlık üzerinde konuşulmaya can atılan bir husus değildir. Bu nedenledir ki başarısızlığa neden olan faktörler ile ilgili araştırmalar literatürde geniş bir yere sahip olamamıştır.

Şirketlerin sektörel başarılarını iç ve dış sorunların farkına varmaları ve bunlarla başa çıkabilmeleri belirleyecektir.

Bu çalışma kapsamında Türk inşaat sektöründe, şirket başarısızlık / iflasında etkili olan faktörler araştırılmaktadır. Bu doğrultuda, araştırmanın amacı şirket yöneticilerinin profesyonel yaşamlarında karar destek aracı olarak kullanabilecekleri "Türk inşaat sektöründe organizasyonel başarısızlık / iflas değerlendirme ve tahmin" modeli oluşturmaktır. Bu modele baz teşkil edecek olan ve geniş bir literatür araştırmasına dayalı olan faktörler hiyerarşisi EK.1'de sunulmaktadır.

Bu bilgi formu birkaç etaptan oluşacak ve bilgiler sizden aşamalı olarak istenecektir. Her aşamada elde edilen sonuç bir diğer aşamanın içeriğini belirleyecektir. Bu konudaki açıklama "Tezin Aşamaları" başlığı altında bilgilerinize sunulmaktadır.

Katılımınız için teşekkür eder, çalışma hayatınızda başarılarınızın devamını dilerim.

Saygılarımla;

Nurdan EĞİLMEZER
ODTÜ – İnş. Müh. Bölümü
Y. Lisans Öğrencisi

2. TEZİN AŞAMALARI:

Aşamalar:

1. *Aşama:*
   - Modelin geçerliliğinin sorgulanması:

   - Katılımcıların model hakkındaki görüşlerinin alınması
   - Katılımcıların görüşleri doğrultusunda modelin revize edilmesi
   - Faktörler arasındaki etkileşimin belirlenmesi:

   - Katılımcıların, aralarında ilişki olduğunu düşündükleri faktörleri belirtmeleri
2. *Aşama:*
   - 1. Aşama sonucunda kararlaştırılan faktörler arası ilişkiler kullanılarak "ikili karşılaştırma matrislerinin" oluşturulması
   - Katılımcıların; faktörleri, "ikili karşılaştırma matrislerini" kullanarak birbirlerine göre kıyaslamaları ve önem derecelerini belirlemeleri
3. *Aşama:*
   - 2. Aşamada elde edilen bilgilerin karşılaştırılması ve katılımcılar arasında fikir ayrılığının çok fazla olduğu faktörlerin belirlenmesi
   - Katılımcılara, tüm katılımcıların cevaplarının gönderilerek, fikirlerinde bir değişiklik olup olmadığının sorulması ve fikir birliği sağlanmaya çalışılması
4. *Aşama:*
   - 1, 2 ve 3. Aşamalarda elde edilen veriler ışığında faktörlerin önem derecelerinin "Superdecisions" isimli yazılım aracılığıyla hesaplanması ve sonuçların katılımcılara sunulması
   - Katılımcılardan, elde edilen sonuçlar hakkındaki yorumlarının alınması

Yukarıda açıklandığı üzere katılımcılardan bilgi toplama süreci 4 aşamadan oluşacaktır.

Önemli Notlar:

- Bu bilgi toplama formu ile amaçlanan katılımcıların sektörel deneyimlerinden faydalanmaktır. Dolayısıyla siz değerli katılımcılardan belirli bir şirketi baz alarak değil de, sektörün genel durumunu göz önünde bulundurarak değerlendirme yapmanız istenmektedir.
- Faktörler arası ilişkiler ve önem dereceleri tamamen katılımcıların subjektif görüşlerine göre belirlenecektir. Bu önem dereceleri faktörler için katsayı niteliği teşkil edecektir. Şirketler içerisinde bulundukları durumu her bir faktöre göre değerlendirecek ve "performans/olasılık ile önem derecesini çarpıp" bir değer elde edeceklerdir. Bu değer, iflasa yakınlık ölçüsü olarak kullanılabilir bir değer olacaktır.
- Toplam katılımcı sayısı beştir. Katılımcıların kimlikleri gizli tutulacaktır.
- Hiyerarşi Diyagramı EK. 1' de Türkçe ve İngilizce versiyonlarıyla sunulmaktadır.

SORULAR:

1. EK.1 sunulmuş olan Şirket Çöküş / İflas Nedenleri hiyerarşisini lütfen inceleyiniz. EK.1'de önerilen kriterler sizce doğru ve yeterli mi? EK.1'de sizin görüşünüze göre düzeltmeler gerekli mi? Gerekli gördüğünüz düzeltmeleri (ekleme/çıkarma) lütfen belirtiniz.

2. EK 2'de sizlere sunulan kriterler arası İkili İlişki Kararlaştırma - "Pairwise Relation Decision" matrisini inceleyiniz.

İkili Karşılaştırma Matrisinin amacı hiyerarşide ana başlıkların altında yer alan kriterlerin birbirleri ile olan ilişkileri belirleyebilmektir.

Kriterler arası ilişkileri belirlemek için bu matrisi aşağıda belirtilen açıklamayı dikkate alarak inceleyiniz ve gerektiğini düşündüğünüz değişimi matris üzerinde belirtiniz.

- Kriterler arası ilişkilerin kuvvetini belirlemek için kullanılacak olan yöntem:

Matriste sıra elemanlarının o sıradaki her sütun elemanı için o sütun elemanı üzerinde etkili olup olmadığı sorgulanmaktadır.
" + " görülen matris kısımları için açıklama, " + " ya tekabül eden sıra elemanı (row element) kolon elemanı (column element) üzerinde etkilidir şeklindedir.

ÖRNEK:

İkili İlişki Kararlaştırma Matrisi	**A**	**B**	**C**
A		**+**	**+**
B			
C	+	-	

Açıklama : Yukarıdaki örneğe göre, A elemanı B ve C elemanları üzerinde etkilidir; B elemanı A ile C elemanları üzerinde etkili değildir; C elemanı A elemanı üzerinde etkili, B elemanı üzerinde etkili değildir. Elemanların kendi üzerindeki etkileri incelenmeyecektir (örneğin: A'nın A üzerinde, EK.2'deki İkili İlişki Kararlaştırma Matrisinde bu kısımlar gri renkte belirtilmiştir.)

İstenen : Matris doldurulmuş görünmektedir. Matrisi inceleyerek + işaretlerinin sizlere göre doğru yerde olup olmadıklarını kontrol ediniz, ayrıca boş bırakılmış olan ancak sizlerin oradaki sıra (row) elemanının kolon (column) elemanı üzerinde etkili olduğunu düşündüğünüz kısımlara + işareti koyunuz. Burada amaç siz değerli katılımcıların deneyimleri ile ikili ilişkileri belirleyebilmektir.
Matris incelenirken KRİTERLER ARASI İKİLİ KARŞILAŞTIRMADA **DİREKT ETKİ** BAZ ALINMASINA DİKKAT EDİLECEKTİR. DOLAYLI YÖNDEN ETKİLEME + İŞARETİ İLE BELİRTİLMEYECEKTİR.

