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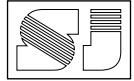
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Impact of Planning on Quality Implementation of Engineering Projects Case Study: Koya District, Hawler Province – Kurdistan Region of Iraq

● **Peshawa J. Muhammad Ali** - Lecturer ●

Department of Software Engineering / Koya University

Bahman Omar Taha - Lecturer

Department of Civil Engineering / Erbil Polytechnic University

Rezhna Hassan Faraj - Asst lecturer

Chemistry Department / Koya University

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Abstract



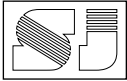
Project success means different things to different peoples, public projects are services of general interest which grabs the attention of most of citizens. Infrastructure of cities, public buildings and road must be implemented according to a plan set by city council or city authorities and then to be implemented by engineering directorates. Project success is a complicated process has economic, environmental, political and social trends. Success of project measured through proper planning, cost, quality, functionality, and on time completion. In order to show the consequences of poor and faulty project planning, a number of unfinished, badly finished and/or deserted construction projects have been thoroughly analyzed. Accordingly, 20 constructional public service projects are considered. The included area of the study covers Koya district in Kurdistan-Iraq (36.084643N, 44.627252E) while the time span of the study extends to thirteen years, including projects started in January 2000. A questionnaire form is distributed among 50 experts living in the Koya district itself. Experts are professionals in different sectors relating to construction, management and planning. They are asked for their opinion about the success of these projects as well as the reason of failure if exist. For this purpose seven predefined casues of failure were specified by authors. Results showed that the main reason for failure is lack of planning, and the most common secondary reason for failure is the functionality problem (project not function well for some reason). This research concluded that lack of a unified perspective for

the future of the district, and the absence of long-term city master plan are the main reasons behind poor planning and implementation of the projects.

Keywords: Koya, planning, project success.

1. Introduction

Koya (or Koysanjaq) is a district located in the northeast of Iraq, 60 km to the east of the capital city of Kurdistan region, Erbil. It connects three big cities Erbil, Sulaimanya and Karkuk (Al-Ta'mim), see Figure (1). Historically, because of the significant geographical location the district has a great role in the religious education and economic activities of Kurdistan and neighbor countries ^[1]. The elevation of the district is 620 m above sea level. In the last decade Koya has witnessed a fast growth reached 65% in some sectors such as number of pupils, number of cars in the district, and number of families ^[2]. Additionally, a new university established in the district which is expected to increase the momentum of the development further. Similar to the other Iraqi and Kurdistan cities, a number of public service projects have been implemented in the district after 2000. While there is no suspicion that in all Iraqi cities, projects are implemented without proper planning, this dilemma is by far the worst in Koya. This exception is clearly seen, supported and documented by the numerous projects which are implemented with a very poor or without any project planning at all. Consequently, big amounts of the district's public budget have been



wasted and the confidence of people in the local governmental authorities has been lost ^[3].

Many researches have been done on the impact of good planning on the quality of the engineering projects, they specified different factors influencing project's evaluation. Albert P.C. Chan in his research declared that project success means different things to different peoples, some peoples may consider time, quality, safety, durability but still there are other issues that must be taken in consideration in project success process. He tried hard to find and identity what is called by the Key Performance Indicator (KPI) which helps to set a benchmark for measuring the performance of a construction projects. Chan concluded that cost, time and quality are the three most important indicators in measuring successful projects, while safety, functionality, and satisfaction got attention recently. He didn't consider the overall benefit of the project to the community as a success factor ^[4].

Other researches tried to group factors affecting success of projects. Chan and his team grouped factors to five major groups, namely project-related factors, project procedures, project management actions, human related factors, and external environment. They didn't consider the satisfaction of beneficial peoples and the community which the project is built to them ^[5]. Some other researches done on specific projects relies on questionnaires, they tried to conduct the survey on a target group of peoples that directly related to this project from beneficiaries and professionals. The research showed that questionnaire survey is a good way to know things that can't be measure directly like project success, causes of delay ^[6] ^[7]. Most of the researches talking about success in projects are relating success to delay in projects, others consider the cost only, or both the implementation time and cost ^[8] ^[9]. Some projects were implemented in low cost, within time, but no research considered the benefit behind implementing projects as a success measure.

