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EMPLOYEES' ACCEPTANCE TOWARD APPLICATION OF INDUSTRIALIZED BUILDING SYSTEM (IBS) IN CONSTRUCTION PROJECTS

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Abstract: *The Industrialized Building System (IBS) has evolved as an innovative technology in the building sector, providing increased efficiency, quality control, and environmental benefits. This study investigates the important elements influencing employee acceptance of IBS applications in construction projects. A survey was conducted among 150 industry professionals chosen using Krejcie and Morgan's (1970) sampling table. The data was evaluated using regression analysis to determine the impact of knowledge (EK), training and development (T&D), organizational support (OS), and IBS performance (IBSP) on employee acceptance. The study found that all four parameters have a substantial influence on IBS adoption (R^2 = 0.307), accounting for 30.7% of the variation. The findings highlight the relevance of structured training programs and organizational support in increasing employees' willingness to accept and adopt IBS in Malaysia's construction industry.*

Keywords: *Knowledge, Training and Development, Organizational Support, IBS Performance*

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Introduction

The construction sector is critical to Malaysia's economic development, contributing significantly to infrastructure expansion, employment generation, and urban development. This sector contributes to the nation's economic success by providing critical infrastructure that supports a variety of other businesses and promotes economic activity. The construction of roads, bridges, schools, hospitals, and other key infrastructure projects has not only enhanced Malaysians' quality of life, but has also drawn foreign investment, hence increasing the economy (CIDB, 2024).

Malaysia's Industrialized Building System (IBS) was introduced and implemented in the 1960s. Initially, IBS was implemented to alleviate the country's chronic housing shortage (Saberi et al., 2022). Despite its early usage, IBS was not as common as it is now. The system was largely utilized to build residences quickly in response to the population's urgent demands. As a developing country, Malaysia is continually researching and using innovative construction methods to improve the performance and sustainability of its construction industry. The IBS signifies a substantial change toward more efficient and environmentally friendly construction processes. By prefabricated components in a controlled industrial setting and assembling them on-site, IBS decreases construction time, waste, and enhances overall quality and safety. This method is consistent with Malaysia's commitment to sustainable development and its goal of minimizing the environmental impact of construction activities (Ahmad & Zain, 2024).

The adoption and willingness to accept IBS is also motivated by the need to address traditional construction industry challenges such as labor shortages, rising costs, and the demand for higher-quality, more sustainable buildings. Malaysia hopes to improve the productivity and competitiveness of its construction sector by leveraging IBS benefits, thereby contributing to the country's economic growth and development (Lee & Lim, 2023). Employee acceptance and support are important for successful IBS deployment in construction projects. Companies may greatly improve employees' acceptance of IBS adoption and assure the successful realization of its benefits by offering knowledge, training and development, organizational support, and showcasing IBS performance, all while maintaining a positive workplace culture.

Research Background

In recent years, Malaysia has shown an increasing interest in the IBS, which entails the construction of utility components off-site. This modern building strategy has several potential advantages, including increased construction efficiency, higher quality control, lower labor requirements, and increased sustainability. However, the successful implementation of IBS is dependent not only on technology improvements, but also on employee acceptance and engagement in building projects (Khor et al., 2021). The construction business employs project managers, construction managers, civil engineers, architects, project engineers, quantity surveyors, health and safety managers, and experienced tradesmen (El-Sawalhi & Lafy, 2021).

The Malaysian construction industry has experienced a growth in IBS implementation, with reports estimating an increase from 10% in 2000 to 40% in 2020 (CIDB, 2024). However, improvements in productivity are inconsistent. Identifying the fundamental elements impacting employees' acceptance of IBS is critical to closing this gap.

A key component of an IBS construction project's success is employee acceptability. The adoption and use of industrialized building systems may encounter major obstacles if staff members do not embrace and support them. Additionally, obtaining greater productivity and

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efficiency when applying IBS depends heavily on employee acceptance (Khor et al., 2021). As a result, it is critical that construction businesses address any employee reluctance or worries and give them the appropriate instruction and training on IBS practices (Mohsen et al., 2019). In addition to improving their abilities, this will help them better comprehend and accept the advantages of building with an industrialized building system. One of the most important variables is employees' awareness and knowledge about IBS. Providing extensive information and education about the benefits, processes, and technologies related with IBS can help to dispel misconceptions and increase acceptance. Effective knowledge dissemination ensures that staff are well-informed about the benefits and realities of IBS, which can foster a positive attitude towards its adoption.

