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Strategies for Effectively Managing Stakeholders in 4IR Information Technology (IT) Projects

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Abstract – As a result of the Fourth Industrial Revolution (4IR) and the resultant rapid growth in Artificial Intelligence (AI) technologies, effective stakeholder management in Information Technology (IT) projects has become pivotal for project success. This study explores strategies for IT stakeholder management. The emphasis is on proactive and innovative approaches. Using a mono-method research approach, data was collected through online questionnaires distributed using the Lime Survey platform, targeting IT project professionals. The findings highlight the importance of regular and transparent communication, stakeholder engagement in planning and decision-making processes, and the use of data analytics and AI for informed stakeholder engagement. Factor analysis identified two primary components: traditional engagement-focused practices and data-driven decision-making. The results underscore the necessity of integrating human-centred and technology-centric strategies to enhance stakeholder management and project success in the dynamic landscape of 4IR.

Keywords – Stakeholders, Information Technology, Artificial Intelligence, Project Management.

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1 Introduction

Information Technology (IT) is defined as the use of computers, various storage systems, network components, and many other tangible devices, together with the accompanying requisite infrastructure and standard operating procedures (SOPS), with the goal of creating, processing, storing, securing, and conveying different electronic data types (Castagna, 2020). Despite the increasing investments in IT, concerns regarding information system (IS) project failures persist. Assessing IT and IS investments versus the productivity returns they yield remains a continuously pressing need for businesses.

The Project Management Institute identifies stakeholder management, together with teams, process framework, cycle development, project lifecycle, project work, delivery, measurement and uncertainty as project management domains of performance (PMBOK® Guide, 2021). There has been enormous development in business processes over the past few years, and projects have continued to be critical business process drivers (PMBOK® Guide, 2021). To generate revenue and, at the same time, remain relevant, companies devise innovative and redesigned approaches to project execution. Information Technology (IT) teams usually comprise several project team members working together to build software from scratch or utilising templates. Based on the CHAOS report, only 31% of IT projects were successful, 50% were challenged, and 19 % failed, Standish Group Report 2021(Portman, 2021; Ghozali et al., 2023).

2 Problem Statement

The existing literature extensively discusses the impact of AI on IT project management. However, there is a noticeable absence of an equally robust discussion regarding AI projects' influence on stakeholder management (Miller, 2021). Project failure is typically characterised by being unable to complete a project within the scheduled timeline, the desired quality, and the allocated budget. Flyybjerg and Budzier (2022), in a survey in the Harvard Business Review, noted that the average cost overrun for IT projects is 27%. They also noted that one in six projects can be considered a "black swan", with cost overruns averaging 200% and schedule overruns averaging nearly 70%. Maaroufi and Asad (2017) posit that IT project teams operate in dynamic environments characterised by evolving customer needs and requirements.

3 Methodology

In this study, data collection will primarily be done using a questionnaire. Designing this questionnaire will use some standard set of questions to prompt responses from participants. The questionnaire was distributed online using Lime Survey. It is a web application for conducting statistical surveys that is both accessible and open source (Piispa, 2023). This software is used as it will assist in generating descriptive statistics. It serves as an efficient means to collect responses from a large sample for quantitative analysis purposes (Fink, 2015). Respondents are required to provide ratings on a provided Likert scale. Secondary Data on IT project success will be gleaned from publications related to IT projects. All potential respondents are asked whether their companies have adopted AI tools.

3.1 Objective

Objective: Identify strategies that can be used to effectively manage stakeholders in information technology projects in the era of the Fourth Industrial Revolution and the proliferation of AI.