Koya distric contains many uncompleted and unfinished public roads and buildings, money sepent on unuseful projects ^[10]. Many worthless and deserted buildings are seen everywhere in Koya district. No academic researches have been done regarding this important issue in this district. Therefore, the objectives of this study are:

1. to determine the reasons behind unsuccessful and uncompleted public projects of Koya district,

2. to suggest solutions for uncompleted projects and to prevent repeating the same problems in the future projects.

The rest of this paper is organized as follows: The methodology used in this paper is described in section (2), while analysis and evaluation of all projects used in the paper is presented in section (3), results are presented in section (4). Finally, section (5) concludes the paper.

2.Methodology

A questionnaire form is distributed among 50 experts living in the Koya district itself. Experts are professionals in different sectors relating to construction, management and planning, includes civil engineers, architects, university researchers, contractors, project managers, etc. The questionnaire includes a list of 20 different Koya service projects, these projects implemented between January 2000 and January 2013. The simple yes/no type question was asked to the experts: "in your point of view, do you think the project is implemented correctly and advantageous or not?. If No, please specify the main and the secondary reasons. ". Table (1) shows the questionnaire form. Forms are collected, According to the responders point of view, the success ratio (Sr) is calculated for each specific project using Equation (1), results are shown in the Table (2).

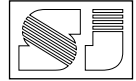
$$S_r = y/t * 100 \quad (1)$$

Where Sr is the success ratio of a specific project, y is the number of Yes responds, and t is the total responds number.

The main reason and the secondary reason behind the failure decision of responders are determined regarding each project through majority votes to the reasons (i.e. most voted reason from 50 responders is considered as real reason of failure for each project). The results of this step are summarized in the table (3).

3.Project analysis

In this section, the unsuccessful project is analyzed, then the reason of the failure is discussed in detail. The importance of this analysis is that it specifies the reason behind the failure, why the project doesn't function usefully? Was there any alternative to avoid the failure? Is there a possible solution for the project to function well? All these questions will be answered in this section for each project individually.



3.1. Presidency of Koya University

The work started on this project since 08-04-2005, and it was planned to be completed in 13-05-2006 with a total duration of 400 days. The building is a five story building, most of the works were finished at that time. The work is supervised by the municipality of Koya and implemented by ESEL Company. During the authors visit to the project site, it was clear that more than 80% of the work is completed, but its left unfinished. The building is shown in the Figure (2).

The reason behind non-completion of this project is administration and legal problems. When the contractor left the site, the authority didn't take any action towards re-tendering the reminded work or to complete it directly by the technical department of the municipality of Koya. So, the real reason behind failure is negligence and dereliction of the related offices and directories. A part of the responsibility is on the Koya University, because they didn't pay any attention to this project, which will be one of their buildings in the future.

3.2. University student center

ESEL Company started working on this project since 08-04-2005, and it was planned to be completed in 03-04-2006 with a total duration of 360 days. The building was planned to be used as a student activity center. It was clear that more than 40% of the work is completed, the building is shown in the Figure (3). The responsibility of this building is lost between Koya municipality and Koya University which is the main reason behind the failure to finish the project.

3.3. Hotel Koya palace

The building is originally constructed to be a hotel, then after two years of completing the project building is left, and now it's abandoned. The quality of the construction was too low which required continuous repairs, see Figure (4).

3.4. Koya maternity hospital

The quality of construction of this building was very low. The building is used as a hospital for a short period of time not more than four years. It's now abandoned and hidden inside the Koya health directorate complex in Haibat-Sultan, see Figure (5).

