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Cost Bearing of Individual Project due to Use of Modern Software in Project Management and Detailed Analysis of Same for Making Cost Effective Path

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Abstract: ***Project management in India is witnessing impact of IT Development on its core field. Particularly in India project management had undergone lot of changes. Post industrialisation era demand of skilled project management had reached a statutory requirement. Introduction of RERA enforced private developer and builders to develop the project in stipulated time. The requirement of quick update, organised effort, errorless drawing and documentations, integrated approach demanded use of IT infrastructure alike other Field. As per the other infrastructure Cost of modern use of Software's demanded Financial Planning and Consideration for Annual basis. The study aims at study of IT infrastructure required for individual project. To list out strategies to control this cost and make a cost-effective way.***
Keywords: IT infrastructure for Project management, Cost bearing,

I. INTRODUCTION

As economy of India is moving towards 3rd largest economy of world. The development speed is multi-fold and complex nature of building and infrastructure projects. At the same time lot of project managers are keen on development of projects in Modern software's. every development had its own Positive and negative impacts. Introduction of modern software reduced the manual processes involved in project management to major extents. But it also demanded expenditure on IT infrastructure required for such projects. In this research we are focusing to find out cost of such infrastructure software and hardware both on to overall project cost. Develop strategies to reduce cost bearing of such infrastructure on to individual project. During course of working in the field of Construction management, it is necessary to develop the ecosystem of office working. To make optimum use of assets and resources available with us. Then only we can plan to have maximum profit and cost-effective solutions for our client.

While working with various companies particularly MNC companies my observation was that they spend substantial amount for Software and hardware. In comparison with project management particularly related construction management companies, such infrastructure is always a second priority.

To know the problem, I made initial research and discussions with professionals. The main issue which came to my mind is that, "in the era of informatics, construction industry lagging in use of IT development". The problem also points out majorly non-use of Project management technique.

Famous case study for failure of IT infrastructure management is Airbus 380. The case study details are published further in which due change in IT system the Company had loss of 200 Million Doller. This is direct example of failure of IT Management and Cost impact of same on your Project Management.

To address and to find out solution this problem My research was pointed in area of cost working of Software and hardware for project Management. The reason of such lag is majorly nonavailability of fund allocation for upgradation of infrastructure.

A. Discussion for Cost impact of IT in individual project due to use of Modern Software in Project Management

Spectrum of construction industry is quite large and diverse in nature. To work in project management the spectrum of hardware and software infrastructure starts from regular operating system and MS office for basic working to more advance software like BIM. It is important to make the equivalent analysis and balance study. we selected software more commonly used in India for project management purpose.

There are two parts of this study-

1) First part is to find out factual data related use of manpower engaged in project management, also to find out IT infrastructure i.e. software and hardware engaged for project management purpose.
2) Second part is to calculate the cost bearing of same infrastructure in respect to overall cost of project, in a way make trend graph to mark the symbolic understanding of pattern behaviour of same the preliminary picture shows-

a) The development of mobile phone is also impacted IT infrastructure. Though there is no trace of such cost which can be marked.
b) New era of urbanisation is growing in India current picture is 35% of total population urbanised. It is expected to reach up to 60% by end of 2030. This will demand massive requirement of urban infrastructure like housing, hospitals, hospitality etc. To build this infra-India will need more sophisticated project management.
c) Deep penetration of IT can be seen in accountancy sector. UPI payment portal is the best example of cashless economy. Similarly, India will witness Paperless project management.
d) MIDC (Maharashtra Industrial Development Corporation) is already shifted to Paperless Building Permissions through Pre-DCR.

It becomes utmost Important to make financial Provision for the IT infrastructure in Planning Project.

B. Need of Study

Project management Companies always quoting on various project and tenders. Generally, the consideration is actual cost incurred and profit percentage. While estimating same it is important to factor the Realtime expenditure.
Now a days most of MNC and even government sector PSU are Enforcing use of legal copies of software while providing services to them. There are two reasons for same

- In case if the firm providing the service comes in legal dispute of unauthorised use of software their project is at stack.
- As promoters of project client's reputation is at stack if any dispute arise and there project name is connection to such dispute

Non-consideration of such cost make cash flow issues for the project managers. For example, cost of BIM software individual licence for one year in approximately 1.8 lack to 2.35 lack. In absentia of cash flow provision of such infrastructure it is difficult to provide services based on same.
Cash flow of project is monitored with the help of modern software analysis. Rather most of the developers now a days make project plan in ratio of material consumption. Such accurate material analysis is only possible with modern software.
Above all reason indicate need of analysis in making financial provision for the projects.