Training and development are also necessary components. Well-designed training programs that provide hands-on experience, workshops, and chances for continual professional development can help staff improve their IBS skills and confidence. These programs should be adapted to the individual demands of different employee groups, ensuring that all personnel, from project managers to experienced tradesmen, are properly equipped to work with IBS (CIDB, 2024). Organizational support is important in promoting employee acceptability. This entails providing the required resources and tools, as well as cultivating a climate that fosters creativity and change. Management should actively demonstrate their commitment to IBS by incorporating employees in decision-making processes, responding to their concerns, and acknowledging their efforts. This strategy not only allows for smoother implementation, but it also improves overall job satisfaction and engagement among employees (Ministry of Works Malaysia, 2023).

Furthermore, the perceived benefits and advantages of employing IBS might have a considerable impact on employee adoption. Employees are more inclined to embrace IBS if they believe it would improve efficiency, quality control, and reduce labor requirements. Highlighting these advantages through real-world experiences and case studies can aid in developing a positive image of IBS. The company culture and climate for innovation and change are also important considerations. A healthy workplace culture that values open communication, collaboration, and continual progress might foster a more welcoming attitude toward new technologies like as IBS. Employees are more inclined to adopt new methods and systems when they believe their employer promotes innovation and encourages professional development (Hernández et al., 2008). Creating an organizational environment where employees feel supported and valued is crucial. This involves promoting teamwork, recognizing and rewarding innovative ideas, and providing opportunities for continuous learning and growth (Ministry of Works Malaysia, 2023). When employees perceive that their organization is committed to fostering innovation and supporting their professional development, they are more likely to embrace and effectively utilize new technologies like IBS (CIDB, 2024).

Employee adoption of IBS might also be influenced by its ease of use and perceived usefulness in daily work tasks. Employees are more likely to accept technologies that are easy to use and provide evident practical benefits in everyday operations. Ensuring that IBS is both efficient and simple to use can dramatically increase adoption rates. Employees' acceptance of IBS adoption in the construction sector is influenced by several aspects, including awareness and knowledge, training and development, organizational support, perceived benefits and organizational culture. By resolving these issues, construction companies can increase employee acceptance and successfully use IBS. Therefore, it leads to IBS performance.

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Problem Statement

The use of the IBS in construction projects has sparked widespread interest in Malaysia due to the potential benefits, which include higher construction efficiency, improved quality control, reduced labor requirements, and increased sustainability. However, the successful deployment of IBS is dependent not only on technology advances, but also on the viewpoints and acceptance of construction workers. This emphasis on employee acceptability is crucial, as Malaysia's construction industry has encountered several obstacles and issues, resulting in a decrease in productivity over time. Currently, the industry lags other developed economies and Malaysian economic sectors (Construction Industry Development Board, 2015).

However, Malaysia's construction industry continues to have poor adoption rates. According to a CIDB study (2024), only 30% of projects fully adopt IBS owing to employee reluctance. This study attempts to discover the factors that influence employee acceptance and provide practical insights to improve IBS implementation. Despite the obvious benefits and support from the government, the adoption rate for IBS remains low. Challenges such as low knowledge, insufficient training, and perceived high initial expenses continue to impede mainstream use. Addressing these difficulties is critical to fully realizing IBS's promise for increasing efficiency and sustainability in Malaysia's construction industry.

In addition, it is critical to understand the elements that influence employee acceptance of IBS in Malaysian construction projects. Identifying these elements, as well as the problems faced by employees and measures for increasing their participation and engagement, is critical for the successful implementation of IBS. Therefore, such understanding can benefit to shape effective interventions and support mechanisms, ensuring that the potential benefits of IBS are fully realized and that the construction industry's productivity and efficiency meet global standards (CIDB, 2024; Ministry of Works Malaysia, 2023).

The objective

To investigate the key factors influencing employees' acceptance and engagement with IBS in the Malaysian construction industry.

Literature Review

The IBS represents a significant advancement in construction methodologies, particularly within the Malaysian context. IBS involves the offsite construction of building components, which are then transported and assembled onsite. This system has garnered attention for its potential to enhance construction efficiency, improve quality control, reduce labor requirements, and promote sustainability (CIDB, 2024).

