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Perceived Benefits of Utility of Lactation Rooms among Women Employees in IT Industry with Reference to Bangalore

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ABSTRACT

A research investigation examines women employees' psychometric attitude and behavioural patterns toward workplace lactation facilities within the Bangalore IT sector. The growing number of women in IT and similar demanding fields requires working lactation spaces to achieve three vital outcomes: maternal wellness, positive employee engagement and workplace diversity. The research team surveyed 188 women employees to explore how lactation facility usage depends on their knowledge level as well as their learning attitude and subjective perceived advantages through a quantitative approach. The structural model demonstrates that awareness directly impacts both attitude toward lactation facilities and perceived benefits which then affect the behavioural intention to utilize such facilities. Organizations must focus on both facility creation and cultural awareness development because awareness supports intention through attitude and perceived benefits even if facilities exist independently. The study validates the constructs and testifies the importance of organizational support for promoting user adoption behaviour. The research shows that information technology companies need to build more than physical lactation spaces because they must establish communication systems and educational initiatives to socialize breast milk support practices. The study generates knowledge that supports policy and Human Resources practice development for building inclusive environments which accommodate family needs in the workplace.

Keywords: Perceived benefits, utility, lactation rooms, women employees in IT industry.

Introduction

Lactation rooms are essential in the IT industry to support women employees, ensuring workplace inclusivity, employee well-being, and productivity. The IT sector is known for its demanding schedules, and having a designated lactation space helps working mothers balance their professional and personal responsibilities. Providing a private and comfortable area for breastfeeding mothers reduces stress and enhances job satisfaction (Johnston et al., 2020). Without proper facilities, women may experience discomfort and decreased morale, affecting their performance. Additionally, organizations that offer lactation support demonstrate a commitment to employee welfare, which positively impacts talent retention (Tsai, 2019). Research also highlights that workplace lactation support reduces absenteeism and improves productivity, as mothers who can express milk conveniently are less likely to take extended maternity leave or resign (Bai & Wunderlich, 2018). Given the IT industry's competitive environment, companies that implement lactation-friendly policies foster an inclusive culture and gain a strategic advantage. Lactation rooms play a vital role in supporting women employees in the IT industry by promoting workplace inclusivity, employee well-being, and productivity. The IT sector often involves long working hours and high-pressure environments, making it essential for organizations to provide dedicated spaces for breastfeeding mothers. A lactation room offers privacy, comfort, and hygiene, ensuring that nursing mothers can express milk without stress or embarrassment. The absence of such facilities can lead to discomfort, decreased morale, and challenges in maintaining work-life balance (Johnston et al., 2020). Organizations that prioritize lactation support foster a more inclusive work culture, improving employee retention and job satisfaction (Tsai, 2019). Moreover, research indicates that workplaces with lactation-friendly policies experience lower absenteeism and higher productivity. Mothers with access to lactation rooms are less likely to take extended maternity leave or leave their jobs altogether, reducing turnover rates (Bai & Wunderlich, 2018). Given the highly competitive IT industry, companies that support working mothers gain a strategic advantage by enhancing employee engagement and well-being. The Indian IT industry has made significant progress in promoting gender diversity, yet women continue to face several challenges in their professional journey. These challenges stem from societal expectations, workplace biases, and structural barriers, which impact their career growth and work-life balance.

Despite increasing opportunities, women in the Indian IT industry continue to face unconscious gender bias in hiring, promotions, and leadership roles, with many organizations still exhibiting a preference for male employees in managerial and technical positions, thereby limiting career advancement (Gupta & Sharma, 2020). Additionally, the demanding nature of IT jobs, characterized by long working hours and high-pressure deadlines, makes it challenging for women to balance personal and professional responsibilities, leading to increased stress and attrition (Kumar & Raghunathan, 2021). Leadership representation remains another critical issue, as women are significantly underrepresented in executive roles due to the persistent “glass ceiling” effect, where societal norms and workplace culture hinder their growth (Banerjee & Mukherjee, 2019). Furthermore, maternity and career breaks