3.5. Koya Dental Hospital

This hospital building is completed in 2008, but never been used. Now, it's an abandoned building. The quality of the construction is good, but there is no access road available for this building, see Figure (6).

3.6. Koya cultural center

This building is originally constructed to be a cultural center, the work on this project is started from 2008, but not completed till present (December, 2014). Now, the building is given to KAPLAN language institute for free, which is a private institute. The work on this project is still ongoing very slowly, see Figure (7).

3.7. Koya terminal

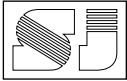
The work started on this project in September, 2003 and the project is finished in September, 2006. The important thing which grabbing attention is the duration of the project, which was 150 days in the contract, but it extended to 1080 days with an extra cost exceeds 40% of the total budget of the project. Generally, the design of the building is not serviceable. It doesn't protect travelers from bad weather conditions see Figure (8), which is the main reason to consider this project as a failed unsuccessful project.

3.8. Hamamok-Kelakhwara road

This road is constructed to connect Kelakhwara village with Hamamok. The road is a sub-base road with steep slope in most of the road stations. Long and deep trenches can be seen easily on both sides of the road caused by rainwater as shown in Figure (9). There is a simple engineering concept saying: "don't let steep slope roads uncovered with asphalt or concrete". There was an ability to easily avoid the structural failure of the road by finishing or covering the sub-base.

3.9. Sinawbar bridge

Figure (10) shows the bridge which is constructed on the Kelakhwara-Hamamok road, now it is useless bridge after change in the road alignment. This project was totally a waste of money.



3.10. Three tourism restaurant around Koya

Constructing restaurants is not the duty or responsibility of the government, these three restaurants are not useful for Koya district, see Figure (11), till now the aim behind constructing these three restaurants is unknown. The duration of the project was 150 days, while the extra-time given to the contractor was 550 days, means 366% more than original time period.

3.11. Koya's main electrical generators

A number of electrical power generators were brought to Koya and they worked for two years only. After that year, no benefit comes from these generators. Spending money on such project is a budget waste, besides the project is placed at unsuitable place inside the district. The project has environmental consequences for surrounding houses, smoke and noise, see Figure (12)

3.12. Koya sport and youth center

The architectural and structural designs of the building are both good. The only problem of the building is serviceability of the building. This building is constructed to serve as a youth center Figure (13), but the location of the building is outside the district on the road to Dukan-Sulaimanya. It can't work as a youth center.

3.13. Tahir Tawfiq swimming pool

Figure (14) shows the project location, the work is started on this project from 2002 uncompleted until now. The reason of failure of this project is a structural problem at the beginning, then administration negligence, finally funding problems.

3.14. Fine Art Institute road

This road is a new road serving the building of the Fine Art Institute in Koya, it connects the building to the main road of Koya-Dukan. The road is very well constructed, but the problem is that only few meters separating its dead end from Haibat-sultan main road which makes the road useless, see Figure (15).

3.15. Abdul-Rahman Hawezi street

This road is a sub-base two directional street, it was planned to serve as an outer road connecting Erbil road to Sulaimani road. Now, a part of this road is implemented, but with dead ends. It

provides no real service to the district, uncompleted roads and streets in Koya district is an issue that municipality of the district doesn't care about it. The environment did its effect on the road, the road contains lots of road defects, potholes and gullies, see Figure (16).

3.16. The bridge on the Abdul-Rahman Hawezi street

This bridge is constructed on the small stream passing the district. The bridge connects the two parts of the Abdul-Rahman Hawezi street. The road is not completed while the bridge is ready to use. Both two projects are useful if they were constructed and finished together. No benefits are seen behind a bridge without a road passing on it, see Figure (17).

3.17. Kosar resort (first phase)

Now this project is very successful, but the construction of this project passes through two important phases, first phase implemented by the government, the second phase implemented by the private sector. The money spent on the first phase is lost, such as nothing done for the project, and it's given for free to the private sector (according to a long-term service contract).

