



# COST REDUCTION IN CONSTRUCTION PROJECT

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## ABSTRACT

Construction and non-construction projects both account for a large portion of Iran's yearly budget for infrastructure development. The lack of a specific system for tracking the real expenses of different operations is one of the major weaknesses of the country's management construction. Forecasting, planning, controlling, determining costs, analysing, and evaluating are all aspects of project cost management (PcM). Because of poor cost management, all of a project's components are affected by a lack of financial resources. If you need to monitor rework occurrences and make sure projects are running well, managers might be a great help to you. People's happiness and project costs are negatively affected by rework. In order to determine the true cost of rework projects, several research have been carried out. It is possible to identify three main reasons of rework: variables relating to customers, design, and subcontractors. Cost management and rework are examined in this study. Management expenses and rework factors are covered in great depth, and the right strategies for detecting and managing rework to lower the overall cost of building projects are referred to.

## INTRODUCTION

Planning and project management, low-cost materials, cost-effective technology, and alternative building techniques may all be used to build low-cost housing. Making low-cost housing available to everyone is made possible by profiting from the usage of these approaches. The phrase "affordable housing" is used to describe a kind of dwelling that is within the reach of those with modest to moderate means. Urbanization has led to an increase in demand for low-cost housing complexes. In order to enhance the quality of life for those who are most important to us, we need to pick construction materials that are appropriate for the

local context. Human settlement success requires innovative ways that take into account both energy and environmental concerns. That's what sustainability in urban dwelling is all about.

Environmental, economic, and social considerations must all be balanced with technological considerations in order for a sustainable housing project to be successful. Engineering and construction materials account for up to 60 percent of the entire cost of a low-income housing project, according to new research. As a result, walls are responsible for up to 50% of the entire cost of materials and up to 40% of the total time spent construction. The kind of material used to construct a wall, as well as the methods of production and the amount of labor required, are all important considerations when making this decision. Building design, planning, material selection, and construction are all covered in great depth in this article.

A Finnish professor named Lauri Koskela first proposed the idea of lean construction after attending the National Construction and Management Conference. A new product theory, elimination of waste and non-value-added activities in the construction process, and a new approach to production efficiency are just a few of his recommendations for how the construction industry can benefit from and learn from lean manufacturing principles, technology, and methods. And he was certain that this new approach will have a significant impact on the construction sector in the coming years. As a construction project management tool, BIM is a kind of information technology that can combine numerous building information databases and model and parameterize the complete construction process. It wasn't until recently, however, that the relationship between BIM and lean building concepts was studied as a process. Lean thinking, according to Hamdi, Olfa and Leite, Fernanda IGLC , was the only strategy employed to enhance the entire construction project's models. BIM and lean construction have been shown to work together in several projects. On the basis of BIM's core functions and lean construction's key technologies, Bhargav A. et al. (2019) developed a coupling matrix between the two and found that BIM can help implement lean construction more efficiently, reduce waste, and promote continuous improvement throughout the project's construction process. Through case studies, Yong-woo Kim et al. (2011) found that Lean Construction and BIM had a significant impact on the total project delivery. Construction project teams may benefit from a closer working relationship between the two.

BIM technology and lean construction play an important role in building projects, according to Chinese academics. With BIM application platform, the concurrent engineering and pull production of lean construction system can be carried out in a considerable way , as stated by Xu et al. As a consequence, the project's progress, costs, quality, and goals may be met; in addition, the BIM application environment can be continuously optimized under the supervision of the lean construction system, resulting in a win-win outcome. A single lean concept may lead the implementation of several BIM technologies, and each BIM function supports multiple lean principles. Lean construction and BIM technologies may deliver maximum value to projects only if they are continuously explored and discovered in practice.

As Indian construction sector has grown rapidly in recent years, the number of building projects has increased year after year, and the cost of each project has risen substantially in tandem. In order to satisfy increasing customer demand while also keeping costs under control, construction firms are now faced with a dilemma: how to expedite the building process, eliminate waste, while still maintaining the highest possible level of quality in their construction and building products? BIM and lean construction are two new methods of construction management. And when they operate together, they may lower building costs and boost worker efficiency, and therefore produce the most value.

This is a model and a supporting system that will have a major impact on the construction industry when they are implemented later on. Using the lean construction and lean cost management theories and methodologies described in this article, construction costs may be kept under acceptable control. The project's lean cost management approaches are then discussed and analysed in detail using the BIM technology platform. A cost-control framework based on lean construction and BIM technologies is then established. The goal of this article is to give construction projects with references for maximizing value and minimizing waste, as well as controlling and reducing the overall cost of a project.

