

King Fahd University Of Petroleum And Minerals

Department Of Construction Engineering And Management

**Causes of Contractors' Failures In Saudi Arabia**

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**Thesis Abstract**

This thesis discusses the main causes of failure in the construction industry in Saudi Arabia. A survey of 68 contractors from the entire kingdom was undertaken. These contractors were classified by ministry of public works and housing from grade one to four. The distribution of the contractors as per the collected respondents as following: 7 from grade one, 12 from grade two, 27 from grade two, and 22 from grade three.

The survey included 34 different causes of failure and their degree of importance. The severity factors of these causes were measured by there level of importance and were ranked according to the severity index for group one together, group two and group three and the combination of all respondents.

By applied statistical analysis, it was concluded that the lack of experience in the line of the work, neglect, poor estimation practices, bad decision in regulating company's policy, and national slump in the economy are the most severe factors.

## **Introduction**

The construction business has very high risks. These risks, which could lead to failure, come from the sensitivity of the businesses to economic cycle and from high level of competition. Because there are large numbers of contractors, it is easy to establish a new firm but the implementation could be poor or unorganized, which increase the probability of the contractor's failure.

In construction there are three parties involved, owner, consultant and contractor. The relationship between the parties is adversarial because each party has goals, which conflict with the other parties' goals. The relation among parties could be a major source of a contractor's failure.

There is no exact definition of the contractor's failure, however it could be defined as:

- Ceases operation following assignment due to the inability to continue construction.
- Goes to bankruptcy due to failure of collecting money from customers
- Voluntarily withdraws because of dissatisfaction with business or profit.

The construction industry attracts many people because of their belief of high profit but when they enter the business they will feel the difficulty and complexity of it.

### **Objectives of the study:**

The main objectives of this thesis are as follows;

- To undertake a comprehensive analysis of the most important factors that cause business failure among contractors.
- To identify and analyze the most severe factors causing contractor's failure in Saudi Arabia.
- To test the hypothesis that different grades of contractors, generally agree on the severity of failure.
- To write conclusion and recommendations.

## **Problem Background**

During the boom years which were from 1975 to 1983, when the demand of oil increased, Saudi Arabia increased its oil export from 4 million in 1975 to 10 million barrels in 1983. Consequently, Saudi Arabia's income increased from SR 41, 705 million in 1974 to SR. 368,001 million in 1983, which was the peak. The increase in income resulted in an increase in expenditure in all sectors. The government established two banks and three funds to give loans without interest to support all types of business. . The construction industry enjoyed a large share in the economic boom. The number of projects offered were so large that the number of contractors increased and each contractor could have as many projects as he wanted. Although the formation of many of these contracting businesses had no solid basis, they were able to do business and make profit.

After the international recession started in mid 1983, the Saudi market was affected. The recession had more influence in the construction industry because of a reduction in oil income, which affected the offering of large projects and loans. Also, most of the large projects had already been executed. Consequently, the competition was much tougher, and standards became higher. As a result of these factors, many contractors were exposed and some of them changed their business and some left the business altogether.

### **The Significance of the Study**

The number of competitors in the construction business is much higher than in any other business. As a result, construction business is exposed to failure more than any other business. Therefore, the construction business should be studied to determine the causes of failures. The past period proves that there are causes, which should be avoided in order to reduce the number of failures.

The construction business requires more attention to remedy the weak points. This is what the study investigated.

## **CAUSES OF FAILURES**

### **General**

The causes of construction business failure are varied from a country to country and even from city to city, because of economic, social, and competitive situations of the area and government regulations. In addition, the causes may vary from one type of construction to another; for example, the cause of highway construction is not the same for residential construction.

### **Causes Of Failures In Questionnaire**

These causes, which are included in the questionnaire, are divided into four groups, namely, managerial, financial, expansion, and environmental causes. These causes are as follows:

## **A. Managerial Causes**

The managerial causes include important causes, which have strong influence in the contractor's failures. Lack of experience in the line of work, bad decisions, and company organization could be important factors in the failures. Some of these causes could be part of others. For example, frauds will increase in low experience management and unorganized company. The managerial causes will be as follows:

### **1. Lack of Experience in the line of Work**

The management is the key for the success of the company. The owner should employ high degree of qualified working team in the company. The working team also must have good experience in the same line of work. Therefore, the management would be able to maximize the usage of the company's resources. Not only working team has experience, but also the owner should have experience in the line of work for two reasons. First, the owner would not be cheated from any one inside or outside the company. Secondly, if the owner does not have experience, he may not appreciate any improvement or any new ideas, which could bring good income in the future. Most of the decisions which cause contractors failures are taken by the management.

