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Sustainability in Project Management: Factors That Play a Pivotal Role in Influencing Adoption of Sustainability Practices in IT Projects.

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Abstract:

In today's competitive business landscape, sustainability has become a crucial element of strategic and competitive advantage, particularly in the management of IT projects. As organizations increasingly acknowledge the importance of sustainable development, it is essential to understand the factors that drive the incorporation of sustainability into project management practices. This research paper aims to explore the key factors influencing the adoption of sustainability practices in information technology (IT) project management. It seeks to provide insights into the drivers of integrating sustainability into project management. The study investigates the various factors that influence sustainability in IT project management and examines the barriers to its adoption. It employs a combination of literature review, and data analysis to identify the primary drivers and obstacles. The findings reveal key factors influencing sustainability practices in IT project management, including organizational culture, stakeholder pressure, regulatory requirements, and long-term cost efficiency. The barriers identified include lack of awareness, resistance to change, and limited resources.

Keywords: Project Management, Sustainability, Sustainable practices, Information Technology, Barriers

1. Introduction

Project Management as a subject aims to accomplish unique tasks within the scope, time and cost and meet the stakeholder's expectations identified earlier and managing all these conditions by effectively managing the team effectively within the limited and constrained resources available to them (Abidin & Pasquire, 2007). On a global level the acceptance of Project Management (PM) has seen an exponential increase in the last few decades in order to achieve a higher rate of success among projects (Alvarenga et al., 2020). There has been varied level of adaptations, focus and changes in the PM domain over the past years and one of relatively recent major focal transformation with the adoption of sustainability in the way projects are handled (El Khatib et al., 2020). Sustainability is the way of addressing the requirement of the present-day without compromising the wants of the future and maintaining a harmonial balance between economic development, environmental protection and social well-being (Chang et al., 2016). This is the social goal of the long-term coexistence of people on earth and to conserve the limited resources for future generations and environment and the precise definitions of the term are controversial and have changed over time and depending on literature, context and usages (Zeng et al., 2022).

"Environmental, economic, and social sustainability" are commonly described by experts as the major three elements, with the environmental dimension having received the greatest attention by many publications and researchers (Boyer et al., 2016). In practical terms, sustainability frequently focuses on addressing the most pressing environmental issues, such as air and water contamination, climatic change, habitat destruction, and loss of ecosystem services (Arora et al., 2018). The idea of sustainability at the global, national, as well as individual levels, decisions which have influenced the numerous reasons on why sustainability has been inculcated in PM (Silvius & Schipper, 2014).

Sustainability in PM offers a proactive strategy for managing projects with a comprehensive perspective that includes environmental, social, and economic aspects while dealing with projects (Marcelino-Sádaba et al., 2015). Every industry today has sustainability as a corporate objective, and businesses understand that ignoring the problem would be simply be acting irresponsible (Fontaine, 2013). There is an increasing recognition of the necessity to include sustainability principles into PM practises within the technology sector as IT continues to play an increasingly important role within current organisations (Toljaga-Nikolić et al., 2020; Sharma et al., 2021a). To ensure continuity and mitigate adverse

impacts on the environment, sustainability in PM involves including environmental, economic, and social issues into the planning, implementation, and monitoring of IT projects (Sánchez, 2015).

The article focuses on the incorporation of sustainability principals into the process of PM and this includes the various sectors of IT in terms of industries. Such integrated approach makes it possible to draw out a holistic picture of the sustainable behavior which is taking place in different organizational settings in the way projects are handled (Jennings and Zandbergen, 1995). The need of this research is two-fold: First, to identify the key factors that have impact in firms adopting sustainability as a part of managing projects and secondly, to understand the obstacles that will impede the working staff from being socially responsible and thirdly, to understand the purposes of implementing sustainability in an organization.

The structure of the study is as follows: Section 1. Introduction of project management and sustainability. Section 2. Description of research objectives Section 3: Presented the research methodology of the study. Section 4 explore various determinants of sustainability and project management. Section 5 dedicated to results and interpretations section 6 highlights the implications for the study. and Finaly the study concluded in section 7.

1.3 Research GAP: The IT projects lack the pragmatic research that adheres to focus on adopting sustainability. Numerous studies to date reveal that the term 'sustainability' has been absorbed in certain industries as well as in project management, lacking in inculcating its unique basics to IT projects. Because of this, a consequential gap is observed in recognizing sustainability practices that are assimilated, executed and organized within the IT sector.

1.2 Research Question: To addressed the research Gap following research question were formulated.

RQ 1: what are the factors affecting adoption of sustainable practices in in IT firms.

RQ 2. What are the barriers which preventing employees from being sustainable in an organization?

RQ 3: What is the purpose of implementing sustainability in an organization?