EK.1

Hiyerarşi Diyagramı

(Bknz Ms Excel dosyaları: hiyerarşi_diyagrami_ingilizce)

EK.2

İkili İlişki Belirleme Matrisi

(Bknz Ms. Excel Dosyası : ikili_iliski_belirleme_matrisi)

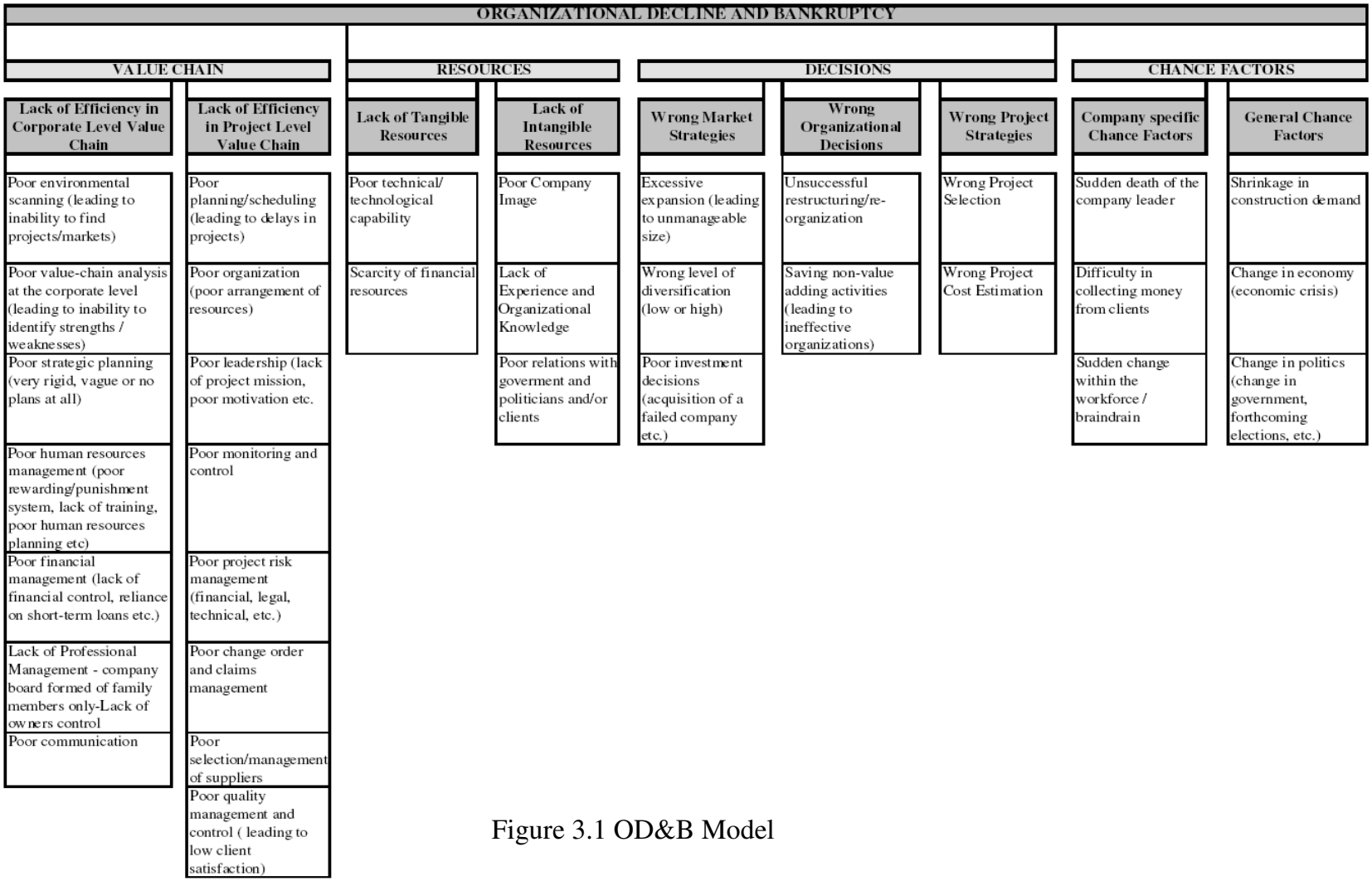
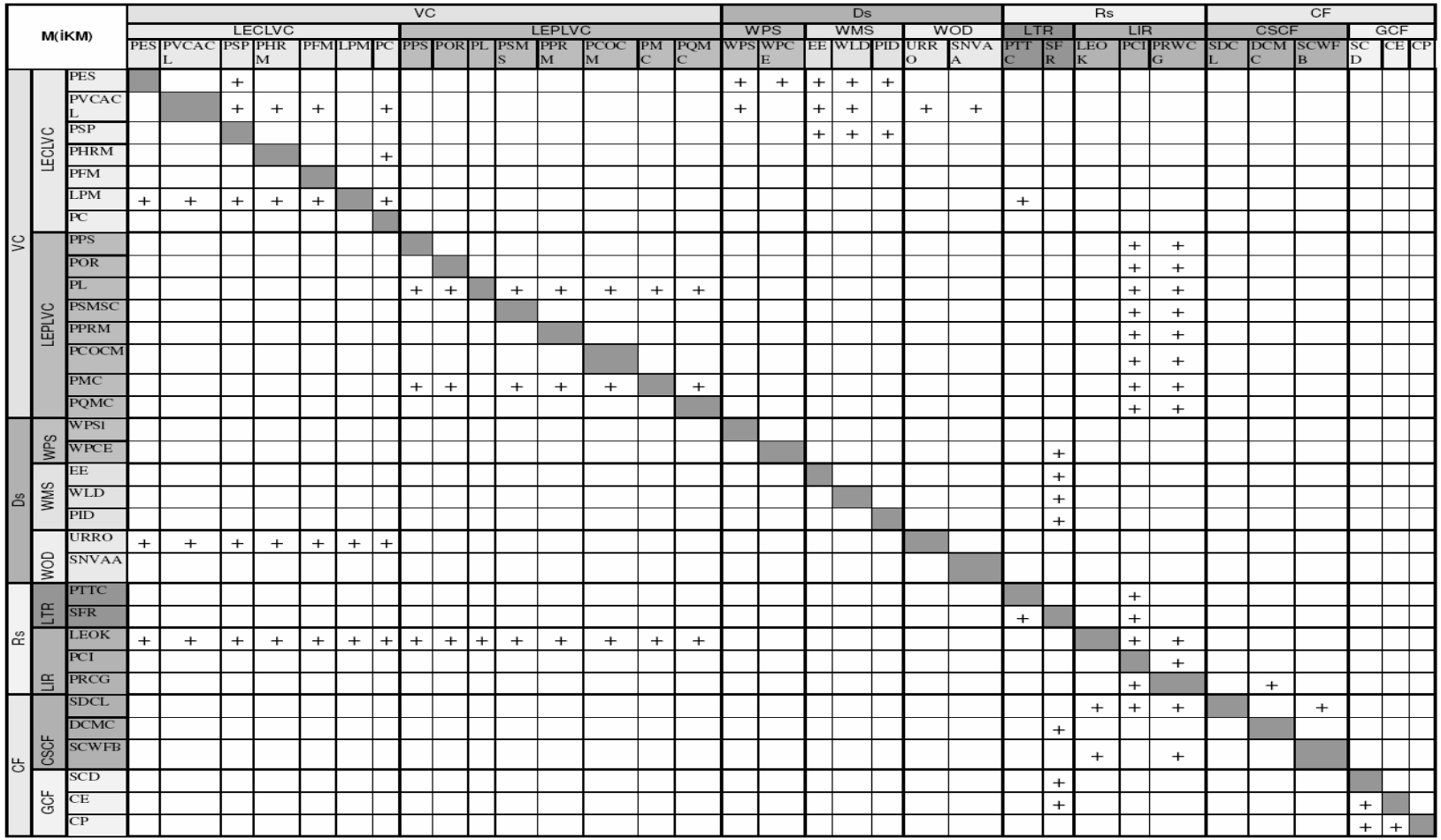
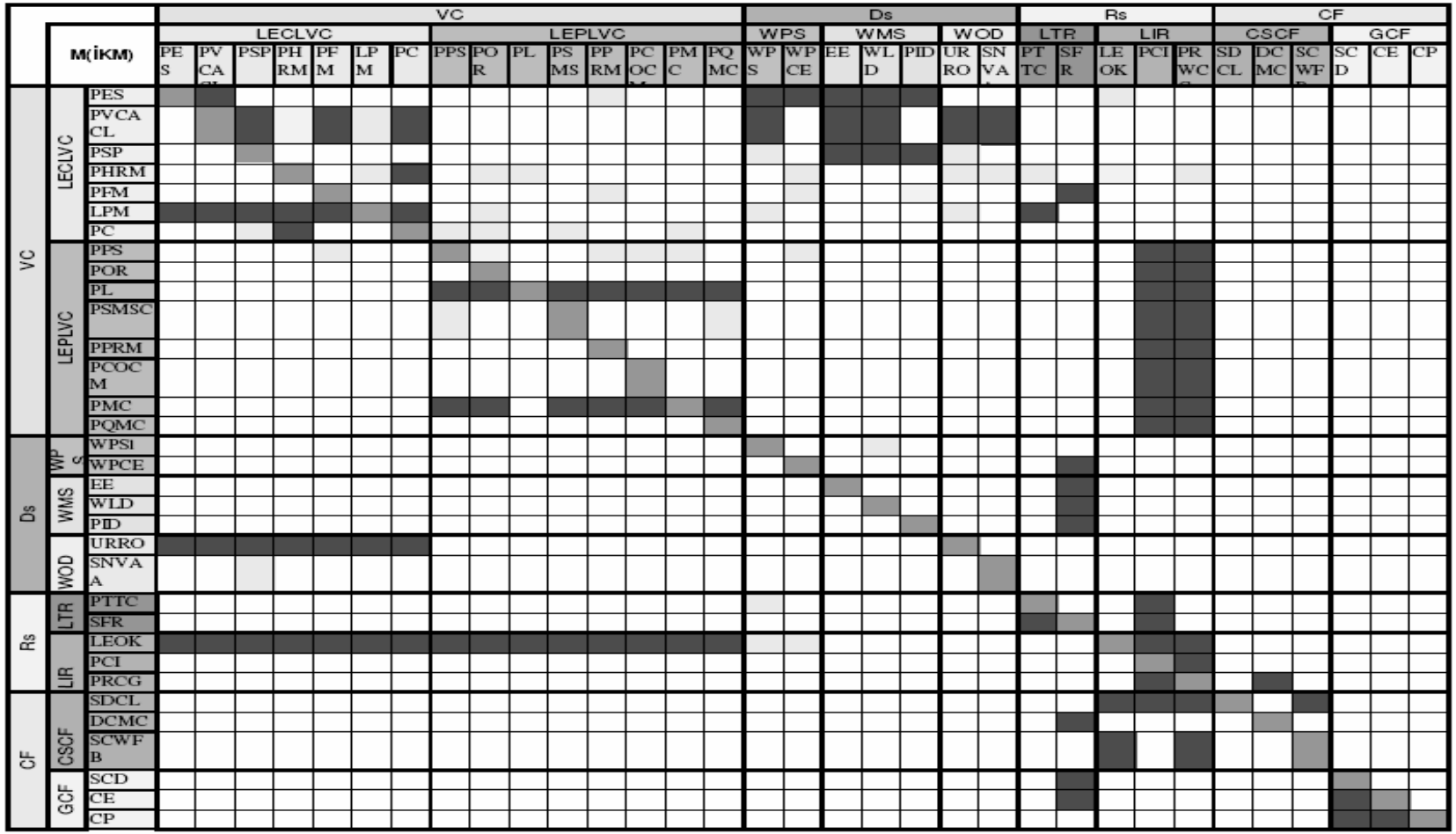


