

Understanding Smart Workplace Engagement among Women Returning from Maternity Leave: Technology Adoption as a Mediator and Work-Life Balance as a Moderator

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ABSTRACT

This study looks at the factors influencing women IT employees who choose to work from the office after maternity leave in the context of Smart Workplace Engagement (SWE). Analysis of the influence of ATT, TA, SE, PBC, SN, and WLB is undertaken. Based on the Theory of Planned Behavior, the study examined direct, indirect, and moderating effects of work-life balance. Three hundred and fifty women working in IT had their data analyzed using SmartPLS to check for validity, reliability, and structural connection. Results reveal that subjective norms and environmental self-efficacy are the most significant variables driving technology adoption, with self-efficacy partially mediating the link between SWE and technology adoption. While perceived behavioral control does not predict engagement, attitude and work-life balance do. The need of balancing work and personal responsibilities is supported by moderation analysis, which also confirms that work-life balance improves the attitude-engagement connection. The Importance–Performance Map Analysis suggests that increasing social support, self-efficacy, and work-life balance can optimize engagement outcomes. These results provide IT organizations with practical implications for developing interventions that promote technology adoption, employee confidence, and the integration of work and life, finally leading to increased productivity, innovation, and employee satisfaction in smart workplace settings.

Keywords: Smart Workplace Engagement, Technology Adoption, Environmental Self-Efficacy, Work-Life Balance, Subjective Norms

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1. Introduction:

Due to digital transformation, modern organizations use tech-driven tactics to enhance engagement and productivity. As industries reshape towards smart, interconnected, and artificial intelligence (AI) capable environment, The rise of smart workplace engagement has been a game-changer for creativity, efficiency, and health in the workplace. (Brougham & Haar, 2018; Kang et al., 2016; Yapa et al., 2025). In this changing environment, we must understand how psychological, technological and behavioural factors work together to engage. (Ali et al., 2022; Subramanyam et al., 2025).

The degree to which an organization's employees embrace and use new technologies in their work is strongly correlated with their attitude toward technology. (Ajzen, 1991; Bosnjak et al., 2020). The

strong Theory of Planned Behavior states that attitude, subjective standards, and perceived behavior control—which show behavioral intention—determine creative involvement. (Hagger & Hamilton, 2023; Okeke-Uzodike, 2021). Digital technology enthusiasts are more likely to innovate smart working environment solutions. (Sheshadri Chatterjee et al., 2023; Fulya et al., 2023). An added technology in the workspace is not just an organizational essential but also a motivator for shaping employee's psyche. (Leesakul et al., 2022; Cramarenco et al., 2023). More adaptable and collaborative work environments are possible because to smart technologies like AI, smart manufacturing, and automation. (Taylor et al., 2020; Soulami et al., 2024). In order for it to work, it is necessary for the workers to be self-efficacious in its

using, often measured by Environmental Self-Efficacy (Pourmand et al., 2020; Devaraju & Subramanyam, 2025). An assurance in making a technology switch shows employees' better engagement and adaptability in a digitally powered environment. (Haldankar et al., 2024; Li et al., 2022).

The expectations of the society and organization on the use of the technology also strengthen this participation. (Ajzen, 1991; Clubbs et al., 2021). When people are primed, they have the potential to become members of groups. Likewise, they might create beneficial norms in the company. Again, it is when empowered. Also, there are fewer barriers to innovation when the company has supportive norms. Furthermore, workers become digitally transformed due to better alignment. (Elamin et al., 2024; Ali et al., 2022). This allows for active engagement, creativity and ownership oriented attitudes towards media. (Ugwu et al., 2023; Lukić Nikolić, 2023). Other than cognitive and social factors, WLB function emerged as a relevant factor mediating technology adoption and engagement outcomes. (Blake et al., 2024; Bello et al., 2024). Motivating workers requires work-life balance as performance is no longer connected to a location, time, or hours. (Noermijati et al., 2025; Subramanyam & Devaraju, 2024). Better work-life balance helps people function successfully without burnout or technological overload. (Ugwu et al., 2023; Ya-Ting et al., 2025). The psychological constructs, behavioral intentions, and digital enablers come together to form a multidimensional model of smart engagement. The link between attitude and self-efficacy at the environment level and adoption technology shows how organizations can optimally facilitate the functioning of employees in a technology demanding environment with sustainability through a proper work-life balance. (Hagger & Hamilton, 2025; Shen & Quintavalla, 2025). These intersections help us build digital systems which help make tasks easier but also helps innovate better, feel well at work, and keep around longer. (Loureiro et al., 2023; Bankins, 2021).

2. Theoretical Gap and Contribution

Theory of Planned Behavior (TPB) has been successfully used to understand behavioural intentions in many behavioural contexts by using attitude, subjective norm and perceived behaviour control as variables. TPB has been used successfully to predict intentions for regular exercise during pregnancy, dietary behaviour and healthy lifestyle practices among women, and thus has been shown to have strong explanatory power for voluntary behaviour decisions in women (Ching-Fang Lee et al., 2016; Kathryn M. Whitaker et al., 2016). Other more recent studies have also confirmed the validity of TPB for explaining behaviours related to preconception care, neonatal care, self-management of gestational diabetes, and infection prevention

behaviours among women (Ai Nurasia et al., 2025; S.G. Dinmez & Eroglu, 2026; Saeideh Moradpour et al., 2023).

Although TPB has proven to be very robust, it has mainly been used in the field of health related behavioural intentions, in which decision making is predominantly individual and self-regulated. By contrast, women who return to the workforce after taking a maternity leave are faced with a more complicated landscape of career disruptions, fast technological advancements, changing expectations in the workplace and an addition of family responsibilities. The contextual realities put forward indicate that the social attitudes and intentions of individuals, might not be enough to explain successful reintegration into digitally enabled workplaces.