C. Problem Statement

Project management field is also heavily dependent on the modern software and hardware alike the other field. Many project lag in schedule as well as non-performance issue due to noncompliance to IT infrastructure.
This research is focused on –
"Cost bearing of individual Project due to use of modern software in project management and detailed analysis of same for making cost effective path".

D. Scope of Subject and Limitations

Scope of such cost is vast and needed to control for research purpose. This research is focused on cost implication of IT infrastructure. Which considers part Software cost and hardware required for same. Here we are focusing on project development majorly in cost range of
Bracket I- 0-20 cr
Bracket II- 20-100 Cr
Bracket III 100 and above

There are project requirements of 500 cr above are totally different and the infrastructure setup is totally different. To make the alignment of work the case study is being selected in same pattern.

E. Background Work

Detail study of literature was done particularly about similar area of research. Two different paths are taken- similar research done in relevant to construction management. Also understanding of cross trade techniques of analysis to construction industry. Based on the literature review there was no paper found speaking about the cost of modern software though there were few papers talking about use of specific software in Project management. Also after literature review common conclusion is modern software are used in construction industry predominantly and they do have some cost impact on overall cost of Project.

Factors considered for making such research are –

- Use of modern software to make actual tracking of project.
- Use of modern software to make cost effective tracking and integrated approach to project.

Till today Project management is taking the decision on there base knowledge and then it is validated with the help of modern software. Whereas path should be using modern software for making framework and take decision based on output of same.

F. Literature Review

To make this report reference papers are studied are as below-

PROJECT MANAGEMENT IN CONSTRUCTION: SOFTWARE USE AND RESEARCH DIRECTIONS

G. Flow Chart of Work

II. METHOD

To start with in this research my focus is to more practical approach rather than theoretical analysis. My research is divided in to four parts-

A. First phase

Research on topic and literature study related to topic. But also streaming similar cost baring in other field particularly mechanical project where in comparison can be made if we can simulate similar model in Construction industry. Along with this to study paper presented on similar topic in Bharat as well internationally.

B. Second phase

This phase is data collection. As mentioned previously to limit the scope research will be based on 3 sizes of project based on cost- Project Cost- 5-10 Crores, Project cost-35-50 Crores, Project Cost of 100-200 Crores. Along with this to find out the manpower involved in these categories of project. The entire team to be involved in same for coordination. Collection of data related to cost of individual software used in such project. Calculating idol time for software and cost of same on project.

C. Third Phase

Making Live Case study for similar project. Also making Bookcase study for project done in past. Making analytics and making mathematical calculation of same. Coming to inference based on study and finalising cost.

D. Forth Phase

The Conclusion phase wherein research will focus working out cost of individual project on account of IT and Infrastructure required for Construction/ project management in construction industry.

To make statement on the development required for such software development. Precisely making analysis that will guide further research of for people to develop the resources on the same line.

1) *Expert opinion*
2) *Project Category Analysis:* The project selected had spectrum of non similar projects. The Project are sampled from private developer, Multinational companies,
3) *Sampling Procedure:* The sampling procedure is tracing variety of project along with cost margin. Selection shows diverse project from institutional, industrial, and other type of project. To test the same on the expert basis experts count was taken for reference.

