A STUDY OF THE CONSTRAINTS AFFECTING THE PROPER UTILIZATION OF COMPUTER APPLICATION SOFTWARE IN RESOURCE MANAGEMENT IN CHENNAI CONSTRUCTION COMPANIES

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Abstract
Construction is one of the area in which computer application software are highly required to perform different task at various stages of project construction. Computers have been used to enhance the effectiveness of construction management. Efficient utilization of computer application software is a key to enhancing the proper management of construction activities which will contribute to the successful implementation of construction project. Careful selection of computer application software is required by the construction companies for proper management of their resources. The difficulty about computerization especially with regard to the use of computer application software in resource management require the knowledge and expertise of those working in construction companies, and who are directly involved in the management of construction resources. The study was carried out to determine the obstacles confronting the proper utilization of computer application software in resource management. The result of the questionnaire survey used in this research work clearly indicated those constraints, which include, non-understanding about software potentials, lack of qualified personnel to use the software, unaware of most of the resource management software available in the market, communication gap between the vendors and users which contribute to non-understanding of the full scope of the software, greater-know-how required from staff, among numerous others. A total of 22 construction companies were selected for the study. An open ended questionnaire which consist of 22 questions with regard to the constraints affecting the proper utilization of computer application software in resource management was designed, validated, and distributed among Engineers, Project Managers, as well as executives who are directly involved in the activities of the construction site.

Keywords: resource management, application software, construction management

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1. INTRODUCTION

Construction industries consist of numerous issues including various activities of a construction projects, these construction activities require proper planning, scheduling and allocation of resources, ranging from construction equipment, construction materials, manpower, as well as money. The emergence of computers as well as various computer application software have to a large extent simplifies the work of a project managers and other construction engineers in one hand and on the other hand make it more complex, this is because greater know how is required from the project managers and other construction professionals on how to use such computer application software for planning and scheduling purposes. Ready-made packages software are readily available in the market, and are produced by the software vendors for the use of construction companies, other Generic software are developed by the construction companies themselves, either directly or indirectly, in order to suit their purpose. "Construction projects contain numerous inter dependent

and inter- related activities. The fast changing environments of the present era impose numerous financial, legal, ethical, environmental and logistic constraints. Being that construction project consist of voluminous resources that are required to be allocated to each activity of a construction project, it poses a series of problem concerning how much resources are required, how to optimize their utilization, when they should be used among many questions.There are so many popular project management software used for the purpose of project management, such as Primavera, Microsoft project, Milestone professional, Candy, AMS Realtime Project, Project kickstart, Gala, Adria KOD, Carpio and Maris, among numerous others, these computer application software helps the construction managers for proper planning and scheduling of construction resources, such as material, labour, equipment and money. Each computer application software having it peculiar benefits as well as constraints. The recent literature showed that, construction resource management studies is increasingly becoming more important, there is a wide range of literature

concerning various areas of construction resource management, but very few studies were conducted in the area of computer application in construction resource management".

1.1 Project Management Software

"Project management software are software which have the capacity to help plan, organize, and manage resource pools and develop resource estimates. Depending on the sophistication of the software, it can manage estimation and planning, scheduling, cost control and budget management, resource allocation, collaboration software, communication, decision-making, quality management and documentation or administration systems. Today, numerous PC & browser based project management software exist and they are finding their way into almost every type of business. One of the most common project management software tool types is scheduling tools. Scheduling tools are used to sequence project activities and assign dates and resources to them. The detail and sophistication of a schedule produced by a scheduling tool can vary considerably with the project management methodology used, the features provided and the scheduling methods supported".

1.1.1 Primavera

"Primavera.-is the world leading provider of project, program and portfolio management software solutions. It provides the software foundation that enables all type of business to excel in managing their portfolios, programs, projects and resources".

1.1.2 Milestone Professional

"Milestone Professional-It is a fast and easy software to schedule, manage and report projects. It has Gantt chart software for creating presentation ready project-management chart and also works with Microsoft project. It can function as an add-on tool to Microsoft Project. It can create presentation reports, combine cost and schedule, manage large projects, create reports from Microsoft Office Project, calculate earned value, and distribute schedule via print, Email and Internet. Project Control".

1.1.3 Candy-Construction Project Modelling

"Candy-Construction Project and Project Control- is a single-package, project control system designed by construction professionals specifically for the construction industry. Estimations, valuations, planning, cash flow and forecasting components can be integrated. The operation in Candy is similar to manual methods. One of candy`s most powerful features is the unique facility to dynamically link money and time, i.e., linking the bill of quantities to the program of work".

1.1.4 AMS Realtime Projects

"AMS Realtime Projects-is powerful, easy-to-use tool that provide integrated project, resource scheduling and cost management. It support the needs of individual project managers and provide consolidation, aggregation, analysis and management through powerful mult-project facilities".

