Assessing Awareness of Building Information Modeling (BIM) among AEC Professionals in Nepal

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ABSTRACT

The advent of Building Information Modeling (BIM) has led to a revolutionary transformation in the construction sector on a global scale. The implementation of BIM has resulted in a multitude of benefits, including enhanced project outcomes, cost savings, and improved collaboration. However, in Nepal, the adoption of BIM in the Architecture, Engineering, and Construction (AEC) industry presents a distinctive set of challenges and opportunities. A survey of architects and engineers in both construction and academia indicates a moderate level of awareness of BIM, with 55% of respondents reporting familiarity with the technology. Of these, 69% employ BIM primarily during the design phase, thereby underscoring its utility in project planning. Nevertheless, practical applications remain constrained, as a considerable proportion of users have less than two years of experience with BIM. Despite its potential, 41% of professionals remain unaware of BIM, indicating a significant knowledge gap. This suggests the need for increased education and training to fully leverage BIM's benefits. While the current focus is on design, broader integration across all project stages is essential to maximize its impact. Expanding awareness and developing skills in BIM will be key to advancing its implementation in Nepal's AEC sector, driving efficiency and innovation in construction practices.

Keywords-Building Information Modeling (BIM); nepalese AEC industry; awareness; implementation

I. INTRODUCTION

The Nepalese construction industry is engaged in a multitude of large-scale projects, including the construction of administrative buildings, hospitals, hotels, and educational institutions, funded by both government and private sources. Nevertheless, the industry continues to rely predominantly on traditional construction methods, which constrains the adoption of modern technologies such as BIM [1]. The industry's continued reliance on conventional techniques, such as drafting-centric workflows and traditional project delivery systems, has resulted in a number of challenges, including cost and schedule overruns, inefficiencies, poor design quality, and a lack of collaborative workspaces [2]. Insufficient risk assessment and management throughout the project lifecycle, from initial planning and architectural design to construction and ongoing operations, further complicates matters by contributing to project delays and cost overruns [3]. The construction project is experiencing an increase in the number of variation orders due to design and scope changes, the absence of systematic processes, the inadequacy of surveying reports, and the inaccuracy of quantity estimation. These factors are leading to disruptions in project timelines and costs

[4]. Insufficient information, poor project management, and a dearth of innovative ideas, approaches, and modern technologies like BIM have collectively constrained the adoption of these advancements in Nepal's AEC industry, thereby limiting efficiency and the potential for enhanced construction practices [5]. The construction industry has recently adopted model-based tools, such as BIM, with the objective of improving project efficiency and collaboration [6]. The implementation of BIM has been evidenced to confer advantages across the spectrum of construction projects, irrespective of their specific type or scale, throughout the entire project lifecycle, from the initial design phase through to construction, operation, and maintenance [7]. BIM is a sophisticated methodology that employs 3D models to convey precise information to the relevant individual at the optimal time [8]. It enables the effective planning, creation, construction, and supervision of facilities by relevant parties [9]. An increase in constructability and the quality of produced documentation facilitates proactive decision-making [10]. The pre-construction, design, construction, and post-construction processes for infrastructure projects have all been transformed by the advent of BIM [11]. One might posit that BIM represents a more sophisticated iteration of Computer-Aided Design CAD [12]. A BIM project is an integrated database that considers not only the geometric model, which is the most visible component of the process, but also the materials estimated for use in construction, as well as their mechanical and physical characteristics [13]. The use of BIM technology enables the creation of a precise virtual model of the building within a computer system [14]. This model comprises precise geometry and pertinent digital data, which facilitate accelerated construction processes, including fabrication, assembly, and other activities [15-17]. The implementation of BIM in the construction industry may confer significant benefits to practitioners, including enhanced visualization, communication, and integration in building processes [18]. The advent of BIM has precipitated a shift in the construction industry, whereby information systems are now based on 3D objects rather than drawings [19].

