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Evaluating Green Building Knowledge, Attitude, and Practices Among Kathmandu Valley Architects and Engineers with a Focus on Energy Efficiency

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Abstract
The core values of green building are centered on optimizing energy usage to reduce the environmental footprint associated with building construction. Building stakeholders such as architects and engineers are pivotal in promoting the growth of green and energy-efficient building practices. Despite the essentiality of green and energy-efficient buildings and the apparent role of architects and engineers, there is a limited study on the stakeholders' perspectives on these building practices. This study aims to assess the above-mentioned stakeholders' existing knowledge, attitude, and practice regarding green buildings with an emphasis on energy efficiency. A questionnaire survey was conducted to evaluate the situation within the context of Nepal through the perspectives of architects and engineers practicing in Kathmandu Valley. Data was collected from 363 architects and engineers based in the valley. The collected data was analyzed using descriptive statistics. The results showed that the respondents' knowledge level regarding green and energy-efficient buildings was moderate, whereas their attitude was moderately positive. In contrast, the practice level of these stakeholders was found to be low. It is observed that there is a gap between knowledge and attitude versus actual practice among engineering professionals, suggesting a prevalence of challenges to the adoption of green and energy-efficient buildings. This study provides a holistic picture of present green and energy-efficient building practices in Nepal. It serves as a decision-making reference for the building industry stakeholders for facilitating the implementation of such practices in the country.

Keywords
Green building, Energy efficiency, Knowledge attitude practice, Stakeholders' perception, Green buildings in Nepal

1. Introduction

Buildings account for 30% of total final energy consumption and 27% of the total energy sector emissions globally [1]. Consequently, the escalating levels of greenhouse gas emissions in the atmosphere have prompted the global population to proactively advocate sustainability and address the consequences of climate change [2]. The inception of the notion of sustainability as a means to mitigate the impacts of climate change was inaugurated in the Brundtland Report, a publication by the United Nations World Commission on Environment and Development (WCED) in the year 1987 [3, 4]. Concurrently, the concept of a building that integrates sustainable features into its design, commonly referred to as a green building, was introduced during the 1990s [5]. Green building design is defined as the approach of designing and constructing resource-efficient structures at every stage of the building's lifespan - from site selection to eventual deconstruction - while being accountable to the environment [6]. The essence of green building design lies in reducing energy, water, and material consumption while simultaneously optimizing occupant well-being by enhancing indoor air quality and thermal comfort [7].

Energy plays a pivotal role in the realm of green buildings. The principles of green building revolve around optimizing energy consumption, wherein buildings strive to operate at minimal energy usage while providing adequate comfort for occupants [8]. Fundamental strategies for managing energy in green buildings encompass reducing energy demands and improving energy efficiency [9].

As a developing country, Nepal is currently engaged in numerous development activities, including constructing numerous buildings, leading to an increase in energy consumption and GHG emissions [10]. Moreover, Nepal has been suffering from an energy crisis for decades due to the widening gap between the energy supply and demand due to various issues concerning insufficient energy infrastructure, dependence on energy imports, lack of proper energy management, and unsustainable energy strategies, among other reasons [11]. Despite the country's energy crisis, there has not been much focus on green practices and green building construction in Nepal, which would have reduced the net energy consumption [12]. Additionally, there is still a focus on conventional building practices with limited incorporation of green elements [13]. Due to this, many constructions lack sustainable features and practices throughout their life-cycle [8].

Promoting and implementing green buildings or any building project requires the participation of stakeholders, encompassing a diverse range of individuals and groups, including engineers, architects, clients, developers, contractors, suppliers, end-users, government entities, and the public [14]. Among them, architects and engineers are building designers involved from the beginning of any building project and have roles in planning, developing, and implementing sustainable design practices [15].

The existing literature suggests the need for an assessment of building stakeholders' perceptions to promote sustainable building implementation [16]. For this purpose, a knowledge, attitude, and practice (KAP) survey may be conducted to assess a group's knowledge, attitude, and practice regarding a subject matter [17]. Despite the significance of a KAP survey, a lack of literature is observed on the KAP scenario of building stakeholders within the Nepalese context.

To address the research gap, this study employs a questionnaire survey approach to evaluate the existing status of green and energy-efficient building projects in Nepal through analysis of the KAP level of architects and engineers. This study contributes to the body of knowledge on building designers' KAP level towards green and energy-efficient buildings. It serves as a decision-making instrument for policymakers, designers, and other building industry stakeholders to develop mechanisms that effectively promote energy efficiency strategies in the construction of green buildings through a comprehensive understanding of the current situation.

