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# MEASURING RESULTS OF PROJECT MANAGEMENT TRIANGLE CONSTRAINTS: THE CASE OF ENGINEERING BUILDING AT EFFAT UNIVERSITY

*Salma Al-Qahtani*[1], *Mohamed Baymout*[2]

[1,2] College of Business, Effat University, Qasr Khuzam St., Kilo. 2, Old Mecca Road.

P.O.BOX 34689, Jeddah 21478, Saudi Arabia.

Email: [1]salqahtani@effatuniversity.edu.sa, [2]mbaymout@effatuniversity.edu.sa

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## ABSTRACT

This study aimed to determine delay factors in delivering Engineering building and gaps in the project management in Effat University. The study had used quantitative research. The respondents were Effat University student and faculty staff. Data collection techniques to be adopted were interviewed respondent and survey. Secondary data comprise of an assortment of articles from published and peer reviewed books and journals included reliable web sources that enclosed information on operation management. The sample was conducted used convenience sampling technique. The questionnaire was presented to Effat University student. The data was gathered by employed normal questionnaire. The questionnaires had open and closed ended queries created for writing and three segments were created. First segments were concerned with information included respondent distribution. Meanwhile, second segment related to data analysis and discussion from the questionnaire contained subsections. The descriptive statics in term of percentage included frequency distribution were qualitative. There were five factors that influenced delay in delivering the building included clement and seasonality, financial difficulties, cleanliness and orderliness, short time planning phase and project scope limitation among contractor.

## INTRODUCTION

In human activity, there are constraints in achieving good performance. Projects are defined as one-off efforts, unique that need proper preparation which have repetitive process and become automated or routine activities [1]. Project management is organization, planning, monitoring and control all project aspects with motivation to achieve project goals on safety within

agreed schedule, budget and performance criteria [2]. Project management also defined as application of skills, knowledge, tools and techniques to the project activities to meet project requirements [3]. Project is a human activity that achieves a clear objective against a time scale [4]. Projects are tools of influence for organizations to achieve strategic goals [5].

The Iron Triangle criteria are most commonly measuring of project success [6]. This triangle was known as a framework to allow project managers to determine and balance the competing demands of cost, time and quality within their projects [7]. In additions, the Iron Triangle is also great tool for project manager to find out the priorities and motivation for numerous stakeholders [8]. Iron Triangle is a triangle of time, cost and performance that connect the universe within which every project needs to be achieve [9]. The project success is not an easy task which depend stakeholder perspective, project kind, temporal perspective (short, medium and long time) [10].

The project fails in the constraint due to lack of understanding in the scope itself. An increment in the project scope increases the cost and time of the project completion. The customer was incurred a certain money for project performance. An increment in the completion project cost will reduce the scope time.

This study aimed to determine delay factors in delivering Engineering building and gaps in the project management in Effat University. The study scope also focused on Effat University Engineering building construction. The study finding also definitely provided benefit to the university in the future.

## METHODOLOGY

The study used quantitative research which was methodical pragmatic examination of recognizable phenomenon through arithmetical, statistical or numerical data or computational approach. The progression of assessed the core to quantitative research since provided the basic association connected the practical observation as well as numerical expression of quantitative connection.

The data was collected with aid of statistics that the statistics was generated non-discriminatory result that widespread to better inhabitant. The study employed the qualitative measures had smaller sample sizes than quantities studies.

This study seeks wide questions and gathered sound data from phenomenon. The researchers had illustrated the information in topic and prototypes restricted to participants set. Qualitative research techniques were suitable for specific study; the study provided a fortune and concentration of comprehensive. Qualitative research such as semi-structured interrogation, case studies and storyline due course disclose more concerned efficiency form of project.

The study aimed to collect data in two ways such as primary and secondary data, survey and interview. This data was analysis tool were identified and

ascertained based on its relevance. Personal interview surveys were employed to probe the respondent solution and observed the respondent behaviour either personal or group. The personal interview approach was favoured for diverse advantages. In the interviews, information was acquired by question and recorded by enumerator. Prearranged interviews were executed by employed survey forms.