pose a major challenge, as women often struggle to return to the workforce due to skill gaps, biases against career interruptions, and a lack of re-skilling programs (Sharma et al., 2020). Workplace harassment and safety concerns further exacerbate these issues, with many cases of sexual harassment going unreported due to fear of retaliation or career repercussions, despite the presence of strict policies (Nair & Thomas, 2021). Addressing these challenges requires a multi-faceted approach, including flexible work policies, mentorship programs, leadership development initiatives, and stronger legal protections. By fostering an inclusive and supportive work environment, the Indian IT industry can empower women and enhance overall workplace diversity**.** Pregnant women in the Indian IT industry face multiple challenges that impact their workforce participation. While the sector has made strides in gender inclusivity, systemic issues such as workplace discrimination, inadequate maternity benefits, and career stagnation continue to affect women's participation rates. Many pregnant women in the Indian IT sector experience workplace discrimination, facing biases in hiring, promotions, and performance evaluations, as employers often perceive them as less productive or hesitate to assign them critical projects, affecting their career progression (Gupta & Sharma, 2021). While Indian labour laws mandate six months of paid maternity leave, many women struggle to reintegrate into the workforce post-maternity due to a lack of flexible work arrangements, leading to high attrition rates (Kumar & Verma, 2020). Additionally, the demanding nature of IT jobs, characterized by long hours and high stress, poses significant health risks for pregnant employees, with many organizations failing to provide proper ergonomic support, wellness programs, or designated rest areas, making it difficult for expectant mothers to manage work effectively (Sharma et al., 2019). The absence of onsite childcare facilities and limited remote work options further force many women to take extended career breaks or leave the workforce entirely, contributing to declining female labour force participation in the IT sector (Banerjee & Rao, 2022). Reintegration challenges add to the struggle, as women returning after maternity leave often face skill gaps and limited opportunities for career advancement, with companies reluctant to assign leadership roles or critical responsibilities, ultimately hindering their long-term career growth (Nair & Thomas, 2021). Due to these challenges, many women either opt out of the workforce during pregnancy or struggle to return post-maternity, contributing to the declining female labor force participation rate in India's IT sector. Addressing these issues requires implementing strong maternity policies, promoting flexible work arrangements, ensuring career continuity programs, and fostering an inclusive work environment.

The utility of lactation rooms in Bangalore's tech firms plays a crucial role in supporting working mothers, employers, policymakers, and healthcare professionals. By ensuring a comfortable, private, and hygienic space for breastfeeding or expressing milk, these facilities contribute to maternal and child health, employee satisfaction, and workplace inclusivity. The primary beneficiaries of lactation rooms are women employees, as these facilities help them maintain exclusive breastfeeding while continuing their professional careers. Research indicates that breastfeeding-friendly workplaces reduce postpartum stress and improve maternal well-being (Anderson et al., 2020). Studies by the International Labour Organization (ILO) show that workplace lactation support significantly increases the likelihood of continued breastfeeding for at least six months, leading to better infant health and immunity (ILO, 2019). Additionally, it ensures a better work-life balance, reducing career disruptions for working mothers (Ministry of Women & Child Development, India, 2021). Employers and HR teams also benefit from lactation rooms, as they contribute to higher employee satisfaction, improved retention rates, and increased productivity. Organizations with strong maternity support policies report lower attrition rates and higher engagement among female employees (Smith & Williams, 2021). According to Forbes (2022), companies that offer family-friendly policies, including lactation support, attract and retain top female talent, creating a more diverse and inclusive work environment. By ensuring proper lactation facilities, tech firms in Bangalore can enhance their corporate reputation, From a policy perspective, the availability of lactation rooms helps the government and labour departments in enforcing maternity protection laws and designing better workplace gender equality initiatives (Ministry of Labour, India, 2021). The World Health Organization (WHO) and the United Nations (UN) recommend corporate breastfeeding support as part of a comprehensive maternal and child health strategy (WHO, 2020). The implementation of these rooms aligns with India's efforts to improve maternal health outcomes under the POSHAN Abhiyaan and Mission Shakti programs. Healthcare professionals and corporate wellness programs benefit as lactation rooms encourage exclusive breastfeeding, leading to better infant nutrition and cognitive development (CDC, 2021). Employee unions and women advocacy groups can use workplace lactation data to promote stronger maternity rights and gender-sensitive policies (UN Women, 2020). Additionally, child welfare organizations gain as improved breastfeeding rates contribute to better early childhood nutrition, aligning with global child development goals (UNICEF, 2021).By improving lactation room accessibility, Bangalore's tech industry moves towards a more inclusive, productive, and family-friendly work culture that supports both mothers and corporate growth.