The rest of the paper is structured as follows. Section 2 provides the background and related work resulting from a literature review. The research methodology applied in this research is provided in Section 3. Section 4 provides the results, while section 5 presents the discussion based on the results. Section 6 concludes this paper.

2. Literature Review

2.1 Green building and energy efficiency

The green building concept is highly intertwined with the energy efficiency concept. Building energy efficiency relates to reduced energy consumption, use of passive design techniques [9], minimized embodied energy in building materials, use of renewable energy sources on-site [18], which are significant strategies for making a building green. Buildings can be planned to use less energy and more renewable resources for carrying out construction processes. Buildings can also be designed using passive design measures, incorporating optimum natural lighting and natural ventilation, which helps to consume less energy. Energy-efficient devices and equipment like sensor lighting, LED bulbs, and energy-saving rated equipment reduce energy use to a large extent [8]. Installation of green roofs, low-E glass for windows, low U-value of materials for building envelopes, use of shades on windows and walls, and effective window placement in the design phase are some of the green practices that allow energy use reduction and energy efficiency [19].

2.2 Architects and engineers in green building

Recognizing the perspectives of diverse stakeholders involved in a construction project, including those engaged in green building projects, holds considerable significance due to the stakeholders' pivotal roles in the decision-making process of any sustainable undertaking [20]. Among different building stakeholders, architects and engineers emerge as key contributors during the design phase of any building project [15].

Innovative approaches like green and energy-efficient building methodologies rely heavily on the pivotal roles of "middle-level" building industry players, namely architects and engineers, who wield the power to instigate change across multiple dimensions, be it upstream, downstream or sideways, through their influential capacities [21]. Their ability to convey insights to policymakers (upstream), clients (downstream), and peers in related institutions (sideways) position them as conduits for transformative practices within their domain. Their expertise can shape policy recommendations, influence client decisions, and mobilize sustainable practices across their field [22]. Furthermore, the practices of these intermediaries can inspire their associates to adopt similar approaches, thus propagating change within the industry [21].

Sustainable construction, encompassing green and energy-efficient building approaches, necessitates a collaborative effort between architects and designers, extending to engineers with varied specializations [23, 24]. Engineers such as structural engineers contribute by undertaking life-cycle analyses of materials and framing systems, striving to optimize overall designs that mitigate the project's environmental impact [25]. Similarly, mechanical and electrical engineers engage in projects encompassing environmental control systems for ventilation, heating, lighting, and acoustics and mechanical transportation systems like lifts and escalators, significantly influencing a building's long-term energy consumption [26, 25]. A synergy among design professionals and an early integration of engineering insights during the conceptual phase is vital for a successful building project [27, 24].

2.3 KAP survey

A knowledge, attitude, and practice (KAP) survey helps to evaluate the knowledge, attitude, and practices of a group, which helps to acquire essential information on the subject matter in hand based on what is currently known by the group on the subject, how the group perceives it, and what is done about it by the group [17, 28].

A KAP survey is based on the fact that attitudes are influenced by knowledge and that both knowledge and attitudes serve as foundational pillars for the development of effective practices [29]. The decision to practice is shaped by the level of knowledge on that subject [30]. More knowledge on the subject helps to change people's attitudes and subsequent practices [31].

Similar studies have been conducted previously. A KAP study conducted in Hong Kong examined the KAP levels of multiple stakeholders toward zero-carbon buildings [32]. A similar study was performed to identify challenges to green construction from the contractors' perspective in Malaysia [33]. Another KAP survey examined multiple stakeholders' perspectives on the motivations and barriers to adopting green buildings in New Zealand [34]. A comparable study in Zambia helped to investigate the KAP levels of stakeholders of residential building projects [35].

3. Research Method

3.1 Questionnaire survey

A comprehensive examination of the current state-of-the-art literature on green and energy-efficient building practices facilitated the designing and developing a set of survey questionnaires. The deployment of these questionnaires played a pivotal role in ascertaining the present scenario concerning the adoption of green and energy-efficient building practices within the local context. The survey questionnaire was instrumental in collecting quantitative data from architects and engineers. It was primarily distributed online to architects and engineers using available survey tools, including Google Forms.