### **Cost Control Analysis of Construction Project Based on Lean Construction Theory**

First and foremost, this study employs value flow control. That is, the building process's non-value-added activities are kept in check, resulting in lower costs. And the product's value flow is the site where values and costs are generated, as well as a place where waste and expenses may be eliminated and controlled. Construction companies prioritise value flow management since it is critical to Lean Enterprise cost control and is the determining element in a company's competitiveness and success.



### **Project Design Sketch**

The first step is for construction companies to do a thorough analysis of the flow of construction and production value before starting any actual work. In this way, the flow of construction and manufacturing is improved. With this approach, non-value-added operations like as process analysis, design, and disparities control are all targeted at being eliminated. In addition, BIM technology is used. Building Information Modeling (BIM) helps prevent design mistakes and collisions during the design phase, as well as reducing design revisions and a lot of effort in the latter phases. First and foremost, the building firm has a very effective budget management throughout the product creation and design process. 70% to 80%

of a product's expenses are determined during the design phase, and the development stage has a larger impact on cost management than the subsequent phases, which only contribute for 30% or so.

The construction business uses lean construction theory and BIM technology in conjunction to create a detailed cost plan for the project, allowing it to keep most expenses under control. As a result, the product's design is more logical and cutting-edge. Owners, designers and contractors may use BIM visualization tools to detect and eradicate design flaws of all types in order to decrease the number of variables in the construction process, which is led by the project's BIM team. In addition, the project department applies the target cost management technique, assigns explicit duties to, and establishes defined working targets for each function Object [native code]in the early planning and design stages of the project. To keep construction costs under control and unanticipated expenses to a minimum, the project's goal cost is split into layers and assigned to each department's employees.

### **Technology for detecting collisions in the vehicle's interior**

The timetable for the basement in this project is quite constrained. So the project team determined that the pit support would be demolished when progress on the main structure of the construction is less than 0. If you're dealing with a unique situation in which the interior support is later demolished, you'll need to plan ahead to calculate the construction schedule and organise your team in advance. This means that builders can ensure that the on-site construction goes well, cut down on rework and secondary construction, and guarantee the project's completion date.

In order to create a BIM model based on the construction drawings, an on-site study is carried out. Once this has been done, BIM collision detection and visualization methods are employed to conduct collision detection to the basement structures and the interior support (Fig. 2). Thus, a total of 72 collisions have been discovered. Seven collision locations may be set aside for treatment, 33 collision points need mechanical repositioning (Fig. 3), and 32 collision points can be handled by drawing optimization. It is possible to shorten the project's timeline by 14 days, saving RMB 439,000 (approximately US\$6.129 at the time of this writing).



**Fig. (2).** Interior Support Collision Detection Model



**Fig. (3).** Collision Points Removal Beforehand.

#### The Pipeline Integration and Holes Reservation Technology

BIM collision detection and visualisation technology is used to identify and visualise collisions in the project's secondary basement structures and pipes. 549 collision points have been found. The locations and sizes of the reserved holes may be better understood thanks to an improved pipeline layout (Fig. 4). There are 10.6 m<sup>3</sup> of reserved holes in the basement walls' pipes, which saves RMB 18,020 in construction costs and avoids material waste caused by second-cutting and civilised building.

#### BIM Technology and Project Supply Chain Management vs. Cost Control

The project construction company (China Construction Eighth Engineering Division Co., Ltd.) utilises the BIM platform throughout the supply chain management process and performs well in logistics management via effective information management. BIM team updates construction project progress and dynamic circumstances in real time, allowing all parties in the supply chain to make appropriate arrangements for their work activities and regulate construction costs in line with real-time progress and dynamic situations.

Pull-based lean manufacturing concepts are used to provide raw materials, including a construction site layout where supplies are kept and large-scale material shipments. As a result, construction projects can avoid unnecessary delays or rework due to the inaccuracies in the supply of materials and equipment, as well as the incorrect equipment type, by integrating the BIM group's project and supply chain database for the materials and equipment suppliers into their own database.

