

USING BUILDING INFORMATION MODELLING SYSTEMS (BIM) IN CONSTRUCTION PROJECTS

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ABSTRACT

This study aims at the possibility of using the building information modelling system (BIM) to raise the implementation efficiency stage, an electronic questionnaire was designed to verify the validity of the research hypothesis to seek realistic information about the use of BIM systems. The questionnaire Was distributed to all workers in the construction industry, companies and industry, companies and individuals, to know the reactions to the use of

BIM systems in the management of construction projects.

KEYWORDS: BIM, Construction, Questionnaire.

INTRODUCTION

The construction sector is one of the most complex and least efficient sectors in terms of commitment to the pre-prepared planning for the completion of the project within the constraints of (time, cost, quality) compared to other sectors such as the automotive industry, computers and others), despite the many differences between them and the construction sector, but the criticism is always directed at the construction sector with its different variations. The rationale for the frequent criticism as defined by construction management scientists is that construction projects are considered restricted projects, that is, they have a predetermined beginning and end. In this period, there is a group of companies with different goals temporarily to implement the project, whether it is a building, road or other different construction sectors through

contracts, and then this partnership ends with the end of the project, and these different goals often result in disputes and problems before, during and after the implementation of the project. Many studies have emerged that have addressed this issue and seek to find a radical solution to it by improving the efficiency of project cleaning, reducing waste and increasing productivity at the lowest cost and highest quality. But design changes, delays and cost increases are still in place.

This research aims to study the possibility of using the BIM system to raise the implementation efficiency phase, and research the prevalence of the use of BIM systems during the design and implementation phases between the various parties of the project by designing a questionnaire through the participation of the opinion of users of BIM systems on actual projects implemented.

Study in^[1] shows that BIM enhances traditional scheduling and costing methods with more reliable and automated technology based on the reviews on BIM and the case study, the thesis discovers that there are three areas for potential future development:

1. Higher levels of detail (LOD) in the BIM model will be available as BIM technology develops.
2. Linking time and cost information in conjunction with BIM components in the BIM model build to provide a scheduled financial analysis.
3. Analyze and plan resource usage based on the most up-to-date design, and even simulate resource allocation.

It was mentioned in,^[2] that BIM can be used as a tool to help improve not only the construction process but also help manage the facility after construction is complete.

METHODOLOGY

Introduction BIM systems and studying the impact of using BIM systems on the key performance indicators at the construction stage in improving building productivity.

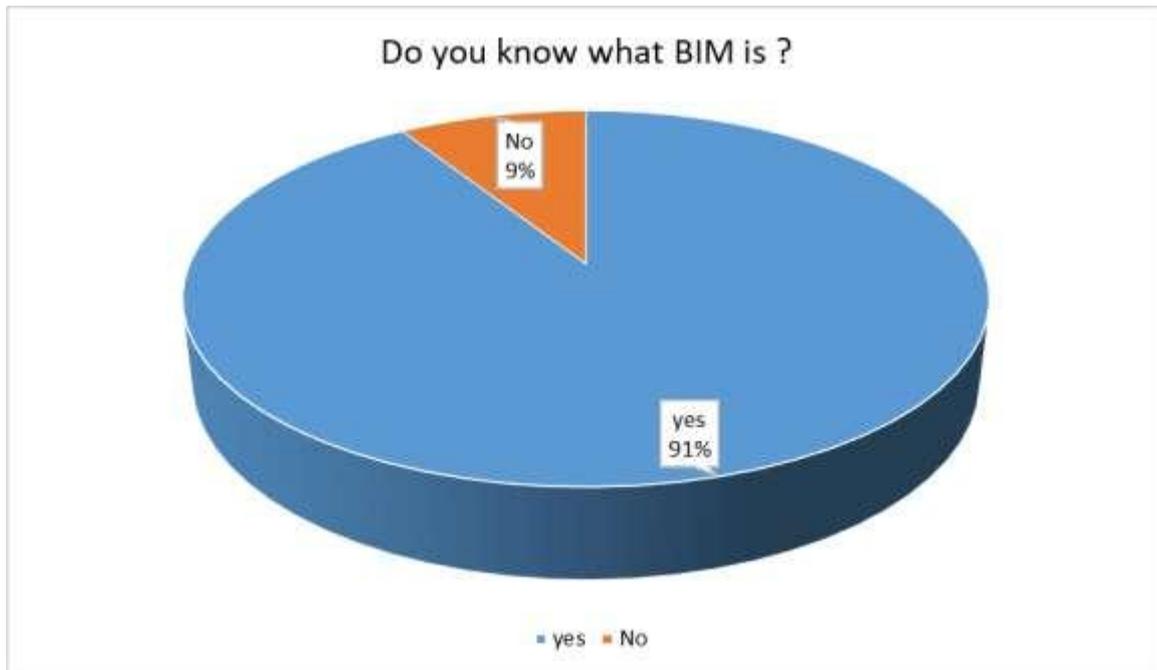
RESEARCH AIMS

1. Reducing the lack of information for the executing party and the orders for change and avoiding them as they lead to delaying the time of the project from what is planned and thus leads to an increase in the total cost, which leads to the

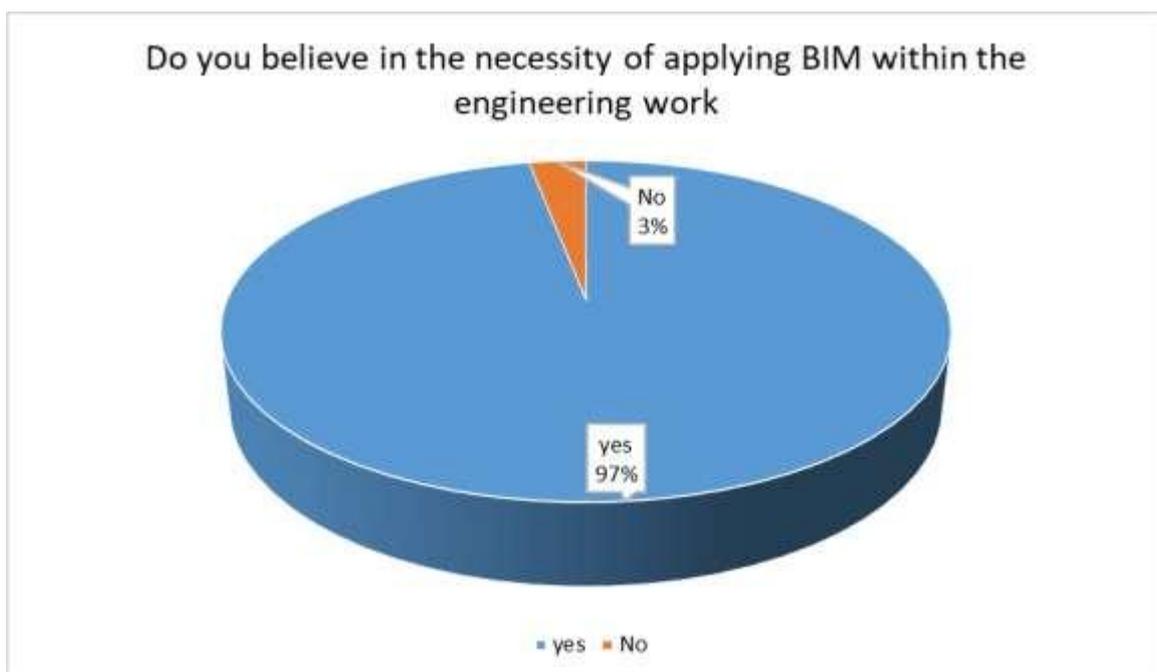
occurrence of claims.