The questionnaire collected demographics and general information of the respondents, including experience and roles. The questionnaire comprised the section to gather information on current green and energy-efficient practices scenarios using questions to test the respondents' existing knowledge, attitude, and practice on green and energy-efficient practices. This section was used to collect data on what people know, how they feel, and what they do [36]. The knowledge questions helped to assess the respondents' awareness of green and energy-efficient building practices. Theoretical knowledge and familiarity with green and energy-efficient technologies, materials, and practices were evaluated using these questions. Questions on attitude allowed the investigation of the respondents' attitudes in terms of their motivation, awareness, and sense of responsibility toward green buildings [34]. The aim of the questions on practice helped to assess the level of current practice of green and energy-efficient buildings in Nepal through the evaluation of the respondents' experiences.

3.2 Data collection

A few architects and engineers were sent the online questionnaire to conduct a pilot survey, which helped improve the questions' clarity. The pilot survey helped to validate the measurement scale used before distributing the questionnaire [37]. After integrating the feedback from the pilot survey, the questionnaire was distributed online among architects and engineers. The research employed a random sampling technique to select participants. This approach enabled the creation of a sample that genuinely reflects the broader population of architects, civil engineers, mechanical engineers, and electrical engineers residing within the Kathmandu Valley. Through the application of a sample size determination formula [38], it was established that a sample size of 350 individuals is necessary to satisfy the criteria of a 95% confidence level and a 5% margin of error, considering the overall population of 3,904 architects and engineers based in Kathmandu valley, as per the membership database from Nepal Engineers' Association. For this purpose, hundreds of architects and engineers were invited to participate in the survey through emails and other online platforms.

3.3 Data analysis

All the collected data underwent analysis using various statistical tools. Data handling tools, IBM Statistical Package for Social Science (SPSS) and Microsoft Excel software, were used for descriptive analysis. Total mean scores were used to assess the existing scenarios. Furthermore, the responses were grouped according to architect and engineer professions, allowing for comparing the current scenario among those professions regarding green building.

4. Results

4.1 Background and demographics of the respondents

A total of 363 responses were received. The results are presented in Table 1. The table shows that a substantial portion of the survey respondents were 20 to 29 years old. Conversely, the gender distribution of respondents leaned towards a majority being male. Notably, a significant proportion of respondents held both a bachelor's and a master's degree. Furthermore, the survey revealed a prevalence of civil engineers as the primary respondent group, followed by architects as the second largest. The survey pool included participants from diverse professional backgrounds, including mechanical and electrical engineers. Software engineers, researchers, urban planners, hydrologists, and energy experts comprised of the profession category 'other engineering background'. Almost half of the respondents had work experience of 1-5 years.

Table 1: Demographic information of respondents (n = 363)

Variable	Category	Percentage %
Age	20-29 years	59.0
	30-39 years	29.8
	40-49 years	7.4
	50-59 years	2.8
	>59 years	1.1
Gender	Male	72.5
	Female	27.5
Education Level	Bachelors	46.6
	Masters	49.9
	Ph. D.	3.6
Professional Background	Architect	22.9
	Civil Engineer	62.1
	Electrical Engineer	5.8
	Mechanical Engineer	7.4
	Other engineering background	2.8
Work Experience	<1 year	9.6
	1-5 years	45.2
	5-10 years	25.6
	10-15 years	8.3
	>15 years	11.3

4.2 Knowledge, Attitude, and Practice

4.2.1 Knowledge level of the respondents

Table 2 shows the percentage distribution of different categories under knowledge variables. From the table, it can be deduced that most of the respondents had moderate knowledge of green and energy-efficient building practices. Almost half of the respondents were moderately familiar with environment-friendly, energy-efficient materials and technologies. As for familiarity with the latest advancements in green building technologies and energy-efficient systems, many were only slightly familiar.

Table 2: Results of knowledge variables (n = 363)

Variable	Category	Percentage %
Level of knowledge on green and energy-efficient building practices	Very Limited	7.7
	Limited	24.8
	Moderate	42.1
	Good	22.9
	Extensive	2.5
Familiarity with environment-friendly energy-efficient materials and technologies	Not Familiar at All	4.7
	Slightly Familiar	37.2
	Moderately Familiar	46.0
	Very Familiar	11.0
	Extremely Familiar	1.1
Familiarity with the latest advancements	Not Familiar at All	11.3
	Slightly Familiar	42.1
	Moderately Familiar	38.0
	Very Familiar	7.4
	Extremely Familiar	1.1