Figure 3.1 OD&B Model



Pairwise Relation Decision Matrix



Pairwise Relation Decision Matrix -
Delphi 2nd Cycle

Data Collection Form Step II

ORTA DOĞU TEKNİK ÜNİVERSİTESİ

FEN BİLİMLERİ ENSTİTÜSÜ

İNŞAAT MÜHENDİSLİĞİ BÖLÜMÜ

YAPIM YÖNETİMİ ANADALI

YÜKSEK LİSANS TEZİ KAPSAMINDA
2. AŞAMA BİLGİ TOPLAMA FORMU

Tez Danışmanı : Prof. Dr. Talat BİRGÖNÜL

Tez Danışmanı : Doç. Dr. İrem DİKMEN TOKER

Tezi Hazırlayan : İnş. Müh. Nurdan EĞİLMEZER

İÇİNDEKİLER:

AÇIKLAMALAR:

Bilgi toplama sürecinin 2. Aşamasının amacı, siz değerli katılımcılarımızın sektörel bilgi ve deneyimleri sayesinde elde edilen bilgiler ışığında, "İnşaat Şirketlerinde Organizasyonel Çöküş- İflas" başlıklı hiyerarşi diyagramındaki faktörlerin önem derecelerinin kıyaslaması yapabilmektir. Bu aşamada siz değerli katılımcılardan "ikili önem derecesi belirleme matrislerini" doldurmanız istenecektir. İkili karşılaştırma yapılırken size yöneltilecek sorular baskınlık ya da etki açısından karşılaştırma olacaktır. İlk olarak önceden belirtilen bir ana elemana göre, ikili karşılaştırmaya tabi tutulan faktörlerden hangisi ana eleman üzerinde daha etkilidir sorusunun yanıtı aranacaktır. Bunun için lütfen Örnek-1'i inceleyiniz:

Örnek-1

Ana Eleman : C	A	B
A		
B		

Örnek-1'de A ve B, C ana elemanı üzerinde etkili olan 2 faktördür.

İlk sorumuz: Verilen **bir ana eleman C ve bu ana eleman altında karşılaştırılan 2 faktör A ve B iken, hangi faktör (A ya da B) ana eleman üzerinde daha etkilidir?**

Cevap: C ana elemanı üzerinde A faktörü B faktörüne göre daha etkilidir. Bu durumda;

İkinci sorumuz: **C ana elemanı üzerinde A faktörü B faktörüne göre ne kadar daha önemlidir?**

İkinci sorunun cevabının bilgi formumuzun tüm aşamalarında homojen olabilmesi için sizden Tablo-1'de açıklaması bulunan 1-9 skalasını kullanarak karşılaştırma yapmanız istenmektedir.

Tablo 1. Skala değerleri ve tanımları

Değer	Tanım	Açıklama
1	Eşit derecede önemli	İki seçenek de eşit derecede öneme sahip
3	Biraz daha fazla önemli	Tecrübe ve yargı bir kriteri diğerine karşı biraz daha önemli kılmaktadır
5	Daha fazla önemli	Tecrübe ve yargı bir kriteri diğerine karşı oldukça önemli kılmaktadır
7	Çok daha fazla önemli	Bir kriter diğerine göre çok daha fazla önemlidir.
9	Aşırı derecede daha fazla önemli	Bir kriterin diğerine göre çok daha önemli olduğunu gösteren kanıtlar bulunmaktadır.
2,4,6,8	Ara değerler	Uzlaşma gerektiğinde kullanılmak üzere iki ardışık yargı arasındaki değerler

Buna göre 2. sorunun cevabında, C ana elemanına göre A faktörünün B faktörüne kıyasla biraz daha önemli olduğunu düşünürsek, Örnek–1 matrisi aşağıdaki gibi doldurulmalıdır. Tablo-1'e göre 1–9 skalasında "biraz daha önemli" değeri "3" olarak belirlenmiştir. Ayrıca bir faktörün kendisiyle kıyaslandığında önem derecesi "eşit" olacağından 1–9 skalasında kullanılacak değer "1" dir. Anlaşılacağı gibi matriste her satırın solundaki faktör, kolonların başlarındaki faktörlere göre ana eleman altında değerlendirilmektedir. Yani A faktörü önce A faktörüyle, sonra B faktörüyle C ana elemanı altında ikili olarak karşılaştırılmaktadır. Böylece Örnek–1 ikili karşılaştırma matrisinin ilk satırı aşağıda görüldüğü gibi doldurulmalıdır.

Ana Eleman : C	A	B
A	1	3
B		

Matrisin 2. satırına gelindiğinde C ana elemanı altında sırasıyla B faktörünün A faktörüne göre, daha sonra B faktörünün B faktörüne göre önem değeri belirlenecektir. B faktörünün kendisiyle karşılaştırma değeri eşit yani 1 olarak alınacaktır. Daha önce A faktörünün B faktörüne göre C ana elemanı altında önem değerinin 3 olduğuna karar vermiştik. Aslında buna karar verdiğimizde, dolaylı olarak B faktörünün A faktörüyle C ana elemanı altında kıyaslandığındaki önem değerini de belirlemiş bulunuyoruz: C ana elemanı altında, A faktörünün B faktörüne göre önem değeri 3 ise, B faktörünün A faktörüne göre önem değeri, 3 değerinin çarpma işlemine göre tersi olan 1/3 olacaktır. Örnek-1'deki ikili karşılaştırma matrisinin son hali aşağıdadır;

Ana Eleman : C	A	B
A	1	3
B	1/3	1

Özet olarak, matrisler doldurulurken;

- Öncelikle, karşılaştırmanın yapılacağı "ana faktör" baz alınmalı ve faktörler arasındaki "önem/etki derecesi" karşılaştırması bu ana faktör düşünülerek yapılmalıdır.
- Karşılaştırmalar yapılırken 1-9 skalası kullanılmalıdır.
- Karşılaştırma sırasında her zaman "row(sıra) faktörüne göre column(kolon) faktörünün önemi/etkisi" belirlenmelidir.
- 2 faktör karşılaştırıldıktan sonra, matrisdeki paralel değerin tekrar belirlenmesi gerekmemektedir, çünkü bu değer (x) daha önce belirlenmiş olan değerin tersi (1/x) olacaktır.