Hypothesis: Project-based organisations must be able to manage the variable needs of stakeholders proactively throughout the project life cycle. Stakeholder management must be an ongoing exercise from the onset of the project right up to project closure for successful project outcomes. There are different strategies at the project manager’s disposal to achieve the desired goals and outcomes. These strategies include approaches like stakeholder mapping, regular communication, and proactive engagement, which are pivotal to project success (Freeman, 1984; Bourne, 2016; Lockhart, 2024). When properly implemented, the strategies above, amongst others, go a long way in ensuring that stakeholder expectations and overall project goals and objectives are aligned. They also help mitigate some risks, creating an environment that promotes the success of IT projects (Odejide & Edunjobi, 2024). Subsequently, based on the above discussion, the following hypothesis was developed as follows: The implementation of innovative stakeholder management strategies is essential for the success of information technology (IT) projects in the era of the Fourth Industrial Revolution that is characterised by the growth in AI technologies."

3.2 Sampling

Ghasemi and Zahediasl (2012) emphasise that "in large samples (> 30 or 40), the sampling distribution borders close to a normal distribution, regardless of the data's shape." Similarly, O'Leary (2017) suggested that a sample size of at least 30 is necessary to generalise findings to a more significant population. This study's final sample size of 50 satisfies both the requirements for making inferences to a wider population and for assuming normality.

N = 50 might be sufficient for a randomized trial with repeated measures to detect a large effect size but N = 50 might be absurdly low for a between subjects comparison to detect a low effect size (McNeish and Wolf, 2023).In a study to investigate the relationship between project risk monitoring and control and project success; Obondi (2022) used a sample size of 50 project managers in the US. This is a non-probability sampling strategy and as such, the findings will not be generalised to the entire population since there is a potential for specific segments of the population to be either overrepresented or underrepresented, as mentioned by Saunders and Lewis (2017).

3.3 Data Collection

A questionnaire was the main primary data collection tool that was used in the study. The questionnaire was designed to elicit responses from participants by presenting them with a standardised set of questions. It serves as an efficient means to collect responses from a large sample for quantitative analysis purposes (Fink, 2015). Respondents are asked to provide ratings using a Likert scale provided. Secondary data in relation to IT project success was obtained from literature related to IT projects. All respondents are asked to provide an answer to whether their companies have implemented AI tools. In the event the response is no, then the respondents were asked to stop the survey. This filtering initial question prevented the wrong respondents from completing the survey.

4 Literature Background

4.1 Project Management -a Definition

A concrete, universally accepted definition of project success is notably absent (Yohanness, 2022). Project management deals with a unique endeavour in a changing environment and bringing in the complexities of variable stakeholder requirements further complicates the successful management of such projects (Kerzner, 2022). Chipulu et al. (2019) found out that stakeholders tend to emphasize project effectiveness when evaluating project successes. Conversely, when evaluating project ‘failure’, they focus more on efficiency. For project managers, its vitally important that it is understood how stakeholders assess and prioritize project outcomes.

4.2 Stakeholder Theory

The Stakeholder Theory was introduced by Freeman (1984). The theory emphasises the moral and ethical considerations that are fundamental to business operations in particular. In corporate governance as well as in projects the many stakeholders potentially gain form enhanced good governance practices. According to Freeman, an organisation’s primary allegiance or obligation is owed to the stakeholders. The theory gives a view on capitalism that highlights the linkage between the organisation and its stakeholders such as consumers, suppliers, employees, investors, and communities (Davila, 2024).

4.3 Project Stakeholder Management

According to Young (2006), a project manager's ability to be able to recognize and subsequently, effectively manage project stakeholders as valuable resources is integral to project success. Stakeholders are groups or individuals that have vested interests that impact an organisation or project outcomes. (Steyn 2016; Oosthuizen and Venter, 2011).

Eyiah-Botwe (2016) focuses on the importance of stakeholder identification and classification which in turn helps Project Managers in assessing stakeholders' interest, roles and influences whilst establishing a baseline for engaging stakeholders.

The complexity of stakeholder dynamics is well noted and acknowledged by Standoff (2015). They point out that project success goes beyond just plans or diagrams. The challenges of scope creep stemming from stakeholders' indecisiveness, suggests that it is needful to find ways to engage them effectively. even though strict adherence to timelines and budgets might yield a project that meets those criteria but falls short in usability or success. Failures in projects are often linked to stakeholders' perceptions of a project's value and their relationship with the project team, as mentioned by Bourne (2016).