In contrast to interview, enumerator pose question direct, questionnaire referred to forms filled in by the respondents. Questionnaire approach had adopted for entire population. The questionnaire needs to be clear with target questions.
The first-hand information and the respondents were expected from EFFAT University student and faculty staff. Data collection techniques to be adopted were interviewed respondent and survey. This technique was ideal since provided direct information from respondents which fully relied upon in concluded on project viability and its relevance.

Secondary data comprise of an assortment of articles from published and peer reviewed books and journals included reliable web sources that enclosed information on operation management. Furthermore, websites used was included certified agency websites, news articles from credible media companies included materials from authoritative web sources.

The sample was conducted used convenience sampling technique. The questionnaire was presented to EFFAT University student. In this regard, the study ensured that there was an ideal sample size that saved time and ensured that there was low sampling error while covered all areas that pertains data collection and analysis.

The data was gathered by employed normal questionnaire. The questionnaires had open and closed ended queries created for writing and three segments were created. First segments were concerned with information included respondent distribution. Meanwhile, second segment related to data analysis and discussion from the questionnaire contained subsections. The descriptive statics in term of percentage included frequency distribution were qualitative.

## RESULT AND DISCUSSION

### *Result*

Table 1 showed 90.54% respondents were aged between 18 years old and 25 years old and 5.41% respondents were aged between 25 years old and 34 years old. Meanwhile, 1.80% respondents were aged between 35 years old and 44 years old and 2.25% respondents were aged between 45 years old and 54 years old. In Table 2, there were 96.85% respondents were student and 3.15% respondents were faculty staff.

**Table 1:** Respondent Distribution Based on Age

| Age (years) | Percentage |
|---|---|

| | |
|---|---|
| 18-25 | 90.54 |
| 25-34 | 5.41 |
| 35-44 | 1.80 |
| 45-54 | 2.25 |
| 55-64 | 0.00 |
| 65-74 | 0.00 |
| >75 | 0.00 |

**Table 2:** Respondent Distribution Based on Employment

| Employment | Percentage |
|---|---|
| Faculty staff | 3.15 |
| Student | 96.85 |

In Table 3, there were 33.78% respondents were studied or teaching in business and 26.13% respondents were studied or teaching in engineering. Meanwhile, 14.86% respondents were studied or teaching in humanities and 25.23% respondents studied or teaching in architecture.

**Table 3:** Respondent Distribution Based on Courses

| Courses | Percentage |
|---|---|
| Humanities | 14.86 |
| Engineering | 26.13 |
| Business | 33.78 |
| Architecture | 25.23 |

In Table 4, 84.68% respondents were continued as member at EFFAT University that meant the respondents were in EFFAT University before and after building renovation.

**Table 4:** Respondent Membership in Effat University

| Membership | Percentage |
|---|---|
| Continuous member | 84.68 |
| New member | 15.32 |

In Table 5, most respondents had attended their class in engineering building because of largest building in university and 3.60% respondents had attended their class in Humanities building.

**Table 5:** Respondent Distribution Based on Building

| Building | Percentage |
|---|---|
| Humanities | 3.60 |
| Engineering | 50.45 |
| Business | 28.83 |
| Architecture | 17.12 |

In Table 6, 71.63% respondents showed interested on the building appearance and found the appearance was appropriate. Meanwhile, 28.37% respondents did not interest on the building appearance.

**Table 6:** Respondent Distribution Based on Building Appearance

| Building appearance | Percentage |
|---|---|
| Yes | 71.63 |
| No | 28.37 |

Meanwhile, 57.69% respondents were agreed on building need improvement as shown in Table 7. There were 15.38% respondents was agreed that the building was completed.

**Table 7:** Respondent Distribution Based on Building Completion

| Building improvement | Percentage |
|---|---|
| Yes | 15.38 |
| No | 26.92 |
| Need improvement | 57.69 |

In Table 8, 60.58% respondents were agreed on overall building quality and 10.58% respondents were agreed that overall building quality. Meanwhile, 58.65% respondents were agreed that building had good class design while 25.96% respondents claimed need the improvement for class design. There were 12.98% respondents were agreed that poor LAB and 75.48% respondents were agreed that good LAB.

Besides, 55.29% respondents were agreed that internet connection was poor and 43.75% respondents were agreed that need improvement for internet connection. There were 58.17% respondents were agreed on poor waiting area and 39.90% respondents were agreed on need improvement on waiting area.

