Analysis of Rework and Rescheduling in Construction Project using SPSS Software

P. Haritha[1], Dr. K. Vidhya[2]

[1]PG Student, [2]Head of the Department,

[1,2]Mahendra Engineering College, Namakkal, Tamil Nadu, India

ABSTRACT

Rework is a primary contributor to time wastage and time table overruns which eventually impact on cost, assets and quality. Rework is additionally affecting the mission performance. So minimizing the transform is important one. The goal of the questionnaire survey is to analyze the motives and have an impact on of rework. Questionnaire survey has been carried out among a variety of construction corporations and contractors in Salem District. The questionnaire prepared based totally on motives and influence of rework. Ranking analysis is completed by means of the use of the SPSS (Statistical Package for the Social Sciences).In this analysis it helps to check the stability and consistency of information accumulated from the questionnaire survey. Finding the foremost reasons rescheduling will be done.

1. INTRODUCTION

Rework ability that an motion ought to be executed greater than once in order to attain the designated objectives, which consequences in the needless consumption of extra resources in the form of labor, materials, and services past what would have been used if the motion had been carried out only once. In construction activities, in addition to overruns in the agenda and price transform has the in addition effect of inflicting workable risk with recognize to quality and safety.

In the construction industry, rework is widely regarded as an apparent issue that prevents enchantments in productiveness though the hours and price for remodel signify only a small component of the fieldwork as a whole, if fieldwork is viewed to consist of the time and price associated with direct work, support, rework, and delays. However, a frequent faith is that a reduction in rework is a least expensive method to enhancing productivity because most rework may want to be mitigated via enhancing the management of the procedure and growing human performance, neither of which is as high priced as adopting technical innovation in order to enhance productivity.

1.1. DEFINITION OF REWORK

Rework is described as 'the pointless effort of re-doing a procedure or undertaking that used to be incorrectly carried out at the first time'. Within the development industry, transform has been identified as a vast factor that contributes to value increases and time table delays on projects.
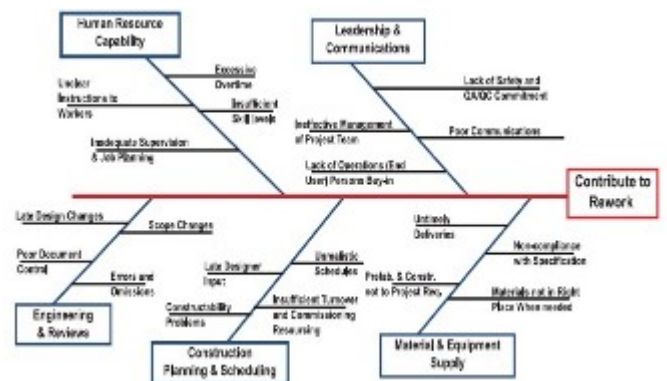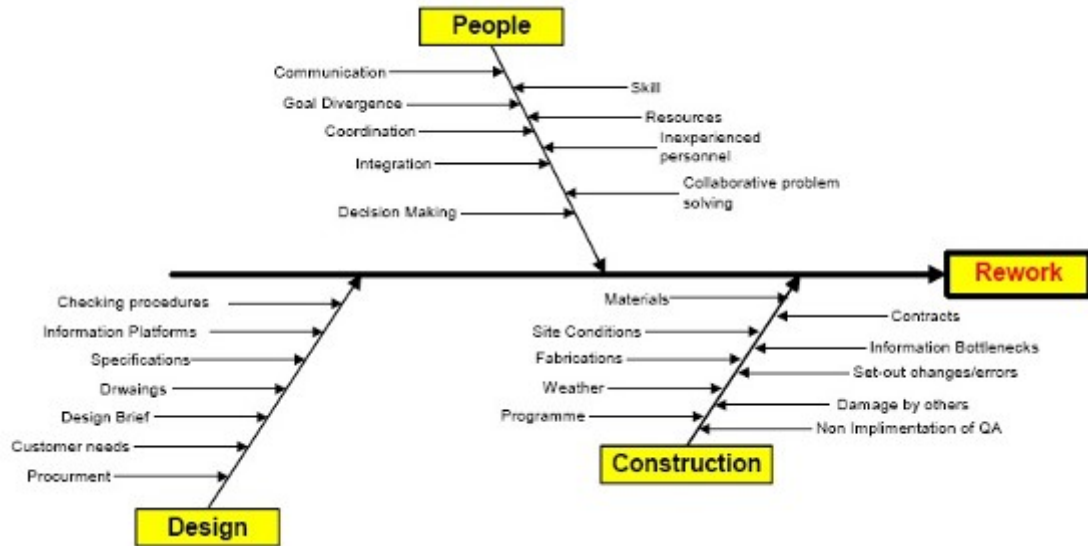