BIM represents a significant advancement for the global construction industry, as it enables the comprehensive management of facility details throughout a building's life cycle, including the creation, coordination, recording, management, and updating of such information [20, 21]. The introduction of digital technology has enabled the construction industry to employ BIM as an effective tool for reducing project costs while simultaneously enhancing productivity and safety performance [22]. To address project-related conflicts and improve cost efficiency during the construction phase, BIM has gained widespread adoption on a global scale [23]. The implementation of BIM in building construction projects has the potential to enhance project performance at every stage, from the initial planning phase through to construction or operation [24]. BIM is described as a technology that connects the building productivity process throughout its life, enabling various professionals to create, exchange, and view each other's designer project information [25]. The data is incorporated into a unified database, which is not limited to 3D models. This enables it to achieve this objective. BIM applications are implemented via the usage of disparate software or programs that can facilitate the presentation of assorted information regarding the edifice in 3D models, thereby enhancing visualization [19]. A number of BIM applications or software programs work in conjunction to provide a shared knowledge resource platform through which various participants in the project can collaborate on tasks related to the project [26]. Developing nations are acutely aware of the technological advancements introduced by the implementation of the BIM wave and its steady development [27]. Middle Eastern developing nations are rapidly adopting BIM to oversee the design and construction phases of large-scale, complex projects. This is due to the fact that BIM provides a structured framework for communication between multiple disciplines and parties involved in the project [28]. Furthermore, authors in [26] indicate that Nepal, a developing nation in Asia, lacks a BIM implementation strategy and awareness within the AEC sectors. There are only a few examples of the utilization of BIM in the building process within Nepal's AEC industry. The Karma Residency Apartment and the 500-bedded Koshi Hospital are two such examples. However, to date, BIM has only been employed for the purpose of 3D visualization. The Nepal BIM Forum (established in 2019) is one of the non-profit organizations that frequently organizes programs to disseminate information about BIM to professionals in the Nepalese AEC sector. The objective of this research is to evaluate the current awareness and understanding of BIM usage within the context of Nepal's building projects. The implementation of BIM tools and applications has the potential to enhance the existing operational framework of Nepalese construction systems. Although some pioneers in Nepal have explored the potential of BIM, it remains a relatively novel concept for many, representing an opportunity to enhance existing workflows and processes in construction projects. Researchers in [29-31] have conducted studies on the implementation of BIM in the construction industry. However, the context of Nepal [26], has examined the awareness of BIM among hydropower professionals and has also studied the challenges associated with the implementation of BIM. Nevertheless, there is a dearth of research that specifically examines the awareness of BIM in the building construction industry in Nepal. This study examines the awareness of BIM among professionals in the AEC sector in Nepal, with a particular focus on perceptions rather than implementation. The insights gained can inform the development of future strategies for the effective adoption of BIM in developing countries such as Nepal.

II. METHODOLOGY

This study employs a quantitative research design methodology, specifically using a questionnaire survey to assess the awareness of BIM among professionals in the AEC sector in Nepal. This strategy was selected because it allows for the collection of a substantial amount of data from a diverse population, thereby facilitating statistical analysis and the identification of patterns and trends in BIM awareness. The questionnaire was constructed with the objective of investigating the participants' backgrounds, their awareness of BIM technology, and the most effective methods for implementing the process, based on the results obtained from the analysis of the variable elements. The questionnaire survey was distributed to a cohort of architects, civil engineers, structural engineers, electrical engineers, and water supply/sanitary engineers, encompassing professionals engaged in planning, design, supervision, construction management, maintenance of building construction, and the academic sector. The questionnaire was structured into the following sections: personal information, professional experience, awareness of BIM, lack of awareness of BIM, and methods of implementing BIM in Nepal. A structured questionnaire was developed and employed for the collection of primary data from 150 AEC professionals using the Computer-Assisted Personal Interviewing (CAPI) technique. This method ensured a broad reach and convenience for respondents. The questionnaire was distributed via email, Viber, Messenger, and WhatsApp to professional associations, construction firms, and academic institutions, with an invitation to participate extended to all relevant parties. The data were prepared in Microsoft Excel, where the responses were coded, examined for procedural inconsistencies, and evaluated for incomplete data, which were subsequently excluded from the analysis. The data were analyzed using the Statistical Package for the Social Sciences (SPSS) software, with internal consistency measured using Cronbach's alpha to confirm the reliability of the ordinal variables. Descriptive statistics were employed to analyze categorical variables pertaining to the respondents' demographics, calculating their frequencies and distribution percentages. This approach facilitated the generation of insights into the awareness of BIM among AEC professionals in Nepal.