2. Research Objective: To addressed the research questions following research objectives were framed:

1) To understand the factors affecting adoption of Sustainable practices in IT firms.
2) To find the barriers preventing employees from being sustainable in an organization.
3) To understand the purposes of implementing sustainability in an organization.

3. Research methodology:

3.1Research Philosophy : The philosophy of research that will be followed in this study is pragmatism and critical realism as this topic is related to them. Pragmatism and critical realism can be used as a tool to investigate sustainability in PM, and two different approaches to research (Elder-Vass, 2022). The aim of the pragmatic perspective is identification of practical sustainability techniques and sustainable methods for project managers. In order to fully grasp the topic and their effects on the project's success, critical realism aims to dissect the core structures and mechanisms that control social happenings.

3.2 Research Approach : The research will employ a deductive approach because it objectives in testing the present sustainability theories and approach in IT assignment management, whilst additionally inducing the exploration of rising subject matters (Elias, 2012).

***3.3 Significance of the Study* :** The research provides a roadmap for IT firms aiming to integrate sustainability into their project management processes, offering valuable insights to support a more sustainable and resilient business environment. The study highlights the importance of sustainability as a strategic priority in IT projects, fostering long-term competitive advantage.

3.4 Data Collection Tool : An online survey through self-administered questioners has used to gather quantitative data on the sustainability in PM in the IT sector. The study consists of all IT project managers (including technical and non-technical employees) from IT sectors in India across a representative sample of companies. This is because the

sustainable initiatives are known at a senior level or managerial level (Kiesnere and Baumgartner, 2020). To ensure representation from various IT project kinds, sizes, and geographic locations, a stratified random sample method was adopted to identify the companies for the purpose of the study based on the IT companies present in various IT hubs India and convenience sampling was adopted to identify the project managers.

3.5 Sample Size : The chosen sample size for this research was 144 respondents (Project Managers) which were collected through a google form from the employees working in the IT organisations in India. The obtained responses were analyzed using JAMOVI to meet the various objectives identified).

Based on the detailed literature review the following theoretical framework is proposed which is shown in figure 1.

3.6 Theoretical framework:

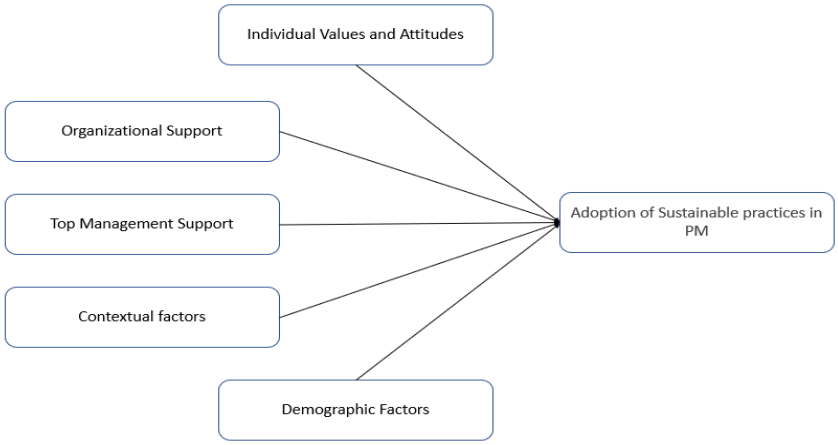

Figure 1: Proposed theoretical framework (Source : Author own)

The theoretical framework illustrates the various factors influencing the adoption of sustainable practices in project management (PM) based on the literature review done and the dependent variable is the "Adoption of Sustainable Practices in PM," which is influenced by several independent variables such as "Individual Values and Attitudes" play a significant role in shaping how employees and managers perceive sustainability initiatives, affecting their commitment to adopting such practices. "Organizational Support" refers to the resources, policies, and cultural backing provided by the organization to facilitate sustainability. Similarly, "Top Management Support" is crucial, as leadership drives the vision and direction for sustainability efforts within projects and "Contextual Factors," such as external regulatory pressures, industry norms, or market demands, also impact the level of sustainability adoption and Lastly, "Demographic Factors" like age, education, and experience influence how different groups within the organization respond to sustainability practices. Together, these elements create a multifaceted framework that shapes the extent to which sustainable practices are embraced in project management settings.

4 Sustainability and Project Management

4.1 Sustainability Practices in PM:

One of the most significant and recent worldwide trend in PM is the incorporation of sustainability ideas into handling projects (Alvarez-Dionisi et al., 2016). There exists an understanding that organisations' procedures, policies, practices, resources, and products would inevitably change in the process of accepting accountability for the impact that they bring about on society (Busch et al. 2024). This responsibility is based on businesses' recognition that they have a positive impact on day to day lives of the people (Mahmud et al., 2021). Furthermore, projects are equally main which leads to organisational transformation therefore, more researchers are beginning to discuss PM's role in helping organisations achieve social and societal sustainability (Larsson and Larsson, 2020). Many research studies have aimed to find how sustainability influences project design, implementation, monitoring, and evaluation (Vrchota et al., 2020) and have cited that the importance of incorporating sustainability when the PM methods is being developed (Stanitsas et al., 2021).