### **2. Replace Key Personnel**

The three main functional areas of construction business are getting the work, doing the work and managing the business. The responsibility of each functional area differs from one company to another. One person could be responsible for all functional areas or two people share the responsibilities. If the construction business is making a profit, the efforts of individuals who are responsible for functional areas will be the key for success. Losing one of these key persons will put the company immediately at risk until his replacement proves that he can run the work for a profit.

In order to put the company in the safe side, there must be two relief persons for each key person. Also, a contractor must keep minutes of all meetings, confirm things in writing and keep all documents related to the business. This information will help the new replacement in the future work.

In the end, the most common cause of construction business failure is inadequate replacement of personnel responsible for one of the primary functional areas.

### **3. Assigning Project Leader in the Site**

The size of Construction Company determines the project leader. The project leader could be a project manager, project engineer, resident engineer or a site engineer. Project leader should be qualified for the job because he is the vehicle for reaching project goals.

“A successful project results when the personality and the leadership ability of the project manager is matched with the right project team in the proper project situation.”

The three major criteria for evaluating a project leader are attitudes, knowledge and skills. Attitudes can not be created but they can be strengthened by experience and attending courses. The project leader should have a strong desire to manage, a strong capacity for empathy, and strong need for power. Knowledge can be divided into academic and practical. Project leader must be an engineer or at least a graduate, beside his degree he should be assigned to fields, which are related to his work or major.

#### **4. Labor Productivity and Improvement**

Productivity can be defined as the rate of production or the amount of goods and services that are produced by productive factor in a unit of time. “Productivity of construction producing resources to include labor and equipment is dependent on numerous factors, including uncontrollable weather, worker moral, and management supervision” (Adrian, 1982). Since, there is a direct relation between productivity and cost, productivity is not only very important term to a contractor but also it is the key to success or failure. Most contractors complain from slow productivity but none of them determine the reasons and create the solutions. In construction, labor is very important because of the following reasons. First, labor is needed in almost every construction activity and he cannot be substituted. Secondly, he constitutes a large portion of the construction input. Thirdly, he is a major determinant of activity of productivity. Finally, he is high variability and most susceptible to improvement (Drewin, 1982).

#### **5. Bad Decisions in Regulating Company Policy**

Most contractors believe that the only reasons for failure are labor problem, inflation, high costs of equipment, and tightening of market. Although there are contractors who are exposed to the same factors but they are making profits. They do not know that they may contribute to failure due to bad management decisions. These management decisions might not cause failure directly but they lead to failure. For example, management decided to bid in project which was four times the largest project has ever executed, the company completed the project with loosing which caused the company to weaken and subsequent failure.

Decisions in regulating the company policy should not be taken unless all significant factors involved not only be considered but also handled in an accurate and correct manner.

## **6. Use of Project Management Techniques**

Project management is the integral of all of the construction project functions which include coordination of subcontractors, scheduling, cost control, labor relation, billing, purchasing, expending, and other functions related to the project. In Construction Company, project manager is in charge of these functions.

Adrian (1976) stated that “ a large number of contractor business failure can be traced to the disuse of proven business practices” (Adrian, 1976). The business practices which is necessary for everyday business vary from a company to another, because they depend on the size of the company and the type of work the company performs. Also, a company’s competition, and the economic environment in which the firm is operating, have influence in the various projects.

The use of project management techniques is very important in the construction industry, because the coordination and use of the many types of labor, skills, materials, and equipments which are used in construction, require daily application of proper project management techniques.

## **7. Company Organization**

The organization of company is very important to do the work efficiently. The organizational structure depends on two factors. The first is the type of contractor and the second is the size of company. However, the main structure is common between all contractors. The more common classification of contractors is according to the type of work performed. So, the type of contractors are residential, commercial, and highway. The performing of organizing function requires a preparation of organizational chart which determines the grouping of activities, the authority relationships, and the communication channels between groupings. There are two types of charts, namely, chain and circular. The decision making in the chain is centralized by an individual or small groups of individuals, where in the circular structure emphasizes decentralization. The communication in the chain structure is faster and more accurate than the chain structure.