1.1.5 Project KickStart

"Project KickStart-helps save time and money by organizing thought quickly with easy user interface. It has straight forward task management and progress tracking, both of which are essential for efficient, successful projects. It other features include basic budgeting and cost tracking. It also support Gantt chart to keep the project on time-or better still, ahead of schedule-and helps in keeping the project organized with centralized document repository".

1.1.6 Microsoft Project

"Microsoft Project-is a popular software offering a number of functions such as scheduling, resource levelling, tracking and reporting, and in-user friendly manner. In appearance it is almost like a spreadsheet. Preparation of schedule and identification of critical path are easily achievable in MS Project. MS Project distinguishes between work resources and material resources. Tracking is possible by entering the information on percent completion of task. The newer versions are equipped with work breakdown-structure tools, risk analysis tools and multiple project-planning tools".

2. METHODOLOGY

The result presented here were obtained from 22 construction companies in Chennai. An open ended questionnaires designed for this purpose were distributed among those construction companies, of the 65 questionnaires distributed, 50 were returned while 15 got lost. 28% of the respondents to these questionnaires were project managers, 24% were engineers, 20% were company executives, 12% were site engineers, while 16% falls under others. Building construction constitutes 46% of the project involved by the construction companies, 36% Road construction, 2% Water project, others represent 14%, while 2% did not provide this information in the questionnaire. With the regard to the work experience of the respondents, 36% falls between 6-10 years, 32% between 1-5 years, 18% between 11-15 years, while 14% greater than 15 years. The data of the questionnaire survey was analyzed using (SPSS) software. The mean value as well as rank of each of the constraints affecting the proper utilization of computer application software was obtained.
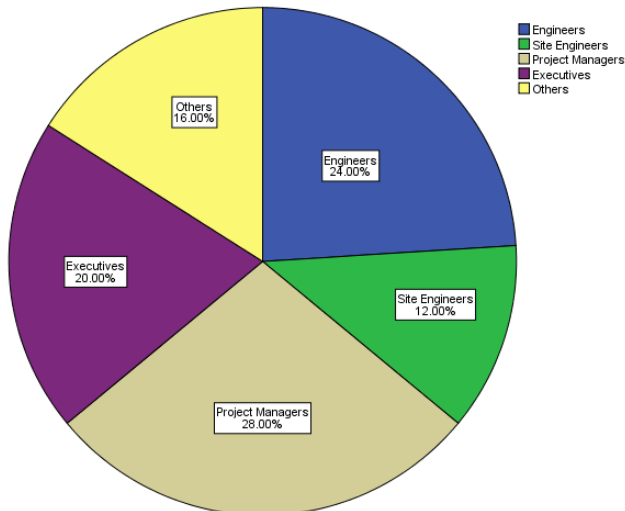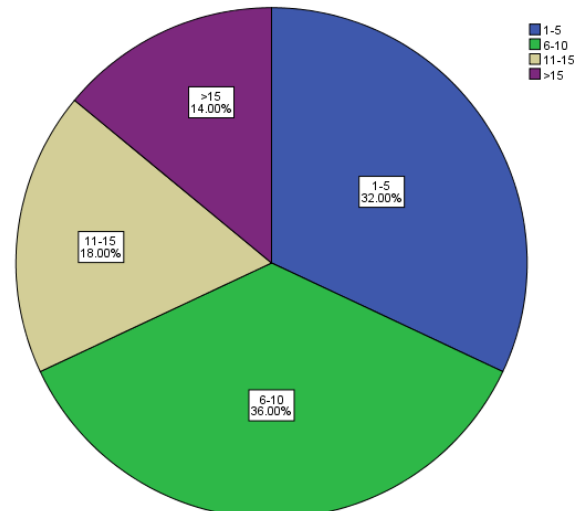
Chart-1: Respondent's position
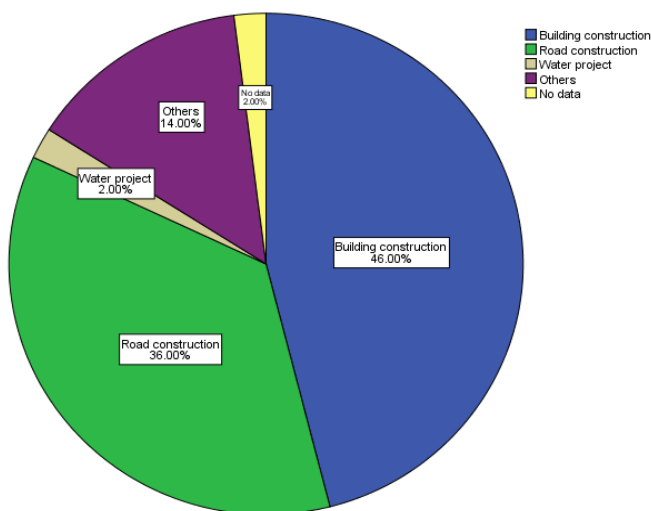