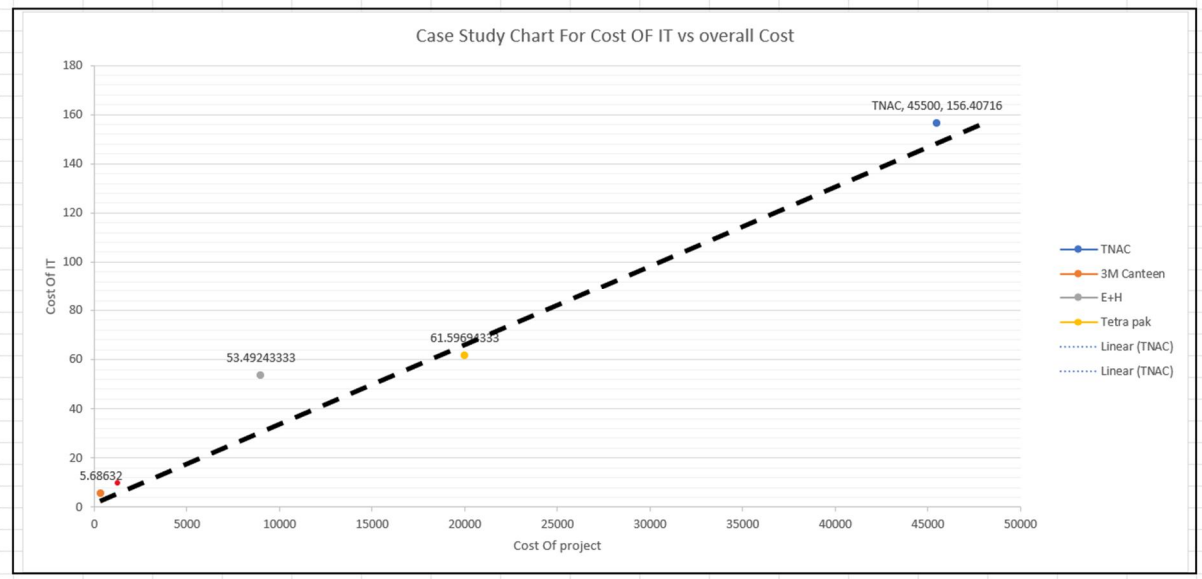
III. RESEARCH ANALYSIS

Based on the case studies we have conducted the report shows similarities in tracing cost graph. The reference case study shows similarities in allocation cost bracket for every project. As well as the data from working professional show similar result that of case studies done. To make a statement the data was entered in excel sheet for making percentile. When we link the same result are clear and give direct indication for our conclusions.

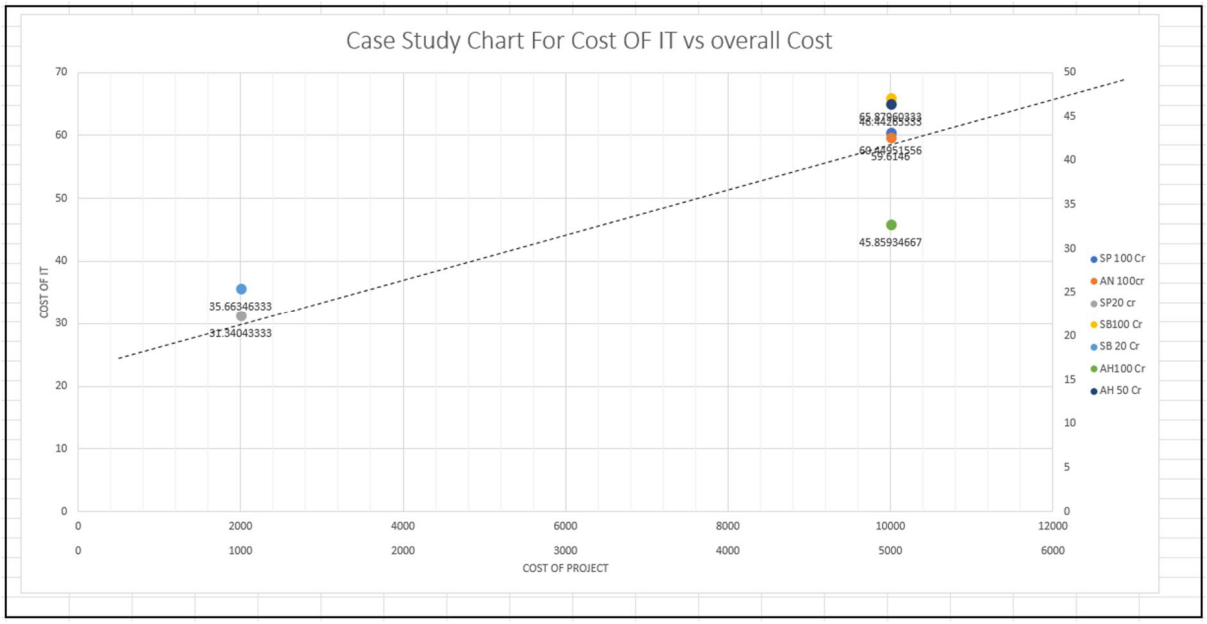
Data collected shows working sheets with similar result although the survey sheet are filled by different people from different organisation. Mainly the percentile for IT infrastructure is increasing as per increase in cost of project.