Priority should be given to the sustainability endeavour by including it into a PM plan and this requires implementation of a comprehensive approach, which considers the environmental, societal, and economic factors (Orieno et al. 2024).

4.2 History of Sustainable Practices in Project Management:

Sustainability has historically impacted sustainable IT project management in different ways by either raising awareness of ethical principles or even taking them through ethical considerations in the IT project planning (Sabini & Alderman, 2021). The notion of sustainability has changed over time, and that which is being etched into the building principles of ethical PM (Sankaran et al., 2021). For the part concerning the relationships between PM and sustainability, this study traces the history of sustainable PM and how the different factors have contributed to its changes (Sarhadi et al. 2021). Sustainability in projects has emerged as a reaction to the challenges faced by conventional PM and study reviews indicate the events that transformed conventional PM and how sustainability emerged as an alternative (Jaafari, 2003). Historical development of sustainability assessment tools in PM, which is a timeline that shows when these tools for sustainable evaluation of projects began emerging and how they have evolved through (Martens and de Carvalho,2013).

4.3 Relationship between Sustainability & Project Management:

The growing technological complexity shows a comprehensive revision of strategies for successful deployment in projects by including sustainable way of managing things in projects (Vrchota et al. 2020). Many studies have analyzed the correlation between PM and Sustainability, and emphasize an overall approach that is integrative and mix of these two elements (Xiaolong et al., 2021). Integrating sustainability criteria into the project selection and decision-making systems, although being the key factor to influence these decisions, presents some differences between the cases analyzed (Ma et al., 2020). Technological complexities and transition into an industry 4.0 challenge the work profile of project managers as they begin to develop sustainability into organisations for social, environment and economic purposes (Furstenau et al., 2020). The practice of sustainability ideologies in PM systems highlights the fact that a comprehensive approach needs to be taken without considering a single project life cycle and its social and environmental effects (Toljaga-Nikolić et al., 2020). The complexities and advantages of introducing sustainability into PM processes, and how these need to be accompanied by strategic changes and organizational preparations for integration (Mangla et al. 2021). The carrying through of sustainability into project success indicators, there is a need to develop a framework that delights in the triangular dimensions of the environment, society and economics with the only purpose of improving on project results and the overall organizational impact (Økland, 2015).

4.4 Factors that influence employees to be sustainable in organization/ Project:

Many studies have been done across countries and timespans to identify the factors that influence the sustainable practices in managing projects and some of the major parameters identified from various literature are as shown in table 1.

Table No 1: Factors influencing adoption of sustainable practices in Project

S.No	Factor	Literature
1	Organizational Culture	(Wang et al. 2019)
2	Leadership Commitment	(Tabassi et al. 2016)
3	Stakeholder Engagement	(Shaukat et al. 2022)
4	Regulatory Compliance	(Kivilä et al. 2017)
5	Environmental Policies	(Martens & de Carvalho, 2013)
6	Demographic factors	(Liberatore & Pollack-Johnson, 2003)
7	Technological Innovations	(Bhattasali & Savarimuthu, 2021)
8	Organizational support	(Yuan et al. 2019)
9	Training and Education	(Odedairo et al. 2011)

10	Risk Management	(Stanitsas et al. 2021)
11	Communication Strategies	(Weder et al. 2021)
12	Individual values	(Xue et al. 2020)

Source: Author own

Based on the detailed literature review on the factors influencing sustainable practices in PM in IT projects the following variables have been identified as key constructs

4.4.1 Individual values and attitudes towards sustainability:

Many studies have indicated the link between personality characteristics and individual value systems when it comes to the concept of sustainability (Khan et al., 2024) and the connection between personality and values is fundamental when it comes to the alignment of sustainability initiatives in the IT sector with the inherent needs and likes of the employees (Yazici, 2020; Chen et al., 2021) concentrates on the effect of individual values upon environmentally sustainable behaviours in the office and explores the relationship between personal values, especially those concerning to environment, and employees' attitude toward sustainability practices. Many researchers have established the link between employees' values and their support of enterprises' sustainable development, considering ecological awareness and social responsibility as driving factors of sustainable behaviour, providing information on the complex dynamics between individual values and sustainability promotion (Unsworth et al., 2021; Maqbool et al., 2023; Rana and Sharma, 2024; Antima et al., 2022) study details the connection among individual attitudes and acceptance of sustainable PM practices in the IT sector and the exploration demonstrates how positive attitudes work towards the overall achievement of environmental projects. The role of individual values in the acceptance of sustainability metrics of IT project evaluations and the integrating core values into the performance evaluation systems improves the efficiency of sustainability projects.