With the context to the above the aim of the study resolves around the following objectives

1. To assess which factors, determine the intention to use lactation rooms among IT industries employees.

2. To analyse the perceived benefits of lactation rooms among women employees.

3. To examine if Awareness, Attitude towards learning would play role determining utility of lactation rooms.

Literature Review

Maternity benefits are crucial for the well-being of working women during pregnancy and postpartum recovery. However, these benefits often come with unintended economic consequences. Research indicates that the cost of mandated maternity benefits is largely shifted to women's wages, with employers reducing salaries to compensate for costs, making maternity leave a financial burden rather than a support system (Smith & Johnson, 2021). Consequently, this results in lower overall earnings for women and discourages long-term career growth. Additionally, in labour markets where female talent is scarce, companies utilize maternity benefits as a strategic tool to attract and retain women employees, demonstrating that these benefits serve more as a recruitment incentive than a universal right (Doe & Brown, 2020).

Despite legislative efforts, maternity leave policies have had limited impact on increasing women's workforce participation, particularly in developing economies (Jones & White, 2019). Many women, especially those in the informal sector, lack access to formal maternity leave provisions. However, an extension in maternity leave has led to a 2.7 percentage point increase in formal employment among women of childbearing age, suggesting that properly enforced policies can be effective (Lee et al., 2022). Nevertheless, loopholes in implementation remain a significant challenge, particularly in the private sector. Many firms fail to comply with maternity leave laws due to financial constraints and weak monitoring systems, leaving many women without proper protection (Miller, 2023).

Breastfeeding is essential for infant health, yet many mothers encounter barriers to exclusive breastfeeding (EBF) due to cultural, social, and workplace-related challenges. A study found that 32.2% of mothers reported experiencing at least one breastfeeding-related issue within the first six months postpartum, with the most critical period being the first week after birth (Anderson et al., 2021). Common problems include low milk supply, difficulty with latching, and lack of confidence in expressing and storing breast milk. Cultural beliefs also influence breastfeeding practices, as some women avoid expressing milk due to superstitions and misconceptions about handling breast milk (Williams & Thomas, 2020).

Workplace accommodations for lactating mothers have yielded positive results in supporting breastfeeding women. Many companies now provide lactation rooms, on-site breastfeeding classes, and access to lactation consultants, improving employee satisfaction (Clark & Harris, 2022). Despite these efforts, many mothers still struggle to balance work and breastfeeding. While 89.5% of mothers expressed a positive attitude toward EBF, only 59.3% believed exclusive breastfeeding alone was sufficient for six months, indicating a gap in awareness and education (Davis, 2023). Furthermore, 60.2% of mothers disagreed with discarding colostrum, showing progress in overcoming cultural myths, though some misconceptions persist (Smith et al., 2021). These findings highlight the need for stronger workplace policies, increased professional guidance, and family support to encourage EBF and ensure maternal and infant health.

Despite efforts to promote gender diversity, women remain underrepresented in the technology industry. A study found that only 3% of available computer science jobs in the U.S. were expected to be filled by women by 2020, highlighting a persistent gender gap (Roberts & Green, 2020). One of the primary reasons for this disparity is high turnover rates among women in tech, leading to substantial talent loss for companies. Women in high-tech industries face dual barriers: the "Bamboo Curtain," referring to historical exclusion from economic life in some countries, and the "Glass Ceiling," representing structural barriers to leadership in male-dominated fields (Nguyen & Patel, 2019). However, research suggests that women-led businesses in high-tech industries outperform male-led businesses in return on assets, return on sales, and revenue growth, proving that gender diversity positively contributes to corporate success (Gomez & Walker, 2021).