2. Raise the efficiency of the project cost estimation process, especially when design changes occur and when different alternatives are introduced, by comparing the current systems followed and BIM systems.

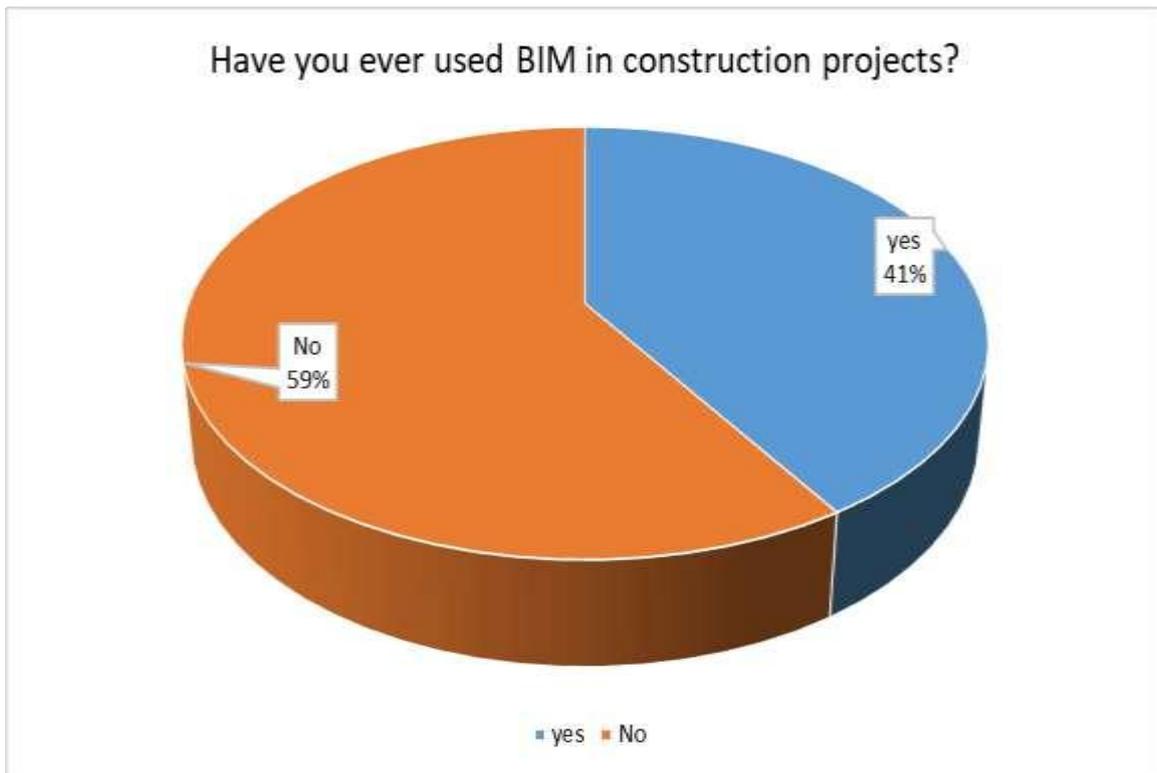
DISCUSS THE RESULTS