Standard material and supply files are established by the construction company, which adheres to the lean construction concept of standardization management and utilises the real-time communication function of BIM technology in goods and processes throughout the building process. This is how it works: the builders must follow rules and regulations, and the administrators can easily create files, which saves both human resources and materials. In addition, the BIM team uses its platform to make a dynamic tracking of the inventory of materials and goods, records detailed contents such as their delivery, loss, production, recycling, and returns to the warehouse, and provides quick feedback on the status quo of onsite goods and materials to the project database. After that, each department on the supply chain is provided the

information necessary to govern the flow of products and materials, as well as the risks and uncertainties, as well as the purchase costs and inventory costs of the supply chain.

The "zero" storage technology of BIM is combined with project supply chain management to efficiently control the additional expenses created by the supply chain. Because of this, only the north side of the project's construction site can accommodate the storage, processing, and transportation of building supplies and cranes, totaling 427.2 m<sup>2</sup>.

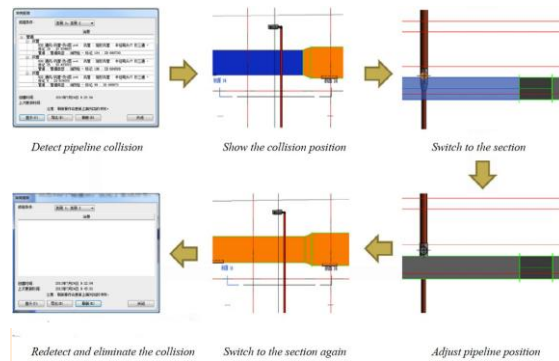


Fig. (4). Pipeline Arrangement Optimization

Accompanied by only 5.72 percent (Fig. 5) of its overall coverage area. Thus, the storage and processing of on-site supplies, as well as living and working circumstances on the building site, would be adversely affected by this change.

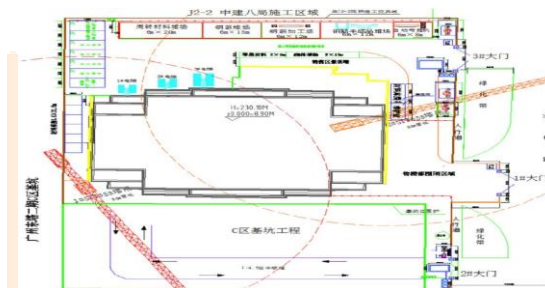
BIM technology is used to enhance the construction drawings and the construction programme in order to discover and then resolve construction difficulties in advance. Transfer the templates, steel, masonry, and other professional projects typically handled on-site to locations outside the site where they may be processed off-site (Fig. 6). A logistics management concept-based strategy ensures that each construction site receives the resources it needs in a timely and organised manner. The conclusion is that professional storage yards, onsite processing, and secondary delivery will no longer be required on the building site. In this way, the negative effects of insufficient space may be avoided, and undesirable aspects can be turned into advantages so that each goal can be effectively and positively realized.

### Controlling costs vs. advancing technology

To ensure that a construction project is completed on time and on budget, it uses a last planner system in conjunction with a BIM team. During construction, the project department encourages builders to take charge of their own specifications, allowing grassroots workers and teams to exercise their initiative and passion. BIM 4D tools, on the other hand, are employed to model and illustrate the construction process. The reduction of uncertainty is made possible by the BIM team's visualisation of the construction process for various departments. More constraints can be more easily realised or controlled by high-level planners, allowing them to better optimise construction processes, ensure work flow stability, and keep a lid on potentially unpredictable costs.

As a result of the project's complexity, ever-changing nature, and dynamic features, the project department should devise a dynamic plan for tracking the project's progress and convene weekly meetings with the

contractors to make summaries and create a plan for the upcoming week. In order to keep the construction schedule in a manageable range, each builder should effectively carry out the plan, so that the goal of cost control can be achieved. The weekly progress of the project can be assessed and measured by calculating the completion rate of the project plan. Analyze tasks that have been completed and those still in progress to determine what needs to be changed to make future work easier using the target cost management method. In order to ensure that the activities outlined in the forward-looking plan are carried out by each headman, the project must maintain a five-week outlook and set up a system of weekly onsite meetings to accomplish this. There are a total of seven factors that need to be taken into consideration in order to keep the work flow unimpeded, such as information management, material supply, personnel allocation, the supply of equipment, and completion of previous work. A last planer system and BIM technology are used to keep costs in check while maintaining a steady workflow. A thorough ergonomics study is necessary because the project's timetable is so tight.



**Fig. (5). Site Planar Layout Mapping**



**Fig. (6). Off-site Professional Processing.**

a study of the most important markets As a result, a digit-based management and control scheme is created on the basis of the BIM visualization analysis and automated calculation of work amount, in line with schedule requirements and data collected from the ergo-nomics research Since each work has a clearly defined budget, resources, and time frame, it's easier to plan ahead. Reminder software is utilised for each phase, as well as for the preemptive warnings.