. In the small sized firm, the decision is centralized and the owner does most of the work. So, the basis is weak, and the business success depends on the owner.

## **8. Procurement practices**

Construction materials can be purchased by two procedures either by purchasing directly or purchasing entire lump sum contract. The direct purchasing is better because it could protect the material from problems associated with theft, misplacement and damage and save cost of storage. However, purchasing materials before the due time is very important in the

construction because the delay in purchasing will delay the completion date and interrupt the schedule. Consequently, the contractor will be exposed to penalty, which might sometimes cause contractor to fail.

## **9. Claims**

The contractor should recognize the risks of the disputes and try to minimize them for two reasons. First, the costs associated with them; secondly the contractor's name in the market will be destroyed. The contractor should quit the claim even through he missed the some of his rights because the owner will complete his building and will disappear from the market but the contractor will stay.

Construction industry will be exposed to many claims if there are no planning, controlling and directing. Claims can cause the contractors completely running out of work.

## **10. Internal company problems**

Most employees of the contractors in Saudi Arabia are multinational. Each employee will have more loyalty to his nationality and will not prefer to work with another nationality, which could cause problem in preparing schedule. Also the problems between the partners will have bad effect in company because many employees will use this problem for their benefit. This problem will resist the improvement and performance, which could cause failure.

## **11. Recruitment from one country**

Almost all construction contractors depend on the foreigners. There are contractors who depend on certain nationality, which could cause failure in many cases. Workers from one country can build strong interrelation, which causes problem to contractors.

One the other hand, there are many advantages in controlling certain nationalities. Workers will understand each other because they speak one language.

## **12. Recruiting multinationality**

Most contractors prefer to recruit multinationals with out understanding the problems behind this decision. Even though, recruiting from more than one country can create competition between employees, there are problems that can be encountered. The most difficult problem is wages. Each country has its own economic standing which affects the wages of that country. So, recruiting multinationality in one company may create friction, which sometimes have negative effects in the works.

### **13. Owner's absence from the company**

No one can take the place of the owner in the company. Even the full time manager cannot manage like the owner even he has the full confidence. The absence of the owner usually results in the poor supervision in the company especially if the employees get their salaries regardless the profit of the company .the problem could be reduced by giving both manager and employees specific percentage of the profit.

### **14. Using computer applications.**

Computers have many applications in the construction industry. Their applications are for cost estimation, planning and scheduling and calculation. All these applications can help the contractor to do the work easily quickly and accurately. The accurate data produced by computer can be an asset for making decisions.

### **15. Frauds**

Frauds can be seen easily in the company, which does not use the business practices. When the company is planned, organized, directed and controlled the chance of fraud will be higher. Frauds can happen from various departments, for example, purchasing by increasing materials prices, contracting by selling bidding information to competitors and job site loss of material .In order to avoid these things the contractors should use the theory which stated the responsibility is equal the accountability .the accountability must be tough to warn employees. The authority should not be given to any employee unless he passed the testing period.

### **16. Neglect**

Neglecting is the another cause of the failure. When the management does not respond to problems and suggestions, this negligence may add to costs to the company. For example, when equipment has minor problem, which could later become a major problem, the management did not respond immediately to repair the minor problem until it broke down. Sometimes the employees suggest something could help to improve the productivity but the management neglects these things.

## **B. FINANCIAL CAUSES**

The financial stand of the contractor is very important for running the business. The work improvement sometimes needs money because improvement needs buying new equipment or developing new techniques. All the important managerial causes could not keep the contractor save without good financial stand. The financial causes are as follows:

### **1. Low margin profit due to competition**

When the contractors bidding on a single project will have different estimate of project cost because of the differences in structure of the cost information, construction method and takeoff procedures used by each contractor.



However, the profit which contractor adds to his bid, determines whether he will win the contract or not. The number of contractors would be expected to be high because of the simplicity of establishing new construction firm. Also, the number of contractors increase, the margin of profit margin very small.

## **2. Cash flow management**

Most of the contractors expenses are paid in cash for example salaries, machines, materials and indirect expenses. Therefore, availability of cash flow is very important for a contractor to run the business. A contractor could find few shops, which would give him credit. However, there are two problems associated with purchasing in credit, prices would not be cheap as compared to cash payment and a contractor is limited to items which are available in the shop which gives him credit.