III. ANALYSIS AND RESULTS

A. Demographic Characteristics of Participants

A demographic analysis of the 150 AEC professionals revealed that 68% of respondents were male and 32% female. A significant majority (64.7%) held a Bachelor's degree, while 34.7% had a Master's degree. The majority of participants (81%) were based in the Kathmandu Valley, with the remaining 19% located outside it. The largest professional group were civil engineers (42.7%) and architects (35.3%), with other disciplines, including structural, mechanical, electrical, and plumbing engineers, comprising the remainder, as shown in Table I. With regard to professional experience, 45% of respondents indicated that they had less than five years of experience, while 34.3% reported having between five and ten years of experience. In terms of experience with CAD, 44.7% of respondents indicated that they had less than five years, 34.3% reported that they had five to ten years, 15.7% stated that they had ten to fifteen years, and 5.3% indicated that they had over fifteen years of experience.

TABLE I. RESPONDENTS' DISTRIBUTION

Occupations	Frequency	Percent
Architect	52	34.7%
Civil	64	42.7%
Structure	13	8.7%
Mechanical	5	3.3%
Electrical	5	3.3%
Plumbing	4	2.7%
Other	7	4.7%
	150	100.0%

B. Awareness of BIM among AEC Professionals

A survey of 150 participants in the AEC industry revealed an awareness of BIM among respondents at a moderate level, with 55% indicating familiarity with the concept. Table II presents the distribution of respondents' awareness of BIM, which differs substantially according to their occupations. The data indicated that architects and civil engineers constituted the largest group of informed professionals. A greater percentage of architects (26%) demonstrated awareness of BIM compared to civil engineers (16%), although a notable number of civil engineers (27%) remained unaware of BIM. The results indicate that mechanical and electrical engineers demonstrate relatively low levels of awareness, underscoring the necessity for targeted educational initiatives in these fields.

TABLE II. BIM AWARENESS AMONG AEC PROFESSIONALS

	Aware		Not Aware	
Professional background	Count	Percent	Count	Percentage
Architect	39	26%	13	9%
Civil	24	16%	40	27%
Structure	9	6%	4	3%
Mechanical	1	1%	4	3%
Electrical	2	1%	3	2%
Plumbing	2	1%	2	1%
Other	6	4%	1	1%
	83	55%	67	45%

The majority of respondents indicated that they were aware of BIM primarily through the seminar, with 39.8% citing this as their primary source of information, as shown in Figure 1. Workplace interactions and personal connections with colleagues were also identified as significant sources of awareness, with 21.7% and 20.5% of respondents, respectively.

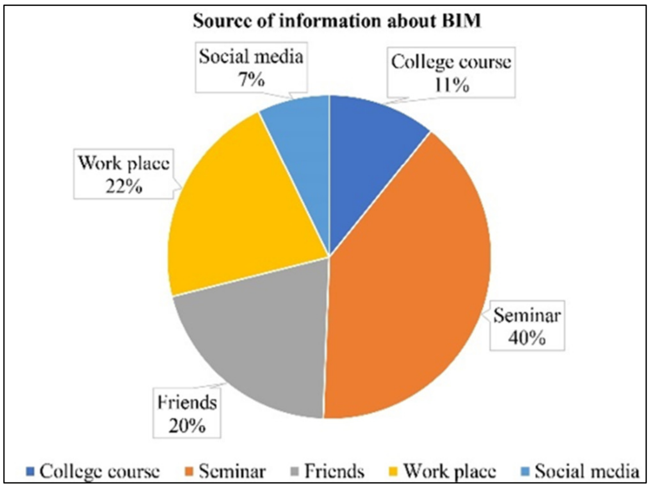

Fig. 1. Source of Information about BIM.

It is evident that the successful implementation of BIM in the AEC industry should be achieved through the incorporation of this technology into academic curricula. However, it is notable that this represents one of the lowest platforms through which AEC professionals are exposed to such knowledge.