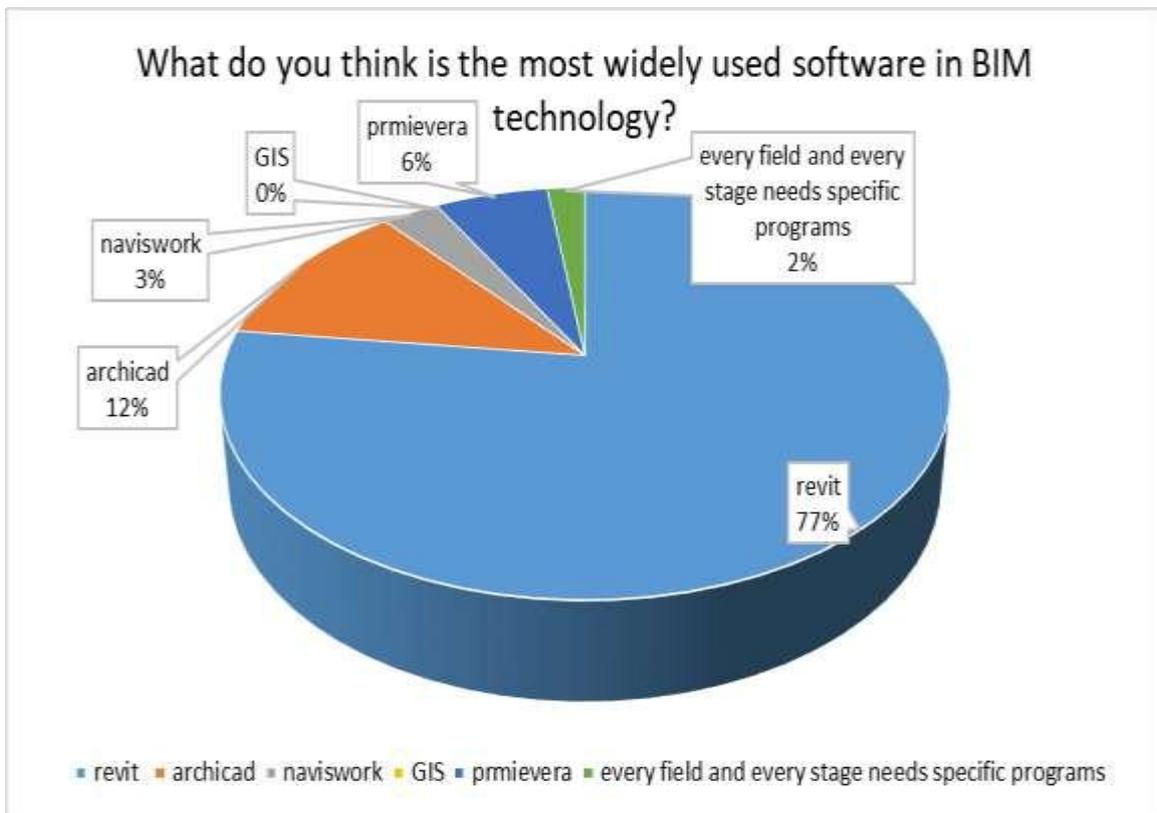
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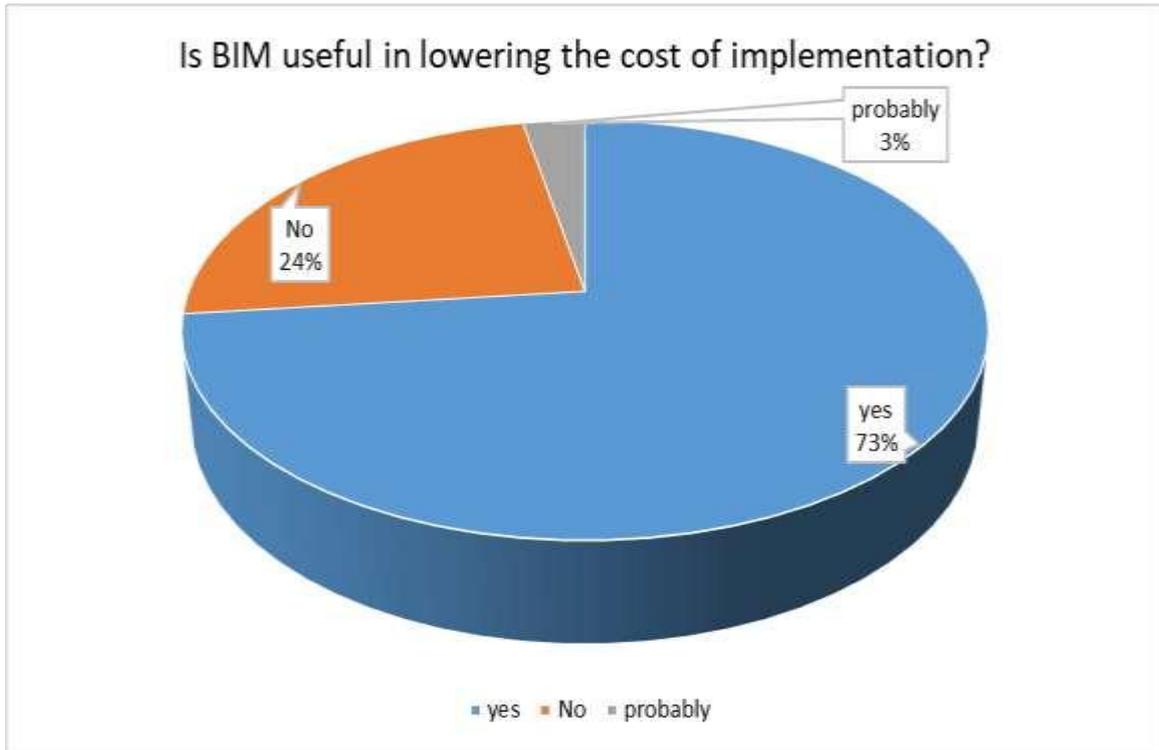
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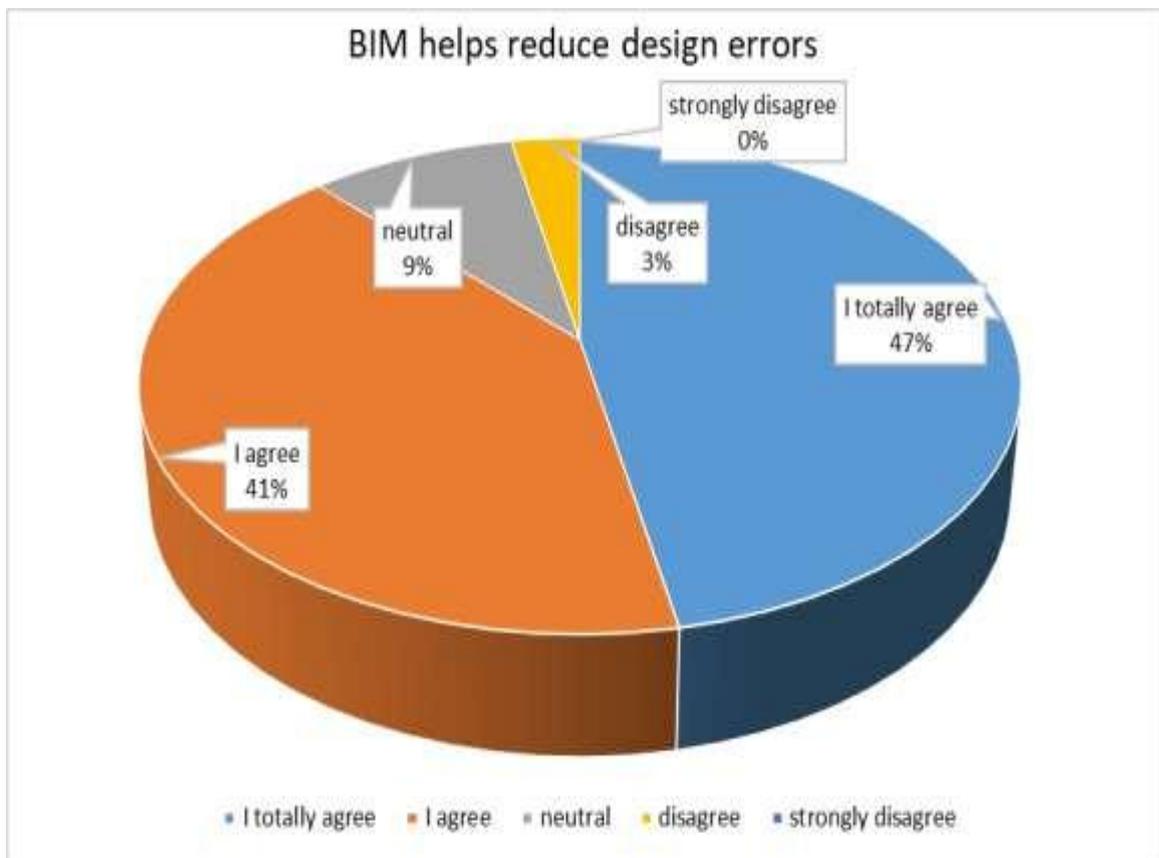
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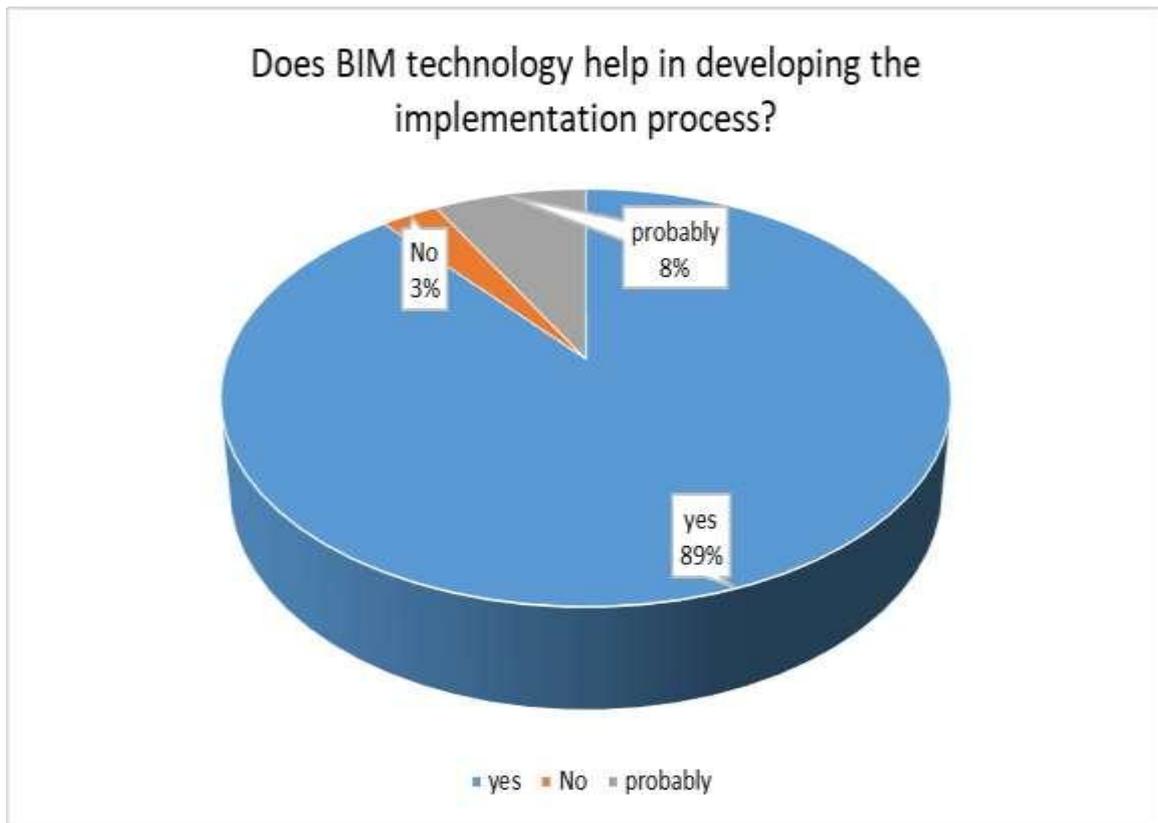