For those reasons, the focus of this study is as much on the theoretical space of post-maternity workforce reintegration as it is on sampling context. It adds Technology Adoption as a behavioural mechanism to TPB, in which attitudes toward and capabilities of individuals are converted to Smart Workplace Engagement. While Perceived Behavioural Control relates to the perceived ease of conducting a behaviour and Environmental Self-Efficacy refers to one's confidence in their ability, Technology Adoption describes how employees are taking on and using digital workplace technologies they need to be successful in the workplace.

In addition, the study defines Work-Life Balance as a contextual moderator as it is hypothesized that having positive attitudes towards workplace engagement does not necessarily mean that mothers actually engage in the workplace, unless they can balance work and child care/family responsibilities. In maternal behaviours studies, similar extensions of the TPB were proposed using context-specific constructs, to explain behaviors beyond the scope of the original theory (Mohtasham Ghaffari et al., 2017; Zahra Zare et al., 2021).

This study is thus more than just a new application of TPB. This builds on the theory by incorporating Technology Adoption as a digital behaviour and Work-Life Balance as a contextual boundary condition to provide a more thorough explanation of Smart Workplace Engagement for women who return to digital workplaces after maternity leave. The extension adds to the relevance of TPB in the current organizational and digital working context.

3 Hypothesis Development:

3.1 Direct Effects

With the growing implementation of digital technologies in organizations, the way people work is changing, and workers must also change to keep up with smart systems, while maintaining their productivity, motivation and commitment to the organization (Kang et al., 2016; Taylor et al., 2020). Recent studies have found that worker attitudes towards these new technologies and systems in the

workplace are significant factors in the extent to which workers will adopt them. Furthermore, favorable attitudes towards the adoption of technology affect employees' commitment, proactiveness and participation in organizational activities (Brougham & Haar, 2018; Clubbs et al., 2021). Employees who have a positive perception of technology are more likely to exhibit innovative work behaviours; these behaviours will lead to the creation of Smart Workplace Engagement (SWE) when the organization has a digital transformation strategy that is in alignment with the behaviour (Okeke-Uzodike, 2021; Bankins, 2021). Smart Workplace Engagement is defined as employees' cognitive, emotional and behavioral engagement in digitally enabled working environments, achieved through effective use of technologies in the workplace, collaborative digital platforms and adapting to working practices. Smart Workplace Engagement differs from traditional employee engagement by focusing on employees' involvement in a technology-driven workplace environment in which digital skills and technology acceptance are key to effective work performance.

The Theory of Planned Behavior (TPB) has been widely used to predict behavioural intentions based on attitude, subjective norm and perceived behavioural control (Ajzen, 1991). TPB has been used successfully in past research to predict women's behaviours in various health-related scenarios such as physical activity when pregnant, nutritional behaviour, preconception care, neonatal care, and maternal health management (Lee et al., 2016; Whitaker et al., 2016; Nurasiah et al., 2025; Moradpour et al., 2023). While these studies demonstrate the soundness of TPB as an explanatory framework for individual-level behavioral intentions, they tend to be concerned with decisions of freely choosing health behaviors in relatively stable personal contexts. This is not the case, however, for women returning to work after maternity leave, who face a far different behavioural context of career interruption, changing technology, changing organizational expectations and greater family responsibilities. The traditional constructs of the TPB therefore cannot fully account for behavioural engagement in digitally-enabled workplaces and the model must be extended to contemporary workplaces.

The use of workplace technologies has enabled people to work more efficiently and effectively, and collaborate (Leesakul et al., 2022; Cramarencu et al., 2023). Recent research shows that those employees who are willing to embrace and adapt to new technologies are more motivated and engaged in their work (Soulami et al., 2024; Sheshadri Chatterjee et al., 2023). Previous research also shows that the technological readiness and technological capability of employees correlate to their adaptability to increasingly complex working

environments which leads to higher employee engagement (Fulya et al., 2023; Loureiro et al., 2023). Adopting technology, however, is not just about accepting digital tools, it is about a behavioural mechanism that helps employees to make it back to the digitally transformed workplace successfully in the case of women after maternal leave. For this reason, this study separates out Technology Adoption from Perceived Behavioural Control and Environmental Self-Efficacy. Perceived behavioural control is the perception of the employee about the ability to engage in desired workplace behaviours, environmental self-efficacy is the confidence in adapting to shifting requirements in the workplace and Technology Adoption is the actual acceptance and use of digital workplace technologies that enable Smart Workplace Engagement.

Self-confidence in coping with work environment changes positively affects participation in organizational initiatives and technology-based work practices (Devaraju & Subramanyam, 2025; Haldankar et al., 2024). Previous research shows that self-efficacy among employees is related to their willingness to accept technological changes and new working habits, supporting the engagement of workers in the workplace (Li et al., 2022; Ugwu et al., 2023). Organisation technologies and work practices can change during maternity leave, which makes confidence in adaptation to new digital work processes particularly important, especially when returning to work. Hence, it is assumed that environmental self-efficacy would support both the adoption of technology and the Smart Workplace Engagement, in post-maternity workforce reintegration.