4.4 Current Stakeholder Theories and Shortcomings in 4IR

Walker (2003)'s work on stakeholder engagement, lays a lot of emphasis on a deliberate structures approach with regards to managing and engaging stakeholders in projects.

The Stakeholder Cycle is a visual tool that was designed to assist PMs in the process of stakeholder identification, prioritisation and engagement of stakeholders. The power, proximity, and urgency of each stakeholder is assessed. Thereafter, strategies are then developed to engage stakeholders, making sure that their needs are addressed during the project roll-out, from initiation to closure.

Besides a plethora of stakeholder theories, there are yet still challenges in stakeholder management in IT Projects as evidenced by scope creep and high IT project failures (Mhlanga, 2020). According to Schwab (2019), for companies to uphold the tenets of stakeholder capitalism, they must adopt new metrics that encompass a fresh gauge of shared value generation.

A more recent approach to stakeholder management in IT project is imbedded in the Agile Project approach to project management. Artificial intelligence (AI); data analytics and 4IR has challenged existing systems and necessitated agility (Sharma et al 2022; Raharjo & Purwandari, 2020) did a systematic study on Agile Project management execution and pointed out that the biggest challenge arises from stakeholder management, and this related to agile adaptation, transition, and transformation. Agile approach to project management, according to Bohmer et al, (2017) is "no silver bullet".The agile approach has many practices of which some tend to give conflicting outcomes (Hidalgo, 2018). This further supports the need for new frameworks for IT Project Management.

5 Findings

5.1 Factor Analysis Summary

Table 1: Correlation Matrix

Correlation Matrix[a]

a. Determinant = .006

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.759
Bartlett's Test of Sphericity	Approx. Chi-Square	234.277
	df	36
	Sig.	<.001

Kaiser-Meyer-Olkin (KMO) measure assesses the adequacy or sufficiency of data for factor analysis ref.Values close to 1 indicate suitability for factor analysis(Hu and Bentler, 1999). The vale of 0,759 above indicates, thus, that the data is reasonably appropriate for factor analysis. The value is above the acceptable threshold of 0. 7 (Hait et al. 2018). In other terms, the correlations between variables are adequate for factor analysis to be instituted on that data so as to derive meangful factors. Bartlett's Test of Sphericity checks whether the correlation matrix is significantly different from an identity matrix (i.e., whether there are meaningful relationships between variables). The chi-square value (approx. 234.277) and the associated significance level (<0.001) indicate that these correlations are not due to chance. Therefore, as indicated by the values, the data was suitable for being subjected to factor analysis.

5.2 Communalities

Table 2: Communalities

	Initial	Extraction
Regular communication with stakeholders	1.000	.773
Transparent communication with stakeholders	1.000	.653
Engaging stakeholders in the project planning process	1.000	.608
Engaging stakeholders in the decision-making process	1.000	.449
Proactive mitigation of risks related to stake-	1.000	.465

holder concerns.		
Leveraging data analytics for informed stakeholder engagement	1.000	.841
Leveraging data AI for informed stakeholder engagement	1.000	.910
Agile project management methodologies for flexibility in adapting to changing stakeholder needs	1.000	.471
Collaborative tools for efficient communication	1.000	.656
Extraction Method: Principal Component Analysis.		

From the above table, "leveraging data AI for informed to stakeholder engagemen"t has a value of 0.910, followed by "leveraging data analytics for informed stakeholder engagement" with their value of 0.841. These constituted the higher communalities, and the implication was that these factors explained the major portion of their variance. Next in line were the moderate values that implied that they are fairly well represented by the extracted factors. These included "regular communication with stakeholders" with 0.773 and "transparent communication with stakeholders" with 0. 653.The variables with lower communities included "engaging stakeholders in the decision making process", (0.449); "proactive mitigation of risks related to stakeholder concerns", (0.465). The communalities helped or assisted in comprehending how the variables fitted into the factor structure and helped in understanding how any variables might have needed further investigation.