A. Findings

When we plot graph of cost of IT vs overall cost of building it shows a straight rise in cost of IT infrastructure as the cost of Project increases.



The graph of case study analysis Cost of IT infrastructure vs overall cost is almost similar to that of similar graph of Survey Form.



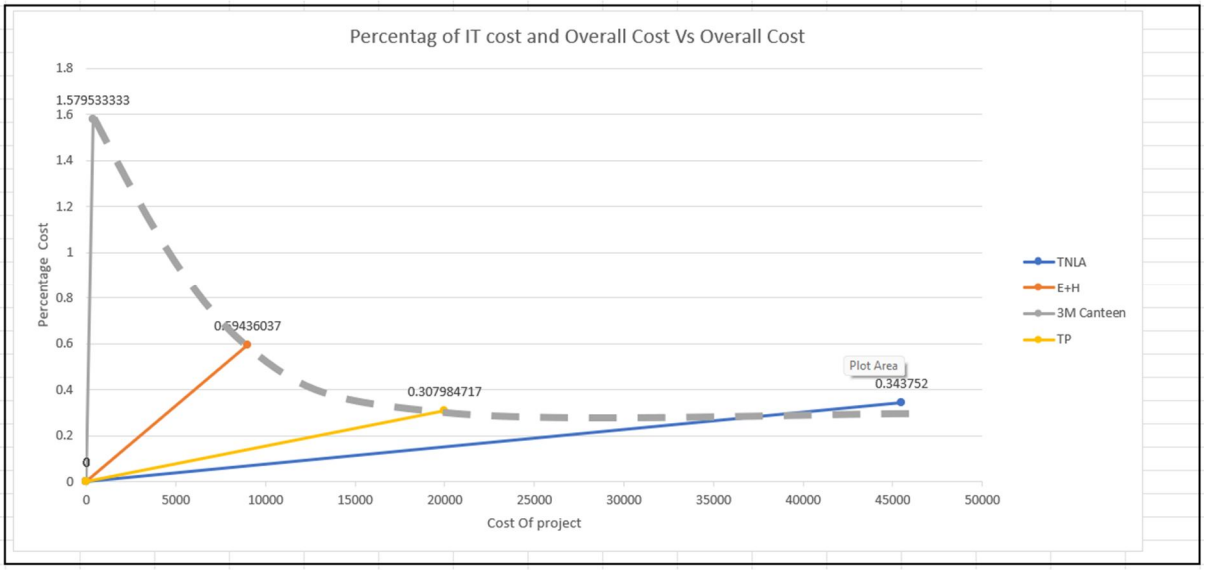
To know the pattern for understanding of cost of IT infra in Project we need to trace second level of graph.

