

1. Research Motivation

Two of the major advancement in construction industry focuses on increasing the productivity and adding value to the building process, these are Lean Construction and Build Information Modelling. The motivations of this research are:

1. Facilitation in tailoring Lean and BIM adoption strategies towards the companies that are lagging behind in BIM - Lean adoption and collaboration. the construction industry.
2. Identification of strategies towards greater BIM - Lean integration which can be further studied to benefit the construction industry.

2. Research Methodology

For assessing the Mid-Atlantic USA construction industries opinion on BIM/Lean Integration, a survey was prepared and distributed among industry professionals. The survey focuses on answering:

1. Demographic division of the survey respondents and frequency of company usage of Lean Practices and BIM tools on their projects (Figure 4 and Figure 5).
2. The prevalence of the Lean Practices within the Mid Atlantic USA construction industry (Figure 6).
3. The prevalence of BIM Tools used within Mid Atlantic USA construction industry (Figure 7).
4. Industries opinion on the effectiveness of implementing BIM Tools in Lean Practices (Figure 8 and Figure 9).

Based on the literature review six Lean Principle (Figure 2) and five BIM Tools (Figure 3) were selected for the study.

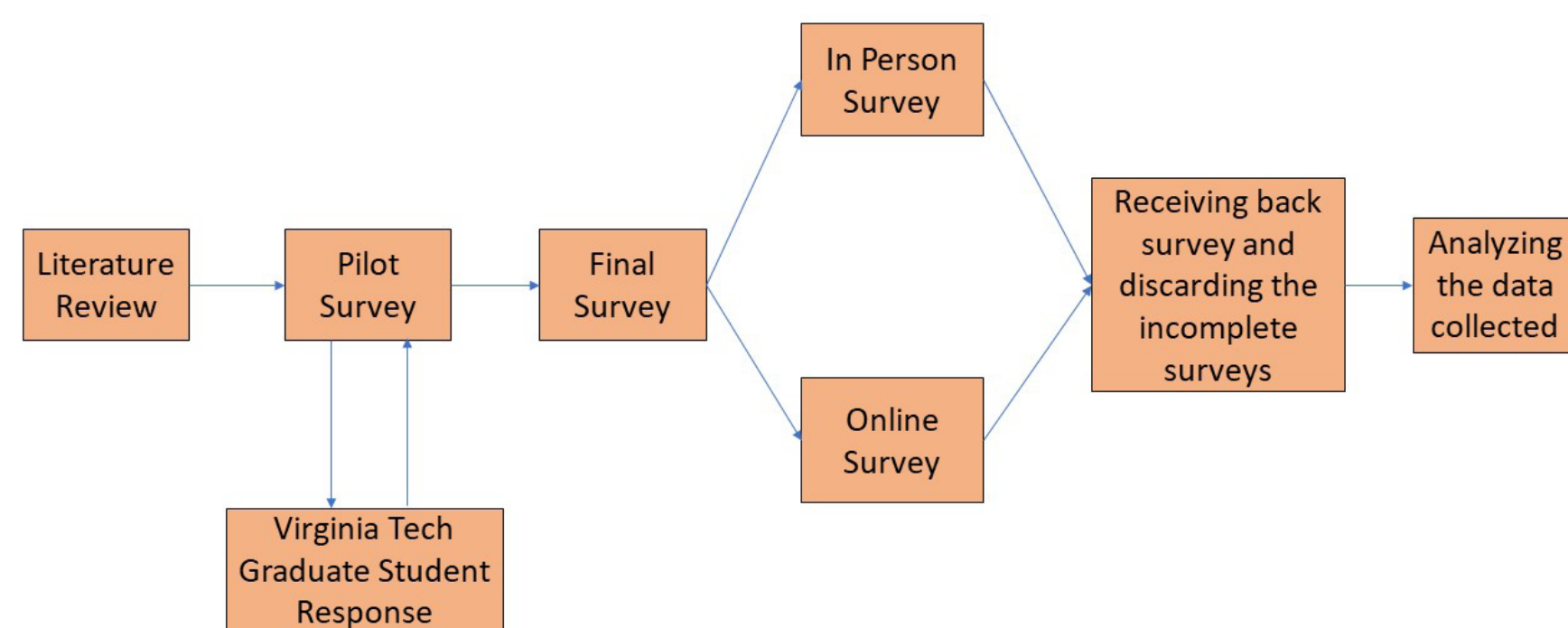


Figure 1: Survey Workflow Diagram

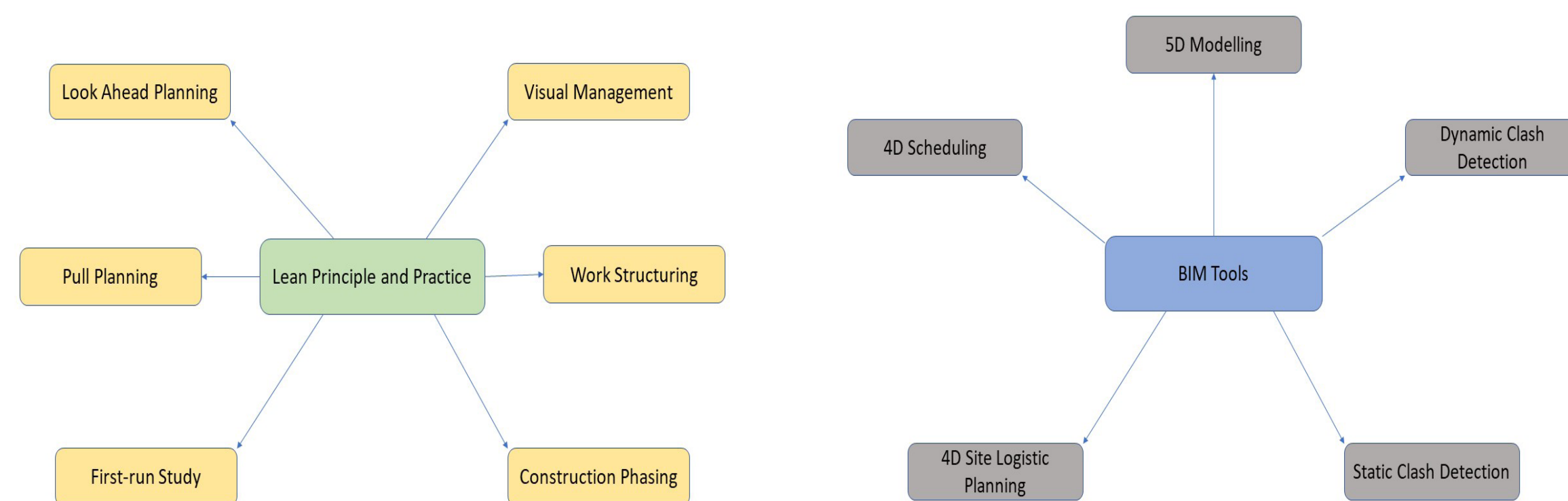


Figure 2: Lean Principle and Practice Studied

3. Result

A total of 28 (N=28) survey were distributed in person and electronically over four week period. The survey was distributed among a 'convenience sample' of industry professionals. A total of 21 survey were received out of with 2 were disqualified on account of being incomplete. 11 of qualified surveys belonged to medium size companies and were analysed to draw conclusion.