The communalities represent the proportion of variance inherent in each variable or item that is explained by the extracted components. The initial communities values are all one at the beginning and this implies that the variables explain 100% of its own variance. The underlying assumption is that the variable is independent. Usually after performing factor analysis or extraction the communalities change. Generally, the extraction of communality shows the proportion of variance that is accounted for by the components. For instance, "leveraging AI data for informed stakeholder engagement" has a high extraction communality of 0.910 and this implies that this factor contributes significantly to one of the extracted components. On the other hand, "engaging stakeholders in the decision making process" as a low extraction communality of 0.449 which actually means it has less contribution to the extracted factors. Practically speaking, variables with higher extraction communalities are more relevant to the components that have been identified and, conversely variables with lower communalities may not align strongly with any specific factor.

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5.3 Total Variance

Table 3: Total Variance

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumul. %	Total	% of Variance	Cumul. %	Total
1	4.376	48.627	48.627	4.376	48.62	48.6	4.251
2	1.450	16.109	64.736	1.450	16.10	64.7	2.259
3	.959	10.653	75.389				
4	.732	8.128	83.517				
5	.436	4.846	88.363				
6	.398	4.421	92.784				
7	.338	3.759	96.544				
8	.172	1.906	98.450				
9	.140	1.550	100.000				

Extraction Method: Principal Component Analysis

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

The eigenvalues show the amount of variance in the data that is explained by each principal component whilst the percentage of variance indicate the percentage of total variance that is explained by each component. The cumulative percentage show the cumulative variance that is explained by that component. Extraction sums of squared loadings account for the variance explained by the components that were retained after the extraction process. Rotation of data redistributes variance across components and makes them more interpretable. The rotation sums of squared loadings is done to make the interpretation of components easier, and these values represent the variance explained by the rotated components.

Component 1 has in eigenvalue of 4.376 after the initial extraction. This component explains 48.627% of the overall variance and after rotation, it still retains a significant amount of variance but however it is slightly less at 4.251.

Component 2 is an eigenvalue of 1.450 and it explains an additional 16.109% of the variance. After rotation the contribution increases to 2.259 and this suggests that rotation made this component more prominent or more influential in explaining the variance.

Components 3 through 9 all if eigenvalues less than one and this typically indicates that they explain less variance individually. The cumulative variance that is accounted for by Component 1 and Component 2 is total 64.736 and that is deemed sufficient in for analysis. The percentage means that they captured much of the data. The variance after rotation is still significant and this suggests that they are crucial for understanding the underlying structure of the data. Components with eigenvalues below one are not retained as they contribute much less to the explained variance.

5.4 Pattern Matrix

Table 4: Pattern Matrix

	Component	
	EMFact1	EMFact2
Regular communication with stakeholders	.919	
Transparent communication with stakeholders	.829	
Engaging stakeholders in the project planning process	.790	
Collaborative tools for efficient communication	.738	
Agile project management methodologies for flexibility in adapting to changing stakeholder needs	.679	
Engaging stakeholders in the decision-making process	.653	
Proactive mitigation of risks related to stakeholder concerns.	.635	
Leveraging data AI for informed stakeholder engagement		.987
Leveraging data analytics for informed stakeholder engagement		.855

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.[a]
a. Rotation converged in 3 iterations.

5.5 Component Loadings (EMFact1 and EMFact2)

EMFact1 and EMFact2 are the rotated components. The loadings reflect the contribution of each variable to the component and higher absolute values indicate a stronger relationship.

Component EMFact1 has high loadings in variables such as “regular communication with stakeholders” which has a value of 0.919; “transparent communication with stakeholders” with a value of 0.829 and “engaging stakeholders in the project planning process” which has a loading of 0.790. Thus, to sum it up EMFact1 appears to represent a factor that is related to “stakeholder engagement and communication” which focuses on direct human centred approaches to managing stakeholder relationships.