However, the successful application of IBS is dependent not just on technology developments, but also on employee acceptance and engagement in construction projects. The dependent variable regarded for this study is employee acceptance. The four independent variables (IVs) chosen for this study namely: employee knowledge (EK), training and development (T&D), organizational support (OS), and IBS performance (IBSP) are based on extensive literature that highlights their critical role in employees' acceptance of the Industrialized Building System. This literature review examines the factors influencing employee acceptance of IBS, the challenges faced, and the strategies for enhancing their participation and engagement.

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Employee Acceptance

Several studies have identified important elements influencing employee acceptance of IBS in construction projects. Mohsen et al. (2019) underline that employee acceptability is important to the successful implementation of IBS. They contend that without employee support, the transition to IBS may face significant opposition, particularly from workers used to traditional building processes. Similarly, Razak and Awang (2014) find that employees' opinions of the benefits and advantages of IBS are substantially connected to their adoption of the system. They believe that recognizing the real benefits of IBS, like increased efficiency and quality control, is critical to winning employee acceptance.

Other studies have investigated the effect of training and development in affecting employee acceptability. CIDB (2024) and the Ministry of Works Malaysia (2023) both emphasize the necessity of comprehensive training programs to provide personnel with the skills and knowledge required for IBS projects. These seminars can assist employees overcome any anxieties or misconceptions regarding IBS, increasing their confidence and proficiency in using the system. Hernández et al. (2008) emphasize the importance of hands-on training and ongoing professional development opportunities in cultivating a positive attitude toward IBS.

Involving employees in decision-making and actively soliciting their feedback is critical to establishing a sense of ownership and engagement with the IBS. Mohsen et al. (2019) found that employee participation in decision-making can greatly increase commitment to new building technology. Employers who address their employees' concerns and demands are better positioned to foster a positive attitude and higher acceptance of IBS in the workplace. Furthermore, offering extensive training and assistance during the transition to IBS is critical for employees' proper adaptation to new building methods. This support ensures that staff have the essential skills and confidence to use IBS, resulting in a smoother integration process.

Employee Knowledge

Employees must have a thorough understanding of the IBS to fully support its development and adoption (Ismail et al., 2019). This can be accomplished through comprehensive training programs, workshops, and ongoing communication, ensuring that staff are fully educated of the benefits and advantages of IBS. Employers can overcome potential opposition or doubt by increasing employees' knowledge and awareness, promoting acceptance and support in the workplace (CIDB, 2024).

Furthermore, integrating employees in decision-making can provide essential feedback and insights, which can considerably enhance implementation tactics and lead to better outcomes. When employees participate in decision-making, they feel a feeling of ownership, which can increase their engagement with IBS adoption (Mohsen et al., 2019). Furthermore, businesses must acknowledge the importance of social impact in their employees' social networks to promote wider acceptance of IBS. Employers can foster a positive attitude toward IBS by leveraging employee advocacy and encouraging employees to share positive experiences and information about the system with their social circles (Ismail et al., 2019).

Employers have an important role in developing employee acceptance of IBS, which is required for its successful adoption and implementation in the construction industry (Ministry of Works Malaysia, 2023). Employers who take a proactive approach to education, involvement, and advocacy can ensure an easier transition to IBS and maximise the potential benefits of this revolutionary construction style.

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Employees' understanding of IBS is a critical aspect in determining their readiness to embrace the system. Employees may be resistant to IBS due to a lack of awareness and comprehension of its benefits, construction procedures, and cost efficiency. Misconceptions can be corrected as knowledge dissemination increases, and personnel are more likely to realize the benefits of IBS in enhancing construction quality and efficiency (Razak & Awang, 2014).
Research suggests that employees' awareness and knowledge about IBS significantly impact their acceptance of the system. Providing extensive information on IBS benefits, processes, and technologies can help dispel misconceptions and enhance employees' confidence in adopting the system (Ismail et al., 2019). Employees who are well-informed about IBS advantages are more likely to perceive it as a valuable innovation, leading to higher acceptance rates. Employees with higher knowledge levels tend to have a positive attitude toward IBS.

Hypothesis 1 (H1): Knowledge significantly influences employees' acceptance of IBS applications.

Training and Development

Training and development are critical components for increasing employee adoption of the IBS. Employers may provide their employees with the skills and knowledge they need to effectively engage with IBS technologies and processes by providing thorough training programs. This training should include not only the technical components of IBS, but also any new tasks or duties that employees may take on within this framework (Razak & Awang, 2014). Providing continual learning opportunities is also critical to ensuring that personnel are up to date on the newest advances and best practices in IBS. This can be accomplished through workshops, seminars, and access to internet materials, allowing personnel to continuously develop their competences and keep current on evolving IBS approaches (CIDB, 2024).