Fig 1.1 Causes of rework

1.2. SOURCES OF REWORK

2. QUESTIONNAIRE SURVEY

In the questionnaire survey questions are taken from the journal through literature survey. The questions are based on the causes and impact of the reworks in construction projects. The answer contains a three options (i.e.) agree, neither agree nor disagree, disagree.

2.1. QUESTIONNAIRE MODEL
2.1.1. SECTION A: PROFILE OF RESPONDENT
1. Name of the respondent: ……………………

2. Name of the company: ……………………

3. Which of the following best describes your company?

Architect ☐ Consulting ☐ Engineering ☐

Project Management ☐ Contractor ☐ Quantity surveying ☐

Other (please specify) ……………………………………………

4. How long have you worked in the construction industry?
……………………………………

5. What is your current position in your organization?
……………………………………

6. How long have you been in your present position?
……………………………………

2.1.2. SECTION B: PROJECT CHARACTERISTICS
7. What was the project type?

8. What was the facility type that best describes the project?

Administrative ☐ Banks ☐ Educational ☐
Entertainment ☐ Hospitals/Health ☐ Commercial ☐
Hotel/Motel/Resort ☐ Industrial ☐ Residential ☐
Other (please specify) ………………………………………………

9. How much was the original tender sum?
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10. How much was the final contract sum?

11. What was the project's original construction period?

12. What was the project's actual construction period?

13. What type of procurement method was used for the project?

Traditional lump sum ☐ Contracting ☐
Traditional cost plus ☐ Turnkey ☐
Other (please specify)
………………………………………………………

14. What was the project's gross floor area (m^2)?
……………………………………………

15. How many floors did the project have?
…………………………………………………………

2.1.3. SECTION C: CAUSES OF REWORK

Table 2.1: Client Related Factor

Client related factors	Agree	Neither agree nor disagree	Disagree
Lack of experience and knowledge of the design process			
Lack of experience and knowledge of the construction process			
Lack of funding allocated for site investigations			
Lack of client involvement in the project			
Insufficient time and money spent on the briefing process			
Poor communication with design consultants			
Poor contract execution			

Table 2.2 Design Related Factors

| Client related factors	Agree	Neither agree nor disagree	Disagree
Lack of experience and knowledge of the design process			
Lack of experience and knowledge of the construction process			
Lack of funding allocated for site investigations			
Lack of client involvement in the project			
Insufficient time and money spent on the briefing process			
Poor communication with design consultants			
Poor contract execution			

3. SPSS SOFTWARE

Its is developed by using Norman H. Nie and C. Hadlai Hull of IBM Corporation in the yr 1968. It is compatible with Windows, Linux, UNIX & Mac operating systems. SPSS is amongst the most broadly used packages for statistical analysis in social science.

SPSS is a comprehensive and flexible statistical evaluation and data management solution. SPSS is a laptop software used for survey authoring and deployment, statistics mining, text analytics, statistical analysis, and collaboration and deployment SPSS can take records from nearly any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and behavior complicated statistical analyses. SPSS is amongst the most extensively used packages for statistical evaluation in social science.