Those who were previously unaware of the implementation of BIM in the AEC industry expressed a strong interest in learning about it. This indicates a potential for increased awareness of BIM technology through the implementation of appropriate educational initiatives.

C. Level of BIM Application

As presented in Figure 2, the majority of respondents demonstrated a limited to moderate understanding of the practical applications of BIM. Among the participants who are aware of BIM technology, 69% have been using it in their projects. Of these, 85.5% have employed BIM in the design stage, 12.7% during construction, and 1.8% in operations and maintenance. Additionally, it was determined that 61.8% of respondents have been using BIM applications for a period of less than two years, with 32.7% having done so for a duration of between two and five years, and 5.5% for a period exceeding five years.

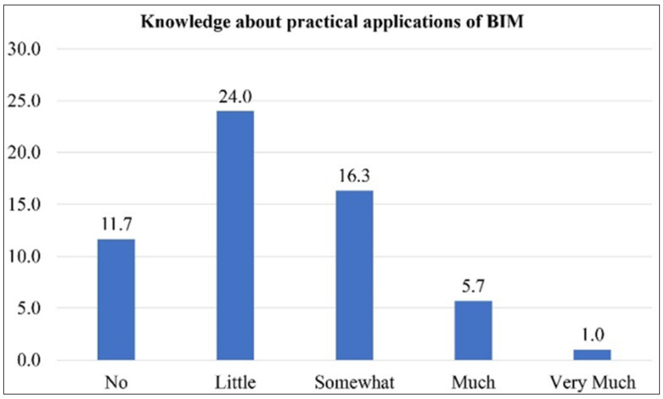

Fig. 2. Knowledge of practical application of BIM.

Among the participants who have been using BIM in their actual projects pertaining to the methodology employed in creating BIM models, it was discovered that 62% are engaged in BIM creation from the initial phase of design and support. Conversely, 38% are using BIM for modeling from CAD documents, as shown in Figure 3.

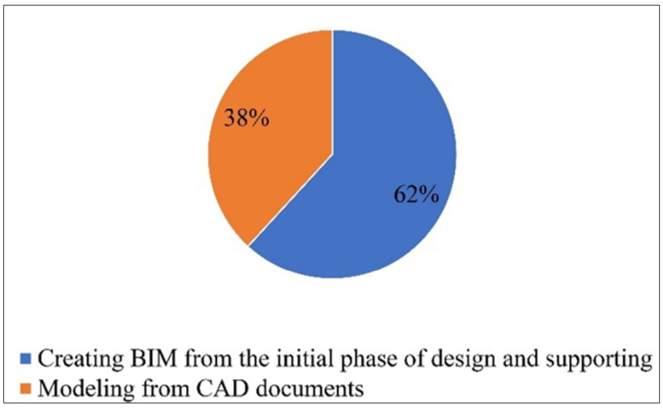

Fig. 3. Methodology undertaken in creating BIM models.

D. Descriptive Statistics

Descriptive statistics were employed to ascertain the mean and standard deviation of the difficulties encountered in the usage of BIM in Nepal, based on the responses of 150 individuals included in this research. The data are summarized through the calculation of the mean and standard deviation. Descriptive statistics provide a mean of simplifying extensive data sets related to various variables in a coherent manner. Furthermore, respondents were presented with five-point Likert scale questions, ranging from 1 (strongly disagree) to 5 (strongly agree), encompassing all factors examined. Table III provides an overview of the principal constraints associated with the implementation of BIM in Nepal. The primary obstacles can be attributed to a dearth of educational and training opportunities (with an average score of 4.11), an absence of comprehensive governmental guidelines (with an average score of 4.06), and a limited understanding of BIM applications (with an average score of 4.02). Furthermore, the dearth of qualified professionals and the paucity of client demand (with a mean score of 3.94) also impede the widespread implementation of BIM. Furthermore, high training costs and resistance to change represent additional barriers to implementation. The lack of tangible use cases in Nepal and the reluctance to adopt new technology contribute to the slow rate of adoption. In conclusion, these challenges highlight the necessity for enhanced awareness, education, and policy support to facilitate the integration of BIM in the country's AEC industry.