4.4.2 Organizational support for sustainability:

The distribution and utilization of resources in supporting environment within an organization immensely improves sustainability efforts and focusing on the hurdles and the opportunities available for integrating sustainability in companies becomes easier with proper resource allocation and continuous organizational support (Kusi et al. 2021). The main role of policies and procedures in the sustainability promotion discovers that when be explicit in sustainability policies and procedures companies can shape the behaviour and attitude of employees towards sustainability (Khan et al. 2022; Rana and Sharma, 2021). Research studies points out that such business enterprises which possess agile structures are more likely to accommodate as well as adopt the changing sustainability trends easier and faster (Miceli et al., 2021; Chandan et al., 2022). The concept of having a budget and proper allocation of resources for sustainability purposes and that this will help on the proper realization of green practices and sustainability-oriented initiatives can be implemented into IT projects and the role of incorporating eco-conscious values to include sustainable practices in the firms policies, and the creation of working culture that accepts the green thoughts for all the decision making (Sisto et al. 2020).

4.4.3 Top management support for sustainability:

Senior management should back the concept of sustainability as a core component of the structure and strategy of organisations, particularly the emphasis on goals that link sustainability with the achievement of organisational objectives and the performance of companies (Ilyas et al. 2020). Top management is influencing and pushing sustainability initiatives within IT PM is important and research stresses on how, due to visible support and commitment provided by top executives, the integration of green & sustainable practices becomes easier (Zaleski and Michalski, 2021). Many studies focus on the top-level executives' strategies and support systems for promoting sustainability placing emphasis on teams that are devoted to sustainability and resources and several authors have cited that Top management support for sustainability in IT projects' (Kiesnere and Baumgartner, 2020). Top management support plays a significant role of establishment of a culture where sustainability is a strategic decision and management policies have a major impact on the junior executives' adaptive capabilities and consequent sustainable IT PM practices.

4.4.4 Contextual factors:

Contextual factors in the context of sustainability in PM encompass a wide array of external and internal elements that significantly influence the incorporation and management of sustainability values within projects (Chipulu & Vahidi, 2020) and these factors include organizational culture and structure, which dictate the commitment and resources allocated towards sustainability, and stakeholder engagement, which ensures that diverse interests are addressed through effective communication strategies (Boffa et al., 2023; Sharma and Rana., 2021b Razali and Jamil, 2023). Regulatory and legal environments impose compliance requirements that shape sustainable practices, while market and economic conditions drive the demand and financial feasibility of these initiatives (Pankov et al. 2021; Sharma et al.,2024). Technological advancements and innovations facilitate the adoption of sustainable solutions, whereas environmental factors focus on resource management and impact mitigation. Social and cultural factors reflect societal attitudes and the firms pledge to social responsibility, and project-specific factors ensure that sustainability is embedded throughout the project lifecycle (Mandić & Kennell, 2021). Effective supply chain management, risk management strategies, and alignment with corporate social responsibility initiatives further support sustainability goals. Finally, education and training programs are crucial for raising awareness and developing the necessary skills to implement and sustain these practices, thereby ensuring that sustainability is integrated holistically and effectively within PM (Tipu, 2022).

4.4.5 Demographic factors:

In the study of Demographic factors play a crucial role, such as Time, Age, and Budget of the project, its proper understanding is very important to get a clearer view of the intricacies of sustainability in PM in the IT sector (Hashim et al., 2022). Studies have focussed on the time aspect of project and revealed that a business needs to have an enough time to manage the integration of sustainable practices because time is often a barrier (Alkashami et al., 2023) and it illustrates the importance of having a project timeline with available space that provides the chance of encompassing green themes without compromising the completion goals. In few other studies researchers have identified budget and age of the projects shifted to the age of the projects teams as on why sustainability outcomes are affected (Moses et al., 2022) and have indicated that the higher the degree to which budgets are well allocated, the higher the chance for a sustainable project to succeed. Additionally, the work they did accentuated that provision of financial support for sustainable practices is a key issue that could imply that inadequate funding is a shortcoming to the green project success in the long run. There have been various research studies citing the importance of the demographic factors influencing the acceptance of sustainability (Amin, 2018; Hashim et al., 2022).