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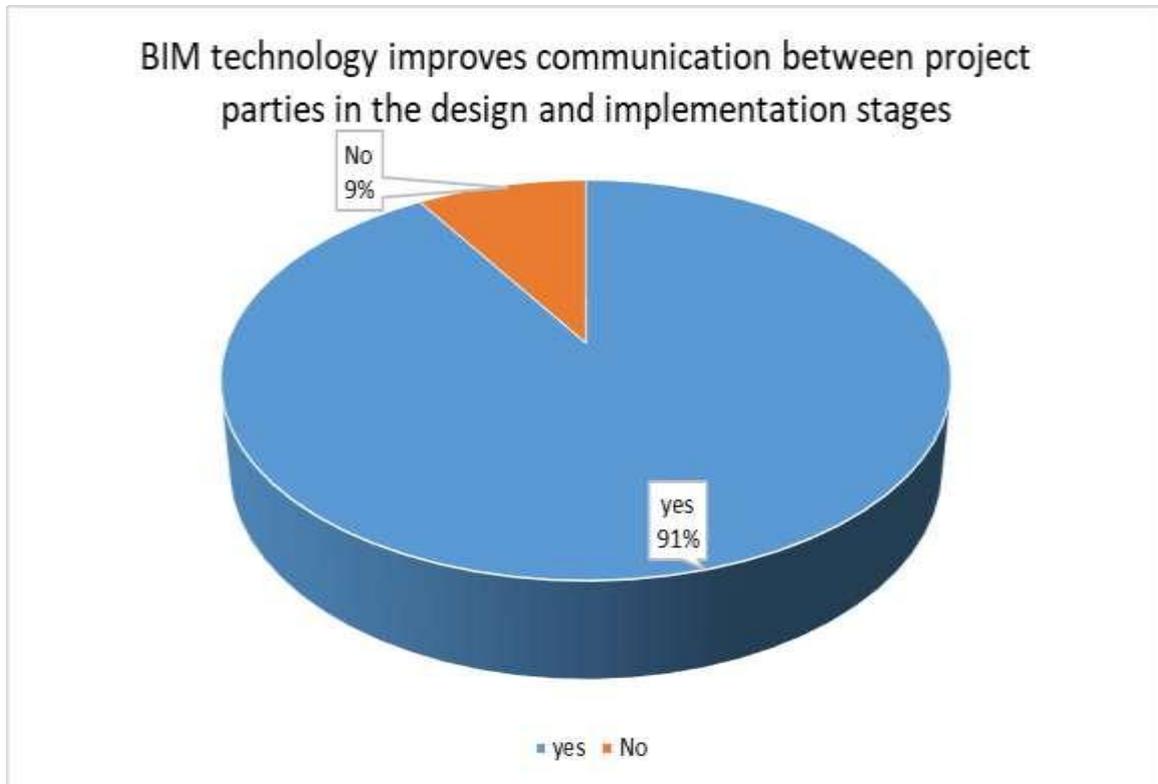
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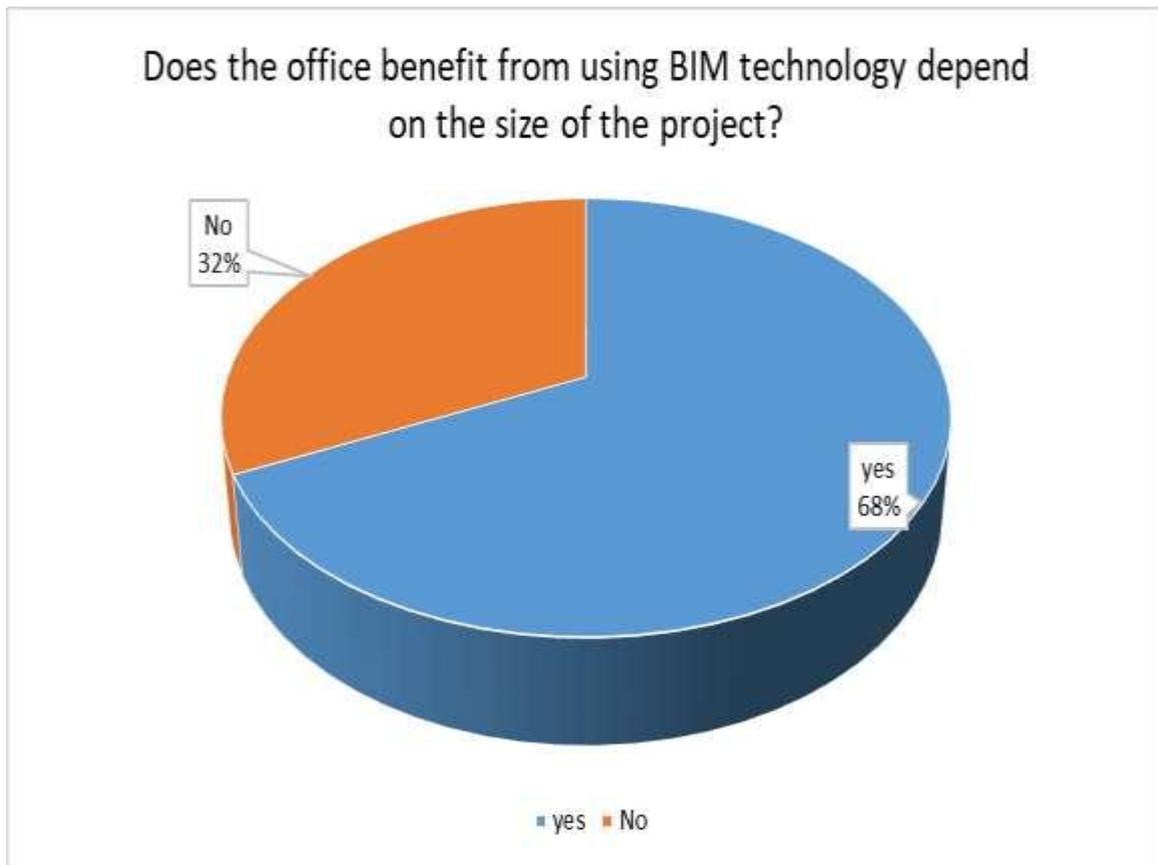
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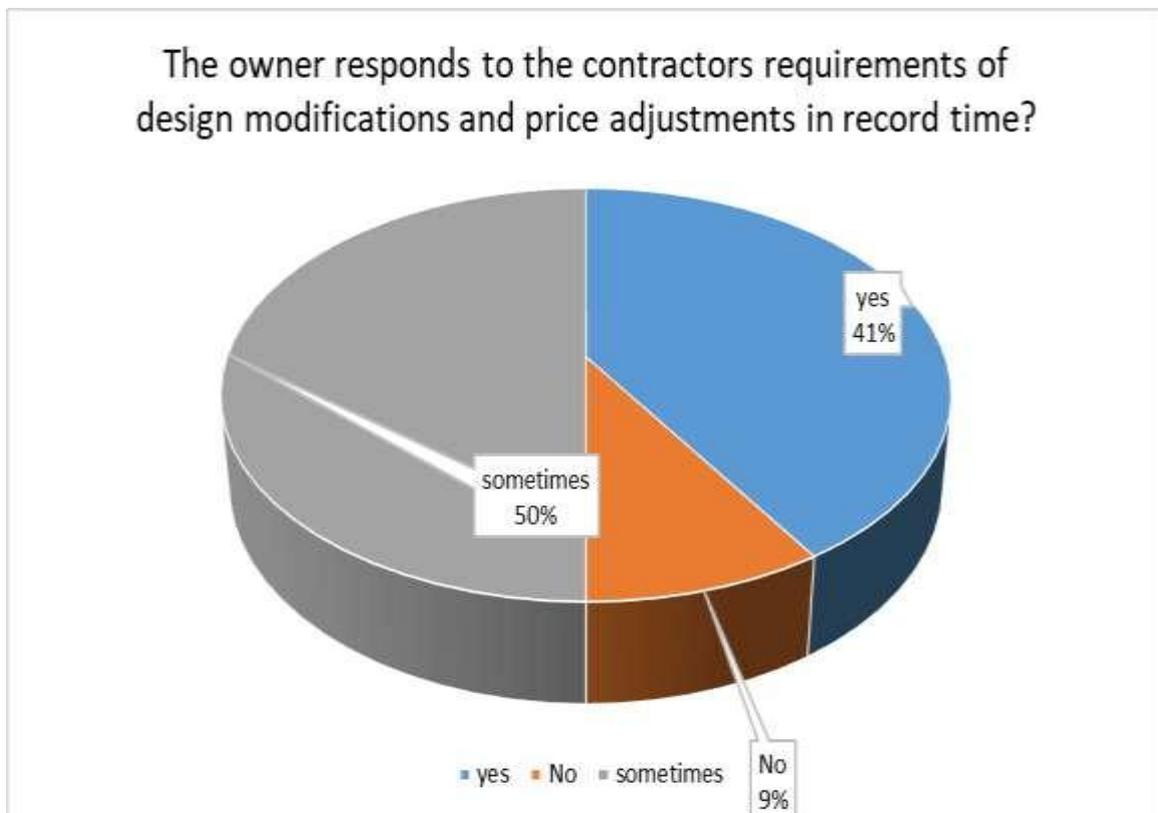