Used in Telecommunications, Banking, Finance, Insurance, Healthcare, Manufacturing, Retail, Consumer packaged goods, Higher education, Government, and Market research. Features of SPSS: It is handy to analyze and use. It consists of a full range of data. Management machine and enhancing tools. It presents in-depth statistical capabilities. It offers whole plotting, reporting and presentation features.
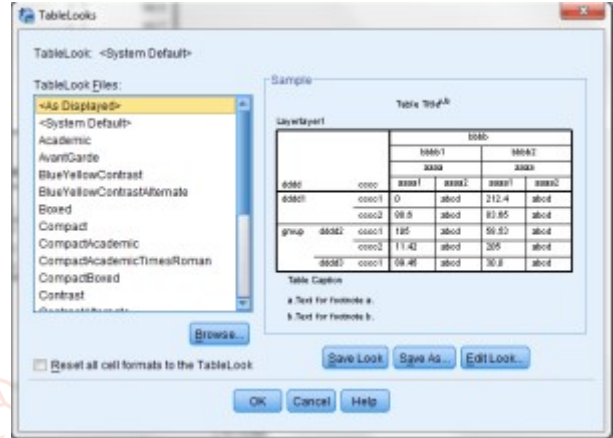
3.1. ENTERING DATA
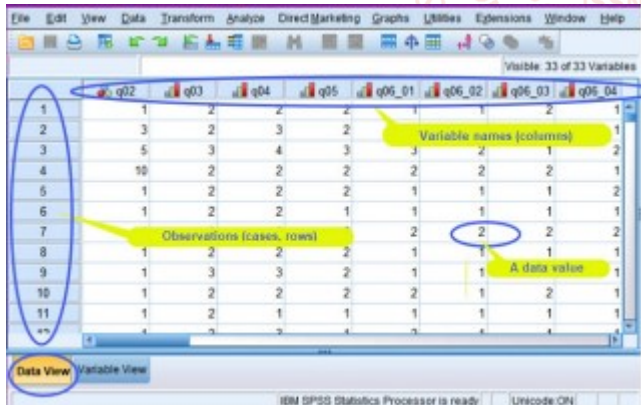
Fig 3.1 Data View In SPSS Software
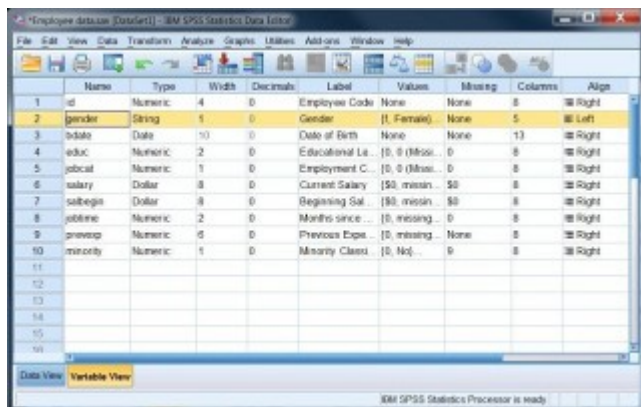
Fig 3.2 Variable View in SPSS Software

3.2. EDITING DATA

Fig 3.3 Pivot Table Editor in SPSS Software
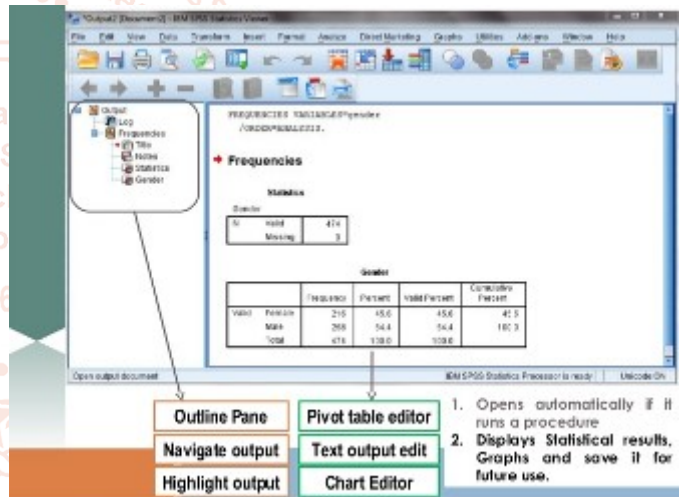
Fig 3.4 Text Output Editor in SPSS Software
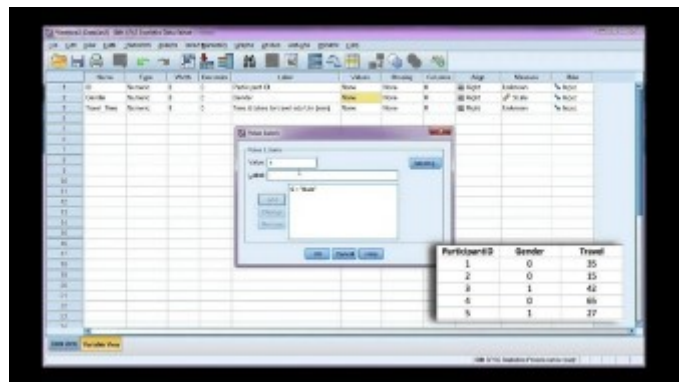
Fig 3.5 Get Your Data Into SPSS