Another important part of increasing employee acceptance is addressing any misconceptions or fears about IBS. Employers can accomplish this by providing open and transparent communication channels where employees can seek clarity, have their questions answered, and receive clear explanations of the benefits and advantages of implementing IBS (Razak & Awang, 2014). Creating a friendly and inclusive work atmosphere is critical for building trust, collaboration, and open communication. Such an environment promotes employee participation and engagement in IBS implementation, ultimately boosting their propensity to accept and support the system (Ismail et al., 2019).

Furthermore, integrating employees in the decision-making process for adopting and implementing IBS is a highly effective method. Employers can make employees feel appreciated and included by requesting their thoughts, opinions, and ideas, increasing their sense of ownership and dedication to IBS's success (Hernández et al., 2008). Furthermore, providing incentives and awards for employees who have a good attitude and actively contribute to the implementation of IBS might help to increase acceptance. These incentives can include money incentives like bonuses or salary increases, as well as non-financial recognition like employee of the month awards or public acknowledgement in business communications (Ismail et al., 2019).

Training programs are critical for providing employees with the skills the employees' need using IBS technology. According to the CIDB (2024), inadequate training is a key barrier to

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IBS adoption. The continual learning and training opportunities can all help employees enhance with IBS components. Therefore, it will lead to increased acceptance rates.
Employers can build a work climate conducive to the effective adoption of IBS by combining three strategies: training, open communication, participation in decision-making, and incentivization. Organizations can improve employee acceptance and commitment to IBS by creating a positive environment in which employees feel empowered, supported, and respected, resulting in improved implementation outcomes.

Comprehensive training programs, which include hands-on experience and professional development opportunities, are essential for enhancing employee competency and confidence in utilizing IBS (CIDB, 2024). Many studies underline the importance of skill development while integrating new technology into the construction industry.

Hypothesis 2 (H2): Training and development significantly influence employees' acceptance of IBS application.

Organizational Support

IBS have received a lot of interest in the construction industry due to its potential to increase production, efficiency, and sustainability. However, for IBS to be successfully implemented, employee acceptance and participation are critical variables. Organizations must provide enough support and resources to guarantee that staff are properly prepared to adopt and use IBS technologies. This assistance can take several forms, including training, clear communication tactics, and creating an inclusive work atmosphere (Wang et al., 2023).

Training and development programs are essential for providing personnel with the required skills and expertise to work with IBS. These training should address the unique processes and technologies involved in IBS, as well as any new roles or duties that employees may face (Razak & Awang, 2014; Ibrahim et al., 2023). Employers should also provide continual professional development to staff through workshops, seminars, and online tools that keep them up to date on the most recent advances in IBS technology and implementation procedures (Ismail et al., 2023).

Effective communication is another critical component in increasing employee acceptance of IBS. Organizations should use clear communication tactics to communicate the aims, objectives, and benefits of adopting IBS. This helps employees grasp the system's value and long-term impact, resulting in a more positive attitude toward its deployment (Mohsen et al., 2019; Rahman & Abubakar, 2023). Awareness initiatives should be developed to educate employees on the benefits of IBS and how it may improve their work processes. Employees who have a thorough awareness of IBS are more likely to overcome resistance and skepticism (Ismail et al., 2019).

Organizational support, including management commitment, resource availability, and employee decision-making participation, has been acknowledged as a critical aspect in IBS implementation (Ministry of Works Malaysia, 2023). Employees are more likely to adopt IBS if the organization support and providing effective direction and incentives.

Furthermore, integrating employees in decision-making processes is critical for strengthening their sense of ownership and commitment to IBS implementation. Giving employees a platform to voice their ideas and provide advice on the implementation approach promotes a positive

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company culture and increases acceptance (Hernández et al., 2008; Khor et al., 2023). Employees that feel valued and involved in decision-making are more likely to support the IBS change, resulting in better outcomes. Incentives and rewards play an important role in increasing acceptance. Organizations can establish a motivated workforce committed to the effective adoption of new technologies by recognizing and rewarding individuals who take a proactive role in IBS implementation (Ismail et al., 2019; Razak & Awang, 2014). These incentives might be both monetary (bonuses) and non-monetary (recognition programs or career advancement chances).