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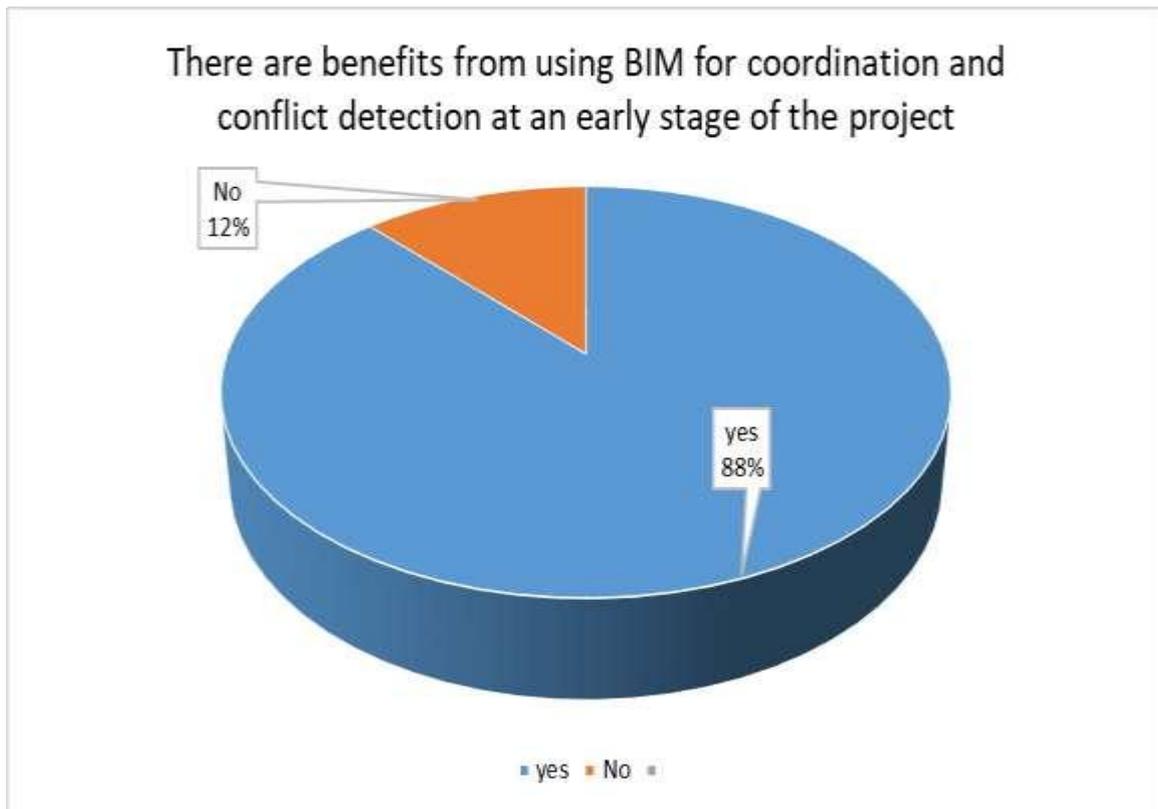
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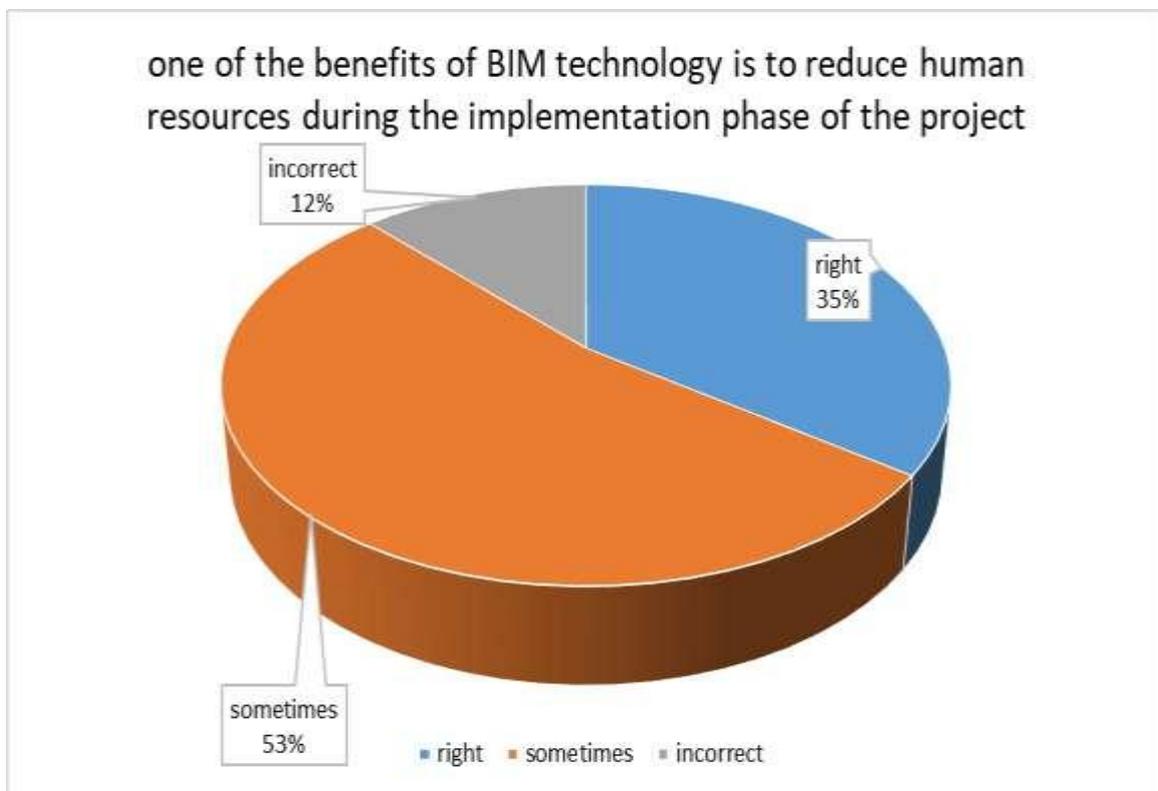
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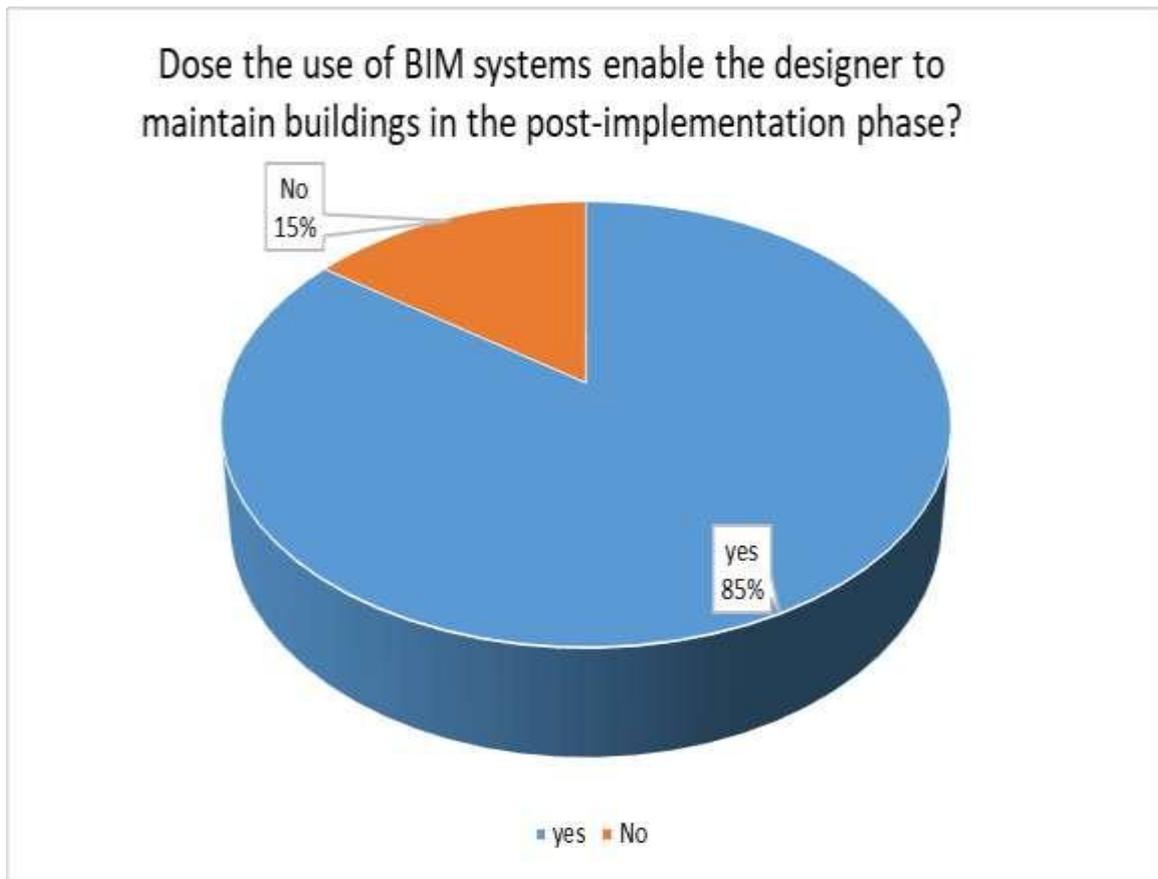