## **3. Bill and collecting effectively**

Cash flow is very important for a contractor. Therefore, billing and collecting effectively are the ways to get cash flow. Contract documents must state the procedures for billing and collecting money clearly from customers. It is important to send the bill to customer on time. Adding charge to late submission of payment will encourage customers to pay on time.

## **4. Poor estimation practices**

Cost estimation of the job for competitive bid is not easy task. The cost of labor, equipment, material, and subcontractor, taxes overhead and surety bond are calculated and combined with markup to arrive at the final bid amount. This will determine whether the contractor gets the job or not. The cost of labor and equipment are the most difficult to estimate and control because the cost depends on production rate.

## **5. Evaluate project profit in one fiscal year**

In construction, it is extremely difficult, in one fiscal year to know whether or not each project is making a profit or loss before the project is completed. This difficulty comes from a variety of things associated with construction.

## **6. Employee benefits and compensations**

The employees should be given bonuses to improve their motivation toward the company. These onuses should be given to the employees as part of a careful considered compensation plan. Bonuses have to be very effective and fair. Bonuses will cause more problems in the company if they are random and unorganized. Bonuses should be connected to the employee's performance and the company's profits.

## **7. Controlling equipment cost and usage**

Equipments are very important to contractor they could save time and money. There are two reasons to buy them either to replace old or to save money by

owning new equipment. In replacing equipment contractor must determine whether the new equipment is really more productive than the old. the calculation must include all costs for example ; maintenance ,downtime, operation ,obsolescence and replacement.

In buying new equipment the contractor must decide whether to own or to lease. The more suitable for his business must be considered.

### **C. EXPANSION CAUSES**

The expansion is the normal growth in any business .if the company doesn't develop, the companies, which are the same size, will develop and became stronger than the solid company. However, the expansion should be done under very good researching, planning, controlling. The size of the expansion should be reasonable for the business to avoid failure.

#### **1. Expanding into new geographic locations**

The change from geographic area in which a contractor is usually bidding, achieving productive work and making profit, can cause failure. Constructing a project outside the geographic area could be done but there is a question about the profit.

There are many reasons for contractor to expand into geographic areas, for example, lack of work in the local area ,normal growth and opportunity to follow customers or designers.

#### **2. Opening a regional office**

Opening a regional office is a new business, which can do exactly the same function of the office. The distance is not great factor in locating a regional office as it is in expanding in new geographic area because the regional office will depend on the market place rather than opportunity. The reasons of opening regional office are same reasons for expanding into new geographic.

#### **3. Increased number of projects**

A contractor must know his ability and the maximum volume for each year. The real planning for the work will determine a contractor's ability and his maximum ability yearly, so each contractor must have maximum number of the projects. There are many factors which could be considered in determining the maximum number of project, for example, number of workers, management ability, the size of the contractor's geographic area, labor productivity and type of work. There is no formula to determine the number of the project because the productivity of the contractor varies from a contractor to another. However, it can be determined by experience.

#### **4. Increased size of projects**

The most common factor of failure is the increase in the size of the project, if the contractor is not aware of the safe ways to grow and expand. There is no formula and very few rules for determining the limits of the expansion. As project size increases, the risk increases. The contractor might complete a job greater than the largest ever built but he does not make a profit.

## **5. Change the type of the work**

A contractor sometimes shifts from one type of construction to another or add new type to the current work. The most common reason for changing the type of work is to accelerate the growth of the company. A contractor must determine what type of work he can do best and even in which part of work he can do better then he can move forward in the type of work with more confidence and less risks.

## **6. Lack of managerial maturity**

Managerial maturity means that contractor's managerial abilities must mature or develop as his business does. So the contractor should accept the change in the management as company grows during successful times to assume continuous success. The only real difference between the continued successful contraction business and early and mid time failure is the management. Management skill should have a certain amount of vision.

Changes from private to public or vice versa

The differences between private and public projects should be recognized by contractor to avoid the failure. The first difference is the quality for bid lists. The second difference is the criteria used for selecting winning bids. The third difference is the amount of collaboration between parties. The fourth difference is the quality of work expected and delivered. The fifth difference is the changes.

## **D. ENVIRONMENTAL CAUSES**

### **1. National slump in the economy**

Money runs in the cycle and the government is part of the cycle. If the government does not have money, they will not offer new projects and contractors will run out the work. This factor is very important because if the economy of the country is good, there will be more development which increase the chance for contractors to get job.