BIM's process structure and direction are handled entirely by hand. As a result, the project's timeline and its various work processes may be reliably predicted.

### Analyzing the Effects



**Fig. (7). Logistics Plan Preparation Process.**

Lean construction theory and the backing of BIM technology have helped to improve the time once the stages listed above have been completed. the progress of a construction project, any problems with the project's quality or safety, the use of available resources, and so on. The project begins to employ BIM technology during the development of the basement. Interior support detection, pipeline integration, hole reservation, and progress monitoring and control are all made possible via the use of BIM technology. Construction on-site can proceed without hitches, and the resulting savings in labour and materials translate into savings of RMB 1.759 million for the local economy. The following formula is used to determine the economic benefits:

In advance, the BIM model is used to identify collision spots and address them appropriately. A total of 14 days may be saved by coordinating and organising ahead of time, resulting in a direct savings of around RMB 439,000.

As a result, a construction cost of RMB 18k may be saved by using BIM collision detection and visualisation technology to optimize pipeline arrangement and explain the positions and sizes of the reserving holes.

### LITERATURE REVIEW

Building techniques such as foundation, walling and roofing are examined in VivanW.Y.Tam (2011)'s research on the cost-effectiveness of adopting low-cost housing technologies in building. During cost-cutting, elements such as strength and durability, safety, and mental contentment take precedence. When compared to conventional construction techniques, low-cost housing technologies save builders 26.11 percent and 22.68 percent, respectively.

According to a research done by Kuo-Liang Lin (2011) on the subject of allocating human resources for remote construction projects' management teams, These companies adopt a hybrid strategy that alternates between using permanent employees and bringing in temporary workers from the surrounding area. To begin, a decision-making model for the allocation of human resources in distant construction costs is presented in this research. Study findings reveal that regular project administrators are preferred over local ones because they are better at reducing management defects and reducing project losses.



According to a study by F.Pachecotorgal et al. (2012), earth construction has a significant presence in less developed countries, while the mimetic temptations of more poisonous construction techniques based on reinforced concrete and bricks that are fired up are more likely to favour a shift away from an obvious unsustainable design. This article examines the environmental advantages of earth building, such as the use of nonrenewable resources, trash creation, energy consumption, carbon dioxide emissions, and interior air quality, in order to reveal and emphasise their significance.

According to a 2014 research by Tomas.U.Ganiron and his colleagues, the use of prefabricated components in a modular house may significantly reduce the cost of building compared to traditional techniques because of the materials and quick construction time period.

Natural materials like bamboo, straw, the use of bagasse-cement boards and panels, bagasse-PVC boards, Coir-CNSL board, Jute coir composites and coconut and wooden chips roofing materials were studied in this paper, and the potential of these materials was evaluated. Manmade materials such as fly ash, aerocon panels, ferro cement, rice husk were also studied and the potential of these materials was evaluated.

Bioclimatic architecture principles can be used in conjunction with low-cost construction techniques to create buildings that are environmentally conscious and responsible, as demonstrated by research conducted by R.Caponetto et al (2013) on ecological materials and technologies in low-cost building systems. Special blocks for sustainability and building ease were also designed at the same time.

To find the most cost-effective construction technology, Sengupta Nilanjan and his colleagues (2013) conducted a study of the appropriateness of cost-effective building construction technologies. They conducted a field survey, a literature review, and technical calculations in order to determine the most appropriate one.

Stabilized earth is an alternative building material on every continent and in every time period, according to a research by Mohannad sharif zami et al (2010) on the Economic Benefits of Contemporary Earth Construction in Low Cost Urban Housing State. According to this article, the economic advantages of utilising earth as a building material for urban housing supply in underdeveloped nations are examined and described.

Project management for low-cost housing in poor nations has been studied by John M. Hutcheson (2011), who found that the research included designs, cost control systems and communications, contract law and planning. Because of this, we may make judgments on design simplifications, the effect of insufficient local support, and hence the need of thorough and extensive early planning. Conclusions emphasise that self-supporting teams of multi-disciplined professionals and subprofessionals must be carefully gathered.

Researchers Iwuagwu ben UgochUKWU et al. (2015) conducted a research on local construction materials, and they found that housing inadequacy is cited as a major impediment to long-term urban development and progress. Ecosystems may be restored and preserved via extensive usage of recycled

materials. Waste management in green buildings guarantees the efficient use of resources and energy. The proximity of raw materials reduces transportation costs and pollution by reducing the amount of fuel required for transportation.