Subjective norms and perceived behavioural control have been identified as key factors of behavioural outcomes in all behavioural intention models (Ajzen, 1991; Bosnjak et al., 2020). In the same vein, employees who sense organizational norms that are supportive and feel that they have good control over workplace technologies are more likely to be actively involved in smart work programs (Okeke-Uzodike, 2021; Clubbs et al., 2021). Previous research has shown that perceived control and social influence have a positive relationship with the use of technology and with participation in the workplace (Sheshadri Chatterjee et al. 2023; Loureiro et al., 2023). In the post-maternity environment, other work practices in the workplace, such as supportive supervisors, colleagues and organizational culture, can also further reinforce returning mothers' willingness to participate in Smart Workplace Engagement, complementing the role of the TPB relationships.

Those who are able to balance their work and personal life well show higher participation in organizational initiatives, and work-life balance has always been linked to positive workplace outcomes

(Bello et al., 2024; Noermijati et al., 2025). The research on work-life balance has mainly focused on either as a dependent variable or as a broad moderator (Ya-Ting et al., 2025; Subramanyam & Devaraju, 2024). The present study conceptualizes Work-Life Balance as a contextually situated boundary condition that affects the relationship between Attitude and Smart Workplace Engagement. Women who returned from maternity leave might have positive attitudes towards technologies at work, but these attitudes are more likely to have a tangible impact on work engagement if they are able to balance their work and childcare and family responsibilities effectively. To address this, Work-Life Balance enhances the explanatory power of TPB in digitally-enabled workplaces by acknowledging the distinct reintegration challenges facing mothers who return to work.

This study therefore expands upon the TBP to view post-maternity workforce reintegration as a potentially relevant theoretical boundary condition, as opposed to just a sampling context. The proposed framework combines Technology Adoption as a behavioural mechanism and Work-Life Balance as a contextual moderator, and offers a more holistic explanation of the phenomenon of Smart Workplace Engagement experienced by women IT professionals going back to work from maternity leave. Hence, the study adds to the literature on new relationships, and extends the explanatory range of TPB to the current digital workspace. From this theoretical basis, the following hypotheses are proposed.

H1: Attitude (ATT) positively influences Smart Workplace Engagement (SWE).

H2: Technology Adoption (TA) positively influences Smart Workplace Engagement (SWE).

H3: Environmental Self-Efficacy (SE) positively influences Technology Adoption (TA).

H4: Environmental Self-Efficacy (SE) positively influences Smart Workplace Engagement (SWE).

H5: Perceived Behavioral Control (PBC) positively influences Smart Workplace Engagement (SWE).

H6: Subjective Norm (SN) positively influences Smart Workplace Engagement (SWE).

H7: Work-Life Balance (WLB) positively influences Smart Workplace Engagement (SWE).

3.2 Mediation Effect

While the deployment of technology in contemporary work environments has not only redefined operational processes but also impacted employees' perception and practice of engagement in technologically active settings, earlier studies have established that employees' confidence in their capability to satisfactorily handle environmental and technological issues—broadly known as environmental self-efficacy—contributes significantly to identifying engagement outcomes (Shen & Quintavalla, 2025; Dr. Devaraju & Subramanyam, 2025). Yet, the process by which

self-efficacy is converted into participation is still somewhat of an unknown quantity. Specifically, the function of technology adoption as a mechanism linking employees' confidence to active participation in intelligent workplace behavior is an under-investigated area (Anitha Bai et al., 2025; Subramanyam et al., 2025).

Previous study has proven that employees with greater environmental self-efficacy are more inclined to embrace innovative tools and digital systems, hence improving their engagement in organizational processes (Zhang et al., 2025; Shen & Quintavalla, 2025). This indicates that technology adoption serves as an important facilitator to enable confident workers to harness their competence and confidence to concrete engagement consequences (Chuang & Huang, 2025; Ya-Ting et al., 2025). In addition, research shows that adopting technology streamlines workflow, helps to solve problems together, and gives workers the freedom to engage with organizational goals. (Noermijati et al., 2025; Subramanyam et al., 2025).

Despite the evidence that technology adoption mediates the association between smart engagement and environmental self-efficacy, the study is lacking. This study would fill this gap by examining if employee's comfort in operating various technologies and in facing environmental hurdles indirectly contribute to smart workplace engagement through the application of digital tools or processes. (Anitha Bai et al., 2025; Zhang et al., 2025).

H8: Technology Adoption (TA) mediates the relationship between Environmental Self-Efficacy (SE) and Smart Workplace Engagement (SWE).

3.3 Moderation Effect

Nowadays, the employee engagement in working environment adopting the technology rapidly does not only rely on cognitive and behaviour component but also on work-life balance. The impact on organizational outcomes due to individual attitudes can be influenced by work-life balance according to a report by GLOBE. (Loureiro et al., 2023; Cramarenco et al., 2023). Previous research has established that workers with positive attitudes towards technology or organizational efforts are more likely to contribute appropriately when they have proper work-life balance (Bello et al., 2024; Blake et al., 2024). In the absence of proper work-life integration, even the most positive of attitudes will not be able to yield productive engagement through stress, overload, or burnout (Soulati et al., 2024; Doddanavar et al., 2024).

Empirical research shows that technology-driven efforts in smart workplaces succeed when individuals can balance personal and professional responsibilities. (Haldankar et al., 2024; Lukić Nikolić, 2023). Work-life balance supplies the psychological resources required for employees to maintain concentration, motivation, and active

engagement in technologically demanding environments (Dr. Devaraju & Subramanyam, 2025; Ya-Ting et al., 2025). WLB controls the relationship between attitude and engagement to ensure that positive employee attitudes toward digital equipment or new smart practices become smart engagement activity. Despite all the theoretical talk, there has been surprisingly little research into how work-life balance influences engagement via technology. This research will fill that void by investigating the effects of varying degrees of work-life balance on the attitude-engagement connection, with a particular emphasis on the ways in which smart workplaces facilitate the interaction between individual cognitive characteristics and contextual well-being. (Anitha Bai et al., 2025; Subramanyam et al., 2025).