Figure 3: BIM Tools Studied

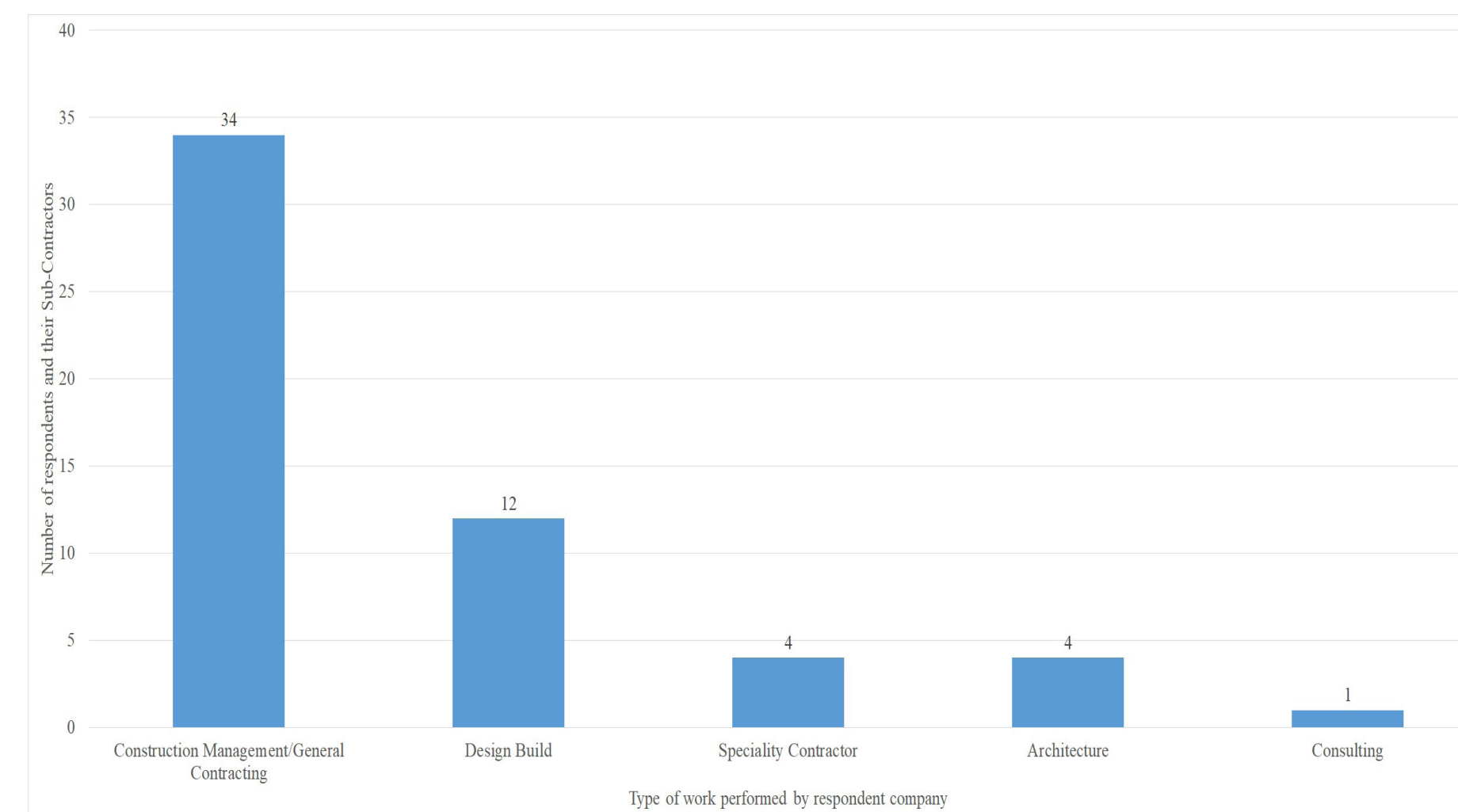


Figure 4: Number of respondents based on type of work performed frequently using Lean Principle and Practices