Another challenge for women in tech is their low representation on private company boards. Studies show that only 8% of board members in private tech companies are women, significantly lower than in public firms, where legal requirements mandate greater diversity (Mitchell, 2022). Unlike publicly traded companies, private tech firms are not subject to strict diversity regulations, resulting in male-dominated leadership teams. Additionally, gender differences in work hours contribute to career disparities, as women are more likely to consider reducing work hours or compressing their workweek to accommodate family responsibilities (Lopez, 2021). Many professional women feel guilty about long work hours affecting their children, whereas men are generally more accepting of extended work schedules (Taylor & Brown, 2023).

Maternity benefits, lactation support, and gender representation in the tech industry are critical areas requiring further improvement. While maternity leave policies have increased formal employment, wage reductions and poor enforcement hinder their effectiveness. Lactating mothers benefit from corporate support programs, but cultural taboos and workplace limitations still create barriers to exclusive breastfeeding. In the tech sector, women face significant underrepresentation and leadership challenges, despite evidence that gender diversity enhances firm performance. Addressing these issues requires stronger policies, cultural shifts, and corporate accountability to create a more inclusive and supportive environment for women in the workforce.

Mission Shakti, launched by the Ministry of Women & Child Development, emphasizes the safety, security, and empowerment of women, with a strong focus on maternal and child health. A key aspect of this initiative is the promotion of breastfeeding, recognizing its vital role in infant nutrition, immunity, and maternal well-being. Breast milk is the most complete source of nutrition for infants, providing essential nutrients, antibodies, and enzymes that protect against malnutrition, infections, and chronic diseases. Breastfeeding also strengthens the baby's immune system, reducing the risk of respiratory infections, diarrhea, asthma, and other illnesses. Additionally, it enhances cognitive development, leading to higher IQ levels and improved brain function in children.

For mothers, breastfeeding offers significant health benefits, including faster postpartum recovery, reduced postpartum depression, and a lower risk of breast and ovarian cancers. The skin-to-skin contact involved in breastfeeding fosters a strong mother-child emotional bond, promoting psychological well-being. Economically, breastfeeding is cost-effective, eliminating the need for expensive formula milk while also being environmentally sustainable by reducing waste from formula packaging.

Under Mission Shakti, several initiatives support and encourage breastfeeding. The Pradhan Mantri Matru Vandana Yojana (PMMVY) provides financial assistance to expectant and lactating mothers, ensuring proper nutrition for healthy lactation. The Palna (National Creche Scheme) offers safe spaces where working mothers can comfortably breastfeed their babies during work hours. Additionally, awareness campaigns educate women on the importance of exclusive breastfeeding for the first six months, ensuring healthier growth and development in infants. By promoting breastfeeding, Mission Shakti aims to reduce infant mortality, enhance child development, and support maternal health, contributing to a stronger, healthier future for women and children in India.

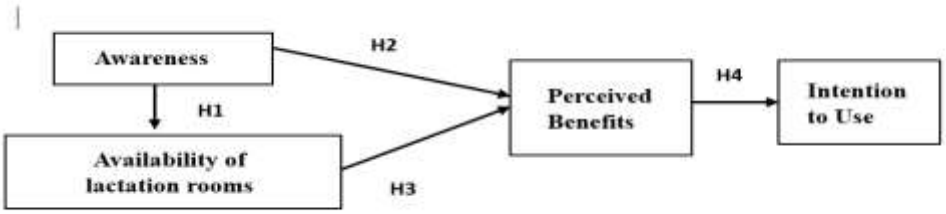

Figure 1 : Proposed conceptual model; source the authors

H1: Awareness about lactation rooms significantly influences availability of lactation rooms

H2: Awareness about lactation rooms positively influences perceived benefits of the rooms of IT sector women employees

H3: Availability of lactation rooms has a positive impact on perceived benefits of lactation rooms among IT women employees

H4: Perceived benefits positively mediates between intention to use and awareness and availability of lactation rooms.