Bu açıklamaları dikkate alarak, lütfen 3. Aşama Bilgi Toplama Formu Kapsamında Hazırlanan İkili Önem Derecesi Karşılaştırma Matrisleri'ni doldurma işlemine geçiniz.
Matrisleri Excel dosyası halinde "pairwise comparison matrices" ismiyle bu maile eklenmiş olarak bulacaksınız.

Matrislerde **gri** ile boyanmış alanları doldurmanız **gerekmemektedir**. Bu kısımlar yukarıda açıklandığı gibi doldurduğunuz bilgilerin çarpmaya göre tersi kullanılarak otomatik olarak doldurulacaktır.

NOT = Tüm aşamalarda doğru karar verebilmek için matrislerdeki başlıkların içeriklerinin doğru anlaşılması gerekmektedir. Bu amaçla matrisleri doldururken Tablo-1'deki hiyerarşi diyagramını göz önünde tutmanız önemle rica olunur.

İlginiz ve katılımız için teşekkür eder, siz değerli katılımcılara saygılarımı sunarım.

Nurdan EĞİLMEZER
O.D.T.Ü.- İnşaat Mühendisliği Bölümü
Yapım Yönetimi Ana Dalı
Yüksek Lisans Öğrencisi

EK.1

Hiyerarşi Diyagramı

bkz mail ekleri ms excel dosyası : "**hiyerarşi_modeli_090706"**

EK.2

İkili Önem Derecesi Belirleme Matrisleri

bkz e-posta ekleri MS Excel dosyası:

"pairwise priority comparison matrices"

Top Level Hiyerarchy Pairwise Comparison Matrices:

Effect of other top level hierarchy factors on "Value Chain" :

Question: Given "Value Chain" top level element as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Value Chain	Value Chain	Decisions	Resources
Value Chain			
Decisions			
Resources			

Önem Skala Değerleri ve Tanımları

Değer	Tanım	Açıklama
1	Eşit etkili	İki seçenekte eşit derecede öneme sahip
3	Biraz etkili	Tecrübe ve yargı bir kriteri diğerine karşı biraz üstün kılmakta
5	Fazla etkili	Tecrübe ve yargı bir kriteri diğerine karşı oldukça üstün kılmakta
7	Çok fazla etkili	Bir kriter diğerine göre üstün sayılmıştır
9	Aşırı derece etkili	Bir kriterin diğ. üstün olduğunu gösteren kanıt çok büyük güvenilirliğe sahiptir
2,4,6,8	Ara değerler	Uzlaşma gerektiğinde kullanılmak üzere iki ardışık yargı arasındaki değerler

Yukarıdaki matrisi doldurma aşamalarını açoklamak amacıyla örneklersek:

1.Aşama

"Value Chain" ana eleman olarak "value chain" sıra elemanı "decisions" kolon elemanıyla karşılaştırıldığında "value chain" sıra elemanı "decisions" kolon elemanına göre "Value Chain" ana elemanı üzerinde "**aşırı derecede daha fazla etkilidir**" kararı veriyor isek (ki bu kararı verirken elemanların alt faktörlerine hiyerarşi diyagramından göz atmanız neleri karşılaştırdığınızı anlamanız yönünden gerekli olacaktır) bunun yukarıdaki "önem skala değerleri" tablosundaki karşılığı 9 olacaktır. Matrisin durumu:

Value Chain	Value Chain	Decisions	Resources
Value Chain		9	
Decisions			
Resources			

olacaktır.

2.Aşama

"Value Chain" ana eleman olarak "value chain" sıra elemanı "resources" kolon elemanıyla karşılaştırıldığında "value chain" sıra elemanı "recources" kolon elemanına göre "Value Chain" ana elemanı üzerinde "**çok daha fazla etkilidir**" kararı veriyor isek (ki bu kararı verirken elemanların alt faktörlerine hiyerarşi diyagramından göz atmanız neleri karşılaştırdığınızı anlamanız yönünden gerekli olacaktır) bunun yukarıdaki "önem skala değerleri" tablosundaki karşılığı 7 olacaktır. Matrisin durumu:

Value Chain	Value Chain	Decisions	Resources
Value Chain		9	7
Decisions			
Resources			

olacaktır.

2.Aşama

"Value Chain" ana eleman olarak "decisions" sıra elemanı "resources" kolon elemanıyla karşılaştırıldığında "resources" kolon elemanı "decisions" sıra elemanına göre "Value Chain" ana elemanı üzerinde "**daha fazla etkildir**" kararı veriyor isek (ki bu kararı verirken elemanların alt faktörlerine hiyerarşi diyagramından göz atmanız neleri karşılaştırdığınızı daha iyi anlamanız yönünden gerekli olacaktır) bunun yukarıdaki "önem skala değerleri" tablosundaki karşılığı 1/5 olacaktır. (Ana eleman üzerinde kolon elemanı, sıra elemanından daha fazla etkilidir kararı ile tablodaki 5=daha fazla etkilidir değeri tabloya 1/5 olarask yansıtılmıştır:anlamı Ana eleman üzwerinde Decisions 1 etkili iken Resources 5 etkilidir.) Matrisin durumu:

Value Chain	Value Chain	Decisions	Resources
Value Chain		9	7
Decisions			1 / 5
Resources			

olacaktır.

Siz değerli katılımcılarımızdan çalışmamın 3. Aşamasında beklenen matrisleri bilgi ve deneyimleriniza ışığında yukarıda örneklenen şekle uygun doldurmanızdır. Çalışmama katılımınız ve değerli vaktiniz için teşekkür eder saygılarımı sunarım.

Nurdan EĞİLMEZER
ODTÜ İnş. Müh. Y.Lisans Öğr.

Top Level Hiyerarchy Pairwise Comparison Matrices:

Effect of other top level hierarchy factors on "Value Chain" :

Question: Given "Value Chain" top level element as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

1

Value Chain	Value Chain	Decisions	Resources
Value Chain			
Decisions			
Resources			

Effect of other top level hierarchy factors on "Resources" :

Question: Given "Resources" top level element as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

2

Resources	Value Chain	Decisions	Resources	Chance Factors
Value Chain				
Decisions				
Resources				
Chance Factors				

Effect of other top level hierarchy factors on "Decisions" :

Question: Given "Decisions" top level element as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

3

Decisions	Value Chain	Resources
Value Chain		
Resources		

Second Level Hiyerarchy Pairwise Comparison Matrices:

Effect of other second level hierarchy factors on "Lack of Efficiency in Corporate Level Value Chain" :

Question: Given "Lack of Efficiency in Corporate Level Value-chain" second level element as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

1

Lack of Efficiency in Corporate Level Value-chain	Wrong Organizational Decisions	Lack of Intangible Resources	Lack of Efficiency in Corporate Level Value-chain
Wrong Organizational Decisions			
Lack of Intangible Resources			
Lack of Efficiency in Corporate Level Value-chain			

Effect of other second level hierarchy factors on "Lack of Efficiency in Project Level Value-chain" :

Question: Given "Lack of Efficiency in Project Level Value-chain" second level element as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

2

Lack of Efficiency in Project Level Value-chain	Lack of Efficiency in Corporate Level Value-chain	Wrong Organizational Decisions	Lack of Intangible Resources	Lack of Efficiency in Project Level Value-chain
Lack of Efficiency in Corporate Level Value-chain				
Wrong Organizational Decisions				
Lack of Intangible Resources				
Lack of Efficiency in Project Level Value-chain				

Effect of "Lack of Efficiency in Corporate Level Value Chain" sub level factors on itself:

Question: Given "Poor Value-chain Analysis at the Corporate Level" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor Value-chain Analysis at the Corporate Level	Poor Environmental Scanning	Lack of Professional Management
Poor Environmental Scanning		
Lack of Professional Management		

Question: Given "Poor Strategic Planning" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor strategic planning	Poor Valuechain Analysis at the Corporate Level	Lack of Professional Management	Poor Communication
Poor Valuechain Analysis at the Corporate Level			
Lack of Professional Management			
Poor Communication			

Question: Given "Poor Financial Management" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor Financial Management	Poor Valuechain Analysis at the Corporate Level	Lack of Professional Management
Poor Valuechain Analysis at the Corporate Level		
Lack of Professional Management		