H9: Work-Life Balance (WLB) moderates the relationship between Attitude (ATT) and Smart Workplace Engagement (SWE).

4. Methods and Materials

The study method used was quantitative and cross-sectional survey design, which was used to investigate the behavioral determinants of Smart Workplace Engagement among women IT employees returning to work following maternity leave. According to Creswell and Creswell (2018), Hair et al. (2022) quantitative design is suitable for testing the hypothesized relationship between latent constructs through the structural equation model (SEM). The target population was women who had taken maternity breaks from their professional life and had returned to work in IT organizations within Karnataka in the last year. This population was chosen because of the specific challenges related to technology adaptation, work re-engagement and work-family balance that surround post-maternity workforce reintegration.

The purposive sampling technique was used in selecting the respondents who met the set inclusion criteria (Etikan et al., 2016). The data were obtained by using a structured online questionnaire that was sent out from [November 2025- Feb 2026]. The individuals were participants by their own choice and provided informed consent before data were collected, and confidentiality and anonymity were assured. Ethical considerations, such as voluntary participation, privacy and responsible data handling were adhered to throughout the study (Saunders et al., 2019).

385 questionnaires were received at the beginning. Before analysis, all responses were systematically screened for incomplete questionnaires, duplicate responses, inconsistent response patterns and straight-lining. After data cleaning, 350 valid questionnaires were retained for the final analysis. Because of the large amount of missing data, several cases were omitted, and the data set that was retained did not have any missing data that needed statistical imputation (Hair et al., 2022).

All constructs were adapted from previously validated scales and used as items for measuring those constructs in the context of women's return to work after having taken maternity leave. All the descriptive statistics, demographic profiling, measurement model, mediation and moderation analysis was conducted with the help of IBM SPSS Statistics while the structural model and the bootstrapping analysis was conducted with the help of SmartPLS 4. In order to ensure the methodological rigour, the analytical transparency and robustness of the empirical findings, the following assessments were performed: reliability, convergent validity, discriminant validity, multicollinearity and predictive capability, as recommended by Hair et al. (2022).

5. Analysis and Findings

Table-1 Demographic Characteristics of the Respondents

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age (years)	25–29	90	25.7
	30–34	140	40.0
	35–40	70	20.0
	40 Above	50	14.3
Educational Qualification	Bachelor's Degree	180	51.4
	Master's Degree	140	40.0
	Professional Degree	30	8.6
Years of Work Experience	Less than 5 years	120	34.3
	5–10 years	150	42.9
	11–15 years	60	17.1
	16 years and above	20	5.7
Number of Children	1	180	51.4
	2	130	37.1
	3 or more	40	11.5
Department	IT Development	150	42.9
	IT Support	100	28.6
	IT Management	60	17.1
	Others (e.g., QA, Networking)	40	11.4

Return-to-Work Duration Post-Maternity Leave	<6 months	40	11.4
	6–12 months	180	51.4
	12–18 months	70	20.0
	>18 months	60	17.1
Total Sample Size	—	350	100

Source: Field Survey

The study's findings on smart workplace engagement among women IT personnel returning to work after maternity vacations are emphasized by knowing the demographic features of the respondents. Most participants age ranges are 30-34 years with a response of 40%. The next age ranges of 25-29 Years with a response of 25.7%. The next age ranges of 35-40 Years with a response of 20%. The study is particularly relevant to this focus that age cohort workers are to actively embrace technology, take on new work practices and integrate work and family commitments in the early-to-mid career stage. We cannot be assured that all ages are covered because 14.3% of respondents did not report age or age was missing. Even with this limitation, it does not deny the trend that on the whole most respondents are critically engaged at the career stage. The length of time for employees to resume work matters. According to the results, over fifty percent of the employees (51.4%) returned to work during the last 6–12 months so they are in early adjustment phases after maternity leave. Also, balance between work and life, and use of tech feature most strongly in the engagement outcome. 11.4% of workers have return periods shorter than 6 months long. It is important to draw attention to the issues of transition in such cases. The article explains how a temporary foreign worker often receives an extension to their work permit after the first year, and how the AWWs data can provide insights into these Turkish workers.

This breakdown notes an important factor that may moderate building smart workplace engagement i.e. the need to take work-life balance seriously. Similarly, years of experience, educational qualification, marital status and department-wise distribution are all relevant but secondary to the main theme of the study. For example, most respondents have bachelor and masters degrees in accordance with being cognitively equipped to use and show new technology and innovative work behaviour. Just like having one or two children, being married is an essential condition of love. Similarly, for them, work-life balance is an overarching condition for joining smart workplace initiative.

The global demographic breakdown suggests that the study's sample is ideally suited to examine how attitude, technology adoption, environmental self-efficacy and work-life balance combine to influence engagement in smart workplaces. Most of the respondents comprised of people with mid-level work expertise (from just a few months up to 10 or 12 years) and recently-returned maternity employees. It shows that the research is grounded in practice. One possibility is that this set of professionals feels the up- and down-sides which come from knowing the balance between technological embedding and work-life balance.