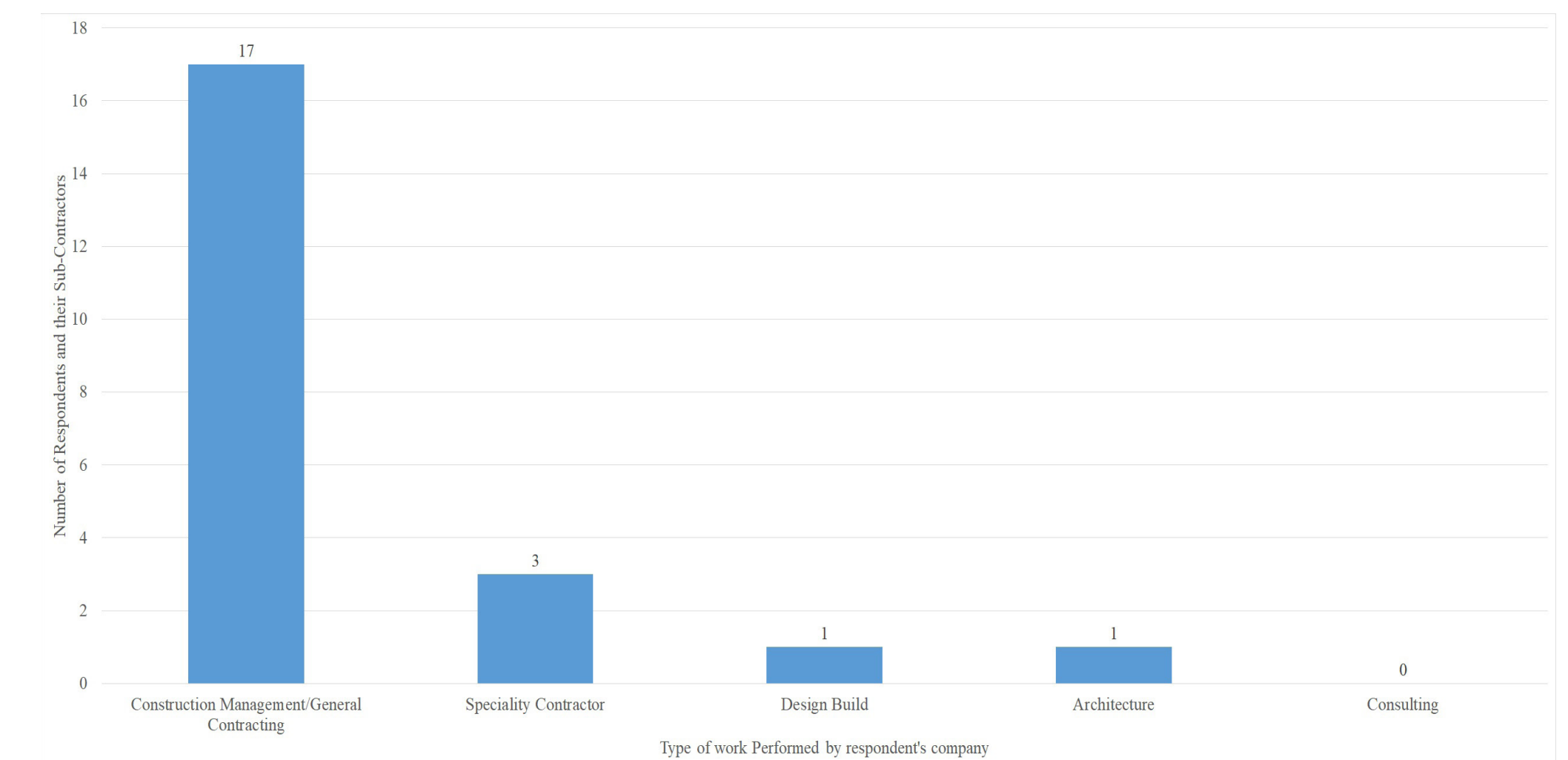


Figure 5: Number of respondents based on type of work performed frequently using BIM Tools.