Finally, businesses should communicate openly with employees to clarify any worries or misconceptions they may have about IBS. Allowing employees to ask concerns and obtain clarifications might help to remove worries and make the transition to IBS go more smoothly. Fostering a supportive and inclusive work atmosphere that encourages teamwork, collaboration, and trust can also improve employee acceptance (Razak & Awang, 2014; Khor et al., 2023). Organizations that use these strategies—training, communication, involvement, incentives, and support—can greatly improve employee acceptance of IBS, resulting in higher productivity, better project outcomes, and more effective implementation of industrialized construction processes. This will not only improve the adaptability of prefabricated buildings, but it will also promote employee acceptability by demonstrating the benefits and potential of Industrialized Building Systems. Furthermore, professional groups and industry associations can help to increase employee acceptability of Industrialized Building Systems.

Employee views toward IBS are strongly influenced by organizational commitment. Employee motivation and willingness to accept IBS are enhanced by supportive management, access to essential resources, and an inclusive decision-making process (Ministry of Works Malaysia, 2023). Previous study has demonstrated that a lack of organizational support leads to employee resistance. Therefore, employees need support from organization are more willingness to accept IBS as new technology.

Hypothesis 3 (H3): Organizational support significantly influences employees' acceptance of IBS application.

IBS Performance

The establishment of the IBS Score is seen as a major milestone for promoting and improving the implementation of IBS in Malaysia. The IBS Score provides a complete framework for evaluating the effectiveness and performance of IBS in various construction projects (Musa et al., 2015; Abdullahi et al., 2023).

Therefore, construction stakeholders will have the tools they need to evaluate and benchmark IBS projects, allowing them to identify areas for improvement and share best practices. Implementing such a uniform method is predicted to result in continual improvements in the quality and efficiency of IBS adoption in Malaysia (Musa et al., 2015; Wong et al., 2023).

Furthermore, the Malaysian Treasury Circular has emerged as a key policy milestone targeted at expanding IBS adoption and implementation, notably in public building construction. This circular emphasizes the government's commitment to supporting IBS as a key component of the national construction strategy, recognizing its potential to increase productivity and minimize reliance on foreign labor (Jaffar & Lee, 2020; Abdullah et al., 2024). The institutional

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endorsement of IBS through such initiatives has encouraged its adoption in the public sector, thereby setting a standard for the private sector to emulate.

However, the adoption and acceptance rate of IBS in Malaysia remains low, remaining to issues such as a lack of provisions in standard form contracts, insufficient integration, and building sector fragmentation. The IBS Performance Report, as detailed by Fateh and Mohammad (2021), highlights the importance of specific measurements in standard contracts to solve these difficulties and promote wider use. The report advocates for the inclusion of provisions that support IBS techniques, ensuring that both public and private sector projects are in line with IBS objectives. Furthermore, the report emphasizes the importance of education and awareness campaigns in overcoming resistance and misconceptions about IBS among the construction circle (Fateh & Mohammad, 2021; Tan & Teh, 2024).

The IBS Performance Report acknowledges the benefits of IBS, such as improved quality control, decreased dependency on foreign labor, and increased sustainability. However, these benefits are mitigated by the ongoing challenges of low adoption rates and a lack of industry-wide understanding of IBS concepts (Musa et al., 2016; Rahman et al., 2024). Therefore, to address these challenges, this study proposes a multidimensional approach that includes changing standard contracts, extending IBS educational programs, and providing incentives for early adoption. Such measures are critical for fostering IBS growth and contributing to the long-term development of Malaysia's building sector.

The IBS Performance Report is a significant resource for stakeholders, providing insights into the present state of IBS adoption and practical recommendations for improving implementation. The IBS Score enables the industry to monitor and evaluate the effectiveness of IBS initiatives, share best practices, and drive continual improvements in its use throughout Malaysia's public and commercial sectors (Jaffar & Lee, 2020; Tan & Teh, 2024; Musa et al., 2015). Employees' attitudes regarding IBS adoption are influenced by their perceptions of its performance, which include efficiency, quality control, and sustainability. Performance perception has a direct impact on construction technology such as IBS.

Hypothesis 4 (H4): IBS performance significantly influences employees' acceptance of IBS application.