B. Proposal

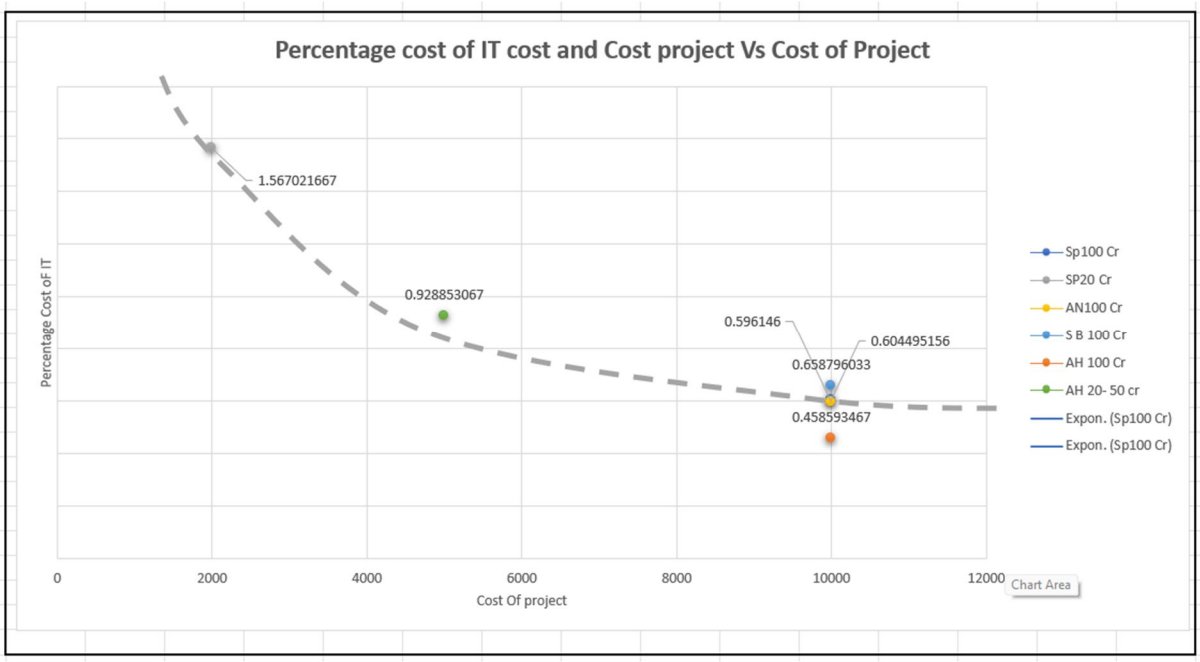
It could be proposed that cost of IT infrastructure in Project management is quantified for various reason. Major reason is it directly impact project management. If the ratio

IV. CONCLUSIONS

To know the pattern of percentile of IT Cost Vs Overall Cost of Project Shows Parabolic Curve remain constant after a limit. This shows a particular pattern of cost impact. The cost impact goes on increasing in overall cost. But the ratio of cost impact to overall cost goes on decreasing as cost of project goes on rising from 5 cr to 50 cr upto 450 cr. But further percentage remain constant for cost of project goes above 500 cr.



Similar to Case study of the Survey forms show exact result.