Chart-3: Relevant work experience

3. RESULT AND ANALYSIS

The table 1 below show the analysis of the constraints affecting the proper utilization of computer application software in resource management, the analysis is based on the response of the professionals working in some of Chennai construction companies, which includes, Engineers, Site Engineers, Project Managers, Executives, among others. The type of analysis used for the study is descriptive analysis. The mean value of each of the constraint as well as rank were obtained using SPSS Software, and arranged in descending order.

Chart-2: Type of project involved

Table-1: The result of the Constraints affecting the proper utilization of computer application software for resource management using SPSS Software.

S/N	Benefit	N	Minimum	Maximum	Mean	Rank
1	Non understanding about software potentials	50	2.00	5.00	3.5200	1
2	Lack of qualified personnel to use the software	50	1.00	5.00	3.4400	2
3	Unaware of most of the resource management software available in the market	50	1.00	5.00	3.3200	3
4	Communication gap between software vendors and users contribute to non-understanding of the full scope of the software	50	1.00	5.00	3.3000	4
5	Greater know-how required from staff	50	1.00	5.00	3.2600	5
6	Lack of training and supports	50	1.00	5.00	3.2400	6
7	Required outdoor training in dealing with the software	50	1.00	5.00	3.2000	7
8	The company find it difficult to develop it In-house software	50	1.00	5.00	3.1200	8
9	High cost of training on use of software	50	1.00	5.00	3.0600	9

10	Time and resource requirement tackled our effort to develop our In-house software	50	1.00	5.00	3.0400	10
11	Virus attack may lead to loss of data	50	1.00	5.00	3.0000	11
12	The resource function of the software used for resource management is not up to expectation	50	1.00	5.00	2.9400	12
13	Limited abilities for resource management	50	1.00	5.00	2.9400	13
14	Complex to use	50	1.00	5.00	2.9200	14
15	Non compatibility in hardware/software selection	50	1.00	5.00	2.9000	15
16	Crashing problem	50	1.00	5.00	2.8800	16
17	Difficulty in understanding the communication medium used in the software	50	1.00	5.00	2.7800	17
18	Software need for regular update	50	1.00	5.00	2.7600	18
19	High cost of the software	50	1.00	5.00	2.7600	19
20	Non suitability for the intended application	50	1.00	5.00	2.7400	20
21	Shortage of user friendly software	50	1.00	5.00	2.7400	21
22	Ready- made software not satisfying the need of the company	50	1.00	5.00	2.7200	22