Component EMFact2 has high loading in variables that entail are firstly “leveraging data AI for informed stakeholder engagement” with (0.987); followed by “leveraging data analytics for informed stakeholder engagement” with 0.855. Evidently, the component seems to focus on the “use of data and technology in stakeholder engagement”.

It is apparent that the variables load clearly and cleanly onto one factor thus indicating that the two components are different and represent distinct concepts.

In summary the analysis has identified two distinct factors in the data, namely one focussing on communication and stakeholder engagement and the other centering on leveraging data technologies.

These components were then used to interpret the structure of the dataset.

5.6 Structure Matrix

Table 6: Structure Matrix

	Component	
	1	2
Regular communication with stakeholders	.868	
Transparent communication with stakeholders	.805	
Collaborative tools for efficient communication	.794	.417
Engaging stakeholders in the project planning process	.779	
Agile project management methodologies for flexibility in adapting to changing stakeholder needs	.686	
Proactive mitigation of risks related to stakeholder concerns.	.673	.328
Engaging stakeholders in the decision-making process	.669	
Leveraging data AI for informed stakeholder engagement		.947
Leveraging data analytics for informed stakeholder engagement	.440	.906

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

The structure matrix is an output of factor analysis especially when using oblique rotation methods such as ProMax. The pattern matrix shows the unique contribution of each variable to a factor, but the structure takes this

further and shows the correlations between them. The loadings in the above structure matrix reveal the correlation between each variable and the extracted components with higher absolute values indicating a stronger correlation with the component.

It can be seen that “regular communication with stakeholders” (0.868) is strongly correlated with Component 1 as well as “transparent communication with stakeholders” (0.805) and “collaborative tools for efficient communication” (0.794) also showed high correlations with the same Component 1, thus inferring that these are closely associated with the first component. Engaging stakeholders in the project planning process (0.779) also loads onto Component 1 and what thus reinforcing the interpretation that this component is reflecting “Stakeholder engagement and communication”.

On the other hand, “leveraging data AI for informed stakeholder engagement” (0.947) shows a very strong correlation with Component 2 as well as does “leveraging data analytics for informed stakeholder engagement” (0.906) that has a high loading also on Component 2 and this reinforces the conclusion that this component is focusing on “data-driven decision making”.

However, “collaborative tools for efficient communication” with (0.417) and “proactive mitigation of risk related to stakeholders concerns”, (0.328) somewhat have moderate correlation with Component 2. They, thus have an indirect link and linkage primarily to Component 1. So, Collaborative tools for efficient communication has moderate loadings on both Component 1 and Component 2 and this suggests that it contributes in various measure to both components.

Component 1 is characterised by variable that put emphasis on the regular transparent communication together with stakeholder involvement in planning and the use of other collaborative tools. Their high correlations imply that the aspects are strongly correlated and that they form a cohesive factor which can be summarised as explaining “traditional engagement-focused aspects of stakeholder management.” Component 2 reflects a more technology-centric approach since it's dominated largely using AI and data analytics for informed stakeholder engagement. In summary factor analysis has unveiled two separate components that are related to stakeholder engagement i.e. “Communication and engagement practices” which focus on strategies and tools that facilitate effective stakeholder communication and involvement; and secondly “data-driven stakeholder engagement” which emphasises on the use of data and application of technology to enhance stakeholder engagement.

5.7 Component Correlation Matrix:

Table 7: Component Correlation Matrix

Component	1	2
1	1.000	.338
2	.338	1.000

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

The correlation matrix displayed in the above table shows the relationship between the factors that were extracted during the execution of the principal component analysis (PCA) using ProMax rotation. The unit values indicated in the component correlation matrix represent the correlation of each component with itself and this will always be a unit. The correlation between component 1 and component 2 is 0.338 which indicates a moderately strong positive correlation. This value indicates that the two components whilst they are capturing different aspects of the data they cannot be viewed as entirely

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independent. There is some overlap implying that changes in one component may be related to changes in the other component. As such, the moderate correlation supports the use of ProMax oblique rotation method.