The goal of a study by David William Dobson et al. (2013) on sustainable construction was to determine whether or not the business community believes that sustainability entails higher costs, and whether or not using sustainable construction methods can actually save money by lowering a building's carbon output and operating expenses. After doing a literature review, a questionnaire survey was conducted to get industry feedback. When a facility is up and running, clients and designers alike will realise how incorporating sustainability into the design can save them a tonne of money on energy and maintenance expenses.

Sustainability targets for low-cost housing and applications may be achieved, according to a research by Bredenoord J (2016) on sustainable housing and building materials. Equally essential are measurements of community development and local physical development. Small housing cooperatives (or similar types of collaboration) and homeowners – or small groups – building and expanding their homes progressively are included in the last category. To achieve sustainability in incremental housing, it is necessary to have good design and good social structure and support.

### Objectives of the study

- ❖ To Study on Identify the latent features of each component and their effective management based on factor analysis of the influencing variables.
- ❖ If the prices of input elements fall, then the unit cost may be reduced as well. However, if such is the case, the decrease won't be long-lasting. In the long run, the cost of raw materials will grow because of a lack of supply due to natural reasons
- ❖ It is the goal of cost-cutting to lower the cost per unit of a product or service.

### Problem Statement of the Study

- ❖ Reacting rather than planning ahead of time
- ❖ Poor communication and visibility among stakeholders
- ❖ There is no standard Work Breakdown Structure (WBS)
- ❖ Underestimating the amount of time and money required
- ❖ Spreadsheets (lack of specific PM tool) are being used

- ❖ Ignoring the fact that managing projects involves managing people as well.

## Hypothesis of the study

HO: There is a big difference between reducing building costs and saving money.

H1: A construction project's cost decrease is not considerable or distinct.

## RESEARCH METHODOLOGY

### Research design

Descriptive research

### Research equipment :

Questionnaire

### Sampling method :

Non-probability technique

### Sampling frame

Convenience sampling

### Sample design

Data has been presented with the help of bar graphs, pie- charts, etc.

### Sources of data:

Both the primary sources and secondary sources of data have been used to conduct the study.

### Primary source:

The primary data for this study has been collected by approaching the salaried employees via internet (digital survey method).

### Secondary source:

The secondary data are collected from articles published on various websites (desk research).

### Plan of analysis

- Diagrammatic representation through graphs and charts
- Suitable inferences will be made after applying necessary statistical tools.
- Findings & suggestions will be given to make the study more useful

### Methods for Data Collection

- Primary Data
- Secondary Data

### Primary Data

Primary source of data was collected by questionnaire.

### Secondary Data

Secondary source of data was collected from

books

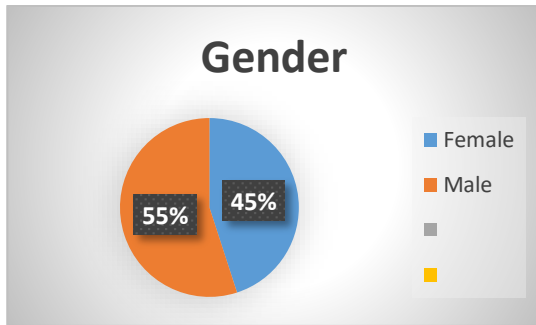
journals

magazines

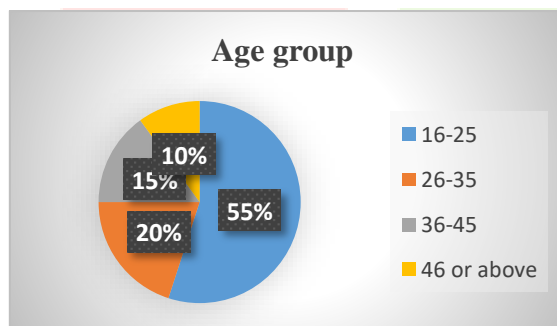
websites.

**DATA ANALYSIS AND INTERETATION****1. Gender**

Gender	No. of Respondents	Percentage
Female	90	45 %
Male	110	55 %

**Interpretation**

The above table and graph analysis represents that 45 percent of the respondents are married and the remaining 55 percent of the respondents are unmarried. Its interprets that Majority of the respondents found in the survey are unmarried.