5. Analysis and interpretation

Based on the responses of the respondents the following are the analysis and

5.1 Descriptive Analysis:

Table 2*: Descriptive analysis of the respondents*

	Level	Count	Percentage	Cumulative total	Cumulative Percentage
Age of respondents	21-26 years	0	0.00%	0	0.00%
	27-32 years	10	6.94%	10	6.94%
	33-37 years	86	59.72%	96	66.67%
	38-43 years	34	23.61%	130	90.28%
	44-49 years	11	7.64%	141	97.92%
	50 years or above	3	2.08%	144	100.00%
Gender	Female	42	29.17%	42	29.17%
	Male	102	70.83%	144	100.00%
Highest level of educational	Bachelor's degree	88	61.11%	88	61.11%
	Doctoral degree	1	0.69%	89	61.81%
	Master's degree	55	38.19%	144	100.00%

Total Experience	0-5 years	0	0.00%	0	0.00%
	6- 10 years	8	5.56%	8	5.56%
	11-15 years	81	56.25%	89	61.81%
	16- 20 years	29	20.14%	118	81.94%
	21- 25 years	13	9.03%	131	90.97%
	More than 26 years	13	9.03%	144	100.00%
Company Location	Metro area	107	74.31%	107	74.31%
	Rural area/Village	2	1.39%	109	75.69%
	Suburban area	22	15.28%	131	90.97%
	Town	13	9.03%	144	100.00%
Size of Organization	Large Enterprises	67	46.53%	67	46.53%
	Medium Enterprises	46	31.94%	113	78.47%
	Micro Enterprises	10	6.94%	123	85.42%
	Small Enterprises	21	14.58%	144	100.00%
Position in the Organization	Entry-level	0	0.00%	0	0.00%
	Executive	5	3.47%	5	3.47%
	Mid-level	57	39.58%	62	43.06%
	Senior-level	82	56.94%	144	100.00%
Type of Projects engaged	Domestic projects	32	22.22%	32	22.22%
	Global Projects	112	77.78%	144	100.00%
Familiarity on the concept of sustainability	Not at all familiar	10	6.94%	10	6.94%
	Slightly familiar	49	34.03%	59	40.97%
	Somewhat familiar	8	5.56%	67	46.53%
	Moderately familiar	47	32.64%	114	79.17%
	Extremely familiar	30	20.83%	144	100.00%
Formal training on sustainability	No	55	38.19%	55	38.19%
	Yes	89	61.81%	144	100.00%

Source : Author own

5.3 Reliability analysis:

The Reliability analysis is a part of the process to ensure the system/product reliability, durability and integrity. Cronbach's Alpha values were calculated for each variable and it is the correlation between the answers in a questionnaire and can take values between 0 and 1. The higher the average correlation between items, the greater the internal consistency of a test

4.4 Cronbach's Alpha values were calculated for each variable.

Table No 3 ***: Reliability analysis***

	Mean	**SD**	**Cronbach's α**
Individual Values and Attitudes	3.94	0.843	0.907
Organizational Support	3.88	0.817	0.895
Top Management Support	3.93	0.759	0.878

Table No 3 ***: Reliability analysis***

	Mean	SD	Cronbach's α
Contextual Factors	3.95	0.705	0.887
Demographic-Variables	3.85	0.810	0.905
Adoption of Sustainable practices	3.92	0.741	0.885

Source : Author own

The findings from the reliability analysis (shown in table 3) were highlighting internal consistency that was very high for the factors that are looked at. The Cronbach's α, an indicator of reliability, for all the constructs ranges between the values of 0.885 and 0.907. The high values of the alpha coefficient confirm that the constructs possess high levels of reliability. With the reliability validated the further tests were performed based on the objectives arrived at based on the detailed literature review.

Objective 1– To understand the factors affecting adoption of Sustainable practices in IT firms.

Structural equation modelling using JAMOVI was done to test the first objective, which is a multivariate statistical analysis technique that is used to analyze structural relationships and is a combination of factor analysis and multiple regression analysis describing the relationship between measured variables and latent constructs (McIntosh and Misic, 2013).

Table No 4 ***: R^2 value***

Variable	R^2
asp	**0.831**

Source : Author own

The statistical measure known as the coefficient of determination, or R^2, is used to determine the degree to which the independent variable(s) included in the regression model can explain the variability in the dependent variable, in this example, "asp." The determined independent variable(s) accounts for about 83.1% of the observed oscillations in the "asp" variable, as indicated by the computed R^2 value of 0.831 (see table 4). The regression model successfully captures a notable percentage of the variability present in the "asp" variable, as indicated by this large R^2 value, which also indicates a robust and meaningful link between the independent and dependent variables.

Table No 5***: Estimates of Adoption of Sustainable practices.***

Latent	Observed	β	p
Individual Values and Attitudes	IV1	0.681	
	IV2	0.696	< .001
	IV3	0.648	< .001
Organizational Support	OS1	0.716	
	OS2	0.711	< .001
	OS3	0.705	< .001
Top Management Support	TM1	0.642	
	TM2	0.72	< .001

Latent	**Observed**	**β**	**p**
	TM3	0.714	< .001
Contextual Factors	CF1	0.528	
	CF2	0.702	< .001
	CF3	0.658	< .001
	CF4	0.624	< .001
Demographic Variables	DV1	0.58	
	DV2	0.571	< .001
	DV3	0.719	< .001
Adoption of Sustainable practices	ASP2	0.678	
	ASP1	0.67	< .001
	ASP3	0.757	< .001
	ASP4	0.648	< .001
	ASP5	0.687	< .001