### **2. Construction industry regulation in Saudi Arabia**

### **3. Owner involvement in construction phase**

In any construction project, the three main goals are low cost, high quality and rapid completion. It is the owner's responsibilities to determine these goals and set their priorities for project completion. The owner's key roles are to form the project team as early as possible, assign responsibilities and establish levels of performance.

### **4. Bad weather**

The eastern province of Saudi Arabia has weather conditions with temperature as high as 50C, thus the contractors must contend with extreme high temperature.

### **Description of the survey**

The methodology and sampling techniques used to measure the severity indices of the major causes of failures.

### **Questionnaire design**

There were two stages were used for the investigation. The first stage is for the collection of the data by reviewing the related literature and gathering it through site, visits. The second stage is focused on the data analysis and identification for all the relevant factors influencing causes of contractor's failures.

There are three parts in the questionnaire .the first part is an introduction to explain the idea and the purpose of the survey. The second part is focused on the contractor's specialty in construction, the nationality of the company, experience, annual volume and number of workers and highest grad of the company. The third part concerns on the causes of the contractors failure in the building and highways construction projects. The causes of the contractor's failures are dived to four groups: managerial causes, financial causes, expansion causes and environmental causes. The purpose of this dividing is to give respondents a full picture for each type of the causes.

For each question there are five options. The first four are 'very influence', 'influence', 'slightly influence' and 'not influence'. The last option is 'can't decide' which was added to permit respondents not to answer if the question id not related to his job.

### **Statistical sampling:**

#### **Sample size:**

For the contractors who have registered in the ministry of housing and public works in 1413H will have had chance to participate. The ministry of the housing and public works classified the contactors based on the fields and activities (see table 1). However, this survey concentrated on the building and roads.

Table 1 : (Ministry of housing and public works classification , 1413H)

**DAMS**

Earth dams  
Concrete dams

**WELL DRILLING**

Surface wells

**MAINTENANCE & OPERATIONS**

Building maintenance  
Road maintenance  
Maintenance & operation of W/s system  
Operation of W/S system  
Maintenance & operation of water system  
Maintenance & operation of electrical. mechanical install  
Etc.

operation of electrical, mechanical instl.  
maintenance of electrical, mechanical ijnstl.  
maintenance electrical instl  
maintenance & opert, of electrical instl.  
maintenance of mechanical instl  
Operation of mechanical instl.

General maintenance

**BUILDINGS**

Public building  
Housing  
Commercial building s  
Educational facilites  
Recreational facilites  
Medical facilites  
Airport buildings  
Prefabricated building

**ROADS**

highways  
streets  
bridges  
tunnels  
railroads  
airports  
earth moving

**WATER & SEWAGW SYSTEM**

**WORKS**

Water networks  
Sewage networks  
Storm water drainage  
Water treatment plants  
Sewage treatment plants  
Agricultural development

**ELECTRICAL**

power generation  
power Trans. & Dist.  
lighting  
communication net.  
electronic instl

**MECHANICAL WORKS**

A?C & refrigeration industrial plants  
W&S treatments plants  
Pump st'nt & Treat't Plant

**INDUSTRIAL WORKS**

industrial plants  
Refine & Petr-chm.PI  
Oil & Gas Pipeline  
Water Desalination

**MARINE WORKS**

Harbors  
Shipyards  
Dredging  
Underwater lines & Tunnels  
Sea Bridges.

The ministry of public works classified each field to five grads. The largest project volume was done by contractors has determined the grad as shown in Table 2. For the non-Saudi contractor, there are six grads as shown in Table 3. the contractors from grade four and above have been included in this research. This includes Saudi and non-Saudi contractors for building and roads. For the contractors who were classified for two fields, the highest grad from any field will be considered.

Table 2 Financial Limits For Classification Grades Saudi Contractors ( (this table indicates the ceiling for any project to be undertaken by classified contractor for each grade and field in million.)

Grade Activities	FIRST	SECOND	THIRD	FOURTH	FIFTH
Buildings	Over 200	200	50	15	5
Roads	Over 300	300	100	30	10
Water & sewage	Over 300	100	100	30	10
Electrical Works	Over 200	200	50	15	5
Mechanical Works	Over 200	200	50	15	5
Industrial Works	Over 300	300	100	30	10
Marine Works	Over 300	300	100	30	10
Dams	Over 100	100	50	15	5
Maintenance & Opert.	Over 100	100	30	10	3
Well Drilling	Deep / surface				

Table 3 Financial Limits For Classification Grades-Non-Saudi Contractors (this table indicates the ceiling for any project to be undertaken by classified contractor for each grade and field in million.)