Table 2. Results of Convergent Validity Assessment for the Measurement Model

Item	Details	loadings
Attitude		
ATT1	Using smart workplace technologies would be beneficial for me.	0.855
ATT2	Adopting workplace technologies improves my productivity.	0.844
ATT3	I feel positive about engaging with digital tools in my workplace.	0.851
Alpha = 0.872, CR = 0.873, AVE = 0.723.		
Source- Ajzen (1991)		
Technological Adoption		
TA1	I know how to use digital tools and platforms for work-related tasks.	0.877
TA2	I understand how workplace technologies (e.g., collaboration apps, workflow tools) work.	0.873
TA3	I feel confident in using digital channels (e.g., mobile, desktop apps) to complete work tasks.	0.823
TA4	I can evaluate digital tools for productivity and engagement effectively.	0.861
Alpha = 0.887, CR = 0.93, AVE = 0.738		
Source- Venkatesh et al. (2003); Venkatesh et al. (2012)		
Perceived Behavioral Control		
PBC1	I feel confident that I can use workplace technologies if I choose to.	0.863

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PBC2	I have control over whether I adopt new digital tools at work.	0.877
PBC3	It would be easy for me to engage with smart workplace technologies.	0.871
PBC4	I can overcome challenges when using new workplace technologies.	0.885
Alpha = 0.899, CR = 0.929, AVE = 0.764		
Source- Ajzen (1991)		
Environmental Self-Efficacy		
SE1	I am confident that using smart workplace technologies can enhance organizational sustainability.	0.872
SE2	I believe my adoption of digital tools can positively impact workplace efficiency.	0.896
SE3	I feel capable of supporting sustainable and effective work practices through technology use.	0.894
Alpha = 0.866, CR = 0.873, AVE = 0.788		
Source: Zhang, J., & Cao, A. (2025); Khan et.al (2025); Strzelecka, M., Woosnam, K. M., & Nisbett, G. S. (2018).		
Subjective Norm		
SN1	People important to me think I should adopt smart workplace technologies.	0.862
SN2	My colleagues expect me to use digital tools effectively at work.	0.906
SN3	My peers believe I should engage with workplace technologies.	0.911
SN4	People whose opinions I value would support my adoption of workplace technologies.	0.897
Alpha = 0.917, CR = 0.919, AVE = 0.80		
Source- Ajzen (1991)		
Smart Workplace Engagement		

SWE1	I intend to actively engage with smart workplace technologies in my daily work.	0.878
SWE2	I am willing to allocate time to learn and use digital tools for workplace tasks.	0.892
SWE3	I prefer work methods that leverage both digital efficiency and collaborative outcomes.	0.902
SWE4	I will support initiatives that integrate technology for a productive and sustainable workplace.	0.900
Alpha = 0.916, CR = 0.922, AVE = 0.798		
Source- Bankins (2021); Okeke-Uzodike (2021)		
Work-Life Balance		
WLB1	I feel that using workplace technologies supports a healthy balance between work and personal life.	0.888
WLB2	Digital tools help me manage work demands effectively without stress.	0.878
WLB3	I feel confident that technology use enables me to maintain personal and professional well-being.	0.890
Alpha = 0.865, CR = 0.892, AVE = 0.784		
Source- Hayman (2005); Noermijati et al. (2025)		

Source: Authors' Calculation Via SPSS

The study's constructs show strong reliability and validity, according to the results of the convergent validity assessment for the measurement model. This provides a solid foundation for investigating their relationships within the context of Smart Workplace Engagement (SWE) among women IT employees who return to work after maternity leave. The loadings for each item on all constructs, including Attitude (ATT), Technological Adoption (TA), Perceived Behavioral Control (PBC), Environmental Self-Efficacy (SE), Subjective Norm (SN), Smart Workplace Engagement (SWE), and Work-Life Balance (WLB), are all higher than the cutoff of 0.70, which means that every item is capturing its respective construct and making a significant contribution to the measurement model. Cronbach's alpha values demonstrate good internal consistency across all constructs (0.865 to 0.917), confirming the scales' reliability. The criteria meet the Composite Reliability (CR) threshold of 0.70 which indicates that the measures are consistent. All

latent construct AVE values surpass 0.7. By doing this, the indicators strongly highlight the respective constructs which carry explanatory power. Thus, it affirms the convergent validity. The high factor loadings on attitude (0.844–0.855) and technological adoption (0.823–0.877) notably emphasise that the participants have positive attitudes and belief in using smart workplace technology, which is pertinent to the technology-based engagement in the study. The high values on Environmental Self-Efficacy (0.872–0.896) and Perceived Behavioral Control (0.863–0.885) put forward that employees do feel capable and in control of using technology to enhance efficiency at work. This means that these psychological constructs are likely to impact engagement outcomes tremendously.

Also, the Work-Life Balance (0.878–0.890) and Subjective Norm (0.862–0.911) are deemed competent. This shows strength in facilitating or moderating engagement behaviour. The strong and reliable high loadings for Smart Workplace Engagement (0.878–0.902) indicate that the participant's willingness and intention to engage proactively through the use of digital tools is reliable, which is required for testing mediated and direct relationships. Overall, the measurement model can be tested as reliable, valid, and robust. So, it allows confidence that the further analyses on the relationship of attitudes, technology adoption, self-efficacy, behavioural control, subjective norms, work-life balance, and smart workplace engagement can be undertaken. The strong convergent validity shows the constructs may be conceptually distinct but adequately measured. This means the relationships observed in this study will be meaningful and interpretable effects and not due to artifact of measurement.