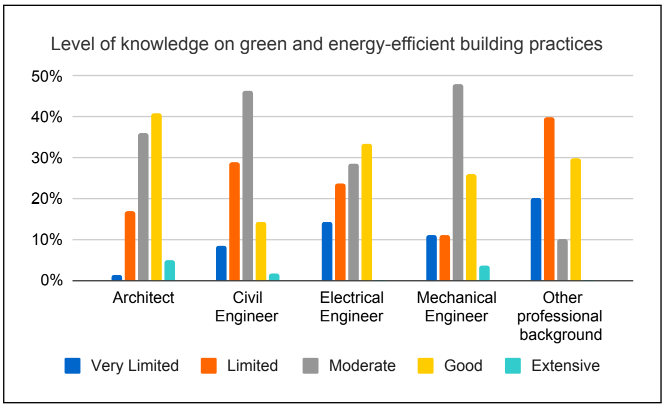

Figure 1: Level of knowledge on green and energy-efficient building practices as per the respondents (n = 363)

It is observed from Figure 1 that most of the architects perceived their level of knowledge as good, which corroborates with the score obtained in Table 4. Most civil engineers identified their knowledge as moderate level, which also supports the score from the table. Most electrical engineers considered they had good knowledge; however, the results of knowledge scores from the table suggest they have moderate knowledge only. On the other hand, mechanical engineers believed they had a moderate level of knowledge, which also matched the observed scores from the table. Most professionals from other engineering backgrounds believed they had limited knowledge only, while many also believed they had good knowledge. However, the score obtained in the table suggests they had a moderate knowledge of green and energy-efficient building practices.

Overall knowledge level was determined using scores for questions on the respondents' knowledge. Options suggesting a higher level of knowledge were given higher scores, whereas options suggesting a lower level of knowledge were given lower scores. For the section of questions requiring a response in the Likert scale, a score of 0 was assigned for 'strongly disagree', 'disagree', and 'not sure' - signifying a lack of understanding of the subject matter. A score of 1 was assigned for 'agree' and 'strongly agree', whereas a score of 0.5 was provided for the 'neutral' option - suggesting the lack of bias on the subject. There were nine questions on knowledge assessment. A maximum score of 21 could be achieved, whereas a minimum score of 3 was possible using the summation of scores. The mean scores suggested the respondents' knowledge level on average. The means were categorized into five groups, as shown in Table 3. From Table 4, it is observed that the summation of mean scores of the total sample of respondents was 12.84, suggesting the respondents had a moderate knowledge of green and energy-efficient building practices.

Table 3: Range of scores to determine level of knowledge

Level of Knowledge	Range
Very Limited	3.0 – 6.6
Limited	6.6 – 10.2
Moderate	10.2 – 13.8
Good	13.8 – 17.4
Extensive	17.4 – 21.0

Table 4: Knowledge scores according to professional background

Professional Background	Total Mean Score	Level of Knowledge
Architect	13.94	Good
Civil Engineer	12.52	Moderate
Electrical Engineer	12.67	Moderate
Mechanical Engineer	13.07	Moderate
Other Engineering Background	10.65	Moderate
Total	12.84	Moderate

4.2.2 Attitude of the respondent

The respondents' attitudes were investigated regarding their perception of motivation and willingness to deliver green and energy-efficient buildings. The motivation variables were derived from the study in [34]. Figure 2 shows that most respondents had a 'reduction of environment impacts' as the primary motivation for opting for green and energy-efficient building practices. Most respondents also chose 'improvement of the quality of life' as motivation. The motivation for 'low running cost' was chosen by half of the respondents as well. Other motivations included 'government regulations,' 'client's demand,' and 'organizational image', which fewer respondents chose.

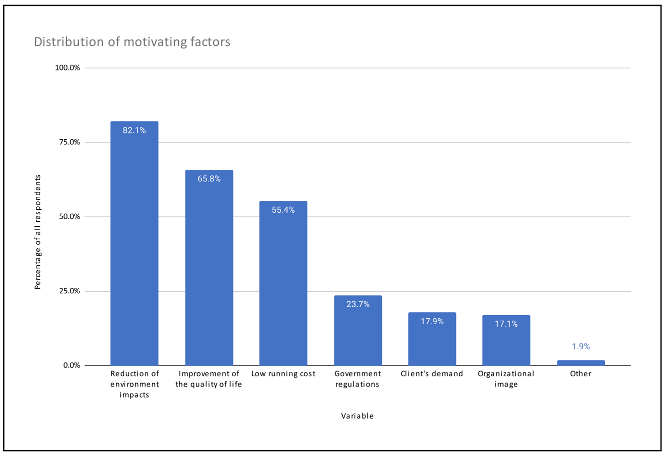

Figure 2: Distribution of motivating factors for green and energy-efficient buildings (n = 363)