3.18. Harmota road

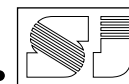
This road was constructed and expanded three times, the amount of the money spent on this road is equal to the money required for constructing three roads like this road in Koya. There was a structural failure in the two previous phases of construction, and the third phase is stopped working on it due to economical problems of 2014. This road was under construction and repair during all these years.

3.19. University student center (second building)

This building is supervised by Koya University engineering office, the structural and architectural designs are very well implemented, but it was better to complete the old building which is left uncompleted instead of constructing a new building like this. The work in this building is now stopped due to economical problems of 2014.

3.20. Koya circular road

The total budget of this project was 2,442 million Iraqi dinars. The project is implemented directly



by the municipality engineering office. This project is left and no longer worked on it. This project is the best example of what is called by "Administrative Corruption".

4. Results

Table (3) summarizes the reason behind incompleteness or unsuccessfulness of the projects, we tried to write two reasons, the first one is the main reason and the second one is the secondary reason. According to the charts of Figure (18) and Figure (19), the main reason behind unsuccessfulness of projects in the Koya district is bad planning, while the secondary reason for most of the projects is functionality and serviceability problem of projects which is in turn the direct result of the main reason (bad planning).

5. Conclusion

Based on the previous analyses and results, it's clear that the main reason behind the failure of some Koya district projects is the lack of planning while the most common secondary reason behind project failure is the serviceability or functionality of the projects. To solve Koya district project problems, it's highly recommended that authorities and town council try to set a long-term master plan for the district.

Technical problems in the most of the studied projects reflects a fact that there is a weak technical supervision for the projects. Administration negligence and administration corruption are clearly noticeable in some projects. Some of the building projects don't have access roads. For the sake of saving the district from failed projects and uncompleted buildings, the authors recommend that city council and engineering directories to concentrate on finishing and completing unfinished projects, repairing and renovating structurally failed projects, if seen that they are useful to serve the development of the city.

It's concluded that municipality takes the most part of the responsibility among other engineering bodies, 60% of the failed, unfinished projects among studied projects were under supervision of engineering office of Koya municipality.

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**کاریگه‌ری پلانریژی له‌سه‌ر کوالیتی ئەنجامدانی
پروژه ئەندازەییەکان
کەبەسی توێژینه‌وه : شارۆچکە کۆیه - پارێزگای هه‌ولێر
- هه‌ریمی کوردستانی عێراق**

پێش‌ه‌وا جمال محمد علی - مامۆستا
به‌شی ئەندازیاری سوفت ویر - زانکۆی کۆیه
به‌همه‌ن عمر طه - مامۆستا
به‌شی شارستانی - زانکۆی پۆله‌تەکنیکی هه‌ولێر
رێژنه‌ حسن فرج - مامۆستا یاریدمه‌ر
به‌شی کیمیا - زانکۆی کۆیه

پوخته :

سه‌رکه‌وتن له‌ ئەنجامدانی پروژهیه‌کدا مانای جی‌او‌ازی هه‌یه
بۆ که‌سه‌ جی‌او‌ازمه‌کان، له‌وانه‌یه‌ پروژهیه‌ک به‌ رای‌که‌سیک
سه‌رکه‌وتوو بیت به‌لام به‌رای که‌سیکی تر
سه‌رکه‌وتوو نه‌بیت. پروژه خزمه‌تگوزاریه‌ گشتیه‌کان
جی‌گای سه‌رنجی زۆریکی دانیش‌توانن. ژێرخانی
شاره‌کان، بێنا و ریگا‌کان، ده‌بیت جی‌ به‌جی بکری‌ن به‌ پێی
پلانیکی گشتگیر و درێژخایه‌ن که‌ له‌لایه‌ن ئەنجومه‌نی
شاره‌وه‌ دابنریت وه‌ له‌لایه‌ن ده‌زگا و فه‌رمانگه‌
ئەندازیه‌یه‌کانه‌وه‌ جی‌به‌جی بکری‌ت. سه‌رکه‌وتن له‌ ئەنجامدانی
پروژه‌یه‌ک کرداریکی تیکه‌له‌کیش و ئالۆزه، په‌یوه‌ندیده‌ره