Grade Activities	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH
Buildings	1200	800	500	200	50	20
Roads	1200	800	500	200	50	20
Water & sewage	1200	800	500	200	50	20
Electrical Works	1200	800	500	200	50	20
Mechanical Works	1200	800	500	200	50	20
Industrial Works	1200	800	500	200	50	20
Marine Works	1200	800	500	200	50	20
Dams	1200	800	500	200	50	20
Maintenance & Opert.	1200	800	500	200	50	20
Well Drilling	Deep / surface					

The population of the contracting firm has been divided in to three groups:

1. Grade one and two (group 1)
2. Grade three (Group 2)
3. Grade four (Group 3)

Grade one has been added with grade two because the amount of volume of grad one is grater than grade two. The sample sizes are presented in table 4.

H	Strata	Strata population N(h)	Sample size	Percent of sample to population size	Prop. sample
1	Group one	85	19	22%	27.9%
2	Group Two	160	27	17%	39.7%
3	Group three	206	22	11%	32.4%
		452	68	15%	100%

### **Scoring**

For question from one to six, no scoring was used since these consist of general information related to the respondent companies. For the seventh question, the importance of the causes of the contractor's failures are considered. Thus, the causes are organized according to their priority. Each factor has a severity index and the severity index is controlled by equation:

$$\text{Severity Index (Is)} = \sum_{i=1}^4 a_i x_i$$

Where  $i=1,2,3,4$

$a_i$  is thw constnt attempts to determine quantitive measures as an indecator of comarable responses. This simply means that the responsdent keeps in mind a four-point scale while answering:

1.  $a_1=0/3$  for 'not influence'
2.  $a_2=1/3$  for 'slightly influence'
3.  $a_3=2/3$  for 'influence'
4.  $a_4=3/3$  for 'very influence'

$x_i$  =the variable expressing the frequency of the  $i$ -th response for  $i= 1,2,3,4$

Accordingly, if all parties answer the first case to 'very influence' then the severity index = 100, which means that this factor is the most important factor and the first in the rank. On the other hand, if all answer are 'not influence' then the severity index is =0 which means that this factor is not relevant and the last in the rank. Consequently, this will give a scale from 0% to 100%.

### **Statistical techniques**

Table 5 shows the statistical technique used to analyze the collected data .this table contain the following statistics :

1. Mean  $=\bar{X} = \sum_{h=1}^3 W_h \bar{X}_h$  where  $W_h = N_h/N, h=1,2,3$
2. Standard Deviation  $=S_x = (\sum_{h=1}^3 W_h^2 S_{hx}^2)^{1/2}$
3. Standard Error of mean  $=S_x = S_x / (N)^{1/2}$
4. 95% confidence interval  $=\bar{X} \pm 1.96SE(\bar{X})$

	Q#	Mean	Standard Deviation	Standard error of Mean	95% confidence interval	Coefficient of variation (CV)
MANAGERIAL	1	1.25	.53	0.06	1.25+/- .13	42.32
	2	1.75	.68	0.08	1.75+/- .16	38.71
	3	1.85	.96	0.12	1.85+/- .23	51.77
	4	1.50	.71	0.09	1.50+/- .17	47.14
	5	1.66	.73	0.09	1.66+/- .17	44.02
	6	1.95	.82	0.10	1.95+/- .20	41.88
	7	1.81	.83	0.10	1.81+/- .20	46.06
	8	1.92	.77	0.10	1.92+/- .19	40.36
	9	2.36	.90	0.11	2.36+/- .22	38.04
	10	1.88	.82	0.10	1.88+/- .20	43.68
	12	2.65	.92	0.11	2.65+/- .22	34.69
	13	3.18	.97	0.12	3.18+/- .23	30.45
	14	1.73	.89	0.11	1.73+/- .21	51.33
	15	2.67	1.13	0.14	2.67+/- .27	42.29
	15	1.88	.95	0.12	1.88+/- .23	50.72
	16	1.36	.6	0.07	1.36+/- .14	43.84
FINANCE	1	1.87	.79	0.10	1.87+/- .19	42.30
	2	1.73	.62	0.08	1.73+/- .15	35.66
	3	1.43	.65	0.08	1.43+/- .16	45.83
	4	1.78	.88	0.11	1.78+/- .21	49.8
	5	1.97	.85	0.10	1.97+/- .20	42.93
	6	2.46	.93	0.11	2.46+/- .22	37.62
	7	2.76	.99	0.12	2.76+/- .24	35.71
EXPANION	1	2.48	.86	0.11	2.48+/- .22	34.77
	2	2.88	.79	0.10	2.88+/- .20	27.41
	3	2.55	1.00	0.12	2.55+/- .24	39.09
	4	2.07	.96	0.12	2.07+/- .23	46.20
	5	2.15	.79	0.10	2.15+/- .19	36.68
	6	1.75	.79	0.10	1.75+/- .19	44.96
	7	3.20	.82	0.10	3.20+/- .20	25.60
ENVIRON MENT	1	1.54	.70	0.09	1.54+/- .17	45.76
	2	2.43	1.06	0.14	2.43+/- .27	43.71
	3	2.26	1.04	0.13	2.26+/- .26	46.02
	4	2.82	.85	0.10	2.82+/- .21	30.04