Effect of "Lack of Project Level Value-chain" sub level factors on itself :

Question: Given "Poor Planning and Scheduling" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor Planning and Scheduling	Poor leadership	Poor monitoring and control	Poor Organization of Resources
Poor leadership			
Poor monitoring and control			
Poor Organization of Resources			

Question: Given "Poor organization of resources" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor organization of resources	Poor planning / scheduling	Poor leadership	Poor monitoring and control
Poor planning / scheduling			
Poor leadership			
Poor monitoring and control			

Question: Given "Poor selection/ mngmntt of supply chain " as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor selection/ mngmntt of supply chain	Poor leadership	Poor monitoring and control
Poor leadership		
Poor monitoring and control		

Effect of "Lack of Corporate Level Value Chain" sub level Factors on "Lack of Project Level Value-chain" sub level factors on itse

Question: Given "Poor organization of resources" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor organization of resources	Poor Human Resources Management	Poor communication
Poor Human Resources Management		
Poor communication		

Question: Given "Poor selection/ mngmntt of supply chain " as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor selection/ mngmntt of supply chain	Poor Financial Management	Poor Communication
Poor Financial Management		
Poor Communication		

Effect of "Lack of Corporate Level Value Chain" sub level Factors on "Wrong Project Strategies" sub level factors on itself :

Question: Given "Wrong project selection" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Wrong project selection	Poor environmental scanning	Poor value-chain analysis at the corp.level	Lack of Professional Management
Poor environmental scanning			
Poor value-chain analysis at the corp.level			
Lack of Professional Management			

Effect of "Lack of Efficiency in Corporate Level Value Chain " sub level Factors on "Wrong Market Strategies" sub level factors on itself :

Question: Given "Excessive expansion " as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Excessive expansion	Poor environmental scanning	Poor value-chain analysis at the corp.level	Poor strategic planning
Poor environmental scanning			
Poor value-chain analysis at the corp.level			
Poor strategic planning			

Question: Given "Wrong level of diversification" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Wrong level of diversification	Poor environmental scanning	Poor value-chain analysis at the corp.level	Poor strategic planning
Poor environmental scanning			
Poor value-chain analysis at the corp.level			
Poor strategic planning			

Question: Given "Poor investment decisions " as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor investment decisions	Poor environmental scanning	Poor strategic planning	Poor financial mngmnt
Poor environmental scanning			
Poor strategic planning			
Poor financial mngmnt			

Effect of "Lack of Corporate Level Value-chain " sub level Factors on "Wrong Organizational Decisions" sub level factors on itself :

Question: Given "Unsuccessful restructuring/ reorganization " as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Unsuccessful restructuring/ reorganization	Poor Value-chain Analysis at the corporate level	Poor Strategic Planning	Lack of Professional Management
Poor Value-chain Analysis at the corporate level			
Poor Strategic Planning			
Lack of Professional Management			

Effect of "Wrong Project Startegies " sub level Factors on "Lack of Tangible Resources" sub level factors on itself :

Question: Given "Scarcity of Financial Resources" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Scarcity of Financial Resources	Wrong Project Selection	Wrong Project Cost Estimation
Wrong Project Selection		
Wrong Project Cost Estimation		

Question: Given "Scarcity of Financial Resources" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Scarcity of Financial Resources	Excessive Expansion	Wrong Level of diversification in Other Sectors	Poor Investment Decisions
Excessive Expansion			
Wrong Level of diversification in Other Sectors			
Poor Investment Decisions			

Effect of "General Change Factors" sub level Factors on "Lack of Tangible Resources" sub level factors on itself :

Question: Given "Scarcity of Financial Resources" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Scarcity of Financial Resources	Shrinkage in Construction Demand	Change in Economy
Shrinkage in Construction Demand		
Change in Economy		

Effect of "Lack of Efficiency in Project Level Value Chain" sub level Factors on "Lack of Intangible Resources" sub level factors on itself :

Question: Given "Poor company image" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor company image	Poor planning / scheduling	Poor organization of resources	Poor leadership	Poor selection/ management of supply chain	Poor project risk mngmnt	Poor change order and claims mngmt.	Poor monitoring and control	Poor quality mngmnt and control
Poor planning / scheduling								
Poor organization of resources								
Poor leadership								
Poor selection/ management of supply chain								
Poor project risk mngmnt								
Poor change order and claims mngmt.								
Poor monitoring and control								
Poor quality mngmnt and control								

Question: Given "Poor relations with clients, supervisors or government (eg. bad attitude of supervisors)" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor relations with clients, supervisors or government (eg. bad attitude of supervisors)	Poor planning / scheduling	Poor organization of resources	Poor leadership	Poor selection/ management of supply chain	Poor project risk mngmnt	Poor change order and claims mngmt.	Poor monitoring and control	Poor quality mngmnt and control
Poor planning / scheduling								
Poor organization of resources								
Poor leadership								
Poor selection/ management of supply chain								
Poor project risk mngmnt								
Poor change order and claims mngmt.								
Poor monitoring and control								
Poor quality mngmnt and control								

Effect of "Wrong Market Strategies" sub level Factors on "Lack of Intangible Resources" sub level factors on itself :

Question: Given "Poor Company Image" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor Company Image	Wrong Level of Diversification in Other Sectors	Poor Investment Decisions
Wrong Level of Diversification in Other Sectors		
Poor Investment Decisions		

Effect of "Lack of Tangible Resources" sub level Factors on "Lack of Intangible Resources" sub level factors on itself :

Question: Given "Poor Company Image" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor Company Image	Poor Technical/ Technological Capability	Scarcity of Financial Resources
Poor Technical/ Technological Capability		
Scarcity of Financial Resources		

Effect of "Lack of Tangible Resources" sub level Factors on itself:

Question: Given "Poor Company Image" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor Company Image	Lack of Experience/ organizational Knowledge	Poor Relations with Clients or the Government
Lack of Experience/ organizational Knowledge		
Poor Relations with Clients or the Government		

Question: Given "Poor Relations with Clients or the Government" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor Relations with Clients or the Government	Lack of Experience/ organizational Knowledge	Poor Company Image
Lack of Experience/ organizational Knowledge		
Poor Company Image		

Effect of "Company Specific Chance Factors" sub level Factors on "Lack of Tangible Resources" sub level Factors :

Question: Given "Poor Company Image" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor Company Image	Sudden Deth of the Leader	Sudden Change within the Workforce-Bfraindrain
Sudden Deth of the Leader		
Sudden Change within the Workforce-Bfraindrain		

Question: Given "Poor Relations with Clients and the Government" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor Relations with Clients and the Government	Sudden Deth of the Leader	Sudden Change within the Workforce-Bfraindrain
Sudden Deth of the Leader		
Sudden Change within the Workforce-Bfraindrain		

Effect of "Company Specific Chance Factors" sub level Factors on themselves :

Question: Given "Shrinkage in Construction Demand" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Shrinkage in Construction Demand	Change in Economy	Change in Politics
Change in Economy		
Change in Politics		

Question: Given "Poor Communication" as the parent element, and comparing raw elements with the column elements, which element has greater influence on the parent element?

Poor Communication	Poor Valuechain Analysis at the Corporate Level	Poor Human Resources Management	Lack of Professional Management
Poor Valuechain Analysis at the Corporate Level			
Poor Human Resources Management			
Lack of Professional Management			

Data Collection Form Step III

Aşağıda tüm katılımcıların ikili karşılaştırma matrislerine verdikleri cevaplar değerlendirildikten sonra ulaşılan son durumda tam bir mutabakata ulaşılamamayan durumlar özetlenmiştir. Delphi Study olarak adlandırılan bilgi toplama formumun son aşamasında siz değerli katılımcılardan aşağıdaki soruları yanıtlamanızı rica ediyorum.

Saygılarımla;

Nurdan EĞİLMEZER- ODTU-04 Y.Lisans Öğrencisi

Aşağıdaki sorulara cevabınız evet ise evet cevabını işaretlemeniz yeterli olacaktır, cevabınız hayır ise sizin önerinizi de belirtebilirseniz tezimin gidişatı için çok yararlı olacaktır.