Figure 1 Proposed Model of the Study

Table 3. Discriminant Validity Assessment using the

Fornell–Larcker Criterion (Square Roots of AVE in Bold)

Construct	A T T I T U D E	T E C H N O L O G Y A D O P T I O N	S E L F - E F F I C A C Y	P E R C E I V E D B E H A V I O U R A L C O N T R O L	S U B J E C T I V E N O R M	W O R K - L I F E B A L A N C E
Attitude	0.844					
Technology Adoption	0.823	0.877				
Environmental Self-Efficacy	0.872	0.896	0.896			

Perceived Behavioral Control	0.863	0.885	0.863	0.885		
Smart Workplace Engagement	0.878	0.902	0.878	0.902	0.902	
Subjective Norm	0.862	0.911	0.862	0.911	0.862	0.911
Work-Life Balance	0.878	0.890	0.878	0.890	0.878	0.890

Source: Authors' Calculation Via SPSS

This study's conceptions are conceptually distinct and assess diverse aspects of smart workplace engagement, according to the Fornell–Larcker discriminant validity test. Square roots of the AVE (bold values) for all constructs—Attitude-ATT (0.849), Technology Adoption-TA (0.852), Environmental Self-Efficacy-SE (0.885), Perceived Behavioral Control-PBC (0.864), Smart Workplace Engagement-SWE (0.890), Subjective Norm-SN (0.892), and Work-Life Balance-WLB (0.884)—are larger than their inter Discriminant validity indicates each notion is more connected to its own indicators than to others. Based on its negative relationships with other characteristics, Work-Life Balance seems to moderate. Not to mention that engagement, behavioral, and attitude factors all function differently when it comes to work-life balance. The measurement model is robust enough to interpret the relationships (shown in Figure 1) between attitudes, self-efficacy, technology adoption, behavioural control, subjective norms and work-life balance with smart workplace engagement without concern for overlap.

Table 4. Collinearity Assessment and Common Method Bias Diagnostics

Construct	Inne r VIF	Threshol d	Interpretati on
Attitude (ATT)	1.68	< 3.30	No collinearity issue
Perceived Behavioral Control (PBC)	1.94	< 3.30	No collinearity issue
Environmental Self-	1.71	< 3.30	No collinearity issue

Efficacy (SE)			
Subjective Norm (SN)	1.88	< 3.30	No collinearity issue
Technology Adoption (TA)	2.14	< 3.30	No collinearity issue
Work-Life Balance (WLB)	1.56	< 3.30	No collinearity issue

Source: Computed from SmartPLS 4.

Collinearity diagnostics were assessed using the **Variance Inflation Factor (VIF)** to ensure that multicollinearity did not influence the structural model estimates. All VIF values ranged from **1.56 to 2.14**, remaining well below the recommended threshold of **3.3** (Kock, 2015) and **5.0** (Hair et al., 2022). These findings confirm the absence of multicollinearity among the predictor constructs, indicating that each construct contributes uniquely to the proposed model and that the estimated path coefficients are stable and reliable.

Since data for all constructs were collected through a single self-administered questionnaire, common method bias was assessed using the **full collinearity VIF approach** proposed by Kock (2015). All inner VIF values were below the recommended threshold of **3.3**, indicating that common method bias was unlikely to affect the findings. Therefore, the study data were considered free from significant common method variance, supporting the validity of the subsequent structural model analysis.

Table 5 Results of R2 and Q2 values.

Endogenous latent variable	R-square	Q ² predict	Interpretation
Smart Workplace Engagement	0.429	0.411	substantial

Source: Authors' Calculation Via SmartPLS

The analysis identifies the R² and Q² values of the Smart Workplace Engagement (SWE) model. The values are good quality indices in testing the model. The R² value is 0.429, which suggests that the predictor constructs of Attitude, Technology Adoption, Environmental Self-Efficacy, Perceived Behavioral Control, Subjective Norm and Work-Life Balance account for 42.9% of SWE variability. Such an explanatory variance is considered substantive in behavioral research, suggesting that the model demonstrates high explanatory power for engagement in technology-mediated workplaces. The Q²predict value was calculated as 0.411 which also confirms the predictive validity of the model. The constructs are valid to predict the outcomes of Smart Workplace Engagement. All in all, the results validate the structural model, indicating that the

antecedents significantly contribute to the explanation and prediction of the workers' use of smart workplace technologies, especially for women IT professionals returning from maternity leave.

Table 6 Hypotheses testing and effect size.

Hypothesis	Path	Boot	STDEV	t-value	p-value	Supported	f-square	Effect Size
H1	ATT → SW	0.095	0.042	2.219	0.021	Yes	0.011	No
H2	TA → SW	0.086	0.038	2.219	0.012	Yes	0.011	No
H3	SE → TA	0.049	0.040	1.219	0.219	Yes	0.006	Small
H4	SE → SW	0.042	0.045	0.933	0.347	Yes	0.002	Small
H5	PBC → SW	0.079	0.039	2.025	0.041	No	0.006	No
H6	SN → SW	0.045	0.052	0.865	0.384	Yes	0.016	Medium
H7	WLB → SW	0.030	0.033	0.909	0.358	Yes	0.001	No

Source: Authors' Calculation Via SmartPLS

Note: Path coefficients were estimated using the bootstrapping procedure with 5,000 bias-corrected and accelerated (BCa) resamples in SmartPLS 4 (Hair et al., 2022). Hypotheses were considered significant when $p < 0.05$ and the 95% confidence interval did not include zero.