## Ranking

As mentioned, the use of percentage and severity index( a weighted average) will simplify and reduce all the numbers to a range from 0 to 100.

Consequently, the data will be translated in to standard form with base of 100 for relative comparisons.

There are four ranking tables presented namely group one, group two and group three. The fourth table will express the opinion of all contractors. These are Table 6,7,8&9. The severity index of all tested groups and all contractors for managerial causes is shown in table 8.



Table #6 grade One and Two contractors(group one)

<b>OBS</b>	<b>Factor</b>	<b>Severity Index</b>
1	Lack of managerial experience in the line of work	96
2	Bad decisions in regulating company policy	84
3	Poor estimation practices	82
4	National slump in the economy	80
5	Neglect	79
6	Replace key personal	79
7	Company organization	77
8	Cash flow management	77
9	Bill and collecting effectively	74
10	Owner absent from company	74
11	Labor productivity and improvement	74
12	Use the project management techniques	74
13	Low margin profit due to competition	72
14	Internal company problems	68
15	Procurement practices	68
16	Lack of the managerial development or maturity as company grows	68
17	Assigning project leader in the site	67
18	Controlling equipment cost and usage	61
19	Frauds	61
20	Change in the type of the work	59
21	Construction industry regulations in Saudi Arabia	55
22	Increased size of the projects	54
23	Owner involvement in construction phase	51
24	Using computer applications	51
25	Claims	50
26	Expanding into new Geographic location	50
27	Recruiting from one country	44
28	Evaluate project profit in one fiscal year	42
29	Increased number of the projects	41
30	Opening a regional office	38
31	Employee benefits and compensations	33
32	Recruiting multinational	30
33	Change from private to public	29
34	Bad weather	23

Table #7 Grade three contractors (group two)

<b>OBS</b>	<b>Factor</b>	<b>Severity Index</b>
1	Lack of managerial experience in the line of work	93
2	Neglect	92
3	Poor estimation practices	86
4	Bad decisions in regulating company policy	86
5	National slump in the economy	84
6	Labor productivity and improvement	83
7	Lack of the managerial development or maturity as company grows	79
8	Cash flow management	76
9	Bill and collecting effectively	75
10	Frauds	73
11	Owner absent from company	73
12	Replace key personal	72
13	Controlling equipment cost and usage	72
14	Internal company problems	70
15	Assigning project leader in the site	70
16	Company organization	70
17	Low margin profit due to competition	70
18	Procurement practices	68
19	Increased size of the projects	65
20	Use the project management techniques	65
21	Change in the type of the work	64
22	Owner involvement in construction phase	55
23	Claims	54
24	Increased number of the projects	54
25	Using computer applications	49
26	Evaluate project profit in one fiscal year	49
27	Expanding into new Geographic location	48
28	Recruiting from one country	47
29	Employee benefits and compensations	47
30	Construction industry regulations in Saudi Arabia	47
31	Bad weather	45
32	Opening a regional office	36
33	Change from private to public	29
34	Recruiting multinational	23

Table #8 Grade four contractors (group three)