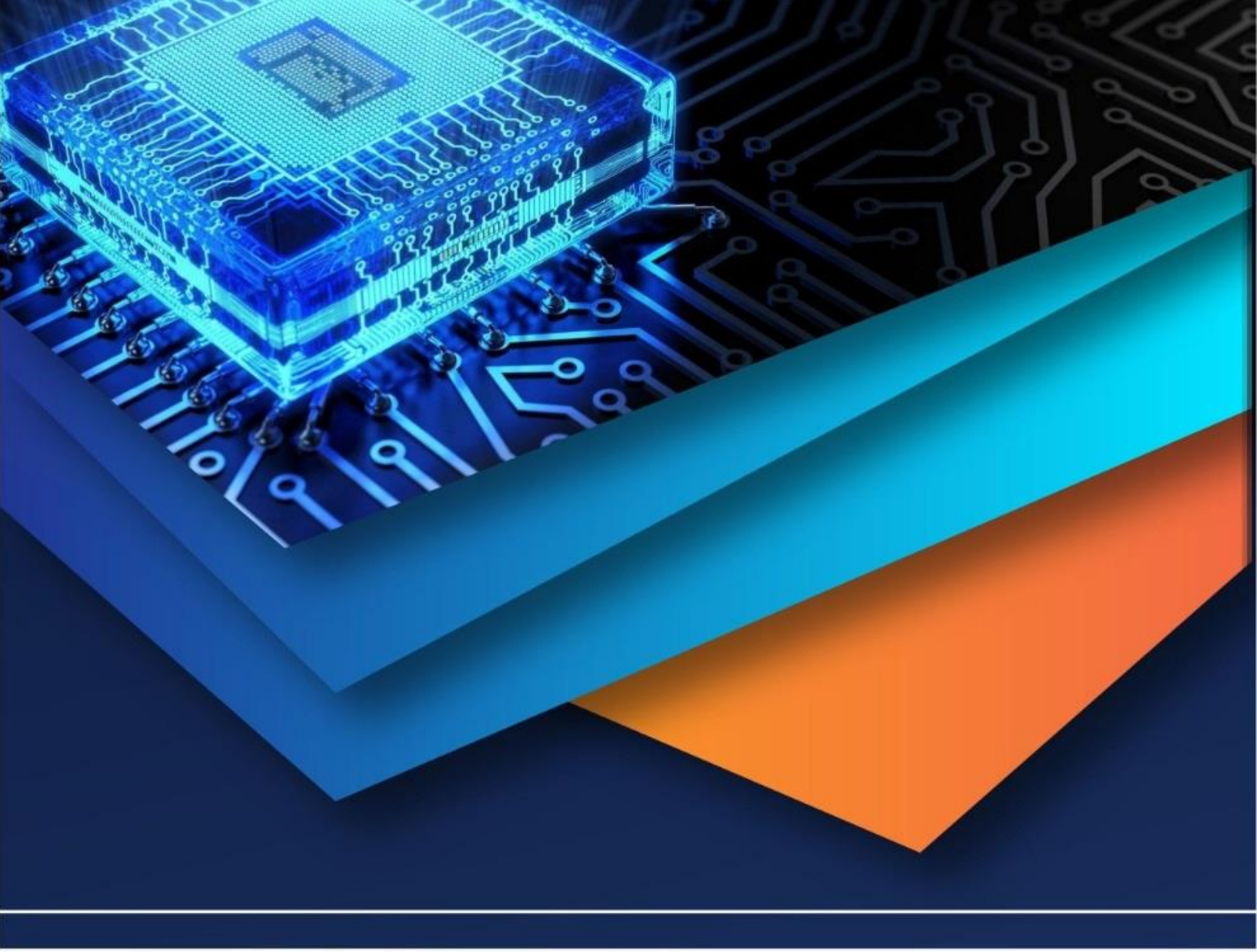


The parabolic curve of Case studies and Survey forms are so similar that we can narrow do conclusion below;

- Cost of IT infrastructure for project management is directly proportional to cost of overall project.
- Ratio of cost IT infrastructure to over all cost vs cost of project is high in smaller cost project and reduces as the cost of projects increases. That mean as the project cost increases ratio of IT infrastructure goes on reducing.
- The parabolic curve of the ratio of cost of IT infrastructure and overall cost remain constant as the project cost increases. The factual ratio remains in range of 0.45 and 0.60.
- We also can trace cost of individual category of software vs overall cost of IT infrastructure.

REFERENCES

[1] www.projectstakeholder.com Case study posted by Peter Gilliand PMP on 16 Jan 2008
[2] PROJECT MANAGEMENT IN CONSTRUCTION: SOFTWARE USE AND RESEARCH DIRECTIONS
[3] Serge Bojinski.(2023 feb). How has construction project management software transformed. Construction 21 international, Volume(Issue), Pages. https://www.construction21.org/articles/h/how-has-construction-project-management-software-transformed-home-building-today.html
[4] Matthew J. Liberatore,1 Bruce Pollack-Johnson,2 and Colleen A. Smith3 .(Journal of Construction Engineering and Management ,Volume 127, Issue 2), Title of the work. Website-https://ascelibrary.org/doi/abs/10.1061/(ASCE)0733-9364(2001)127:2(101)
[5] Gaurav S. Narlawar, N. B. Chaphalkar, Sayali Sandbhor . Journal. (INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 8, ISSUE 08, AUGUST 2019). Title of the article- Application Of Primavera Software In Management Of Construction Project: A Review. https:// www.ijstr.org
[6] Kirsten Mann (February 20, 2019). Title of the work- What the Construction Industry Can Learn from Software Development: Five Useful Practices. Website. https:// blogs.oracle.com/construction-engineering/post/what-the-construction-industry-can-learn-from-software-development-five-useful-practices
[7] A A Ermakov, A N Korkishko, S A Smirnov and A S Shapovalov (2020, jan). Title of the work- Modern technologies of project management and implementation in the construction industry. Conference- IOP Conf. Series: Materials Science and Engineering 952 (2020) 012024, doi:10.1088/1757-899X/952/1/012024



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