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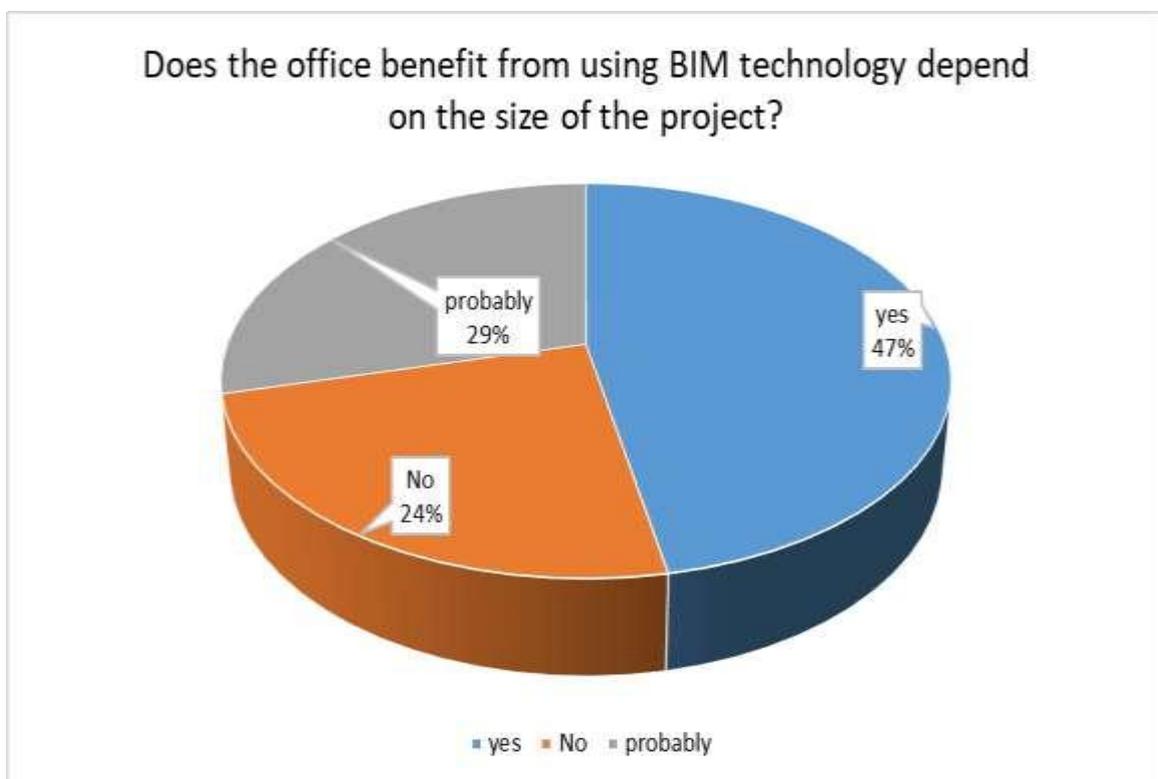
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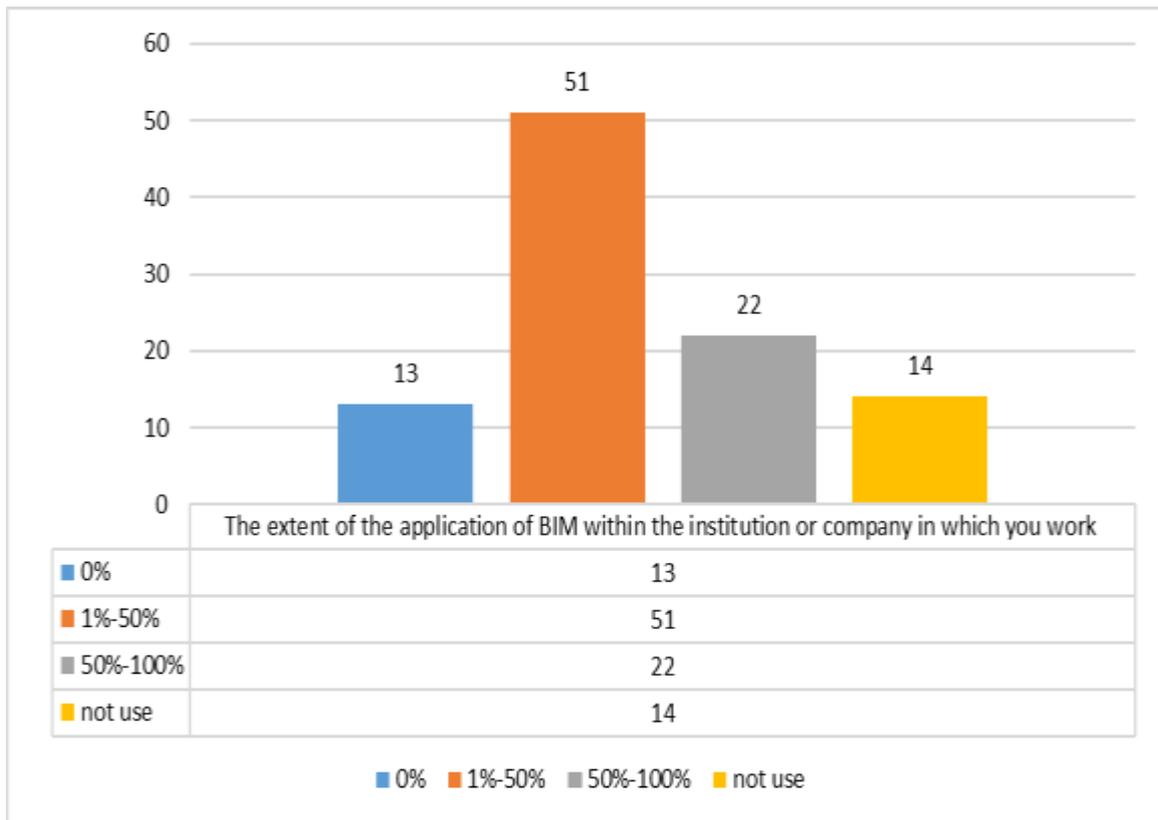
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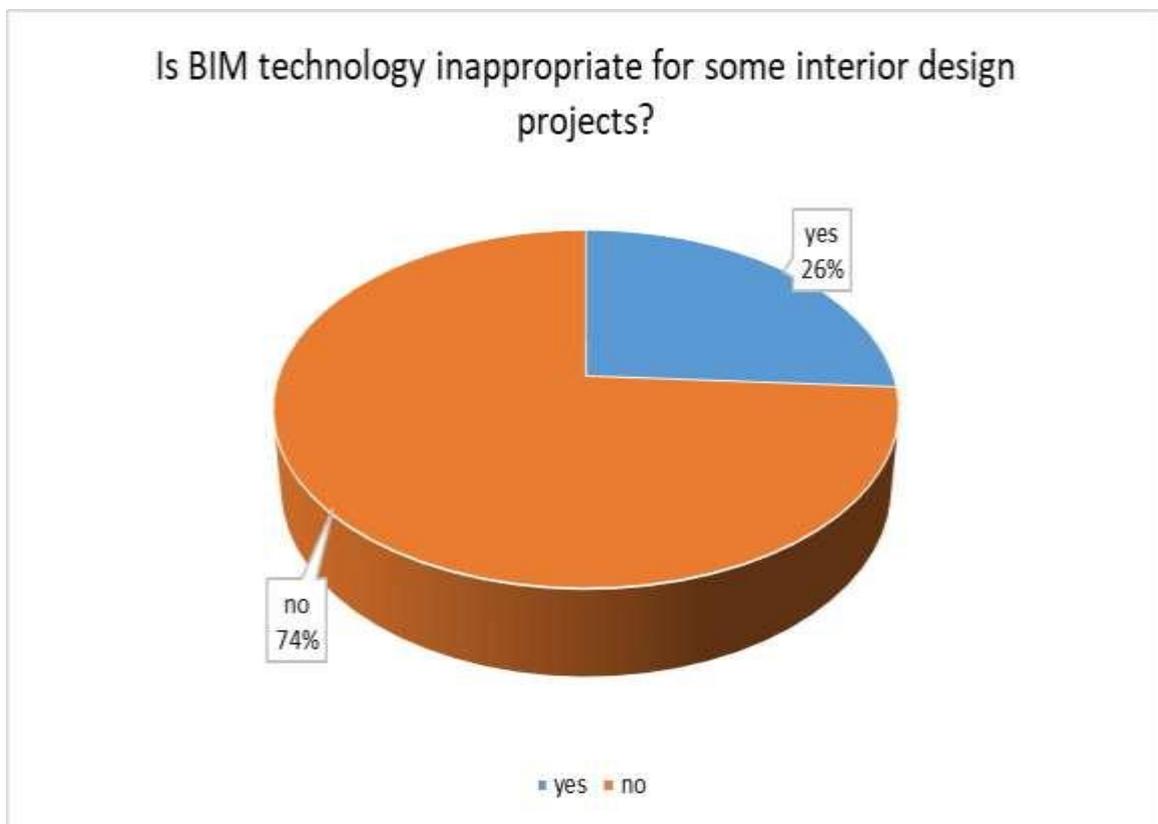