Ust düzey yönetimin yetersiz olması ana faktörü alt elemanlarının kendi üzerlerindeki etkileri incelendiğinde:	
1.	"Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)"**ana eleman olarak alındığında, 2 katılımcı** "Profesyonel yönetim eksikliği - yönetim kurulunun yalnızca aile üylerinden oluşması-Şirket sahiplerinin kontrol yetisinin kaybı" **faktörünün** "Şirketin değer zinciri analizinin iyi yapılamaması (şirketin güçlü ve zayıf olduğu alanların doğru belirlenememesi vb.)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim:	
2.	"Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)" **ana eleman olarak alındığında, 2 katılımcı** "Profesyonel yönetim eksikliği - yönetim kurulunun yalnızca aile üylerinden oluşması-Şirket sahiplerinin kontrol yetisinin kaybı" **faktörünün** "Şirketteki dış ve iç iletişim bozukluğu" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim:	
3.	"Şirketteki dış ve iç iletişim bozukluğu" **ana eleman olarak alındığında, 1 katılımcı** "Profesyonel yönetim eksikliği - yönetim kurulunun yalnızca aile üylerinden oluşması-Şirket sahiplerinin kontrol yetisinin kaybı" **faktörünün** "İnsan kaynakları yönetimindeki zayıflık (zayıf ödül/ceza sistemi, eğitim eksikliği, kötü insan kaynakları planlaması vb.)" **faktöründen daha etkili olduğuna kanaat getirirken, 2 katılımcı ise ikisininde aynı derecede etkili olduğunu düşündüklerini belirtmişlerdir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim:	
Proje Yönetiminin Yetersiz Olması ana faktörü alt elemanlarının kendi üzerlerindeki etkileri incelendiğinde:	
4	"Süre planlamasının iyi yapılamaması (projelerde süre aşımı)" **ana eleman olarak alındığında, 2 katılımcı** "Proje organizasyonunun zayıf olması (kaynakların atanması ve kullanılmasındaki yetersizlik)" **faktörünün** "Yetersiz liderlik (misyon eksikliği, motivasyon eksikliği vb.)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim:	
5	"Süre planlamasının iyi yapılamaması (projelerde süre aşımı)" **ana eleman olarak alındığında, 2 katılımcı** "Proje organizasyonunun zayıf olması (kaynakların atanması ve kullanılmasındaki yetersizlik)" **faktörünün** "Projenin izlenmesinde ve kontrolünde yetersizlik" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim:	
6	"Proje organizasyonunun zayıf olması (kaynakların atanması ve kullanılmasındaki yetersizlik)"**ana eleman olarak alındığında, 2 katılımcı** "Yetersiz liderlik (misyon eksikliği, motivasyon eksikliği vb.)" **faktörünün** "Süre planlamasının iyi yapılamaması (projelerde süre aşımı)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim:	

7	"Tedarikçilerin ve taşeronların iyi seçilememesi ve yönetilememesi"**ana eleman olarak alındığında, 2 katılımcı "**Yetersiz liderlik (misyon eksikliği, motivasyon eksikliği vb.)**' faktörünün "**Projenin izlenmesinde ve kontrolünde yetersizlik**" faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
8	"Yetersiz risk yönetimi (risklerin önceden tanımlanıp, etkilerinin tahmin edilip, gerekli stratejilerin belirlenememesi)"**ana eleman olarak alındığında, 2 katılımcı "**Yetersiz liderlik (misyon eksikliği, motivasyon eksikliği vb.)**' faktörünün "**Süre planlamasının iyi yapılamaması (projelerde süre aşımı)**" faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
9	"Değişiklik taleplerinin iyi yönetilememesi ve hukuksal taleplerin iyi hazırlanamaması"**ana eleman olarak alındığında, 2 katılımcı "**Süre planlamasının iyi yapılamaması (projelerde süre aşımı)**" faktörünün "**Yetersiz liderlik (misyon eksikliği, motivasyon eksikliği vb.)**' faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
10	"Değişiklik taleplerinin iyi yönetilememesi ve hukuksal taleplerin iyi hazırlanamaması"**ana eleman olarak alındığında, 2 katılımcı "**Projenin izlenmesinde ve kontrolünde yetersizlik**" faktörünün "**Süre planlamasının iyi yapılamaması (projelerde süre aşımı)**" faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını** düşündüğünü belirtmiştir**.. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
11	"Değişiklik taleplerinin iyi yönetilememesi ve hukuksal taleplerin iyi hazırlanamaması"**ana eleman olarak alındığında, 1 katılımcı "**Yetersiz liderlik (misyon eksikliği, motivasyon eksikliği vb.)**' faktörünün "**Projenin izlenmesinde ve kontrolünde yetersizlik**" faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersi görüşte olduğunu ve 1 katılımcı eşit derecede etkili olduklarını** düşündüğünü belirtmiştir.**Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yabilir misiniz?**
Benim görüşüme göre ……, çünkü……	
12	"Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)"**ana eleman olarak alındığında, 2 katılımcı "**Yetersiz liderlik (misyon eksikliği, motivasyon eksikliği vb.)**' faktörünün "**Projenin izlenmesinde ve kontrolünde yetersizlik**" faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersi görüşte olduğunu düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
13	"Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)"**ana eleman olarak alındığında, 2 katılımcı "**Projenin izlenmesinde ve kontrolünde yetersizlik**" faktörünün "**Tedarikçilerin ve taşeronların iyi seçilememesi ve yönetilememesi**" faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir.. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
"Üst düzey yönetimin yetersiz olması" ana faktörü alt faktörlerinin "Yanlış Pazar Stratejileri" ana faktörü alt faktörlerine etkisi araştırılırken:	
14	"Aşırı büyüme (şirketin gereğinden fazla genişlemesi)"**ana eleman olarak alındığında, 2 katılımcı "**Şirketin değer zinciri analizinin iyi yapılamaması (şirketin güçlü ve zayıf olduğu alanların doğru belirlenememesi vb.)**' faktörünün "**Yetersiz çevre taraması (yeni projelerin ve yeni pazar imkanlarının farkedilmesi vb.)**" faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**

Cevap:	☐ Evet ☐ Hayır, benim önerim: .....
15	"Aşırı büyüme (şirketin gereğinden fazla genişlemesi)" **ana eleman olarak alındığında, 2 katılımcı** "Şirketin değer zinciri analizinin iyi yapılamaması (şirketin güçlü ve zayıf olduğu alanların doğru belirlenememesi vb.)' **faktörünün** "Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap:	☐ Evet ☐ Hayır, benim önerim: .....
16	"Aşırı büyüme (şirketin gereğinden fazla genişlemesi)" **ana eleman olarak alındığında, 2 katılımcı** "Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)' **faktörünün** "Şirketin değer zinciri analizinin iyi yapılamaması (şirketin güçlü ve zayıf olduğu alanların doğru belirlenememesi vb.)' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap:	☐ Evet ☐ Hayır, benim önerim: .....
17	"Yanlış yatırım kararları (örneğin iflas etmiş bir şirketi kendi bünyesine katmak)" **ana eleman olarak alındığında, 1 katılımcı** "Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)' **faktörünün** "Yetersiz çevre taraması (yeni projelerin ve yeni pazar imkanlarının farkedilmesi vb.)' **faktöründen daha etkili olduğuna kanaat getirirken, 2 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmişlerdir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap:	☐ Evet ☐ Hayır, benim önerim: .....
18	"Aşırı büyüme (şirketin gereğinden fazla genişlemesi)" **ana eleman olarak alındığında, 2 katılımcı** "Yetersiz finansman yönetimi (finansal kontrolün eksikliği, kısa vadeli borçlanmaya bel bağlama vb.)' **faktörünün** "Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap:	☐ Evet ☐ Hayır, benim önerim: .....
	"Üst düzey yönetimin yetersiz olması" ana faktörü alt faktörlerinin "Yanlış Pazar Stratejileri" ana faktörü alt faktörlerine etkisi araştırılırken:
19	"Aşırı büyüme (şirketin gereğinden fazla genişlemesi)" **ana eleman olarak alındığında, 2 katılımcı** "Şirketin değer zinciri analizinin iyi yapılamaması (şirketin güçlü ve zayıf olduğu alanların doğru belirlenememesi vb.)' **faktörünün** "Yetersiz çevre taraması (yeni projelerin ve yeni pazar imkanlarının farkedilmesi vb.)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap:	☐ Evet ☐ Hayır, benim önerim: .....
20	"Aşırı büyüme (şirketin gereğinden fazla genişlemesi)" **ana eleman olarak alındığında, 2 katılımcı** "Şirketin değer zinciri analizinin iyi yapılamaması (şirketin güçlü ve zayıf olduğu alanların doğru belirlenememesi vb.)' **faktörünün** "Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap:	☐ Evet ☐ Hayır, benim önerim: .....
21	"Aşırı büyüme (şirketin gereğinden fazla genişlemesi)" **ana eleman olarak alındığında, 2 katılımcı** "Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)' **faktörünün** "Şirketin değer zinciri analizinin iyi yapılamaması (şirketin güçlü ve zayıf olduğu alanların doğru belirlenememesi vb.)' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap:	☐ Evet ☐ Hayır, benim önerim: .....