Research Framework

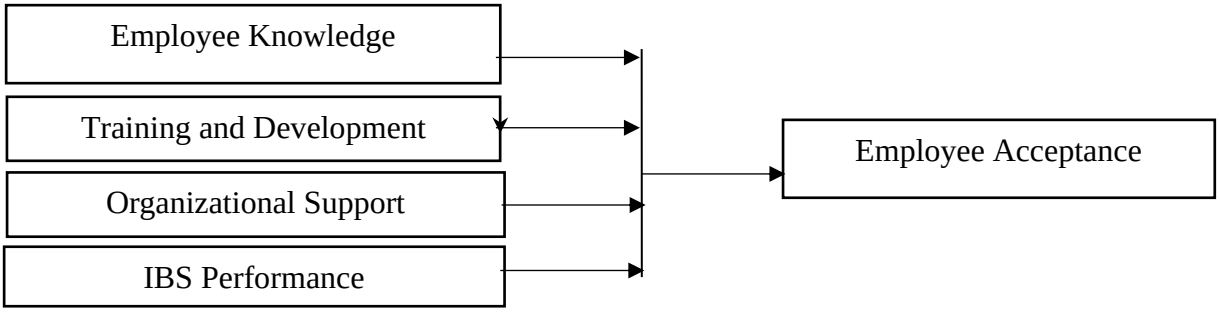

Figure 1: Research Framework

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Research Methodology

A quantitative research design is a complete and methodical plan for investigating employees' attitudes, acceptance and views about IBS application in the construction industry. The primary goal of this research is to determine how construction industry employees perceive and accept the practice of the IBS. The study strategy begins with a clear statement of the research problem, which emphasizes the necessity to investigate and appreciate the elements impacting employees' acceptance of IBS in construction projects. The study's goal is to identify these underlying elements, with the research method taking an explanatory or descriptive approach to demonstrate relationships between various variables.

To achieve a representative and accurate understanding, this study's target audience consists of construction sector employees. The sampling approach is carefully chosen to select a sample of the population that allows for relevant analysis while remaining feasible. The important variables under inquiry, such as employee attitudes and perceptions, are central to the research. These factors will be measured using organized surveys or interviews, which will yield quantitative data that can then be statistically analyzed. The research will be conducted in real-world building project contexts, ensuring that the findings are contextually relevant and applicable.

A quantitative method was employed with 150 construction professionals surveyed. Project managers, engineers, and quantity surveyors participated in the survey. The study's total population is made up of about 1,500 Malaysian construction professionals. The sampling was conducted using Krejcie and Morgan's (1970) formula, which offers a scientifically justifiable sample size depending on population size. For a population of 1,500, a sample size of 150 ensures a 95% confidence level with a margin of error of less than 10%, indicating that the population is representative. Furthermore, demographic data provides light on the distribution of respondents and assists in analyzing how different groups perceive and accept the Industrialized Building System (IBS).

The study will use SPSS version 27 to discover patterns, correlations, regression and other important relationships between the variables, providing valuable insights into employees' acceptance of IBS and leading to a better knowledge of IBS adoption in the construction sector. The data analysis findings will be critical in shaping future decisions and strategies for implementing IBS in Malaysia's construction sector.

Results

Table 1 Regression analysis

Note: N= 122, *$p < 0.05$, **$p < 0.01$

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Regression analysis was used to investigate the relationship between the dependent variable (employees' acceptance of the use of IBS) and several independent variables, including client factors (as project director), consultant factors (as design engineer), contractor factors (as project manager), IBS manufacturer factors (as fabricator), previous IBS performance, and miscellaneous factors. The multiple regression analysis assumptions were tested using the standardized coefficients (Beta), significance levels, and R-squared values. The Beta (B) value measures the strength of the association between each independent variable and the dependent variable. In addition, the adjusted R-squared value, which can vary from -1 to 1, represents the proportion of variance in the dependent variable that can be explained by the independent variables, while accounting for the number of predictors included in the model. A higher adjusted R-squared value suggests a better-fitting model that effectively explains the variability in the dependent variable.

The primary goal of this analysis was to evaluate whether the independent variables had a substantial influence on the dependent variable, in this example, employees' adoption of IBS in construction projects. The regression findings, reported in Table 1.0, revealed that multiple independent factors had a statistically significant connection with employee acceptability. Employee acceptance of IBS was significantly influenced by variables such as IBS performance ($\beta = 0.021$), employee knowledge ($\beta = 0.018$), training and development ($\beta = 0.013$) and organizational support ($\beta = 0.017$).