4. RANKNG AND ANALYSIS

In statistics, "ranking" refers to the data transformation in which numerical or ordinal values are replaced by their rank when the data are sorted. Ranking was done by SPSS software. From that analysis major factors causing reworks and impact of rework should be found.

4.1. Descriptive Statistics

Table 4.1 Descriptive Statistics

Descriptive Statistics			
A. Factors	N	Mean	Std. Deviation
Changes initiated by contractor to improve quality	10	4.60	1.265
Unclear instruction to workers	10	4.40	1.350
Changes in the method of construction to improve constructability	10	4.40	.966
Changes made by the contractor during construction	10	4.40	1.350
Changes made at the request of the client	10	4.40	1.350
Changes in the method of construction due to site condition	10	4.20	1.687
Failure to provide protection to constructed works	10	4.20	1.398
Incomplete design at the time of tender	10	4.20	1.398
Poor site condition such as water, electricity etc.	10	4.00	1.700
Poor communication with design consultants	10	4.00	1.700
Inadequate Supervisor	10	4.00	1.414
Lack of safety	10	4.00	1.700
Poor planning of workload	10	4.00	1.700
Poor coordination of design	10	4.00	1.414
Lack of client involvement in the project	10	3.80	1.932
Changes initiated by the municipality/regulatory bodies	10	3.40	1.838
Shortage of skilled supervisors	10	3.20	1.135
Schedule acceleration	10	3.20	1.476
Poor planning of resources	10	3.20	1.135
Shortage of skilled labour	10	3.00	1.333
Lack of funding allocated for site investigations	10	2.80	1.135
Poor communication between the workers in site	10	2.40	1.897
Damages caused by subcontractor	10	2.40	1.350
Low labour skill level	10	2.00	1.700
Adverse natural condition	10	2.00	1.700
Use of poor construction material	10	2.00	1.414
Lack of training and experience	10	2.00	1.414
Insufficient skill levels to complete the required task	10	2.00	1.414
Ineffective use of quality management practices	10	2.00	1.414
Omissions of items from the contract documentation	10	2.00	1.700
Errors due to inappropriate construction methods	10	1.80	1.398
Damage to other trades work due to carelessness	10	1.80	1.398
Ineffective use of quality management practices	10	1.80	1.398
Ineffective use of information technologies (e.g. CADD)	10	1.80	1.687
The contactor have a less skill	10	1.60	1.350
Ineffective use of construction standard	10	1.60	.966
Errors made in the contract documentation	10	1.60	.966
Incomplete drawings	10	1.60	.966
Insufficient time and money spent on the briefing process	10	1.60	.966
Poor supervision	10	1.40	.843
Lack of experience and knowledge of the design	10	1.40	1.265
Insufficient time to prepare contract documentation	10	1.20	.632
Poor contract execution	10	1.20	.632
Lack of experience and knowledge of the construction process	10	1.20	.632
Valid N (listwise)	10		

4.2. CAUSES OF REWORK

Table 4.2 Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	N of Items
.759	44

4.3. IMPACT OF REWORK

Table 4.3 Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	N of Items
.775	10

5. CONCLUSION

In this task literature survey is conducted and studied about the rework, causes of transform and impact of rework. Based on the literature survey questionnaire is organized and given to a variety of development companies. According to the response from the organizations rating will be carried out the usage of SPSS software and evaluation used to be finished by way of statistical methods. From rating major factors causing rework and have an effect on of transform used to be found. Then reschedule used to be performed for a proposed undertaking via Primavera software.

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