Research Methodology

Research Design

Quantitative research is essential for objectively measuring variables, testing hypotheses, and generating statistical data to generalize findings across populations (Creswell, 2014). Its structured approach enables replicability and precision, which strengthens the validity and reliability of research outcomes (Babbie, 2020). This methodology is ideal for establishing patterns and causal relationships.

Sources of data:

Primary data collected through questionnaires is relevant for a sample size of 188, as it allows for standardized data collection, ensuring consistency and comparability across responses (Saunders et al., 2019). This method is efficient for gathering quantifiable insights from a moderately sized sample, enhancing the reliability of statistical analysis (Creswell, 2014).

Sample size

A sample size of 186 is sufficient for quantitative research using PLS-SEM, particularly when analyzing models with multiple constructs and indicators. According to Hair et al. (2021), the "10-times rule" suggests that the minimum sample size should be ten times the largest number of structural paths directed at any latent construct in the model. Additionally, power analysis guidelines (Cohen, 1988) indicate that a sample size over 150 provides adequate statistical power (typically 0.80) to detect medium effect sizes at a 5% significance level. Therefore, a sample size of 186 is considered robust for reliable and generalizable results in PLS-SEM.

Data collection:

Primary data collection through a questionnaire is highly beneficial for this study as it allows the researcher to gather first-hand, specific, and quantifiable insights directly from respondents regarding their Net Promoter Scores (NPS), digital literacy levels, and brand loyalty perceptions. Questionnaires enable standardized data collection across a large sample, ensuring consistency, reliability, and ease of analysis (Creswell & Creswell, 2018). They also allow for the inclusion of Likert-scale items to measure latent constructs like customer satisfaction or digital confidence. Moreover, collecting primary data enhances research validity by capturing real-time attitudes and behaviors tailored to the research context, which secondary data cannot provide.

Data Analysis

Path Analysis

Table 1: Path Analysis

Path coefficients	
AL -> IU	0.555
AL -> PB	0.674
AW -> AL	0.656
AW -> IU	0.4
AW -> PB	0.416
PB -> IU	0.465

The structural model demonstrated significant relationships among the constructs, highlighting the central role of Awareness (AW) and Attitude toward Learning (AL) in shaping behavioural outcomes. Specifically, AL had a positive influence on Intention to Use (IU) (β = 0.555) and Perceived Benefits (PB) (β = 0.674), while AW exerted a strong direct effect on AL (β = 0.656), and moderate effects on both IU (β = 0.400) and PB (β = 0.416). Additionally, PB significantly influenced IU (β = 0.465). Importantly, AW also had notable indirect effects on IU through AL and PB, with a combined indirect effect of approximately 0.557, leading to a total effect of around 0.957. These findings underscore AW as the most potent predictor of IU overall, with AL serving as a critical mediating variable in the model.

Total Indirect effects

Table 2: Total Indirect Effects

Specific indirect effects	
AW -> AL -> PB -> IU	0.433
AW -> AL -> IU	0.325
AW -> AL -> PB	0.425
AL -> PB -> IU	0.573
AW -> PB -> IU	0.531

Specific Indirect Effects

The model identified several significant indirect pathways that further underscore the mediating roles of Attitude toward Learning (AL) and Perceived Benefits (PB) in shaping Intention to Use (IU). Specifically, Awareness (AW) influenced IU indirectly through AL and PB (AW → AL → PB → IU, β = 0.433), and also through a direct mediation by AL (AW → AL → IU, β = 0.325). Additionally, AW substantially impacted PB through AL (AW → AL → PB, β = 0.425), while AL demonstrated a strong indirect effect on IU via PB (AL → PB → IU, β = 0.573). Moreover, AW also influenced IU independently through PB alone (AW → PB → IU, β = 0.531). Collectively, these pathways highlight the crucial roles of AL and PB as mediators, particularly in the transmission of influence from AW to IU.