TABLE III. DESCRIPTIVE STATISTICS OF BIM APPLICATION CHALLENGES

Challenges to the Application of BIM in Nepal	Mean	SD
Lack of knowledge about the application of BIM	4.02	0.81
Think current technology is enough	3.31	0.96
Lack of governmental guidelines, and policies	4.06	0.74
No demand from the client	3.94	0.72
Absence of real use cases in Nepal	3.84	0.83
Absence of proven positive return	3.78	0.90
Lack of skilled professionals	3.94	0.70
Lack of education and training	4.11	0.66
Unwillingness to learn BIM	3.37	0.98
High training cost	3.58	0.77
Hesitancy to enter new technology	3.47	0.85
Unable to realize the actual benefit of BIM	3.76	0.74
Resistance to change	3.55	0.70
The traditional method of working	3.80	0.73
Overall	3.75	0.46

Table IV provides an overview of several effective strategies for BIM implementation in Nepal. The respondents identified increasing BIM education in engineering colleges (mean = 4.27) as the most impactful solution, followed by raising awareness through real use cases in Nepal (mean = 4.08). The enactment of government mandates for BIM implementation (mean = 4.00) is also identified as a crucial factor in promoting its adoption. Furthermore, the affordability of software and the demand from clients for BIM with adequate design budgets (both with a mean of 3.83) are significant considerations.

E. An Effective Way to Implement BIM

A review of the data collected from 150 AEC professionals revealed that approximately 55% were aware of BIM. However, among those who demonstrated awareness of BIM technology, the majority exhibited beginner proficiency and had used it for less than two years. Furthermore, 69% of the participants are not involved in projects that use BIM technology. This suggests that even the moderate level of participants is aware of BIM technology, but its implementation is still in early stages within the AEC technology sector.

TABLE IV. DESCRIPTIVE STATISTICS OF EFFECTIVE BIM IMPLEMENTATION

An effective way to implement BIM	Mean	SD
Increase BIM education in engineering colleges	4.27	0.83
Government mandates for BIM implementation.	4.00	0.86
Client demands and manages sufficient design cost for BIM usage	3.83	0.68
Affordable software cost	3.83	0.78
Awareness about the benefit of BIM through real use cases in Nepal	4.08	0.77
Overall	4.00	0.64

The ANOVA analysis shown in Table V offers insights into the relationship between the awareness of BIM in the AEC industry and the challenges to BIM application in Nepal. The regression sum of squares (4.711) indicates the extent to which the variability in challenges to BIM application can be explained by the model (awareness of BIM). The mean square of 4.711, in conjunction with a statistically significant *F*-value of 29.594 and a *p*-value of 0.000, which is less than 0.05, indicates that awareness of BIM has a notable impact on the challenges associated with its implementation.

TABLE V. ANOVA TEST OF SIGNIFICANT DIFFERENCES BETWEEN AWARENESS OF BIM AND CHALLENGES TO THE APPLICATION OF BIM IN THE AEC INDUSTRY

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
1	Regression	4.711	1	4.711	29.594	.000b
2	Residual	12.894	81	0.159		
3	Total	17.605	82			
a. Dependent Variable: Challenges to the application of BIM in Nepal						
b. Predictors: (Constant), Awareness about BIM in the AEC industry						

A further analysis of the regression coefficients is provided in Table VI, which explains this relationship in greater detail. The unstandardized coefficient (*B*) of 0.339 indicates that for every unit increase in BIM awareness, there is a change of 0.339 units in the challenges to its application. The *t*-value of 5.440 and the *p*-value of 0.000, which is less than 0.05, confirm that this is a highly significant result. The beta coefficient (0.517) demonstrates a robust positive correlation, indicating that elevated awareness is associated with a discernible reduction in obstacles to the implementation of BIM in Nepal. As evidenced in Table VII of the ANOVA analysis, there is a statistically significant discrepancy between the awareness of BIM within the AEC industry and its effective implementation. The *F*-value is 12.200 with a *p*-value of 0.001, which is less than 0.05. This suggests that awareness of BIM significantly influences its effective implementation. As shown in Table VIII, the regression coefficient analysis demonstrates that awareness of BIM within the AEC industry has a positive influence on the effective implementation of BIM. The unstandardized coefficient (*B*) is 0.327, indicating that for each unit increase in awareness, the effective implementation of BIM increases by 0.327. The *t*-value of 3.493 and the *p*-value of 0.001, which is less than 0.05, provide further confirmation that this relationship between effective implementation of BIM and awareness of BIM is statistically significant.