22	"Yanlış yatırım kararları (örneğin iflas etmiş bir şirketi kendi bünyesine katmak)" **ana eleman olarak alındığında, 1 katılımcı** "Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)' **faktörünün** "Yetersiz çevre taraması (yeni projelerin ve yeni pazar imkanlarının farkedilmesi vb.)" **faktöründen daha etkili olduğuna kanaat getirirken, 2 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmişlerdir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
23	"Aşırı büyüme (şirketin gereğinden fazla genişlemesi)" **ana eleman olarak alındığında, 2 katılımcı** "Yetersiz finansman yönetimi (finansal kontrolün eksikliği, kısa vadeli borçlanmaya bel bağlama vb.)' **faktörünün** "Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
"Ust düzey yönetimin yetersiz olması" ana faktörü alt faktörlerinin "Yanlış Organizasyonel Kararlar" ana faktörü alt faktörlerine etkisi araştırılırken:	
24	"Başarısız yeniden yapılanma " **ana eleman olarak alındığında, 2 katılımcı** "Çok sıkı ya da belirsiz bir stratejik planın yapılması veya hiç planlama yapılmaması (Örneğin ihale stratejilerinde rekabetçiliğin eksikliği)' **faktörünün** "Şirketin değer zinciri analizinin iyi yapılamaması (şirketin güçlü ve zayıf olduğu alanların doğru belirlenememesi vb.)' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
"Yanlış Proje Stratejileri" ana faktörü alt faktörlerinin "Sayılabilen Kaynaklarda Yetersizlik" ana faktörü alt faktörlerine etkisi araştırılırken:	
25	"Başarısız yeniden yapılanma " **ana eleman olarak alındığında, 1 katılımcı** "Yanlış maliyet tahmini (örneğin iş alınan bölgelerde ihtiyaç duyulacak malzemelerin kaynak ve fiyat tespitinin iyi yapılamaması)' **faktörünün** "Finansal kaynakların eksikliği' **faktöründen daha etkili olduğuna kanaat getirirken, 2 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
"Yanlış Pazar Stratejileri" ana faktörü alt faktörlerinin "Sayılabilen Kaynaklarda Yetersizlik" ana faktörü alt faktörlerine etkisi araştırılırken:	
26	"Finansal kaynakların eksikliği " **ana eleman olarak alındığında, 2 katılımcı** "Yanlış yatırım kararları (örneğin iflas etmiş bir şirketi kendi bünyesine katmak)" **faktörünün** "Aşırı büyüme (şirketin gereğinden fazla genişlemesi)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
27	"Finansal kaynakların eksikliği " **ana eleman olarak alındığında, 2 katılımcı** "Yanlış yatırım kararları (örneğin iflas etmiş bir şirketi kendi bünyesine katmak)" **faktörünün** "Yanlış ürün ya da pazar çeşitlemesi (çok farklı pazarlara girme, yanlış ürünler geliştirme, fazla odaklanma vb.)' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
"Genel Şans Faktörleri" ana faktörü alt faktörlerinin "Sayılabilen Kaynaklarda Yetersizlik" ana faktörü alt faktörlerine etkisi araştırılırken:	
28	"Finansal kaynakların eksikliği " **ana eleman olarak alındığında, 1 katılımcı** "Ülke ekonomisindeki değişiklikler (ekonomik kriz vb)' **faktörünün** " Talepte daralma (örneğin bireylerin konut yerine farklı ve daha cazip alanlara yatırım yapması dolayısıyla konut inşaatında azalma vb)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü ve diğer katılımcı ise eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……	
"Proje Yönetiminin Yetersiz Olması" ana faktörü alt faktörlerinin "Sayılamayan Kaynaklarda Yetersizlik ana faktörü alt faktörlerine etkisi araştırılırken:	

29	"Firma imajının olumsuz olması " **ana eleman olarak alındığında,** 1 katılımcı "Süre planlamasının iyi yapılamaması (projelerde süre aşımı)" **faktörünün** " Tedarikçilerin ve taşeronların iyi seçilememesi ve yönetilememesi" **faktöründen daha etkili olduğuna kanaat getirirken,** 1 **katılımcı bunun tam tersini düşündüğünü ve diğer katılımcı ise eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……..	
30	"Firma imajının olumsuz olması " **ana eleman olarak alındığında,** 2 katılımcı "Süre planlamasının iyi yapılamaması (projelerde süre aşımı)" **faktörünün** "Yetersiz risk yönetimi (risklerin önceden tanımlanıp, etkilerinin tahmin edilip, gerekli stratejilerin belirlenememesi)" **faktöründen daha etkili olduğuna kanaat getirirken,** 1 katılımcı ise bunun tersi düşüncede olduğunu **belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
31	"Firma imajının olumsuz olması " **ana eleman olarak alındığında,** 1 katılımcı "Projenin izlenmesinde ve kontrolünde yetersizlik" **faktörünün** "Süre planlamasının iyi yapılamaması (projelerde süre aşımı)" **faktöründen daha etkili olduğuna kanaat getirirken,** 2 **katılımcı** ise eşit **derecede etkili oldukları düşüncesinde olduğunu belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
32	"Firma imajının olumsuz olması " **ana eleman olarak alındığında,** 2 katılımcı "Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)" **faktörünün** "Süre planlamasının iyi yapılamaması (projelerde süre aşımı)" **faktöründen daha etkili olduğuna kanaat getirirken,** 1 **katılımcı** ise eşit **derecede etkili oldukları düşüncesinde olduğunu belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
33	"Firma imajının olumsuz olması " **ana eleman olarak alındığında,** 2 katılımcı "Proje organizasyonunun zayıf olması (kaynakların atanması ve kullanılmasındaki yetersizlik)" **faktörünün** "Yetersiz risk yönetimi (risklerin önceden tanımlanıp, etkilerinin tahmin edilip, gerekli stratejilerin belirlenememesi)" **faktöründen daha etkili olduğuna kanaat getirirken,** 1 **katılımcı** ise **bunun tersi düşüncede olduğunu belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
34	"Firma imajının olumsuz olması " **ana eleman olarak alındığında,** 1 katılımcı "Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)" **faktörünün** "Proje organizasyonunun zayıf olması (kaynakların atanması ve kullanılmasındaki yetersizlik)" **faktöründen daha etkili olduğuna kanaat getirirken,** 2 **katılımcı** ise eşit **derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
35	"Firma imajının olumsuz olması " **ana eleman olarak alındığında,** 1 katılımcı "Tedarikçilerin ve taşeronların iyi seçilememesi ve yönetilememesi" **faktörünün** "Proje organizasyonunun zayıf olması (kaynakların atanması ve kullanılmasındaki yetersizlik)" **faktöründen daha etkili olduğuna kanaat getirirken,** 1 **katılımcı bunun tersi görüşte olduğunu, diğer katılımcı ise eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……..	
36	"Firma imajının olumsuz olması " **ana eleman olarak alındığında,** 2 katılımcı "Yetersiz risk yönetimi (risklerin önceden tanımlanıp, etkilerinin tahmin edilip, gerekli stratejilerin belirlenememesi)" **faktörünün** "Değişiklik taleplerinin iyi yönetilememesi ve hukuksal taleplerin iyi hazırlanamaması" **faktöründen daha etkili olduğuna kanaat getirirken,** 1 **katılımcı bunun tersi görüşte olduğunu düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	