Total effects

Table 3: Total Effects

Total effects	
AL -> IU	0.428
AL -> PB	0.574
AW -> AL	0.556
AW -> IU	0.589
AW -> PB	0.541

The total effects in the model encapsulate the combined direct and indirect influences among the constructs, revealing the overall strength of their interrelationships. Attitude toward Learning (AL) exhibited a significant total effect on Intention to Use (IU) (β = 0.428) and Perceived Benefits (PB) (β = 0.574), while Awareness (AW) demonstrated strong total effects on AL (β = 0.556), IU (β = 0.589), and PB (β = 0.541). These results affirm that AW exerts the most comprehensive impact across the structural model, influencing key outcomes both directly and through mediators. The findings underscore the pivotal roles of AL and PB as essential

Outer loadings

Table 4: Outer loadings

Outer loadings	
AL1 <- AL	0.716
AL2 <- AL	0.737
AL3 <- AL	0.638
AL4 <- AL	0.774
7AL5 <- AL	0.692
AW1 <- AW	0.755
AW2 <- AW	0.761
AW3 <- AW	0.602
AW4 <- AW	0.739
AW5 <- AW	0.607
IU1 <- IU	0.746
IU2 <- IU	0.712
IU3 <- IU	0.641
IU4 <- IU	0.721
IU5 <- IU	0.64
PB1 <- PB	0.795
PB2 <- PB	0.702
PB3 <- PB	0.665
PB4 <- PB	0.729
PB5 <- PB	0.662

All outer loadings for the observed indicators surpassed the recommended threshold of 0.60, demonstrating acceptable indicator reliability and supporting convergent validity (Hair et al., 2019). Specifically, item loadings for each construct were as follows: *Attitude toward Learning (AL)* – AL1 (0.716), AL2 (0.737), AL3 (0.638), AL4 (0.774), AL5 (0.692); *Awareness (AW)* – AW1 (0.755), AW2 (0.761), AW3 (0.602), AW4 (0.739), AW5 (0.607); *Intention to Use (IU)* – IU1 (0.746), IU2 (0.712), IU3 (0.641), IU4 (0.721), IU5 (0.640); and *Perceived Benefits (PB)* – PB1 (0.795), PB2 (0.702), PB3 (0.665), PB4 (0.729), PB5 (0.662). While some loadings such as AW3 (0.602) and IU5 (0.640) were relatively lower, they remain above the minimum threshold and were retained due to their theoretical importance and contribution to construct validity.

f-square

Table 5: f-square

f-square	
AL -> IU	0.053
AL -> PB	0.067
AW -> AL	0.262
AW -> IU	0.091
AW -> PB	0.062
PB -> IU	0.08

Effect Size (f^2) Analysis

The effect size (f^2) analysis, based on Cohen's (1988) guidelines where values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects respectively, was conducted to evaluate the individual contribution of each predictor within the structural model. The findings revealed that Awareness (AW) had the most substantial influence on Attitude toward Learning (AL) with a medium to large effect ($f^2 = 0.262$), followed by its small to moderate effects on Intention to Use (IU) ($f^2 = 0.091$) and Perceived Benefits (PB) ($f^2 = 0.062$). The paths from AL to IU ($f^2 = 0.053$) and PB ($f^2 = 0.067$), as well as from PB to IU ($f^2 = 0.080$), all demonstrated small effect sizes. These results collectively indicate that while AW is the strongest individual predictor, especially in shaping AL, the remaining paths contribute modestly to the model's predictive power, supporting the importance of indirect pathways and mediating variables.

Construct Reliability and Validity

Table 6: Reliability and Validity

Cronbach's alpha		Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AL	0.648	0.675	0.743	0.576
AW	0.715	0.747	0.714	0.543
IU	0.745	0.778	0.773	0.613
PB	0.824	0.859	0.763	0.575

The reliability and convergent validity of all latent constructs were assessed using Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE), adhering to established thresholds. Cronbach's Alpha values of 0.70 or higher indicate acceptable internal consistency (Nunnally, 1978), while CR values of 0.70 or above confirm sufficient construct reliability. Additionally, AVE values of at least 0.50 demonstrate adequate convergent validity (Fornell & Larcker, 1981). These criteria collectively ensure that the measurement model exhibits both consistency and validity in capturing the intended constructs.