به‌ لایه‌نی ئابووری و ژینگه‌یی و پۆلتیکی و
کۆمه‌لایه‌تییه‌وه‌. به‌لام ئایا چۆن ده‌توانین رێژه‌ی
سه‌رکه‌وتنی پروژهیه‌ک ئەژماربکری‌ت. بۆ ئەو مه‌سته
ده‌بیت بزانی‌ت ئایا پلانریژی پروژهیه‌ک چۆنه‌، ئایا
تیچۆمه‌کی وه‌ک خه‌ملێراوه‌، ئایا کوالیتی
جی‌به‌جی‌کردنه‌که‌ی له‌ چی ئاستیکدايه‌، ئایا ئەو خزمه‌ته‌ی که‌
پروژه‌یه‌ک پێشکەش به‌ دانیش‌توانی ده‌کات له‌و ئاسته‌یه‌ که‌
بۆی دانراوه‌، ئایا له‌ کاتی خۆی ته‌واو بووه‌. له‌ پناو
پێشاندانی کاریگه‌رییه‌کانی پلانریژی لاواز و خراپ
وه‌ نه‌بوونی به‌دواداچوون، ژماره‌یه‌ک له‌ پروژه‌ی
ته‌واونه‌کراو یان ته‌واوکراو به‌لام به‌ خراپی
یاخود پروژه‌ی به‌جی‌هێراو هه‌لسه‌نگاندنی بۆ
کراوه‌ وه‌ لیکۆلینه‌وه‌ی له‌باره‌وه‌ کراوه‌. به‌و پێیه‌
20 پروژه‌ی خزمه‌تگوزاری گشتی خراونه‌ته‌
ژێر لیکۆلینه‌وه‌ که‌ ناوچه‌ی توێژینه‌وه‌که‌ شارۆچکە
کۆیه‌ ده‌گریته‌وه‌ له‌ هه‌ریمی کوردستان
(36.084643N, 44.627252E)، وه‌ ئەم ماوه‌یه‌ی
که‌ پروژه‌یه‌کانی تیا‌دا جی‌به‌جی‌کراوه‌ بریتیه‌ له‌ 13 ساڵ که‌ له‌
سه‌ره‌تای سالی 2000 ده‌ست پێده‌کات. فۆرمیکی
راپرسی به‌سه‌ر په‌نجا که‌سی شاره‌زای دانیش‌توی
شارۆچکە کۆیه‌ دابه‌شکرا، ئەو که‌سانه‌ شاره‌زاییان هه‌یه‌
له‌ بواره‌کانی په‌یوه‌ندی دار به‌ بیناکاری، به‌ریوه‌بردن و
پلانریژی. پرسیار ئاراسته‌ی ئەو که‌سانه‌ کرا بۆ رایان
ده‌باره‌ی سه‌رکه‌وتنی ئەو پروژه‌انه‌ یان سه‌رنه‌که‌وتنیان،
وه‌ دیاری کردنی هۆکاری سه‌رنه‌که‌وتنیان.