Table 5 shows the percentage distribution of different categories under attitude variables. The table demonstrates that most respondents considered integrating green and energy-efficient practices in their projects as very important. Many considered these practices to be highly crucial as well. The majority of different professionals agreed that sustainability and energy efficiency should be considered important factors when designing/building a project, while many strongly agreed on the matter. There were a few who were unbiased to the concept as well. More than half of the respondents were somewhat confident that they could incorporate green and energy-efficient practices in their works. It is also observed that almost half of the respondents believed Nepalese architects and engineers were neutral towards the delivery of green and energy-efficient buildings.

Table 5: Results of attitude variables (n = 363)

Variable	Category	Percentage %
Importance for integration of green & energy-efficient practices in projects	Not important at all	0.6
	Somewhat important	12.4
	Very important	54.5
	Extremely important	32.5
Consideration of sustainability and energy efficiency as important factors	Strongly disagree	2.5
	Disagree	1.4
	Neutral	9.6
	Agree	54.8
	Strongly agree	31.7
Confidence to incorporate green & energy-efficient practices in projects	Not confident at all	11.6
	Somewhat confident	55.9
	Very confident	28.7
	Extremely confident	3.9
Willingness of architects/engineers to deliver green & energy-efficient buildings	Very weak	5.0
	Weak	27.0
	Neutral	40.2
	Strong	24.8
	Very strong	3.0

Similar to the calculation of the knowledge score, the overall attitude was determined by using scores for questions on the attitude of the respondents. There were four questions on attitude assessment. A maximum score of 18 could be achieved, whereas a minimum score of 4 was possible using the summation of scores. The means were categorized into four groups, as shown in Table 6. From Table 7, the summation of the mean scores of the total sample of respondents was 12.50, suggesting the respondents had a moderately positive attitude toward adopting green and energy-efficient building practices.

Table 6: Range of scores to determine level of positive attitude

Level of Positive Attitude	Range
Limited	4.0 - 7.5
Slight	7.5 - 11.0
Moderate	11.0 - 14.5
High	14.5 - 18.0

Table 7: Attitude scores according to professional background

Professional Background	Total Mean Score	Level of Positive Attitude
Architect	12.58	Moderate
Civil Engineer	12.41	Moderate
Electrical Engineer	13.29	Moderate
Mechanical Engineer	12.37	Moderate
Other Engineering Background	12.30	Moderate
Total	12.50	Moderate

4.3 Practice scenario of the respondents

Table 8 shows the percentage distribution of different categories under practice variables. The table illustrates that most respondents had yet to experience energy-efficient building practices, which is also observed in Figure 3. Out of the respondents with some previous work experience in the field, most had experience of 1-5 years. Table 8 also shows that only a few respondents applied their knowledge of green and energy-efficient practices and technologies in their work always. Most of them applied their knowledge occasionally or rarely only. Some had never applied their knowledge in their work as well. It is also observed that most of the respondents have yet to participate in seminars, conferences, workshops, or training on green and energy-efficient buildings. Figure 4 shows that most architects had previously participated in seminars, conferences, workshops, or training on green and energy-efficient buildings. In contrast, most civil, electrical, and mechanical engineers never participated in such programs. The respondents of other engineering backgrounds were evenly split regarding their engagement in these activities and programs.

Table 8: Results of practice variables (n = 363)

Variable	Category	Percentage %
Previous work experience in energy- efficient building practices	No	72.2
	Yes	27.8
Work experience in energy-efficient building practices	<1 year	9.9
	1-5 years	13.2
	5-10 years	3.6
	10-15 years	0.3
	>15 years	0.8
Application of knowledge of green and energy-efficient practices and technologies	Never	6.1
	Rarely	32.5
	Occasionally	41.0
	Frequently	15.7
	Always	4.7
Willingness of architects/ engineers to deliver green and energy-efficient buildings	No	60.6
	Yes	39.4