Source : Author own

The purpose of "Confirmatory Factor Analysis" is to discover the very crux of the dimensions of our examined variables. The table 5 contains particular model outcomes and that it's a good fit. The results of structural equation modelling (SEM) evidence a considerable relationship between latent constructs and the corresponding observed variables. IV affects the organization's culture and attitude positively, OS affects outstanding management leadership favourably, TM is influential to senior management engagement amicably, CF relates to national policies and corporate culture positively, DV attributes the demographic variables in industry and environment aspects, and ASP shapes the behavioural intention of choosing sustainable practices favourably. Analyzing ASP5 and Variables, they show the direct relationship among them. As the figures are approaching 0.571 and 0.757, the p-value being less than 0.001. This being the case these variables are suggesting analogously that they are also significant factors in the formation of the constructs they actually represent. In summary, the SEM outcomes consist in the fact that Organizational/Individual Values, Top Management Support, Permeation by the Contextual Factors, Demographic Variables and the Adoption of Sustainable Practices have a significant influence on the conversion of Latent Values and Attitudes. (Mutyasira, Hoag, Pendell, 2018), (Apurbo Sarkar a, Jony Abdul Azim, 2021)

Table 6: Structural Model Validation

Parameters	**Model**
RMSEA	0.084
SRMR	0.094
Comparative Fit Index (CFI)	0.979
Tucker- Lewis Index (TLI)	0.975
Bentler- Bonett Non-Normed Fit Index (NNFI)	0.975
Relative Non – Centrality Index (RNI)	0.979
Bentler- Bonett Normed Fit Index (NFI)	0.963
Bollen's Relative Fit Index (RFI)	0.955
Bollen's Incremental Fit Index (IFI)	0.979
Parsimony Normed Fit Index (PNFI)	0.798

Source : Author own

The "Root Mean Square Error of Approximation" (RMSEA) quantifies the difference between the actual data and the model. "Standardised Root Mean Square Residual" (SRMR) measures the average difference between the correlations that were observed and those that were anticipated. A satisfactory fit is usually defined as SRMR < 0.08 stated by (Yan et al., 2019; Newsom 2023). The value of RMSEA being 0.084 is slightly more than the commonly recommended limit of 0.08, which implies a moderate fit. Meanwhile, RMSEA should always be used in assessing model fit jointly with the other fit indices for a comprehensive evaluation. The SRMR value of **0.094** indicates a reasonable fit, with values below 0.10 generally considered acceptable. This suggests that the model adequately reproduces the observed covariances among variables.

Structural model validation

The Comparative Fit Index (CFI) measures how well the model fits the data in comparison to a null model. A strong fit is indicated by a threshold value of CFI > 0.95. Tucker-Lewis Index (TLI): TLI compares the given model to a null model to determine the improvement in fit; values around 1 denote a strong fit, but precise threshold values may differ. (Gita et al., 2016) Similarly, the other fit index measures like NNFI, RNI, NFI, RFI, IFI, PNFI should have the ideal threshold value of above 0.95 to exhibit a good fit. Here all the values are above 0.98, signalling the robust fit of the model (Daire et al., 2008) The structural model exhibits strong overall fit, supported by high values in key indices, with values ranging from 0.975 to 0.979, suggest a very good fit. CFI, TLI, NNFI, and RNI values close to 1.00 signify that the model fits the data well, capturing the relationships among variables. NFI, RFI, and IFI values around 0.955 to 0.963 indicate a good fit, reinforcing the notion that the model adequately reproduces the observed data. The PNFI value of 0.798 suggests that the model may be overly complex relative to its explanatory power. This might indicate potential issues with model parsimony. The structural model demonstrates overall good fit, as evidenced by high CFI, TLI, NNFI, RNI, NFI, RFI, and IFI values. However, the elevated RMSEA and the lower PNFI suggest some caution, indicating that there may be areas for model improvement, possibly by addressing issues related to complexity or the model's ability to generalize to new data. A more in-depth investigation into specific areas of misfit or model refinement may be beneficial for enhancing the overall model performance and ensure a more parsimonious representation of the underlying relationships.