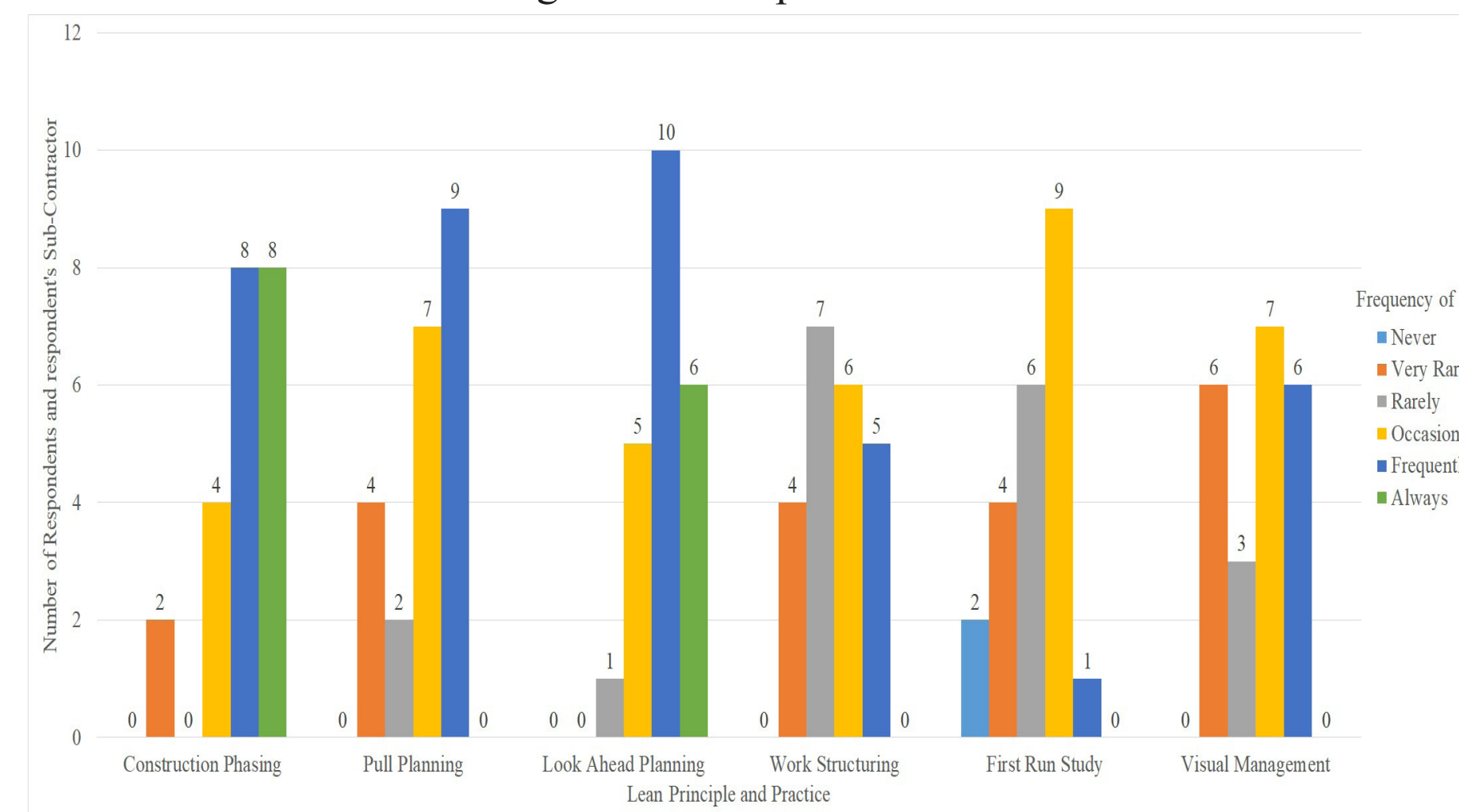


Figure 6: Prevalence of Lean Principle and Practices

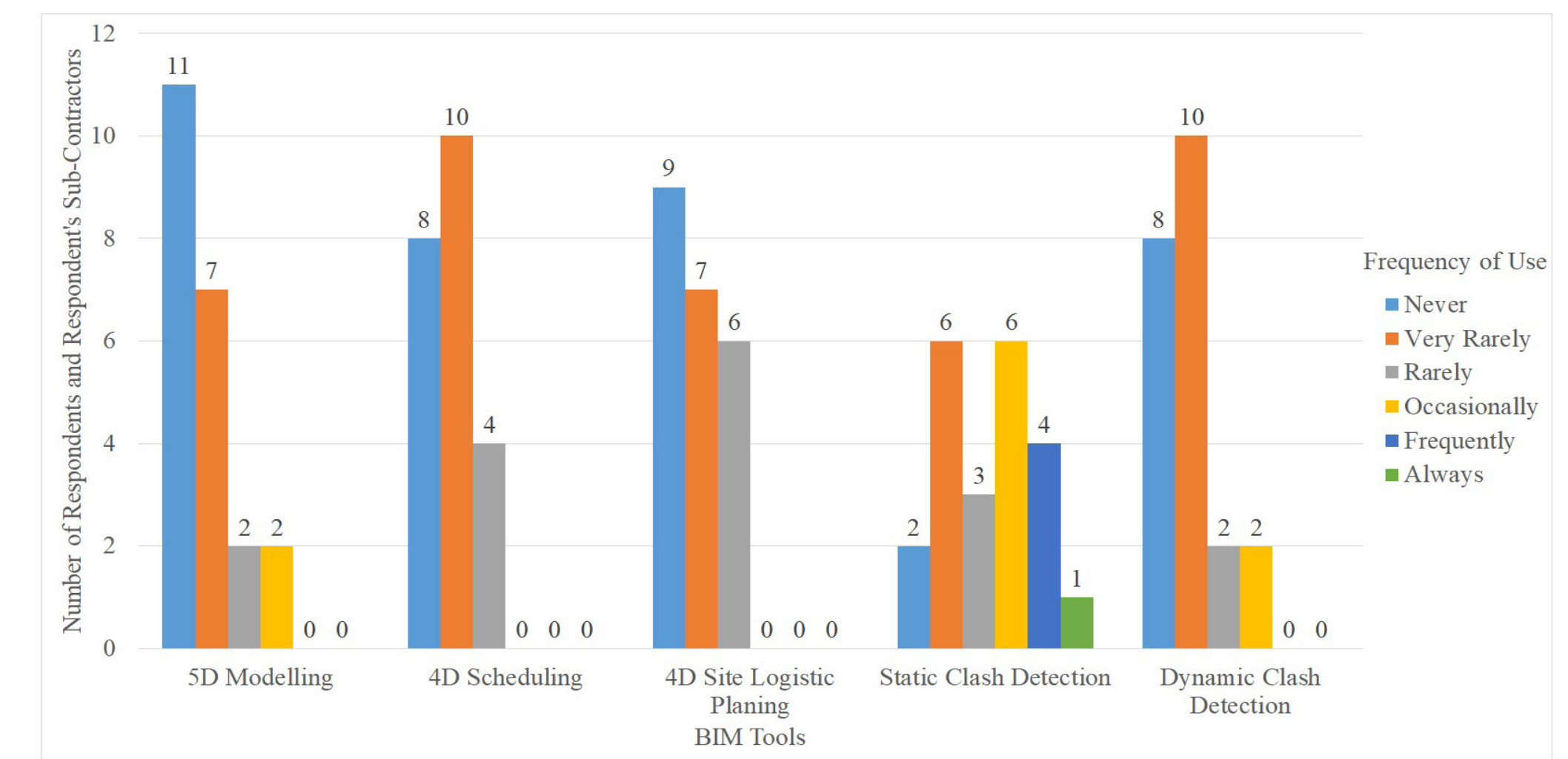


Figure 7: Prevalence of BIM Tools

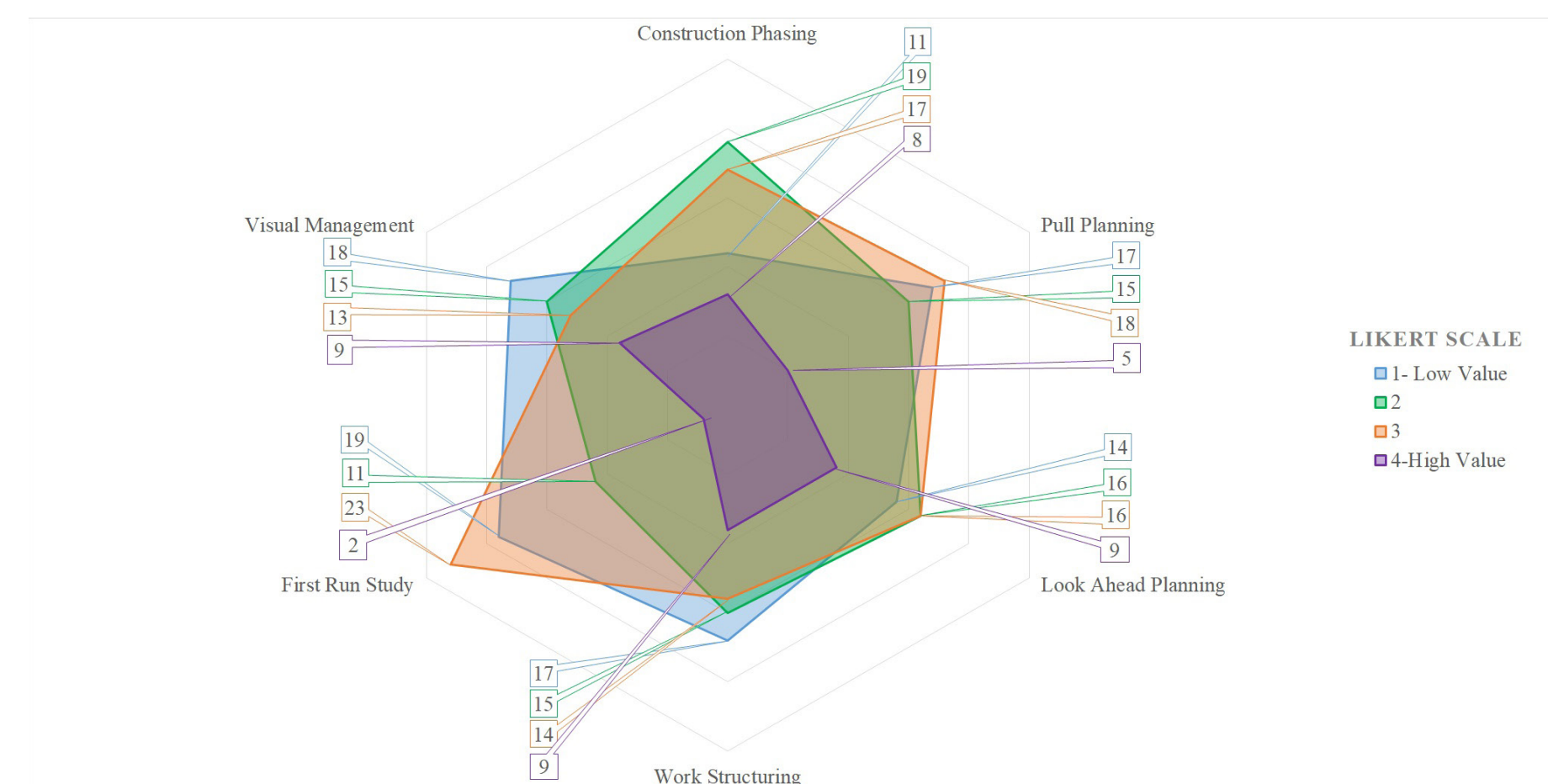


Figure 8: Value added to the Lean Principle and Practices by BIM Tools

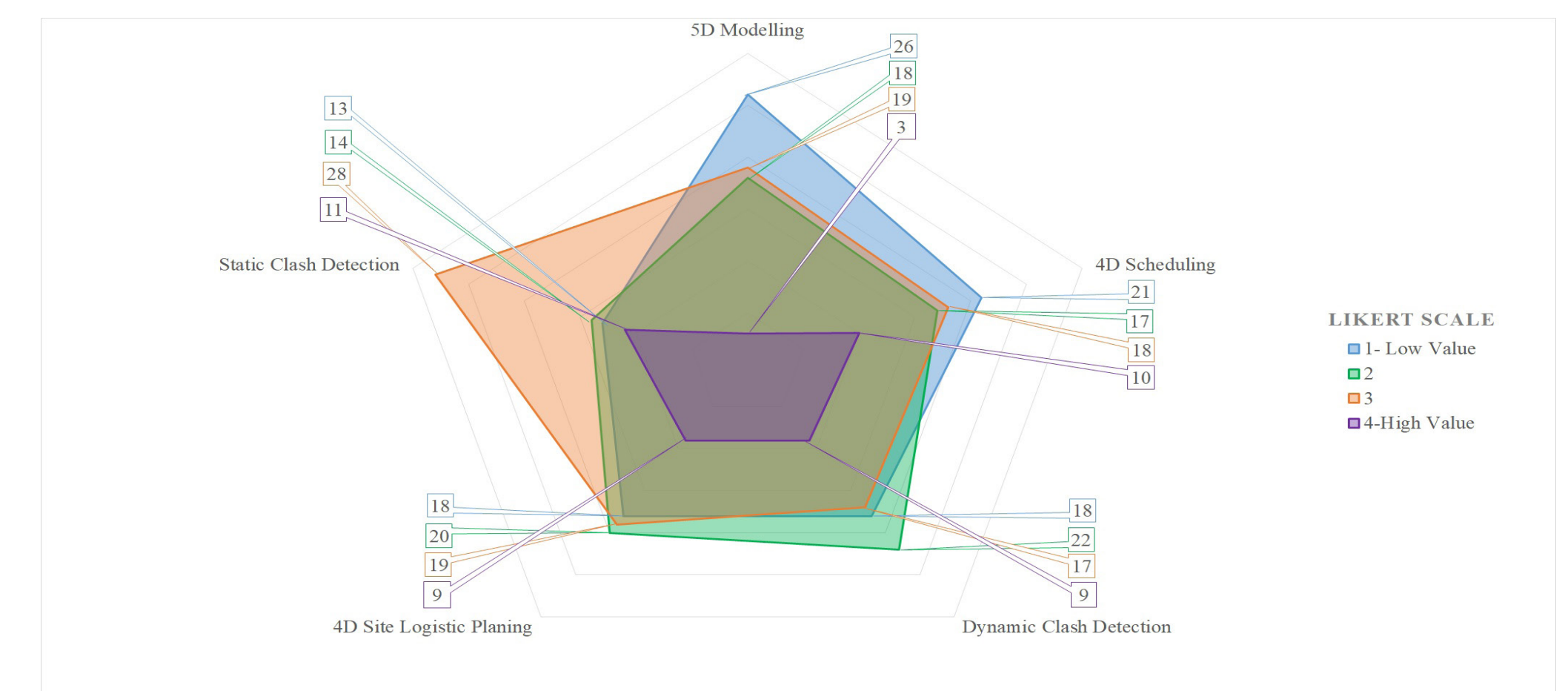


Figure 9: Effectiveness of BIM Tools in implementation of Lean Principle and Practices

4. Conclusion

After analysing the results it was concluded that:

1. General Contracting/Construction Management Firm most frequently use Lean Principles and BIM Tools.
2. Look Ahead Planning and Static Clash Detection are the most frequently used Lean Principle and BIM Tool respectively.
3. Static Clash Detection is consider to be adding medium to high value to the Lean Principles and Practices.
4. First Run Study's shows medium to high addition in value with the implementation of BIM Tools.

5. Implementation of BIM Tools and Lean Principle and Practice depends on the type of work performed.
6. It was also concluded that the effectiveness of BIM Tools in Lean Construction depends on the cost of implementation and training the personale.

5. Research Impact

Form the research it was evident that to make BIM - Lean integration effective we need to develop cost effective and easy to learn BIM strategies and tools. Also, as it was seen that BIM and Lean implementation depends on the type of work performed, further research is required to identify the reason for the gap in implementation.