It also infers that identified factors such as “stakeholder engagement and communication”, and “data-driven decision-making “may have some influence over each other to a certain extent. For instance, how an organisation approaches traditional stakeholder engagement may be linked to how it uses data-driven tools even though they are still largely separate strategies. This practically means that whilst focusing on improving communication and stakeholder engagement (i.e., Component 1), there may be some inherent impacts on the data data-driven approaches (i.e., component 2), and vice versa.

This is crucial when designing integrated strategies where improvements in a certain area can potentially support or enhance another area. This becomes valuable contextually when both traditional and data-driven approaches to stakeholder management are being concurrently implemented.

6 EMFact1

6.1 The model contains the following variables (Group number 1)

Observed, endogenous variables: EM1; EM2;EM4;EM5;EM9;EM12;EM13

Unobserved, exogenous variables:

eEM1;eEM2;eEM4;EMDim1;eEM5;eEM9; eEM12;eEM13

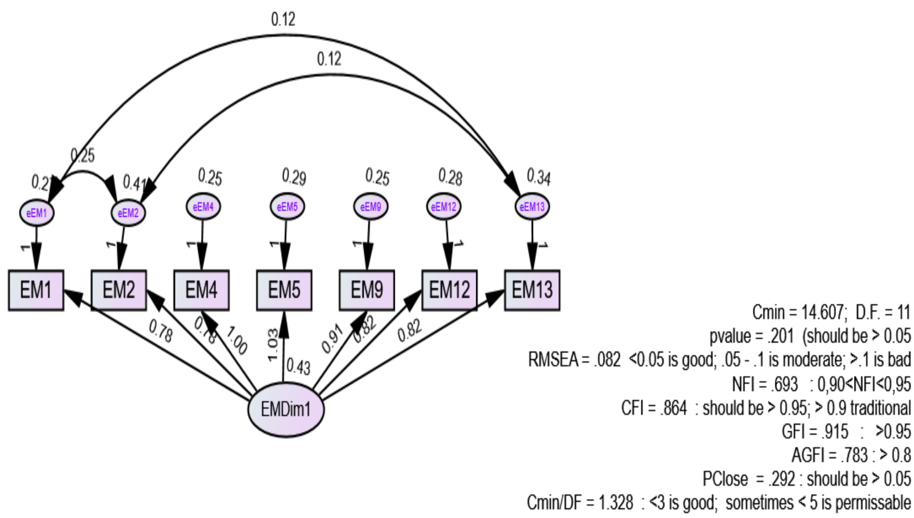

Figure 1: EMDim1(Source: IBM SPSS AMOS Version 27 SEM)

Table 8: EMDim1

ITEM	STATEMENT
EM1	Regular communication with stakeholders
EM2	Transparent communication with stakeholders
EM4	Engaging stakeholders in the project planning process
EM5	Engaging stakeholders in the decision-making process
EM9	Pro-active mitigation of risks related to stakeholder concerns
EM12	Agile project management methodologies for flexibility in adapting to changing stakeholder needs
EM13	Collaborative tools for efficient communication

This image represents a Confirmatory Factor Analysis (CFA) model for the latent variable "EMDim1," which is measured by the observed variables EM1, EM2, EM4, EM5, EM9, EM12, and EM13. Breaking down the key elements.