Path coefficients

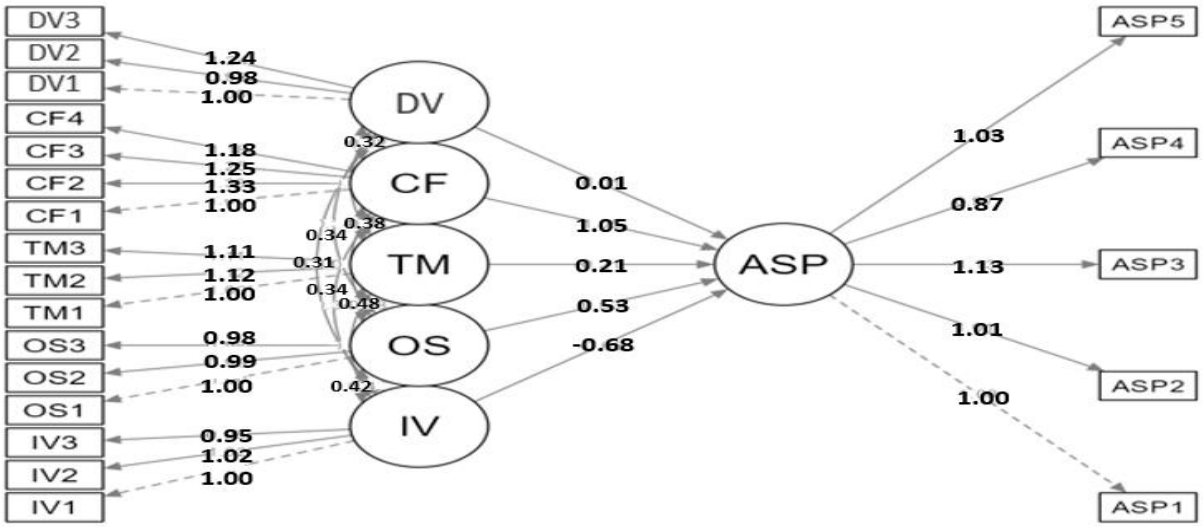

Fig No 2: Path Coefficients in SEM

Table No 7*: Association between the Adoption of Sustainable practices - Heterotrait- monotrait (HTMT) ratio of correlations*

	IV	OS	TM	CF	DV	ASP
Individual Values and Attitudes	1.000	0.845	0.941	0.957	0.774	0.791
Organizational Support	0.845	1.000	1.054	0.930	0.751	0.991
Top Management Support	0.941	1.054	1.000	1.115	0.962	1.076
Contextual Factors	0.957	0.930	1.115	1.000	0.979	0.951
Demographic Variables	0.774	0.751	0.962	0.979	1.000	0.928
Adoption of Sustainable practices	0.791	0.991	1.076	0.951	0.928	1.000

Source : Author own

Heterotrait- monotrait (HTMT) ratio of correlations, an important measure of discriminant validity between latent constructs. Each diagonal entry represents the autocorrelation of a construct, which is always 1.000. Texts without diagonals indicate correlations between constructs, with values ranging from 0.751 to 1.115. These values are generally below 1, indicating reasonable discrimination. However, attention should be paid to the relatively high TM-CF and TM-ASP correlations at 1.115 and 1.076, respectively. This improved theory suggests that further testing is needed to ensure appropriate discrimination as well as between top management support and adoption of sustainable practices Nonetheless, although most constructs exhibit strong discrimination , these specific inter -construct relationships require closer examination in terms of potential consensus or measurement issues The SEM model exhibits stronger validity revealed, supported by strong fit indices, Heterotrait- Monotrait (HTMT) ratios indicate meaningful discrimination overall between latent constructs, strengthening model reliability.

Objective 2: To find the Barriers Preventing Employees from being sustainable in an organization.

Ranking analysis involves assigning numerical values to items based on their relative positions or preferences within a list. It helps identify the most significant factors or priorities within a set of options. Factors is ranked based on its mean scores, providing perceptions into the importance of various challenges or barriers in implementing sustainable practices.

Table No 8: ***Barriers Preventing Employees from being sustainable in an organization***

χ^2	df	p
104	6	< .001

The Chi- square test result of $\chi^2 = 104$ with df of 6 and p value of < .001 shows a statically significant association between the Barriers Preventing Employees from being sustainable in an organization and Adoption of sustainability.

Table No 9*: Ranking Analysis*

	Mean
Workload and Time Constraints	3.10
Lack of Leadership Commitment	3.33

Table No 9*: Ranking Analysis*

	Mean
Limited Access to Sustainable Technologies	3.47
No return on Investment on ESG investment	3.88
Resistance to Change and Lack of Awareness	4.53
High set-up cost in sustainable technology	4.62
Lack of domain expertise in sustainable practice	5.08

Source : Author own

A ranking is a mean score used to determine an average score. "Workload and time constraint" is the most prominent obstacle, it ranks as the highest with 1st rank and 3.1.Second one is , "lack of leadership commitment" ranks second with 3.33. With a score of 3.47, "little access to sustainable technologies" ranked third with 3.88, and "no return on ESG investments" ranked fourth, indicating a challenge ". change" has increased slightly. Resistance and lack of knowledge" with a score of 4.53, "high cost of programming in sustainable technologies" and "lack of domain knowledge in sustainable practices" ranked fifth " with falling challenges on sixth and seventh, respectively, with mean scores between 4 4.62 and 5.08. Overall, aiming to overcome these barriers provides valuable insights for organizations with project sustainability monitoring and control.