**2. Age group**

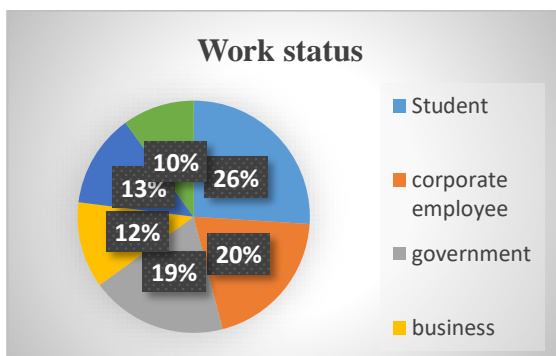
Age group	No of Respondents	Percent age
16-25	110	55 %
26-35	40	20 %
36-45	30	15 %
46 or above	20	10 %

**Interpretation**

According to the data in the tables and graphs above, 55 percent of respondents are between the ages of 16 and 25, 20 percent are between the ages of 26 and 35, and 15 percent are between the ages of 36 and 45. The percentage of respondents who are 46 years old or older is 10 percent.

## 3. Work status

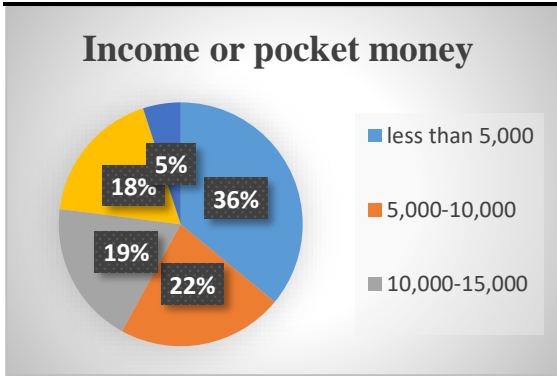
Work status	No. of Respondents	Percentage
Student	52	26 %
corporate employee	40	20 %
government	38	19 %
business	24	12 %
freelancer	26	13 %
unemployed	20	10 %

**Interpretation**

The following chart clearly shows that out of the whole survey item had to get the respondent's 26% students, 64% working and remaining 10% unemployed.

## 4. Income or pocket money

Income	No. of Respondents	Percentage
less than 5,000	72	36 %
5,000-10,000	44	22 %
10,000-15,000	38	19 %
15,000-20,000	36	18 %
more than 20,000	10	5 %

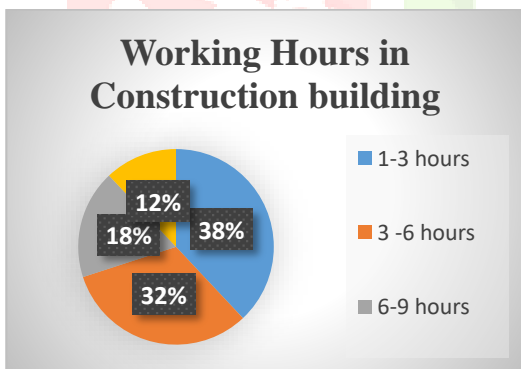


**Interpretation**

The following chart clearly shows that out of the whole survey, over 36% of the respondent’s income goes to workers earning less than 5000 and 22 percent of the pay goes to workers earning 5000-10000. 19% of the pay goes to workers earning 10000-15000,18% of the pay goes to workers earning 15,000-20,000 5% and more than is 20,000, This clearly shows that annual Income based classification of the Respondents.

**5.Working Hours in Construction building?**

Hours	No. of Respondents	Percentage
1-3 hours	76	38%
3 -6 hours	64	32%
6-9 hours	36	18%
more than 9 hours	24	12%

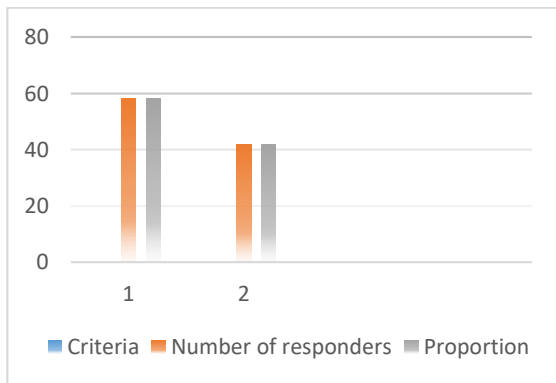


**Interpretation**

Out of all the polls, this graph clearly shows that, according to the study, 38% of respondents work in buildings, 32% for 3 to 6 hours, 18% for 7 to 9 hours, and 12% for more than 9 hours each week.