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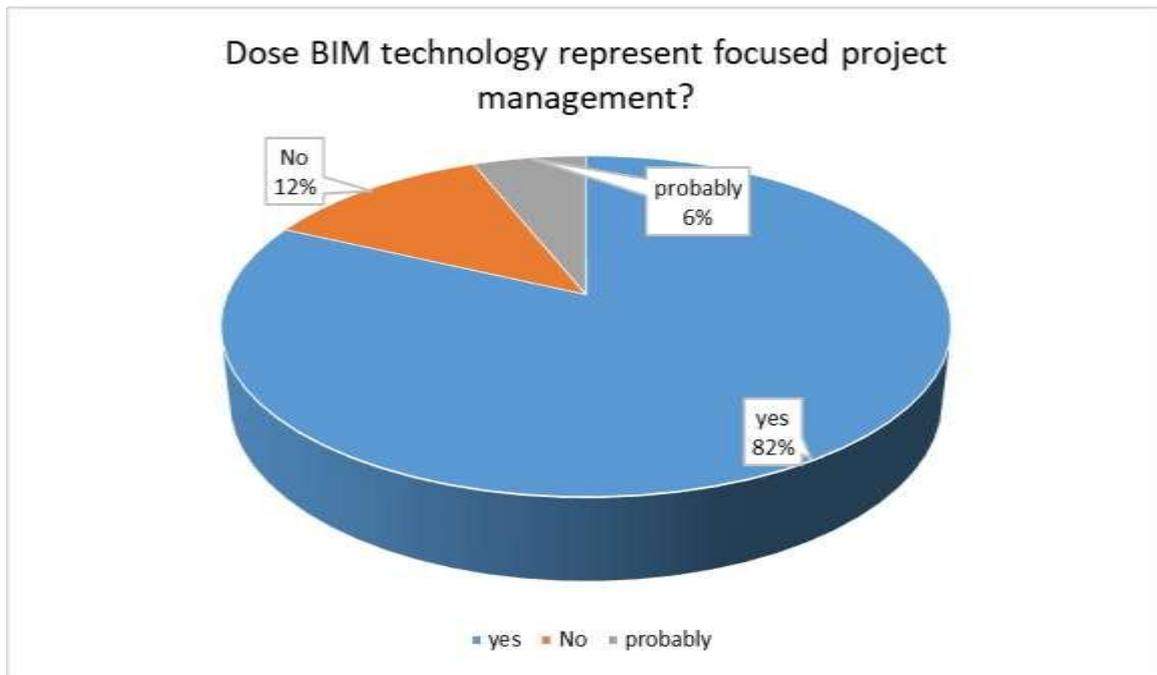
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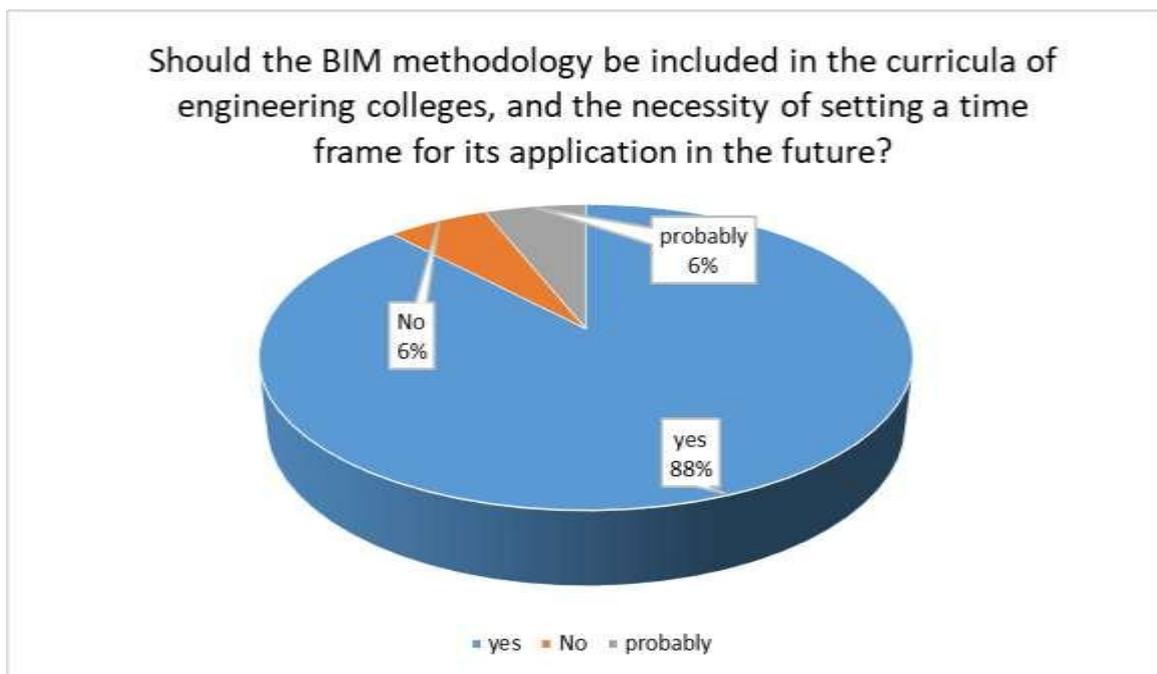
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CONCLUSION