حه‌وت هۆکار بۆ ئەژمارکردنی پروژه‌یه‌ک به‌
سه‌رنه‌که‌وتوو دیاری کران له‌لایه‌ن نوسه‌ره‌کانی ئەو
توێژینه‌وه‌یه‌، ئەنجامی توێژینه‌وه‌که‌ ئەوه‌ ده‌رمخات که‌
هۆکاری سه‌ره‌کی بۆ سه‌رنه‌که‌وتن له‌ زۆریه‌ی پروژه‌یه‌کان
بریتی یه‌ له‌ نه‌بوونی پلانریژی، به‌لام هۆکاری دووهم بۆ
سه‌رنه‌که‌وتن له‌ زۆریه‌ی پروژه‌یه‌کان بریتی یه‌ له‌ نه‌بوونی
توانای ئەو پروژه‌انه‌ بۆ خزمه‌تکردن به‌و بوواره‌ی که‌ بۆی
دروست کراون (واتا به‌هۆی هۆکاریکه‌وه‌ ئەو پروژه‌یه‌
سوودی نه‌بووه‌). ئەو توێژینه‌وه‌یه‌ ده‌ریخستوه‌ که‌
نه‌بوونی به‌رچا‌وروونی بۆ داها‌تووی ئەو شارۆچکەیه‌ وه‌
نه‌بوونی ماس‌ته‌رپلان دوو هۆکاری سه‌ره‌کین بۆ نه‌بوونی
پلانریژی له‌ پروژه‌یه‌کاندا وه‌ جی‌به‌جی‌کردنیان به‌ شیوه‌یه‌کی
خراپ.

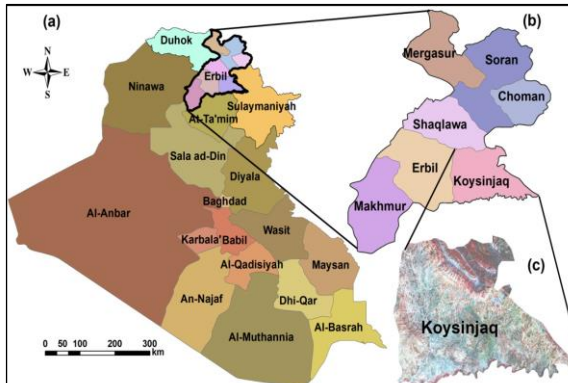
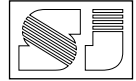


Figure 1 : Map of Iraq (a), Erbil Province (b), location of Koya (c) ^[10]



Figure 2a : Building of the presidency of Koya University.



Figure 2b : Building of the presidency of Koya University



Figure 3 : University student center structure



Figure 4 : Hotel Koya palace building



Figure 5 : Koya maternity hospital building

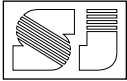


Figure 6a : Building and fence of Koya dental hospital



Figure 6b : Building and fence of Koya dental hospital



Figure 7 : Structure of Koya cultural center



Figure 8a : Koya terminal



Figure 8b : Koya terminal



Figure 9a : Hamamok-Kelakhwara road

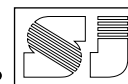


Figure 9b : Hamamok-Kelakhwara road



Figure 10 : Sinawbar Bridge



Figure 11 : Tourism Restaurant.



Figure 12 : Electrical generators project



Figure 13 : Building of Koya sport and youth center



Figure 14a : Tahir Tawfiq swimming pool structure

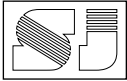


Figure 14b : Tahir Tawfiq swimming pool structure



Figure 1 : Fine art institute's road project



Figure 16a : Abdul-Rahman Hawezi street



Figure 16b : Abdul-Rahman Hawezi street

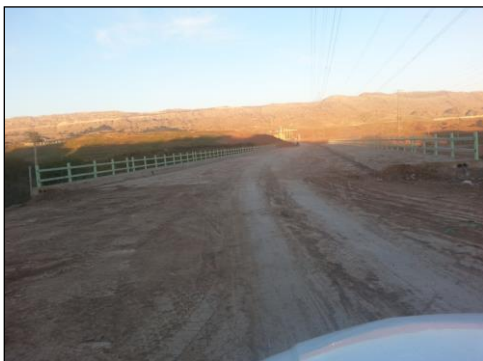
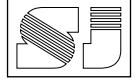


Figure 17a : Bridge on the Abdul-Rahman Hawezi street



Figure 17b : Bridge on the Abdul-Rahman Hawezi street

**Table 1: The research questionnaire form**

In your point of view, do you think this project is implemented correctly and advantageous or not?? Write **Yes** or **No** beside each project name in the below list. If your answer is No, please specify the main and the secondary reasons by ticking in the box.