<b>OBS</b>	<b>Factor</b>	<b>Severity Index</b>
1	Neglect	91
2	Poor estimation practices	88
3	Lack of managerial experience in the line of work	86
4	National slump in the economy	82
5	Owner absent from company	82
6	Bad decisions in regulating company policy	79
7	Assigning project leader in the site	78
8	Labor productivity and improvement	76
9	Frauds	76
10	Replace key personal	76
11	Lack of the managerial development or maturity as company grows	76
12	Internal company problems	73
13	Cash flow management	73
14	Company organization	73
15	Bill and collecting effectively	73
16	Procurement practices	72
17	Low margin profit due to competition	71
18	Increased size of the projects	71
19	Controlling equipment cost and usage	68
20	Use the project management techniques	67
21	Owner involvement in construction phase	67
22	Evaluate project profit in one fiscal year	62
23	Change in the type of the work	61
24	Claims	59
25	Construction industry regulations in Saudi Arabia	57
26	Expanding into new Geographic location	54
27	Increased number of the projects	48
28	Bad weather	45
29	Recruiting from one country	43
30	Employee benefits and compensations	41
31	Opening a regional office	38
32	Using computer applications	33
33	Recruiting multinational	30
34	Change from private to public	21

Table #9 All contractors

<b>OBS</b>	<b>Factor</b>	<b>Severity Index</b>
1	Lack of managerial experience in the line of work	92
2	Neglect	88
3	Poor estimation practices	86
4	Bad decisions in regulating company policy	83
5	National slump in the economy	82
6	Labor productivity and improvement	78
7	Owner absent from company	76
8	Cash flow management	76
9	Lack of the managerial development or maturity as company grows	75
10	Replace key personal	75
11	Bill and collecting effectively	74
12	Company organization	73
13	Assigning project leader in the site	72
14	Low margin profit due to competition	71
15	Internal company problems	71
16	Frauds	71
17	Procurement practices	69
18	Use the project management techniques	68
19	Controlling equipment cost and usage	68
20	Increased size of the projects	64
21	Change in the type of the work	62
22	Owner involvement in construction phase	58
23	Claims	55
24	Construction industry regulations in Saudi Arabia	52
25	Evaluate project profit in one fiscal year	51
26	Expanding into new Geographic location	50
27	Increased number of the projects	48
28	Recruiting multinational	45
29	Using computer applications	44
30	Employee benefits and compensations	41
31	Bad weather	39
32	Opening a regional office	37
33	Recruiting from one country	27
34	Change from private to public	26

## **Major Findings**

The average of each area was calculated then the percentage of each area was calculated. The percentage of each area is 27.78% for managerial, 27.27% for finance, 23.70% for environmental and 21.70% for expansion cause of failures.

The percentages of the managerial and finance causes are almost equal and the highest, but the expansion causes make least contribution to the failure. The most important causes are:

- 1. Lack of the experience in the line of work**
- 2. Neglect**
- 3. Poor estimation**
- 4. Bad decisions in regulating company policy**
- 5. National slump in the economy**
- 6. Labor productivity and improvement**
- 7. Owner absent from the company**
- 8. Collecting and managing cash flow**
- 9. Lack of the managerial maturity**
- 10. Replacement of key personal**
- 11. Assigning project leader in the site**
- 12. Low margin of profit due to competition**
- 13. Construction industry regulations in Saudi Arabia**

## **Conclusion**

1. Insufficient experience in the line of work is the main important cause of failure. Because the experience is very important for all the levels of management since the construction needs awake management.
2. Poor estimation practices are a major source of failure. The owner required to contribute in preparing the final price of the bid.
3. One of the main causes of the failure is no restriction on those entering the construction market.
4. The impact of economic and the shortage of past years have resulted in an increased number of failures.

5. Delays in the payment are the main cause of failures because they result in a financial problem to the contractor.
6. The study shows that the three parties (group one, two and group three) agree in the rank of failure. The grade three contractors are considered to be the part most influencing failure while grade four is the second.
7. Labor productivity and improvement is another cause of failure. The more labor productivity there is the less the total cost of the project.
8. Bad decision in regulating company policy is a source of the failure. the cause could increase the failure in companies which there is "on man role".
9. Neglect may add more cost to the project, which could cause a failure.
10. Lack of managerial maturity is more influential in grade three and grade four contractors because they manage small companies and are looking to become bigger.

### **Recommendation**

1. Set of procedure to be established to restrict the construction.
2. Contractors should improve their practices for calculating the project cost.
3. The number of payment increase to reduce the amount of each.
4. There should be two committees. The first one would be determine company policy and making decision. The other is for managing the cash flow.
5. Each contractor establishes a program for motivating workers.
6. the contractor development should be done with a long term planning.

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