6.Cost cutting refers to measures implemented by a company to reduce its expenses and improve profitability

Sl Number	Criteria	Number of responders	Proportion
1	Strongly agree	116	58%
2	Agree	84	42%



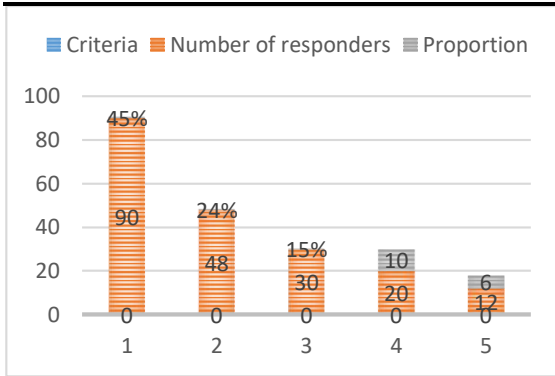
### Interpretation

This graph contained 58 respondents who strongly agreed, and 42 respondents who supported the statement. In all of the surveys, no one objected to the assertion. A company's efforts to lower costs and increase profits are referred to as "cost reduction."

7. In what ways does a safe working environment lead to content workers?

Sl Number	Criteria	Number of responders	Proportion
1	Strongly agree	90	45%
2	Agree	48	24%
3	Neutral	30	15%
4	Disagree	20	10%
5	Strongly disagree	12	6%



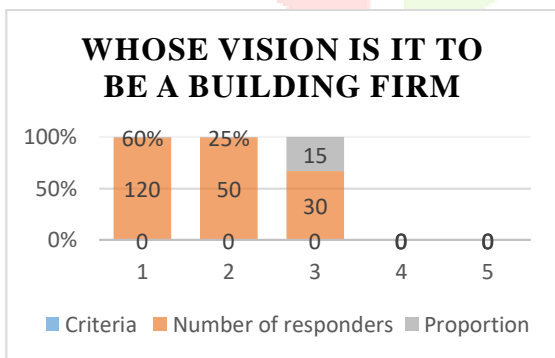


**Interpretation**

The chart above illustrates how happy employees are as a result of a secure working environment. 45 percent strongly agree, 24 percent agree 15% of respondents are neutral, 10% disagree, and 6% strongly disagree.

**8. Whose vision is it to be a building firm?**

Sl number	Criteria	Number of responders	Proportion
1	Strongly agree	120	60%
2	Agree	50	25%
3	Neutral	30	15
4	Disagree	-	-
5	Strongly disagree	-	-

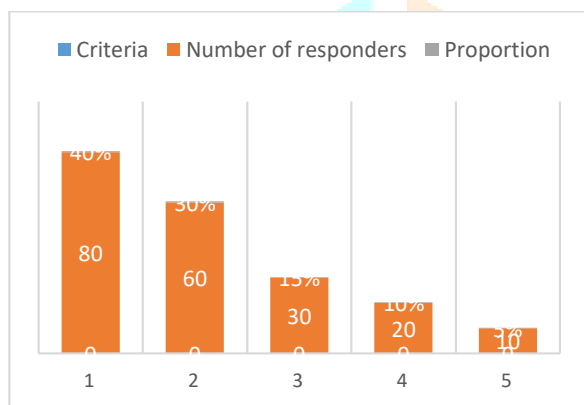


**Interpretation**

Above Graph explains To develop a corporation, who's vision is it, more than half More over two-thirds of respondents strongly agreed with the statement, with just a small minority disagreeing.

## 9. What are the cost reduction techniques?

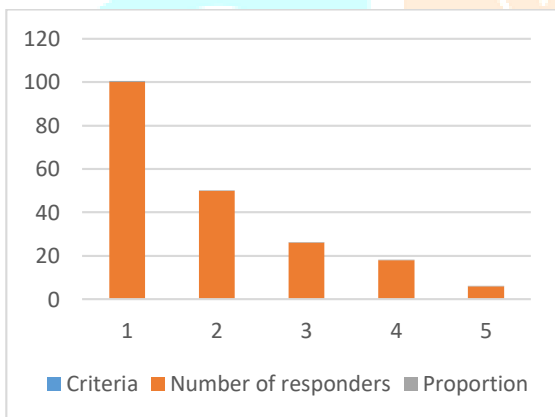
Sl number	Criteria	Number of responders	Proportion
1	Budgetary Control.	80	40%
2	Standard Costing.	60	30%
3	Simplification and Variety Reduction.	30	15%
4	Planning and Control of Finance.	20	10%
5	Budgetary Control.	10	5%

**Interpretation**

Above Graph explains the Simplifying and reducing the variety and complexity of products and services is 15% of the total cost-cutting measures, with budgetary control accounting for 40% of the total.