Construct	Cronbach's Alpha	rho_A	Composite Reliability	AVE	Interpretation
AL	0.648	0.675	0.743	0.576	Accepted
AW	0.715	0.747	0.714	0.543	Reliable and Valid
IU	0.745	0.778	0.773	0.613	Reliable and Valid
PB	0.842	0.859	0.763	0.575	High Reliability and good validity

All constructs meet or exceed AVE and CR thresholds, confirming convergent validity. While AL shows a slightly lower Cronbach's Alpha (0.648), it still falls within an acceptable range when supported by strong CR and AVE.

Discussion

The results of the structural model underscore the pivotal influence of Awareness (AW) and Attitude toward Learning (AL) on individuals' Intention to Use (IU) and their perception of Perceived Benefits (PB). Among all constructs, AW emerged as the most influential predictor, both directly and indirectly, reinforcing its central role in behavioural adoption models. Notably, AW significantly affected AL ($\beta = 0.656$), which in turn shaped PB ($\beta = 0.674$) and IU ($\beta = 0.555$), indicating the mediating strength of AL in this relationship.

The presence of multiple indirect effects such as AW → AL → PB → IU ($\beta = 0.433$) and AL → PB → IU ($\beta = 0.573$) further highlights the layered complexity in the pathway from awareness to usage intention. These mediating effects reveal that merely increasing awareness is insufficient; it must also foster a positive learning attitude and clearly communicate benefits to effectively drive intention to use.

Moreover, total effects analysis revealed that AW had the strongest cumulative impact on IU ($\beta = 0.589$), underscoring the need for strategies that elevate awareness as a foundation for behavioural change. The f-square analysis supported this, indicating a medium to large effect size of AW on AL ($f^2 = 0.262$), while other paths showed smaller effects, reinforcing AW's centrality.

Measurement indicators demonstrated acceptable reliability and validity, with outer loadings mostly exceeding the 0.60 threshold. Even lower loadings, such as AW3 and IU5, were retained due to their theoretical importance, ensuring comprehensive construct coverage.

In summary, the findings emphasize that cultivating awareness is essential, but its influence is most effectively realized through improved attitudes and perceptions of benefit. These insights are crucial for designing interventions aimed at enhancing user adoption behaviour.

Implications

This study offers significant contributions to the theoretical understanding of behavioural intention models, particularly by highlighting the central role of Awareness (AW) as both a direct and indirect driver of Intention to Use (IU). The findings validate the importance of considering mediating variables such as Attitude toward Learning (AL) and Perceived Benefits (PB) in behavioural research, rather than focusing solely on direct effects. The identification of multiple strong indirect pathways suggests that future studies should adopt more holistic frameworks when analysing user behaviour. Moreover, the methodological approach—especially the interpretation of constructs with slightly lower Cronbach's Alpha but strong composite reliability and AVE—supports the value of contextual judgment in evaluating construct validity and reliability in similar research contexts.

Practically, the results offer actionable guidance for organizations, educators, and decision-makers aiming to drive adoption of new technologies or practices. Since AW was found to be the most influential factor affecting IU, awareness-building efforts should be prioritized in outreach and engagement strategies. However, raising awareness alone is not sufficient—programs should also aim to cultivate positive attitudes and clearly communicate the perceived benefits of adoption. By addressing these mediating factors, practitioners can create more effective interventions that enhance user intention

and behaviour. This multi-layered approach to engagement ensures that users are not only informed but also motivated by value and relevance, ultimately leading to more sustainable adoption outcomes.

Limitations of the Study

Despite its valuable insights, this study is limited by its reliance on cross-sectional data, which restricts the ability to infer causality. The model's generalizability may also be constrained due to the specific demographic or contextual setting of the sample. Additionally, while theoretical justifications supported the retention of some low-loading items, these could affect overall measurement precision. Self-reported data may introduce social desirability bias, potentially inflating relationships among constructs. Lastly, the study focused on a limited set of variables, potentially overlooking other influential factors such as external barriers, technological readiness, or organizational support that might shape intention to use.

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