**Table 8:** Respondent Distribution Based on Building Quality

| Building quality | Good | Poor | Need improvement |
|---|---|---|---|
| Overall | 60.58 | 10.58 | 32.21 |
| Class design | 58.65 | 18.27 | 25.96 |
| Lighting | 57.21 | 21.15 | 24.52 |
| LAB | 75.48 | 12.98 | 15.87 |
| Internet connection | 11.06 | 55.29 | 43.75 |
| Waiting area | 10.10 | 58.17 | 39.90 |

In Table 9, 44.71% respondents were agreed that building need improvement and 24.52% respondents were agreed on facilities was provided in the building.

**Table 9:** Respondent Distribution Based on Building Satisfaction

| Building satisfaction | Percentage |
|---|---|
| Yes | 24.52 |
| No | 30.77 |
| Need improvement | 44.71 |

In Table 10, 62.07% respondents were faced difficulties in finding class location and 38.42% respondents were agreed that no any difficulties in finding class location. Meanwhile, 75.365 respondents were faced difficulties in class duration and 25.60% respondents never faced difficulties in class duration. There were 53.20% respondents faced difficulties in class time and 47.29% respondents had no difficulties in class time.

**Table 10:** Respondent Distribution Based on Building Finishing Difficulties

| Building finishing difficulties | Yes | No |
|---|---|---|
| Class location | 62.07 | 38.42 |
| Class duration | 75.36 | 25.60 |
| Class time | 53.20 | 47.29 |

In Table 11, 55.44% respondents were agreed that delay delivering of Engineering had affected their participation in the class. There were 72.31% respondents had agreed that delay delivering Engineering building created difficulties in finding instructors offices. Meanwhile, 28.65% respondents were disagreed that delay of delivering Engineering building created noise and crowd in some areas in the campus. Furthermore, 52.60% respondents were agreed that delay of delivering Engineering building caused cleanliness issues and 31.25% respondents were disagreed that delay of delivering Engineering building caused uncomfortable environment.

**Table 11:** Respondent Distribution Based on Delay Influence For Students

| Delay influence | Yes | No |
|---|---|---|
| Did delay in delivering Engineering building affect the participation in classes | 55.44 | 44.56 |
| Did the delay in delivering Engineering building created difficulties in finding instructors offices | 72.31 | 27.69 |
| Did delay in delivering Engineering created noise and crowd in some areas in the campus | 71.35 | 28.65 |
| Did delay in delivering Engineering building caused cleanliness issues | 52.60 | 47.40 |
| Did delay in delivering Engineering building caused uncomfortable environment | 68.75 | 31.25 |

In Table 12, 52.08% respondents were agreed that delay of delivering Engineering building affected work performance and 53.33% respondents were disagreed that delay of delivering Engineering building affected office location. Meanwhile, 63.22% respondents were agreed that delay of delivering Engineering building caused uncomfortable environment and 33.33%

respondents were disagreed that delay of delivering Engineering building created noise and crowd in some areas in the campus. Furthermore, 37.65% respondents were disagreed that Engineering building caused cleanliness issues.

**Table 12:** Respondent Distribution Based on Delay Influence For Faculty Staff

| Delay influence | Yes | No |
|---|---|---|
| Did delay in delivering Engineering building affected work performance | 52.08 | 47.92 |
| Did the delay in delivering Engineering building affected office location | 46.67 | 53.33 |
| Did delay in delivering Engineering building caused uncomfortable environment | 63.22 | 36.78 |
| Did delay in delivering Engineering building created noise and crowd in some areas in the campus | 66.67 | 33.33 |
| Did delay in delivering Engineering building caused cleanliness issues | 62.35 | 37.65 |

There were five factors influenced delay and disrupted the project quality compliancy. Five factors caused delayed included seasonality and clement, financial difficulties, cleanliness and orderliness, short planning phase and project scope limitation among contractor. Meanwhile, most students and faculty staff were agreed that building need to improve in service quality which might cause delay in delivering Engineering building.

## CONCLUSION

In conclusions, there were several factors that influenced the worker performance which led to the delay in delivering the building. The factors included clement and seasonality, financial difficulties, cleanliness and orderliness, short time planning phase and project scope limitation among contractor. Time, cost and scope were parameters of compliancy quality that defined project successful.

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