37	"Firma imajının olumsuz olması " **ana eleman olarak alındığında, 2 katılımcı "**Yetersiz risk yönetimi (risklerin önceden tanımlanıp, etkilerinin tahmin edilip, gerekli stratejilerin belirlenememesi)" **faktörünün "**Projenin izlenmesinde ve kontrolünde yetersizlik" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersi görüşte olduğunu düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
38	"Firma imajının olumsuz olması " **ana eleman olarak alındığında, 1 katılımcı "**Yetersiz risk yönetimi (risklerin önceden tanımlanıp, etkilerinin tahmin edilip, gerekli stratejilerin belirlenememesi)" **faktörünün "**Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersi görüşte olduğunu, diğer katılımcı ise eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……	
39	"Firma imajının olumsuz olması " **ana eleman olarak alındığında, 2 katılımcı "**Projenin izlenmesinde ve kontrolünde yetersizlik" **faktörünün "**Değişiklik taleplerinin iyi yönetilememesi ve hukuksal taleplerin iyi hazırlanamaması' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tersi görüşte olduğunu düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
40	"Firma imajının olumsuz olması " **ana eleman olarak alındığında, 2 katılımcı "**Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)" **faktörünün "**Değişiklik taleplerinin iyi yönetilememesi ve hukuksal taleplerin iyi hazırlanamaması' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
41	"Firma imajının olumsuz olması " **ana eleman olarak alındığında, 1 katılımcı "**Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)" **faktörünün "**Projenin izlenmesinde ve kontrolünde yetersizlik" **faktöründen daha etkili olduğuna kanaat getirirken, 2 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
42	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 1 katılımcı "**Proje organizasyonunun zayıf olması (kaynakların atanması ve kullanılmasındaki yetersizlik)' **faktörünün "**Projenin izlenmesinde ve kontrolünde yetersizlik" **faktöründen daha etkili olduğuna kanaat getirirken, 2 katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
43	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 2 katılımcı "**Projenin izlenmesinde ve kontrolünde yetersizlik" **faktörünün "**Tedarikçilerin ve taşeronların iyi seçilememesi ve yönetilememesi" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
44	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 1 katılımcı "**Projenin izlenmesinde ve kontrolünde yetersizlik" **faktörünün "**Değişiklik taleplerinin iyi yönetilememesi ve hukuksal taleplerin iyi hazırlanamaması" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü ve diğer katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……	

45	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 1 katılımcı** "Proje organizasyonunun zayıf olması (kaynakların atanması ve kullanılmasındaki yetersizlik)' **faktörünün** "Projenin izlenmesinde ve kontrolünde yetersizlik" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü ve diğer katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……..	
46	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 1 katılımcı** "Proje organizasyonunun zayıf olması (kaynakların atanması ve kullanılmasındaki yetersizlik)' **faktörünün** "Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü ve diğer katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……..	
47	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 1 katılımcı** "Tedarikçilerin ve taşeronların iyi seçilememesi ve yönetilememesi' **faktörünün** "Yetersiz risk yönetimi (risklerin önceden tanımlanıp, etkilerinin tahmin edilip, gerekli stratejilerin belirlenememesi)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü ve diğer katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……..	
48	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 1 katılımcı** "Tedarikçilerin ve taşeronların iyi seçilememesi ve yönetilememesi' **faktörünün** "Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü ve diğer katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……..	
49	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 2 katılımcı** "Yetersiz risk yönetimi (risklerin önceden tanımlanıp, etkilerinin tahmin edilip, gerekli stratejilerin belirlenememesi)' **faktörünün** "Değişiklik taleplerinin iyi yönetilememesi ve hukuksal taleplerin iyi hazırlanamaması' **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	
50	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 1 katılımcı** "Yetersiz risk yönetimi (risklerin önceden tanımlanıp, etkilerinin tahmin edilip, gerekli stratejilerin belirlenememesi)' **faktörünün** "Projenin izlenmesinde ve kontrolünde yetersizlik" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü ve diğer katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……..	
51	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 1 katılımcı** "Yetersiz risk yönetimi (risklerin önceden tanımlanıp, etkilerinin tahmin edilip, gerekli stratejilerin belirlenememesi)' **faktörünün** "Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü ve diğer katılımcı eşit derecede etkili olduklarını düşündüğünü belirtmiştir. Bu durumda bir mütabakat sağlanamamıştır? Bu hususta daha önceki cevabınızı gözden geçirip yeniden bir değerlendirme yababilir misiniz?**
Benim görüşüme göre ……, çünkü……..	
52	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 2 katılımcı** "Projenin izlenmesinde ve kontrolünde yetersizlik" **faktörünün** "Değişiklik taleplerinin iyi yönetilememesi ve hukuksal taleplerin iyi hazırlanamaması" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim: ……	

53	"Devlet kuruluşları, politik makamlar, işveren yahut kontrolle kötü ilişkiler (örneğin kontrolün kötü tutumu) "**ana eleman olarak alındığında, 2** katılımcı "Projenin izlenmesinde ve kontrolünde yetersizlik" **faktörünün** "Yetersiz kalite kontrol ve yönetimi (düşük müşteri memnuniyeti)" **faktöründen daha etkili olduğuna kanaat getirirken, 1 katılımcı bunun tam tersini düşündüğünü belirtmiştir. Bu durumda çoğunluğun görüşünü benimseyebilir miyim? Ya da bunun yerine öneriniz nedir?**
Cevap: ☐ Evet ☐ Hayır, benim önerim:	

Case Study Questionnaire

	Very STRONG → Very POOR				
Faktör Tanımı:	**1**	**2**	**3**	**4**	**5**
Şirketin Çevre Taraması (yeni projelerin ve yeni pazar imkanlarının farkedilmesi vb.)					
Şirketin Değer Zinciri Analizinin yapılamaması (şirketin güçlü ve zayıf olduğu alanların doğru belirlenmesi vb.)					
Şirketin Stratejik Planlaması					
Şirketin İnsan kaynakları yönetimi (ödül/ceza sistemi, eğitim, insan kaynakları planlaması vb.)					
Şirketin Finansman Yönetimi					
Şirketin Profesyonel Yönetimi (Yönetim Kurulununnda Tecrübe Çeşitliliği - Şirket Sahibinin Kontrol Yetisi vs)					
Şirketin Dış ve İç İletişim Sistemi					
Proje Bazlı Süre Planlaması					
Proje Bazlı ve Projeler arası Kaynak Yönetimi ve Organizasyonu					
Proje Bazlı Liderlik - Misyon - Motivasyon Uygulamaları					
Proje Bazlı İzlenme ve Kontrol					
Projede Risk Yönetimi (Risk Tanımlaması, Etki Tahmini, Önlem Stratejileri Geliştirilmesi)					
Projede Değişiklik Taleplerinin Yönetimi ve Hukuksal Taleplerin İyi Hazırlanamaması (change order - claims)					

Faktör Tanımı:	**1**	**2**	**3**	**4**	**5**
Projelerde Uygun Tedarikçi ve Taşeron Seçilmesi ve Yönetimi					
Projelerde Kalite Kontrol ve Yönetimi					
Şirketin Teknik ve Teknolojik Alt Yapısı					
Şirketin Finansal Kaynakları					
Şirket İmajı					
Şirketin Bilgi, Deneyim ve Organizasyonel Birikimi					
ŞirketinDevlet Kuruluşları, Politik Makamlar, İşveren yahut Kontrolle İlişkileri					
Şirket Büyümesinin Yönetilebilir Olması Özelliği					
Şirketin Yatırım Kararları					
Şirketin Yatırım Kararları					
Şirket içerisinde Yenileme ve Yeniden Yapılanma Özelliği					
Şirkete Değer Katmayan Aktiviteleri Belirleme ve Bunlardan Kurtulma					
Şirketin Proje Seçiminde Kapasitesine Uygunlupu					
Proje Maliyet Tahmininde Tutarlılık (örneğin iş alınan bölgelerde ihtiyaç duyulacak malzemelerin kaynak ve fiyat tespitinin iyi yapılabilmesi)					

Faktör Tanımı:	**EVET**	**HAYIR**
Şirket Yöneticisinin Ani Ölümü		
Müşteriden Alacakların Toplanmasındaki Güçlükler (müşterinin iflası vb.)		
İş Gücündeki Ani Değişiklikler ve Beyin Göçü		
Talepte Daralma (örneğin bireylerin konut yerine farklı ve daha cazip alanlara yatırım yapması dolayısıyla konut inşaatında azalma vb)		
Ülke Ekonomisindeki Değişiklikler (ekonomik kriz vb)		
Politik İstikrarsızlık (devlet yönetiminin değişmesi, yaklaşan seçimler, dış ülkelerde alınan işlerde o ülkenin istikrarsızlığı ve gelir,gümrük vergisi v.b. mevzuatlarının sık sık değişmesi)		