TABLE VI. COEFFICIENT ANALYSIS

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	B	Std. Error	Beta		
Constant	2.401	0.252		9.514	0.000
Awareness about BIM in the AEC industry	0.339	0.062	0.517	5.440	0.000
Dependent Variable: Challenges to the application of BIM in Nepal					

TABLE VII. ANOVA TEST OF SIGNIFICANCE BETWEEN AWARENESS AND EFFECTIVE IMPLEMENTATION

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
	Regression	4.382	1	4.382	12.200	.001b
	Residual	29.097	81	0.359		
	Total	33.480	82			
Dependent Variable: Effective way to implementation of BIM						
Predictors: (Constant), Awareness about BIM in the AEC industry						

TABLE VIII. COEFFICIENT ANALYSIS

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	B	Std. Error	Beta		
Constant	2.698	0.379		7.118	0.000
Awareness about BIM in the AEC industry	0.327	0.094	0.362	3.493	0.001
Dependent Variable: Effective way to implementation of BIM					

Table IX presents the results of the one-way ANOVA test, which was conducted to determine whether there were significant differences between the effective implementation of BIM and the knowledge of its practical applications. The level of significance was found to be 0.065, which is greater than the pre-established level of significance of 0.05. This suggests that the relationship between the independent variable (knowledge about practical applications of BIM) and the dependent variable (effective way to implement BIM) is not statistically significant. This indicates that other factors may also be important in determining the effectiveness of BIM implementation.

TABLE IX. ANOVA TEST OF SIGNIFICANT DIFFERENCES BETWEEN EFFECTIVE IMPLEMENTATION OF BIM AND KNOWLEDGE OF PRACTICAL APPLICATION OF BIM

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
	Regression	1.387	1	1.387	3.501	.065
	Residual	32.092	81	.396		
	Total	33.480	82			
Dependent Variable: Effective way to implementation of BIM						
Predictors: (Constant), Know practical applications of BIM						

The regression analysis conducted between the knowledge about the practical applications of BIM and the effective implementation of BIM, as shown in Table X, indicates that knowledge about the practical applications of BIM has a positive yet marginally significant impact on the effective implementation of BIM. This is evidenced by a *B* coefficient of 0.135 and a *p*-value of 0.065. This indicates that for each unit increase in practical BIM knowledge, the effectiveness of its implementation increases by 0.135 units.

TABLE X. COEFFICIENT ANALYSIS

	Unstandardized Coefficients		**Standardized Coefficients**	*t*	**Sig.**
	B	Std. Error	Beta		
(Constant) knowledge	3.672	0.190		19.346	0.000
about practical applications of BIM.	0.135	0.072	0.204	1.871	0.065
Dependent Variable: Effective way to implementation of BIM					

Nevertheless, given that the *p*-value is marginally above the conventional significance level of 0.05, the evidence is insufficient to definitively conclude that a relationship exists. The overall model also indicates that, while practical knowledge of BIM is undoubtedly a significant factor, there are likely additional elements that influence the effective implementation of BIM in the AEC industry:

- A total of 82% of the participants expressed a desire to participate in BIM-related training. This indicates a clear need for the organization of proper and continuous training and development sessions by relevant professional associations and governmental agencies with the aim of enhancing BIM skills.
- The majority of participants (40%) were aware of BIM technology through seminars, while 22% were aware of it through their workplaces. These are the two primary sources through which AEC professionals can gain insight into the advantages of BIM technology and apply it to actual projects. Additionally, although 11% were able to gain knowledge about BIM through academic courses, further training and development in this area will enhance their awareness and expertise, enabling them to effectively implement BIM in their professional careers.
- As 69% of the participants were not involved in projects that use BIM, it is evident that for the effective implementation of BIM in every AEC project, it is not merely a matter of application, but also of implementation and usage of BIM technology at each stage of the project life cycle. Furthermore, the effective implementation of BIM can be achieved through the implementation of government mandates, the provision of affordable and easily accessible BIM software, the fostering of client awareness regarding the benefits of BIM technology in projects, and the raising of awareness among associated stakeholders.
- Additionally, the study identified several significant challenges to the adoption of BIM in Nepal, including a lack of education and training opportunities, insufficient governmental guidelines, and limited knowledge of BIM applications. Effective strategies for promoting the implementation of BIM include increasing the provision of BIM education in engineering colleges, raising awareness through the presentation of real-world use cases, and the introduction of government mandates for BIM adoption.
- The findings of the analytical analysis indicate that with each unit increase in BIM awareness, the challenges for effective implementation change by less than a unit. Moreover, for each unit increase in practical knowledge of BIM, the effectiveness of its implementation increases by a marginal amount.