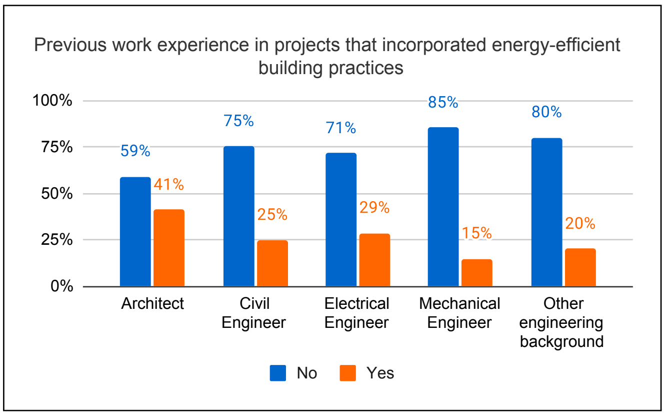

Figure 3: Previous work experience in projects that incorporated energy-efficient building practices according to professional background (n = 363)

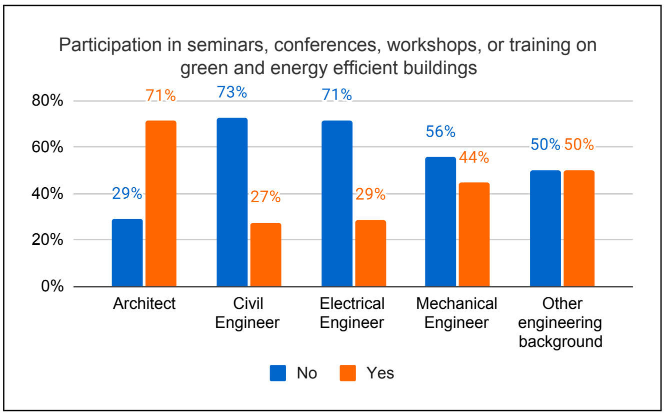

Figure 4: Participation in seminars, conferences, workshops, or training on green and energy efficient buildings according to professional background (n = 363)

The situation of the practice of green and energy-efficient buildings was determined using scores for questions on the respondent's practice, similar to the calculation of knowledge and attitude scores. There were four questions on the practice assessment. A maximum score of 12 could be achieved, whereas a minimum score of 1 was possible using the summation of scores. The means were categorized into four groups, as shown in table 9. Table 10 shows that the summation of mean scores of the total sample of respondents was 4.00, suggesting the respondents had a low level of green and energy-efficient building practices.

Table 9: Range of scores to determine level of practice

Level of Practice	Range
Very Limited	1.0 - 3.0
Low	3.0 - 6.0
Moderate	6.0 - 9.0
High	9.0 - 12.0

Table 10: Practice scores according to professional background

Professional Background	Total Mean Score	Level of Practice
Architect	5.05	Low
Civil Engineer	3.67	Low
Electrical Engineer	3.95	Low
Mechanical Engineer	3.59	Low
Other Engineering Background	3.90	Low
Total	4.00	Low

5. Discussion

In this section, we discuss the results (Section 5.1) and provide implications of the study (Section 5.2).

5.1 Discussion of results

The results on the demography of the respondents underscore a predominant youth representation among professionals in the engineering field. It was also found that the engineering field was male-dominated, with more male respondents in the survey. It was observed that the majority of respondents were civil engineers or architects, suggesting that the result of this study is primarily based on the views of those two professions.

A considerable portion of participants understood the concepts surrounding green and energy-efficient building methodologies moderately well. Their familiarity stood similarly in the case of environmentally friendly energy-efficient materials and technologies, while most lacked adequate familiarity regarding the latest advancements in the field. Architects were found to have a better knowledge of green and energy-efficient practices than other professionals.

Similarly, many believed that green and energy efficiency were significant concepts to incorporate into building projects. The respondents had different motivations for integrating green and energy-efficient building practices into their projects, such as to reduce the environmental impacts of buildings, to improve the quality of life of building occupants, and to reduce the running cost of buildings. Other motivations for the respondents were to adhere to government regulations, satisfy clients' demands, and achieve the organizational image – the options that were chosen by only a few respondents, suggesting these options were not sought-after in green and energy-efficient building practices in Nepal.