and advantageous or not?? Write Yes or No beside each project name in the below list. If your answer is No, please specify the main and the secondary reasons by ticking in the box.				Main Reason of failure								Secondary reason of failure							
No.	Name of the project	Location	Type of the project	Y / N ?	Admin. negligence	Structural failure	Bad planning	Time delay	Functionality problem	Admin. Corruption	Environmental problems	Admin. negligence	Structural failure	Bad planning	Time delay	Functionality problem	Admin. Corruption	Environmental problems	
01	Presidency of Koya University	Haibat-Sultan	Building																
02	University Student Center	Haibat-Sultan	Building				√										√		
03	Hotel Koya Palace	Gashtyaree	Building																
04	Koya Maternity Hospital	Haibat-Sultan	Building		√													√	
05	Koya Dental Hospital	Haibat-Sultan	Building																
06	Koya Cultural Center	Haibat-Sultan	Building						√			√							
07	Koya Terminal	Industrial area	Building																
08	Hamamok-Kelakhwara road	Hamamok	Road			√											√		
09	Sinawbar bridge	Hamamok	Bridge																
10	Three tourism restaurants	Different places	Building							√					√				
11	Koya Main Electrical Generators	Jawharawa	Elec. plant																
12	Koya Sport and Youth Ccenter	Hawawan vilg.	Building				√					√							
13	Tahir Tawfiq Swimming Pool	Haibat-Sultan	Building																
14	Fine art institute's road	Dashti-Koya road	Building					√										√	
15	Abdul-Rahman Hawezi street	Dollarawa	Road																
16	The bridge on the Abdul-Rahman Hawzi st.	On the street	Bridge		√													√	
17	Kosar resort (first phase)	Haibat-Sultan	Recreat.						√				√						
18	Harmota road	Harmota vilg.	Road																
19	University student center (2 nd building)	Koya University	Building			√											√		
20	Koya circular road	Around Koya	Road																

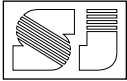
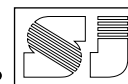


Table 2: Summary of project success ratio

No.	Name of the project	Location	Type of the project	Project success ratio (%)
01	Presidency of Koya University	Haibat-Sultan	Building	00
02	University Student Center	Haibat-Sultan	Building	00
03	Hotel Koya Palace	Gashtyaree	Building	06
04	Koya Maternity Hospital	Haibat-Sultan	Building	06
05	Koya Dental Hospital	Haibat-Sultan	Building	08
06	Koya Cultural Center	Haibat-Sultan	Building	06
07	Koya Terminal	Industrial area	Building	38
08	Hamamok-Kelakhwara road	Hamamok	Road	04
09	Sinawbar bridge	Hamamok	Bridge	02
10	Three tourism restaurant around Koya	Different places in Koya	Building	10
11	Koya Main Electrical Generators	Jawharawa	Elec. plant	20
12	Koya Sport and Youth Ccenter	Hawawan vilg.	Building	26
13	Tahir Tawfiq Swimming Pool	Haibat-Sultan	Building	00
14	Fine art institute road	Dashti-Koya road	Building	40
15	Abdul-Rahman Hawezi street	Dollarawa	Road	16
16	The bridge on the Abdul-Rahman Hawezi street	Close to Dashti-Koya road	Bridge	18
17	Kosar resort (first phase)	Haibat-Sultan	Recreat.	42
18	Harmota road	Harmota vilg.	Road	32
19	University student center (second building)	Koya University	Building	36
20	Koya circular road	Around Koya	Road	00