6.2 Latent Variable (EMDim1)

EMDim1 is measured by 7 observed variables: EM1, EM2, EM4, EM5, EM9, EM12, and EM13.Factor Loadings (numbers on arrows) show the strength of association between each observed variable and the latent variable. Cmin (Chi-square value): 14.607, D.F. = 11; a moderately low value, suggesting an acceptable model fit.p-value: 0.201 (should be >0.05); A non-significant p-value (>0.05) indicates that the model fits the data well. RMSEA (Root Mean Square Error of Approximation): 0.082 suggests a moderate model fit.NFI (Normed Fit Index): 0.693, which is low, suggesting that the model fit could be improved. A value closer to 1 is ideal. CFI is below the desired threshold of 0.95, indicating a less than ideal fit. GFI of 0.915 suggests an acceptable fit, though slightly below the preferred threshold. AGFI (Adjusted Goodness of Fit Index): 0.783 (>0.8 is considered acceptable). This is slightly below the threshold of 0.8, suggesting a weaker fit. PClose: 0.292 (should be >0.05). PClose >0.05 indicates that the RMSEA is not significantly different from 0, supporting model fit. Cmin/DF: 1.328 (should be <3; sometimes <5 is acceptable). This value indicates good model fit, as it falls below the threshold of 3. While some indices suggest the model has a reasonable fit (Cmin/DF, p-value, GFI, PClose), others like NFI, CFI, and RMSEA suggest room for improvement. The model fit is moderate, with some potential areas that could be improved.

The variable EM4 has the highest loading (1.00), meaning it is strongly associated with the latent variable EMDim1. EM1, EM2, EM9, EM12, and EM13 also show strong associations, while EM5 has the weakest association with the latent variable. There are significant correlations between some observed variables (e.g., EM2 and EM4), which may indicate relationships that need further exploration in the model.

6.3 Regression Weights

Table 9: Regression Weights

			Estimate	S.E.	C.R.	P	Label
EM4	<---	EMDim1	1.000				
EM5	<---	EMDim1	1.026	.224	4.572	***	
EM1	<---	EMDim1	.781	.167	4.683	***	
EM2	<---	EMDim1	.775	.182	4.269	***	
EM9	<---	EMDim1	.910	.202	4.511	***	
EM12	<---	EMDim1	.820	.171	4.783	***	
EM13	<---	EMDim1	.816	.174	4.685	***	

Breaking down the provided estimates for the relationships between the latent variable EMDim1 and the observed variables EM4, EM5, EM1, EM2, EM9, EM12, and EM13:

Path Coefficients and Significance:

EM4 <— EMDim1: This path coefficient is fixed to 1.000 to set the scale of the latent variable EMDim1. This is a common practice in SEM to identify the model.

EM5 <— EMDim1: This path coefficient is statistically significant (P < 0.001), indicating a strong positive relationship between EMDim1 and EM5.

EM1 <— EMDim1: This path coefficient is statistically significant (P < 0.001), indicating a strong positive relationship between EMDim1 and EM1.

EM2 <— EMDim1: This path coefficient is statistically significant (P < 0.001), indicating a strong positive relationship between EMDim1 and EM2.

EM9 <— EMDim1: This path coefficient is statistically significant (P < 0.001), indicating a strong positive relationship between EMDim1 and EM9.

EM12 <— EMDim1: This path coefficient is statistically significant (P < 0.001), indicating a strong positive relationship between EMDim1 and EM12.

EM13 <— EMDim1: This path coefficient is statistically significant (P < 0.001), indicating a strong positive relationship between EMDim1 and EM13.

All the path coefficients are statistically significant, indicating that EMDim1 has a meaningful positive relationship with EM4, EM5, EM1, EM2, EM9, EM12, and EM13.Strength of Relationships: The relationships are strong, with path coefficients ranging from 0.775 to 1.026.

7 Conclusion

The study concludes that successful stakeholder management in IT projects within the context of 4IR requires a balanced approach that combines traditional engagement practices with advanced data-driven techniques. Regular and transparent communication, along with active stakeholder involvement in planning and decision-making, are essential for fostering trust and collaboration. Additionally, leveraging data analytics and AI can significantly enhance the effectiveness of stakeholder engagement by providing deeper insights and enabling more informed decision-making. The moderate correlation between traditional and data-driven approaches suggests that these strategies are not mutually exclusive but rather complementary. Therefore, IT project managers should adopt a holistic approach that integrates both aspects to navigate the complexities of modern IT projects and achieve sustainable success.

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