## 10. How do you create a cost reduction plan, Cost Reduction Strategies that Work?

Sl number	Criteria	Number of responders	Proportion
1	Encourage remote working	100	50%
2	Improve your negotiation skill	50	25%
3	Manage fuel and traveling costs	26	13%
4	Invest in technology solutions	18	9%
5	Cut employee costs	6	3%



## Interpretation

The above table and graph demonstrated that encouraging remote work by 50%, improving your negotiating skills by 25%, managing fuel and travel expenses by 13%, investing in technological solutions by 9%, Save 3% on payroll expenses Exactly how do you come up with a cost-cutting strategy, Effective Cost-Cutting Methods.

## FINDINGS

- ❖ The above table and graph analysis represents that 45 percent of the respondents are married and the remaining 55 percent of the respondents are unmarried. Its interprets that Majority of the respondents found in the survey are unmarried.
- ❖ According to the data in the tables and graphs above, 55 percent of respondents are between the ages of 16 and 25, 20 percent are between the ages of 26 and 35, and 15 percent are between the ages of 36 and 45. The percentage of respondents who are 46 years old or older is 10 percent.

- ❖ The following chart clearly shows that out of the whole survey item had to get the respondent's 26% students, 64% working and remaining 10% unemployed.
  
- ❖ The following chart clearly shows that out of the whole survey, over 36% of the respondent's income goes to workers earning less than 5000 and 22 percent of the pay goes to workers earning 5000-10000. 19% of the pay goes to workers earning 10000-15000, 18% of the pay goes to workers earning 15,000-20,000 5% and more than is 20,000, This clearly shows that annual Income based classification of the Respondents.
  
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- ❖ This graph contained 58 respondents who strongly agreed, and 42 respondents who supported the statement. In all of the surveys, no one objected to the assertion. A company's efforts to lower costs and increase profits are referred to as "cost reduction."
  
- ❖ To develop a corporation, who's vision is it, more than half More over two-thirds of respondents strongly agreed with the statement, with just a small minority disagreeing.
  
- ❖ Above Graph explains the Simplifying and reducing the variety and complexity of products and services is 15% of the total cost-cutting measures, with budgetary control accounting for 40% of the total.
  
- ❖ The above table and graph demonstrated that encouraging remote work by 50%, improving your negotiating skills by 25%, managing fuel and travel expenses by 13%, investing in technological solutions by 9%, Save 3% on payroll expenses Exactly how do you come up with a cost-cutting strategy, Effective Cost-Cutting Methods.

## SUGGESTIONS

The reality of the construction industry is that there are societies that build and sell and others that have started bankruptcy procedures or are close to bankruptcy because of an improper general management unadapted to actual economic conditions and especially because of a deficient financial manager.

Law expenses and profit and high movement have long been a well-known idea among business people from all over the globe. It may be time for Romanian businessmen to follow this rule. These cost-cutting techniques for construction projects, which have been based on interviews with both economic and technical personnel, have been taken from the day-to-day reality of a construction society, which tells us how to better use materials and how to rationalize their consumption and labour, how to obtain maximum efficiency with low costs from the use of mechanisms, and so on.

## CONCLUSIONS

Humans have a fundamental desire for safe, secure, self-esteeming, social status, cultural identity, fulfilment, and accomplishment in terms of their housing. Based on an evaluation of many techniques of reducing costs and achieving sustainable and environmentally friendly buildings, natural resources, renewable materials, ecofriendly building materials, local materials, and creative technologies may all be employed in the construction of low-cost buildings.

As the construction business continues to grow rapidly, construction firms are seeking for innovative strategies to reduce building costs in order to increase their profit margins.

There's no question that the early success of lean construction in the building sector is a dosage of heart stimulant for corporate management, which is a valuable lesson for the construction project's cost control. Incorporating lean construction principles with BIM technology helps keep building projects under budget. The case study in this article shows how lean construction theory and BIM technology may help construction projects become more efficient, minimise non-value-added operations, keep costs under control, and ultimately increase project value and fulfil customer expectations. As a result, the case serves as a practical guide for cost management in building projects by introducing and using the lean construction theory and BIM technology.

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