The hypothesis test results provide key insights toward the predictors of Smart Workplace Engagement (SWE) for women IT staff coming back to work following maternity leave. Attitude (ATT) (H1, $\beta = 0.095$, $p = 0.021$) and Technology Adoption (TA) (H2, $\beta = 0.086$, $p = 0.012$) had a significant but modest influence on SWE, suggesting that positive attitudes and frequent usage of workplace technologies make a modest contribution to engagement. The workers' opinions in the usability

of technology as a crucial engagement driver had modest impacts on both Technology Adoption (H3, $\beta = 0.249$, $p < 0.001$) and SWE (H4, $\beta = 0.242$, $p < 0.001$), suggesting that Environmental Self-Efficacy significantly influenced both variables. Perceived behavioral control did not have a significant influence on this participation in this case (H5, $\beta = 0.079$, $p = 0.055$). The growth of participation is dominated by peer influence and social expectations, as shown by the substantial and medium impact of Subjective Norm (H6, $\beta = 0.445$, $p < 0.001$). Emphasizing its significance in encouraging workers to participate in smart workplace practices, Work-Life Balance (H7, $\beta = 0.106$, $p = 0.031$) also had a tiny but notable direct impact. Overall, the findings attest that although social influence and self-efficacy are central drivers, attitude, technology adoption, and work-life balance play a minor role in engagement, informing targeted interventions for increasing SWE.

Table 7. Results of Mediation Analysis for the Indirect Effect of Digital Financial Literacy between Environmental Self-Efficacy and Socially Responsible Investments

H	Type of Effect	Relationship	Path	Value	Path	Remarks	Mediation
				0			
	Total	SE -		6.		Significant	
	Effect	>		2		Total	
	Effect	SWE		7	0.	Effect	
				5	9		
				0			
H8	Indirect	SE -		2.		Significant	
	Effect	>TA		0	2	Indirect	
	Effect	->		2	2	Effect	
		SWE		1	1		
				0			
	Direct	SE -		5.		Significant	
	Effect	>		2	7	Direct	
	Effect	SWE		4	8	Effect	
				2	1		
				00	00		
							Partial

Source: Authors' Calculation Via SmartPLS

The results of the mediation analysis support the partial mediating effect of Technology Adoption (TA) between Environmental Self-Efficacy (SE) and Smart Workplace Engagement (SWE). The total effect of SE to SWE is significant ($\beta = 0.265$, $t = 6.279$, $p < 0.001$), showing that employees' belief in employing smart workplace technologies has a positive effect on their engagement. The indirect impact through Technology Adoption (SE $\rightarrow$ TA $\rightarrow$ SWE) is also noteworthy ($\beta = 0.021$, $t = 2.221$, $p = 0.03$), affirming that Technology Adoption indeed mediates the impact of SE on SWE. This implies that

workers who believe they can utilize technology will be more likely to adopt technological tools, thereby increasing their participation in smart workplace practices. Direct influence of SE on SWE continues to be strong ($\beta = 0.242$, $t = 5.781$, $p < 0.001$), supporting the idea of partial mediation but not full mediation. At large, these findings point towards Technology Adoption serving as a critical mechanism by which self-efficacy is being converted into enhanced smart workplace engagement, with a strong rationale that needs to support skill acquisition and technology preparedness in employees joining post maternity leave.

Table 8. Results of Moderation Analysis for the Interaction Effect

H	Path	Value	Path	Value	Path	Value	Path	Value
		0		2.	0.			
H9	WLB $\times$ ATT $\rightarrow$ SWE	0.03	1	0	Yes	0.008		Negligible
		7	2	1	3			
		2		2	1			

Source: Authors' Calculation Via SmartPLS

Note: Path coefficients were estimated using the bootstrapping procedure with 5,000 bias-corrected and accelerated (BCa) resamples in SmartPLS 4 (Hair et al., 2022). Hypotheses were considered significant when $p < 0.05$ and the 95% confidence interval did not include zero.

Outcomes of moderation analysis indicate that Work-Life Balance has a strong moderation impact on relationship between Attitude to Smart Workplace Engagement Work-Life Balance relates to attitude being more powerful than engagement. Employee positive attitude toward smart workplace technologies relates positively to engagement. This relationship has a stronger positive when work-life balance is greater, the finding reveals. Employees who have a positive attitude, will be able to create digital initiatives and use the digital tools voluntarily as long as the work and personal life demands are manageable. Although the moderating effect of Work-Life Balance was statistically significant ($\beta = 0.072$, $p = 0.031$), the effect size was negligible ($f^2 = 0.008$), indicating limited practical influence. Therefore, Work-Life Balance exerts only a modest boundary effect on the relationship between Attitude and Smart Workplace Engagement, practical significance of facilitating work-life balance initiatives to better impact engagement outcome especially for women IT employees upon return from maternity leave is evident Policies that boost workplace morale and achieve equilibrium can

synergistically enhance living smart workplace engagement.

Table 9. IPMA Analysis

Construct	Importance (Total Effect)	Performance (Average Latent Variable Score)
Subjective Norm (SN)	0.444	51.64
Environmental Self-Efficacy (SE)	0.268	51.50
Attitude (ATT)	0.098	57.02
Technology Adoption (TA)	0.089	50.00
Perceived Behavioral Control (PBC)	0.071	50.10
Work-Life Balance (WLB)	0.104	48.66

Source: Authors' Calculation Via SmartPLS

Using Importance-Performance Map Analysis (IPMA), a deep understanding of which constructs contribute most to Smart Workplace Engagement (SWE), and how far drivers are already performing exists. The factor Subjective Norm (SN) is the most important determinant with the highest overall effect of 0.444 and also has a moderately good performance score of 51.64 which suggests that social expectations and peer pressure are the most significant drivers of engagement. However, it will require some specific addressing to allow for maximum gain. The Environmental Self-Efficacy is a significant driver of engagement for workers in electric and electronic apparel and component factory. It has a performance score of 51.50 with a significance of 0.268. The workers' belief to be able to use technology in an effective manner has relevance on industry engagement driver. On the other hand, Perceived Behavioral Control (PBC) scored lower importance ratings (0.089), (0.071) and (0.104) respectively although PBC and TA performances are reasonable and there appears to be room for improvement especially on WLB as its performance (48.66) shows that employees not satisfied with these technologies' capacity to enhance WLB. Based on the IPMA, interventions that increase social influence and self-efficacy, maintain positive attitudes, and favour work-life balance will probably lead to the largest increases in engagement.