The regression model's R-squared value was 0.307, indicating that the independent factors explain 30.7% of the variation in employees' acceptance of IBS. Furthermore, the adjusted R-squared value of 0.271 indicated that, after controlling for the number of independent factors, the model explained 27.1% of the variation in the dependent variable.

These findings provide compelling evidence that IBS performance, understanding, organizational support, and training and development all play an important role in moulding employees' adoption of IBS in construction projects. These insights help us better understand the major drivers of effective IBS adoption, as well as the characteristics that increase employees' readiness to embrace this construction style.

Discussion

The IBS adoption in Malaysia's construction industry is heavily influenced by aspects such as staff knowledge, training, organizational support, and overall IBS performance (Mydin et al., 2014). Findings from quantitative research methodologies show that elements such as IBS performance, staff knowledge, and training are substantially connected to the effective implementation of IBS in construction projects (Amin et al., 2017). The study emphasizes the need of giving staff with proper knowledge and training to help them adopt IBS efficiently (Mydin et al., 2014).

Understanding and resolving employee views is critical to the successful implementation of IBS in the construction industry. Their insights can help determine the success of IBS, identify potential hurdles to adoption, and offer operational changes (Muhammad et al., 2016). Employee involvement in decision-making improves buy-in and commitment to IBS implementation, increasing the likelihood of successful adoption.

While IBS provides a strategic approach to increasing construction productivity and efficiency, its successful implementation necessitates more than the adoption of modern technology and

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construction processes (Yunus et al., 2016). Employee commitment, good training, and organizational support are critical for the successful integration of IBS into building operations. Organizations can build a supportive environment that fosters IBS adoption by responding to employee concerns and ideas (Razak & Awang, 2014). Malaysia's construction sector is generally made up of small, fragmented firms that may lack the resources and skills required to successfully apply IBS.

To overcome these challenges, financial incentives or subsidies must be provided to help small and medium-sized businesses (SMEs) shift to IBS and implement these systems. Indeed, it is critical for stakeholders to provide personnel, such as construction firms, contractors, and consultants, with training and educational resources to help them understand IBS and its benefits better. This can be accomplished through workshops, seminars, and online tools that educate participants about the principles, methods, and benefits of IBS.

The second step is to create clear communication channels. Stakeholders must build efficient communication channels with employees to address any issues or misconceptions about IBS. Providing regular updates and chances for input can assist to foster transparency and trust among employees. Third, stakeholders should emphasize the benefits of IBS, such as increased efficiency, less construction waste, and better working conditions. Furthermore, initiatives to standardize IBS components and encourage collaboration among construction stakeholders may serve to streamline the implementation process and lessen the difficulty of incorporating IBS into existing construction methods.

Future Research Recommendation

Future research should investigate additional variables including related to technology readiness and policy incentives to gain a better understanding of IBS adoption trends in Malaysia.

Conclusion

This study emphasizes the importance of employee acceptance and participation in the effective application of the IBS in Malaysian construction projects. Organizations can successfully overcome potential hurdles to IBS adoption by thoroughly studying the elements that impact employees' views toward it. Understanding these characteristics enables stakeholders to create focused measures that increase employee participation, knowledge, and organizational support. These activities are vital for improving construction processes, increasing operational efficiency, and ensuring the construction industry's sustainability. The outcomes of this study provide useful insights into the dynamics of IBS acceptance, highlighting the necessity of staff engagement in overcoming implementation hurdles. These findings can help stakeholders develop policies and practices that are consistent with the overall goal of increasing productivity and innovation in the industry. Furthermore, the implementation of IBS benefits not only the construction industry by enhancing quality, efficiency, and cost-effectiveness, but it also adds to the long-term development and competitiveness of the overall economy. In addition, this study contributes significantly to the ongoing discussion on IBS adoption in Malaysia, highlighting the need of addressing employee-related variables in the successful integration of industrialized building technology. The findings of this study are extensive, implying that a complete, employee readiness and commitment approach is required to realize IBS's full potential in transforming the construction industry.

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Authors' contribution
Hamzah, M.I. as the first author, carried out the research and preparation of the thesis. Kassim, S. A., as the corresponding author, provided key information and contributed to the thesis writing and preparation. Abd Ghani, K.D and Hassan, S.H. as the co-author, assisted the writing and editing section of the thesis. All authors played their roles effectively and efficiently to complete this thesis.

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