IV. DISCUSSION

In the context of rapid advancements and intense competition in the construction sector, engineering management companies face significant challenges in meeting the growing demand for superior services while maintaining low costs [32]. It is imperative that cost control variables be taken into account during the planning, design, bidding, and construction phases of any project in order to guarantee completion within the specified time and budgetary constraints [33]. This research is aligned with the assertion put forth by authors in [34], which posits that ideas and technologies form the basis of the BIM process. This process serves to unify all project disciplines and facilitate the development and visualization of the traditional practice of project execution. The principal reason for the dearth of awareness is the reluctance of organizations to integrate BIM into their project methodologies. The primary impediment to the implementation of BIM in the construction industry is the lack of familiarity among employees with the technology and its application process. Authors in [35] yielded the conclusion that 49.7% of the selected professionals are aware of BIM, while authors in [32] found that 38% of respondents were aware of the benefits of BIM. Authors in [26] conducted a study on the awareness of BIM among professionals in the hydropower sector in Nepal. The findings indicated that only 9% of professionals in this field were aware of BIM. In a study conducted by authors in [34] on the Malaysian construction industry in the state of Melaka, it was found that 54% of the 90 Malaysian construction professionals surveyed were aware of BIM. In this study, a survey was conducted in the Nepalese construction industry, which yielded a result of 55% of professionals being aware of BIM. This is comparable to the level of awareness observed in the Malaysian construction industry. This study employs a questionnaire to assess the level of awareness among professionals in Nepal's AEC field regarding the use of BIM. The findings of this research indicate that AEC professionals demonstrate a moderate level of awareness regarding BIM. The findings underscore the necessity for augmented BIM education and training to enhance awareness and practical implementation. It is recommended that educational initiatives and professional development programs be enhanced in order to foster wider BIM adoption and address the existing gaps in Nepal's AEC industry.

V. CONCLUSIONS

This research evaluates the extent of Building Information Modeling (BIM) awareness and implementation within the

Nepalese Architecture, Engineering, and Construction (AEC) sector. A total of 150 main data points for the study were gathered via a structured questionnaire administered to experts in the AEC industry (architecture, civil engineering, structural engineering, mechanical engineering, electrical engineering, plumbing, and others). The selected respondents were chosen using the convenience sample method from the AEC industry. A quantitative research methodology was used for data analysis, frequently characterized by its descriptive nature. The survey findings suggest that while experts in the Nepalese AEC sector demonstrate a moderate understanding of BIM technology, the majority of professionals exhibit limited application of this technology in their work. The research findings indicate that 83 professionals, representing 55% of the AEC sector, are familiar with BIM. Of these, 69% use it in their projects. Among them, 85.5% employ BIM during the design phase, 12.7% during construction, and 1.8% in operations and maintenance. Despite awareness, actual application knowledge was limited, with 69% using BIM predominantly in design phases and 61.8% possessing less than two years of BIM experience. Conversely, 57 respondents, including 45%, are unfamiliar with BIM technology. The findings presented in this study may lack generalizability to the entire Nepalese AEC industries, due to the fact that the research is based solely on a convenience sample of 150 AEC professionals, which does not adequately represent the total population of registered AEC professionals in Nepal. In light of the limited understanding of the actual implementation of BIM and the minimal awareness of it among AEC professionals, the study recommends that academic institutions and professional development programs should provide enhanced BIM education and training in order to facilitate broader and more effective BIM adoption in Nepal's AEC industry.

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