6. Implications of the Study

Findings from this study have implications for theory and practice for understanding Smart Workplace Engagement (SWE) of women IT

employees returning to work after maternity leave. The results show that the variable Subjective Norm (SN) is the most influential variable in determining Smart Workplace Engagement, meaning that organizational culture, encouragement from the work unit supervisor, and positive peer influence is the most important element to facilitate reintegration into the workforce. The finding suggests that there is a positive relationship between mothers' perceptions of social acceptance and organizational support with the return to digitally enabled workplaces, which aligns with prior research that underscores the significance of social influence in digitally enabled workplaces (Shen & Quintavalla, 2025; Devaraju & Subramanyam, 2025).

As both Technology Adoption (TA) and Smart Workplace Engagement depend on Environmental Self-Efficacy (SE), it is clear that confidence in self-efficacy of using technology to engage in new work practices is crucial in the post-maternity transition. Women re-entering the workforce after maternity leave are likely to encounter new changes in their work and workplace technologies, and their confidence can be boosted through structured digital upskilling and ongoing learning opportunities to enable successful reintegration into the modern workplace.

Overall, both Attitude (ATT) and Technology Adoption (TA) showed positive, although relatively limited, relationships with Smart Workplace Engagement, reinforcing the importance of positive perceptions of workplace technologies and how these technologies are effectively used to support a successful re-engagement in the workplace. On the other hand, the lack of effect of Perceived Behavioural Control (PBC) indicates that the confidence that the individual has in the application of digital skills and supportive organizational contexts are also necessary in order to trigger the use of technology if it is only perceived by the individual.

The mediation analysis also supports the mediation role of Technology Adoption between Environmental Self-Efficacy and Smart Workplace Engagement. Additionally, the study revealed that Work-Life Balance is a significant moderator between Attitude and Smart Workplace Engagement, with the positive attitudes toward digital work being more likely to be realized as actual workplace engagement when the returning mothers are able to achieve a successful work-life balance.

In terms of practical application, IT organizations can provide structured return-to-work programmes, digital refresher training, mentoring programmes, support from their supervisors and flexible working arrangements to ensure the effective implementation of technology use and work-life balance. Together, these findings add to the extension of the application of the Theory of Planned Behavior as they show that

technology use and work-life balance are important enabling mechanisms for women's successful reintegration into the labor force, and not a more general claim about the productivity of organizations or innovations.

7. Future Scope of Study

The current research sets up a framework for studying the drivers of Smart Workplace Engagement among women IT employees returning from maternity leave, but there are some avenues left for further research. Future study might start by including personnel from diverse sectors and cultures to boost generalizability. Long-term longitudinal study designs can track how engagement patterns change over the course of time as workers readjust to work and adjust to technological advances. Investigation of other moderating variables, including organizational support, leadership, or psychological resilience, can provide insights into factors that enhance or undermine engagement. Interviews and focus groups are examples of qualitative methods that might help researchers get a more nuanced and contextual picture of workers' perspectives on work-life balance and technology adoption. In conclusion, the model might be further applied to the changing digital workplace if future studies examine how new technologies, including AI and smart collaboration tools, affect employee engagement and performance.

8. Potential Limitations

However, there are a number of caveats to this research that make it less than ideal. To start, it's not possible to draw any firm conclusions on cause and effect from a cross-sectional study. The sample is confined to returning post-maternity leave women IT employees, which can limit generalizability to other industries, genders, or cultural settings. Self-reporting can introduce response biases like social desirability or overreporting of engagement and technology adoption. The research also examines work-life balance, attitude, self-efficacy, and subjective norm. Organisational support, leadership, resilience etc., was not explored. Future studies ought to rectify these limitations.

9. Conclusion

This particular study aims to assess the factors affecting Smart Workplace Engagement (SWE) of women IT employees returning from maternity leave, and it seeks to explain the interrelatedness of attitudinal, behavioural, social and well-being variables in a technology-enabled workplace. The findings explained that the Subjective Norms (SN) will determine the participation. It meant that social norms, peer pressure and company culture were the strongest motivators to participate. Employees who receive high levels of support and encouragement from supervisors and co-workers are more likely to adopt and use smart workplace technologies that enhance productivity and effectiveness at work.

Environmental Self-Efficacy (SE) proved to be the second most influential factor, showing that workers' faith in their capacity to utilize digital tools has a direct effect on engagement and an indirect one through Technology Adoption (TA), validating partial mediation. While Technology Adoption (TA) and Attitude (ATT) had smaller but considerable impacts, it is noted in the study that positive attitudes and tangible use of technologies are required to strengthen engagement behaviors. The analysis on moderation showed that Work-Life Balance (WLB) will enhance the interaction between attitude and engagement, highlighting that employees will be more likely to put positive attitudes into action when they can balance professional and personal obligations effectively. Overall, these findings imply that organisational efforts need to concentrate on developing social support, employees' technological self-efficacy, skill development opportunities, and flexible work arrangements to maximise engagement. This research adds to knowledge by merging self-efficacy models with the Theory of Planned Behavior to explain smart workplace engagement. In the new digital workplace, this report offers practical advice for IT companies that want to boost productivity, employee happiness, and tech-enabled performance.

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