The aim of this research was to show how to make the construction cost estimation process simpler and more accessible by using the BIM system as well as reduce manual data entry which is a time consuming process.

BIM technology improves communication between the project parties in the design and implementation phases, as it:

- Improve coordination between the parties and keep them informed of any change in plans.
- The speed of rectification and modelling of problems and solutions and the formation of a future outlook.
- The technology works in coordination between the parties to the project, whether between different areas or work items, which saves time and effort and reduces errors.

When analysing the opinions of the samples, it was found that most of the opinions identify the benefits of using the BIM system in coordination and detection of inconsistencies at an early stage of the projects, as follows:

- Finding solution and alternative plans in the event of any errors appearing early, which means gaining time and cost.
- Conflicting time related activities during major construction can be easily harmonized and tackled in keeping with the CPM flow-chart.
- Coordinating the progress of the items by making a schedule for the projects.
- A redesign can be done for the building even after some of the construction elements have been created in it. Where several elements are identified in the program and indicate to the program that they have been implemented. So the program makes construction cost calculations, schedules quantities for the rest of the elements that have not been created.

There are many obstacles that affect the implementation of BIM, including economic, social, administrative and educational. Examples of economic obstacles are:

- Irregular funding for projects.
- The cost of purchasing legally licensed BIM software.
- The cost of purchasing new computers with specifications suitable for running BIM software.
- The cost of securing alternative energy for electricity due to the continuous outage.
- There is no unified costing system among designers.
- The cost of financing training courses to qualify work teams.

One of the most influential social obstacles

- Lack of demand from governments and owners to use BIM.
- There is no competition between companies to apply BIM.
- The fate of the engineering expertise that cannot move to the BIM space.
- Examples of administrative obstacles:
- Poor ability to coordinate, cooperate and communicate between project parties.
- Lack of information available for companies to make an informed decision on BIM.
- There is no continuous electric current.
- Weak internet.
- Difficulty managing the BIM model.
- Difficulty applying BIM in the implementation phase due to the lack of qualified contractors.
- Incompatibility between different software platforms used.

An example of educational and cultural obstacles

- Lack of sufficient knowledge and awareness about the concept of BIM and its importance to the project parties.
- The lack of wide adoption of BIM by educational institutions and the lack of training courses.
- Resisting change and being satisfied with current traditional methods and not wanting to adopt new technology.
- Lack of adequate training for cadres due to the lack of specialized experts.

Recommendations

- The introduction of modern BIM technologies in the management of construction projects.
- Training workers in the construction sector on BIM technology.
- Conducting more applied studies on the impact of using BIM in raising the efficiency of construction projects.

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