Objective – 3 : To understand Purposes of implementing sustainability in our organization.

Table No 10: *Friedman*

χ^2	**df**	**p**
71.9	5	< .001

The Chi- square test result of $\chi^2 = 71.9$ with df of 5 and p value of < .001 shows a statically significant association between the Purposes of implementing sustainability in our organization and Adoption of sustainability.

Table No 12*: Ranking Analysis*

Factors	**Mean**
Top management instructions	2.92
Improvement in ESG	2.84
Improvement in brand	3.23
Improve client satisfaction	3.69
Tax savings	4.15
Government regulations	4.17

Source : Author own

The perceptions of different factors associated with sustainability practices, ranked with the aid of Mean ratings, Median and typical ranks. "Improvement in ESG " emerges because the most influential component, with the bottom imply rating

of 2.84 and maximum rank of one, indicating that respondents keep in mind enhancing Environmental, Social and Governance (ESG) performance as a top precedence. "Top management commands " intently follow, reflecting a mean score of 2.92 and second closely observe, reflecting an average score of 2.92 and the second-highest rank, highlighting the significance of clean direction from top leadership in sustainable projects. "Improvement in brand" is inside the 3 rank with a mean score of 3.23. "Improve client pride" is inside the fourth function, showing the respondents don't forget patron pride as an essential final result of sustainable practices. "Tax financial savings" and "Government regulations" rank 5th and 6th, respectively, with mean score of 4 .15 and 4.17, shows economic incentives and regulatory compliance play comparatively much less position in motivating sustainable practices consistent with the results.

6. Implications of the study:

Government entities should enact policies that encourage and incentivize organizations to prioritize sustainability, considering the significant impact of organizational and top management support on sustainable practices adoption. Governments can establish regulatory frameworks that address barriers such as workload constraints and limited access to sustainable technologies, providing support for organizations to overcome these challenges effectively. Investing in research and development in sustainable technologies can facilitate innovation and address barriers related to high setup costs, ultimately fostering sustainable practices adoption across industries.

Industry leaders should prioritize demonstrating strong commitment to sustainability initiatives, as lack of leadership support emerged as a significant barrier to adoption. Firms should spend more in training sessions to improve employees' familiarity with sustainability concepts, enabling them to influence supply chain partners positively and overcome barriers related to resistance and non-awareness. Industry stakeholders should develop gender-sensitive strategies to address disparities in the adoption of sustainable practices, ensuring equitable participation and representation across all gender identities. Establishing robust support systems within organizations, including support for individual values and attitudes towards sustainability, can assist in creating a culture that encourages sustainability. Industry collaborations and partnerships can facilitate knowledge-sharing and resource pooling to address common barriers and drive collective action towards sustainability goals.

Individuals should actively seek opportunities for education and training on sustainability concepts to enhance their understanding and capacity to contribute to sustainable practices within their organizations and communities. Employees can advocate for sustainability within their organizations by actively participating in initiatives and promoting the importance of sustainability to leadership and colleagues. Individuals should advocate for gender-inclusive practices and policies within their organizations to ensure equal opportunities and representation in sustainability initiatives. Continuous learning and improvement are essential for individuals to stay updated on emerging trends and best practices in sustainability, enabling them to contribute effectively to organizational sustainability efforts.

7. Conclusion:

This study explored the pivotal factors influencing the adoption of sustainability practices in IT projects, with a focus on understanding the key determinants, barriers, and purposes of sustainability implementation. Through the application of a deductive research approach, the study revealed several critical factors that significantly affect the adoption of sustainability within IT firms. The objective of the study was to identify the factors influencing the adoption of sustainability in IT firms, identify the barriers of employees adopting sustainable practices and understand the purpose of adopting sustainable practices. The SEM outcomes highlighted the role of organizational and individual values, top management support, contextual factors, demographic variables, and the latent values and attitudes in shaping sustainable practices. Moreover, the analysis identified prominent barriers hindering the adoption of sustainability practices, with "workload and time constraints" emerging as the leading obstacle. This was followed by "lack of leadership commitment" and "limited access to sustainable technologies," both of which create significant challenges for employees and organizations striving for sustainable operations. From the perspective of why organizations pursue sustainability, the study found that enhancing Environmental, Social, and Governance (ESG) performance and following directives

from top management are the primary motivators for sustainable initiatives. These purposes highlight a growing recognition of the importance of sustainability for both organizational reputation and regulatory compliance.

In conclusion, this research provides valuable insights into the determinants, barriers, and drivers of sustainability adoption in IT projects and the findings have implications for practitioners and policymakers seeking to promote sustainable practices within organizations, emphasizing the need for robust leadership support, access to sustainable technologies, and alignment of sustainability initiatives with broader organizational values and objectives. By addressing these critical factors, IT firms can enhance their ability to integrate sustainability into their project management processes, contributing to long-term environmental and societal benefits.

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