A moderate positive attitude toward adopting these practices was observed from the results of data analysis. However, the willingness of architects and engineers to contribute to building green and energy-efficient constructions was lacking in practical execution despite the motivating factors. This disposition was further reinforced by the participants' limited experience in working on such projects. Most respondents had no previous experience of energy-efficient building practices, although most had work experience of 1 year or more. It shows that most building works do not incorporate green and energy-efficient strategies. Inadequate experience in such projects accounts for the limited practice of green and energy-efficient buildings in Nepal. Higher experiences may have suggested otherwise. The results of the application of knowledge of green and energy-efficient practices and technologies also verify the lack of practice. The experience period ranging from 1 to 5 years suggests that the concepts of green and energy-efficient practices are novel in the local context of Nepal. A lack of experience in green building projects, along with a limited transition of buildings into green, is also underscored in the study conducted in [39].

Most survey participants never participated in training, seminars, or other capacity-building activities. Lack of participation in such programs could have also resulted in their limited involvement in green practices. It is also realized that architects are more involved in such projects and programs, suggesting the need for other professionals to adopt green and energy-efficient building practices and participate in related capacity-building activities.

Although most respondents had reasonable knowledge and acceptable attitudes regarding green and energy-efficient building practices, many of them did not apply their knowledge to practice. Similar results were obtained in the studies conducted in [34] and [40]. The reason behind this is a lack of practical knowledge despite the considerable knowledge of theory. It is realized from the literature that practical knowledge of professionals is fundamental since knowledge acquired from academics is only less effective than that obtained through actual practice [41]. However, the educational system in Nepal is not oriented towards practical education; instead, the studies are merely theoretical [42]. Thus, merely having theoretical awareness might not mean acquired practical knowledge in the field, which corroborates the findings of the study that demonstrates lower experiences in the green building field despite adequate knowledge.

Comparable to this study, studies conducted in other developing countries also had similar findings. The knowledge level of construction professionals in Nigeria [43] was considerable. The study participants conducted in India [44] were also aware of green construction practices. However, the adoption of such building practices was slow in these countries. Notably, the translation of substantial theoretical knowledge into practice is found to be restrained. It is observed that there is a gap between people's knowledge and attitude versus their practice.

5.2 Implications

While possessing a higher level of knowledge and a more positive attitude towards green and energy-efficient building practices may not guarantee their actual practice, it is crucial to elevate the understanding of these practices among various stakeholders to bridge the gap between knowledge and attitude with practice. It is vital to undertake initiatives to positively influence the perception of people and encourage a greater acceptance of these practices. To translate theoretical knowledge into practice, capacity development programs are imperative to raise multiple stakeholders' awareness and skill levels. Policies and strategies are necessary to facilitate the proper implementation of green and energy-efficient building practices. A market for green and energy-efficient materials and technologies should also be established and developed to persuade more people to undertake them.

It is essential to realize the shared responsibility of multiple stakeholders rather than assigning the sole obligation to a single group or entity in the adoption and growth of green and energy-efficient building practices. Collaboration among various stakeholders, including government bodies, construction industry associations, and educational institutions, is essential for effective adoption and practice.

6. Conclusion

This paper aimed to assess the knowledge, attitude, and practices of architects and engineers in Kathmandu Valley regarding green building while emphasizing energy. The perspectives of architects and engineers were observed through a questionnaire survey approach. The study revealed significant insights into the familiarity and attitudes associated with green and energy-efficient buildings, which helped to identify the present scenario of green building adoption in the country. The results of this study provide a general picture of the situation of green and energy-efficient buildings in Nepal.

Most respondents demonstrated a moderate understanding of green and energy-efficient building practices. Likewise, a moderate positive attitude towards the adoption of such practices was observed in the study. The driving forces behind adopting green and energy-efficient building practices were also underscored. However, the willingness of architects and engineers to contribute in creating green and energy-efficient buildings was somewhat lacking in practical execution despite the motivating factors.

This research offers a valuable addition to the existing pool of information regarding the viewpoints of building designers concerning green and energy-efficient construction methodologies through the level of knowledge, attitude, and practice in the subject matter. However, owing to the constrained duration of this research, the study was constrained in its capacity to encompass perspectives from building stakeholders beyond architects and engineers. Consequently, it is advisable to undertake additional research endeavors that specifically address the remaining stakeholder groups. Nevertheless, this study has a pivotal role as a guiding tool for policymakers, designers, and other stakeholders within the construction sector. Its insights can facilitate the formulating of strategies and mechanisms that appropriately foster energy-efficient strategies within the realm of green building construction. By comprehensively capturing the current landscape of green and energy-efficient buildings in Nepal, this study provides a foundation for informed decision-making and strategic planning.

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