**Table 3: Reasons behind failure of projects**

No.	Name of the project	Type of the project	Main reason of failure	Secondary reason of failure
01	Presidency of Koya University	Building	Administrative negligence	Functionality problems because of the location
02	University Student Center	Building	Administrative negligence	Functionality problems because of the location
03	Hotel Koya Palace	Building	Structural failure	Administrative negligence
04	Koya Maternity Hospital	Building	Structural failure	No planning
05	Koya Dental Hospital	Building	Bad planning	Functionality problems because it's not used.
06	Koya Cultural Center	Building	Time delay	No functionality
07	Koya Terminal	Building	Functionality problems	Time delay
08	Hamamok-Kelakhwara road	Road	Construction failure	Functionality problems because it's not serviceable.
09	Sinawbar bridge	Bridge	Bad planning	Functionality problems because it's not serviceable.
10	Three tourism restaurant around Koya	Building	Bad planning	Functionality problems because of the locations
11	Koya Main Electrical Generators	Elec. plant	Bad planning	Environmental problems
12	Koya Sport and Youth Ccenter	Building	Bad planning	Functionality problems because of the location
13	Tahir Tawfiq Swimming Pool	Building	Administrative negligence	Structural failure
14	Fine art institute's road	Building	No planning	Functionality problems because it's not serviceable.
15	Abdul-Rahman Hawezi street	Road	Bad planning	Structural problems
16	The bridge on the Abdul-Rahman Hawezi street	Bridge	Bad planning	Functionality problems because it's not serviceable.
17	Kosar resort (first phase)	Recreat.	No planning	Administrative negligence
18	Harmota road	Road	Structural failure	Administrative negligence
19	University student center (second building)	Building	Bad planning	Administrative negligence
20	Koya circular road	Road	Corruption	No planning

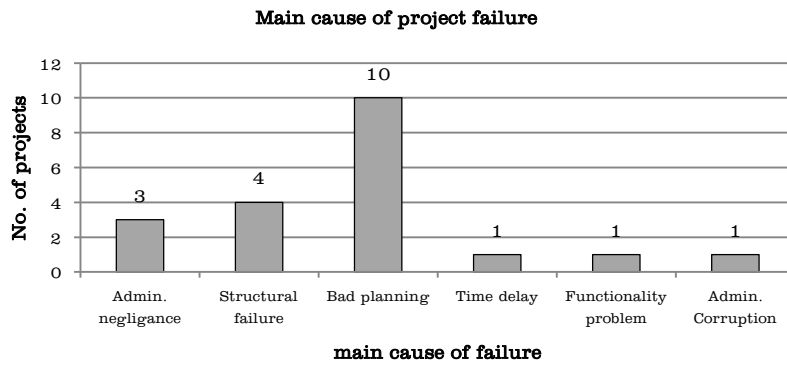
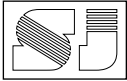


Figure 18 : Main cause of the failure in projects.

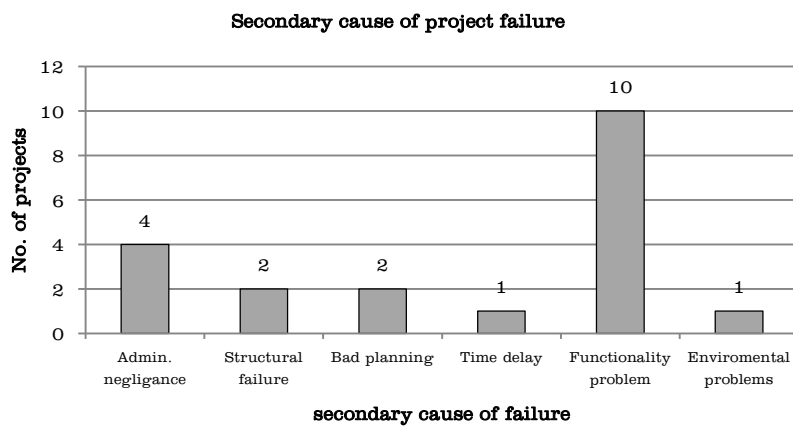


Figure 19 : Secondary cause of problem in the projects.