Table 1 above show that, non-understanding about software potentials is the major problem affecting the proper utilization of computer application software used in resource management, and is ranked 1st, lack of qualified personnel to use the software is ranked 2nd, unaware of most of the resource management software available in the market ranked 3rd, followed by communication gap between software vendors and users contribute to non-understanding of the full scope of the software, and is ranked 4th, while high cost of the software, non-suitability for the intended application, shortage of user friendly software, ready- made software not satisfying the need of the company all obtained the least mean, and were ranked 19th, 20th, 21st, and 22nd respectively.
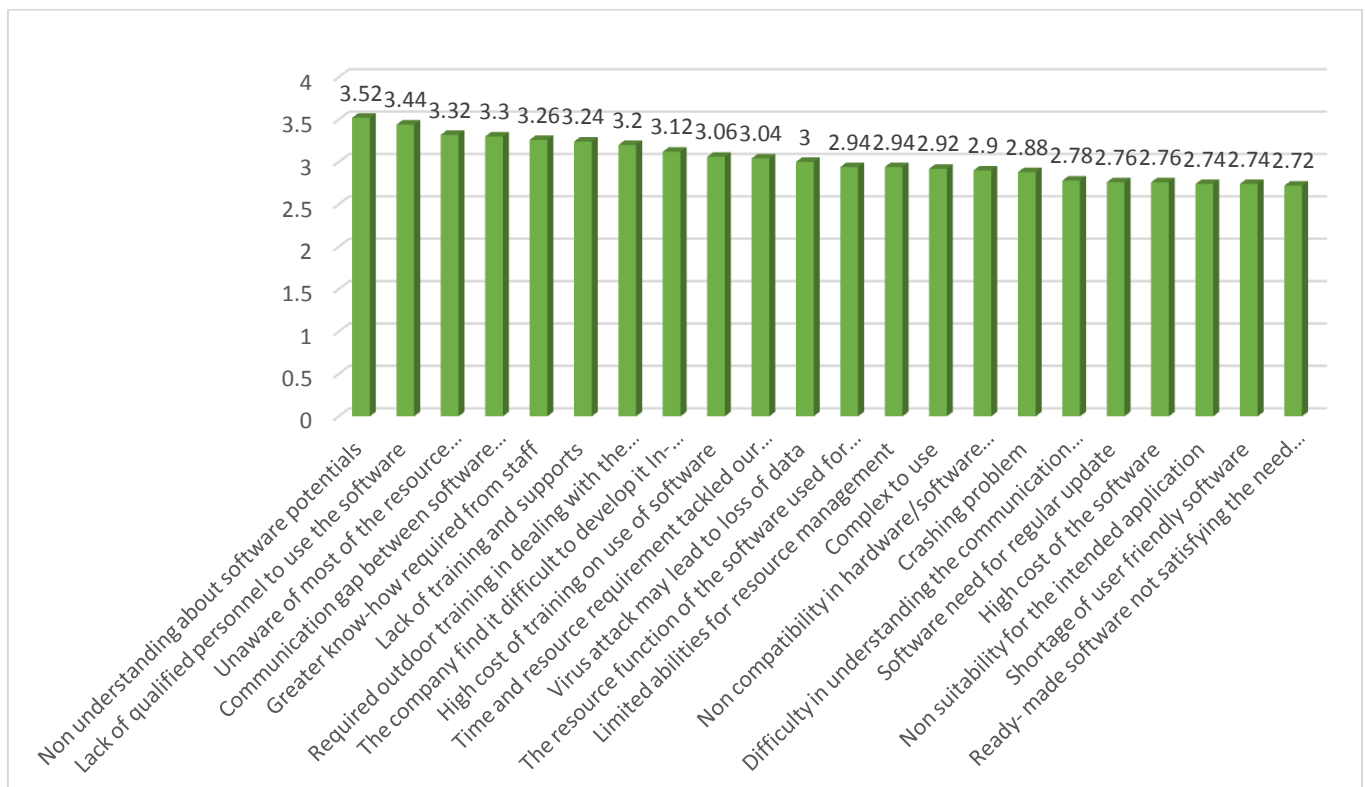

Chart-4: Representation of results

4. DISCUSSION OF FINDINGS

Even though most of the construction companies in Chennai were using project management software in resource management, but based on the study carried out, and the result obtained from the analyzed data using SPSS, it is indicated that, there are still some obstacles which hinder the proper utilization of computer application software in resource management. Some of the obstacle as seen in the analysis of the data, includes non-understanding of most of the capabilities of project management software used in resource management, these capabilities were not well understood by most of the project managers and other construction engineers who are directly involved in the activities of the construction project, there are also lack of qualified personnel to make best use of the software. Another obstacle is unaware of most of resource management software available in the market, therefore most of the project managers and other construction engineers who are directly responsible for scheduling of construction resources were only aware of few project management software e.g. Primavera and MS project. Communication gap between software vendors and users also contribute to non-understanding of the full scope of the software, greater knowledge from project managers and other construction engineers also needed in order to make effective use of the software for proper planning, scheduling and control of construction resources.

5. CONCLUSION

Having analysed the data in table 1 above, and having explore the various constraints affecting the proper utilization of computer application software in resource management, it is now come to conclusion that, for project managers and other construction engineers to make best used of computer application software in resource management, there is need for the construction companies to overcome the identified obstacles which hinder the proper utilization of resource management software, this can be done through training of the relevant staff as well as helping them explore the newly software used in the other part of the world for the purpose of scheduling resources.

SPSS (Statistical Package for Social Science) Software used to analyse the data really helps in the speedy and accurate interpretation of the gathered data from the respondents.

6. RECOMMENDATION

In order for the construction companies to fully utilize the potentialities of the construction management software in the area of resource management, the following should be taken into consideration:
(a) There is need for training and retraining of project managers and other construction engineers on how to make best use of project management software in resource management
(b) The training could be in-house training, by inviting experts in the field of project management software to train those involved on how to use the project management software properly, or by sponsoring them to be attending conferences, workshops, symposiums, as well as other outside training in order to acquire the knowledge and expertise, which will in turn improve the productivity of the companies.
(c) There is need for the construction companies to explore various project management software available in the market to be used for resource management, this will reduce the burden as well as complexity associated with some of the software in used.
(d) The cost of training project management software usage should be made minimal, but reasonable, to enable the teaming UG, PG and other students acquire more training on project management software usage, in addition to the training they received in their various institutions of learning, this will boost their competency when they come to work in the construction companies and minimize the cost of training construction workers.

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