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Consequence of Project Integration Management Process on Success of Project In Ethiopia

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ABSTRACT: The objective of this investigation was to examine the consequences of the project integration management process on success of project in west guji zone road construction. This research employed descriptive and explanatory research design with quantitative and qualitative research approach. Both probability and non-probability sampling techniques were applied to select a sample of 250 respondents. From probability sampling stratified sampling and simple random were used to categorize heterogeneous people into strata. Also purposive sampling was used from non-probability. The primary data were collected through well-organized questionnaires. Data was analyzed using both descriptive and inferential analysis. Descriptive data was expressed by average, mean and standard deviation. Inferential data were analyzed by regression, association with the aid of statistical tool SPSS version 20. The finding of the investigation indicates that project initiation, project planning, and project closure have positive and significant consequence on project success. However, project execution, project monitor and controlling have positive and insignificant consequence. The researcher suggests that Dudgadewa and Melka soda districts have to give first for project initiation, project planning, and project closure to improve the success of road construction. Furthermore, other researchers have to conduct investigation by taking project execution and controlling in west guji zone.

Keywords: project success, project integration management

INTRODUCTION

According to (Amari Mansur 2020) Project integration management accomplishes this by making trade-offs. That means that you can't have everything if you want to get the project completed on time and within budget. This is normal operational procedure for any project manager. If there are competing objectives, then alternatives are needed to meet stakeholder's expectations. To do this, the various processes and activities inside the project management process groups must be identified, defined, combined, unified, and coordinated. As a result, project integration management entails making resource allocation and trade-off decisions while managing the project management knowledge domains' interdependencies(Amari Mansur, 2020)

Construction project management expertise aids contractors and consultants in developing successful construction project management procedures and improving project execution organizational capabilities(Rahimi, 2022).The project management body of knowledge is a generally accepted practice consisting of a series of project management process developed by project management institute ((Kwak & Ibbs, 2021).

Success criteria are defined by Alvarenga et al., (2019) as a predicator or a set of predicators used to assess success of project There is a requirement for complete determination at the planning stage to enable for a consistent sense of what success criteria are in a project. Success determinants on the other hand are the main predicators that contribute to the success of a project (Kamara, Ahmed, & Benavides, 2022). Managers can manipulate the success determinants in a manner that can increase the chances of achieving the desired outcomes of the project (Al-kuhail et al., 2021).

Statement Of Problem

Recently there are only few studies (Demirkesen & Ozorhon, 2017) in Ethiopian context are available in the literature. Even though these available studies were not proposes direct association among construction specific components for integration management. And thus not helps in analyzes the association ship among project integration and project performance. Belay et. al., (2021) investigation only limited to analysis of construction project-specific success determinants in emerging markets in the case of Ethiopia. Girum (2021) investigation only limited to project management maturity analysis for construction companies in the case of Ethiopian construction design and supervision Works Corporation. Likewise (Faiz, 2020) limited his research only to Ethiopian construction project management maturity model determination and corassociation al *prediction of project success*. Basheer et. al., (2021) researched the area of Collaborative management of the Grand Ethiopian Renaissance Dam in increases the economic benefits and resilience in Ethiopia. It is only the one dimension of research. Present research try to conduct a holistic investigation to establish an association ship among project implementation and success of project that fill full the knowledge gap exist in previous researches.

The construction industry still suffers from poor project performance because of its nature where the work is fragmented among different stakeholders and different sub-processes (Kerzner, 2022). Moreover, previous studies (Wideman, 2022) lack a complete understating of the association ship among project integration and firm performance, which is essential to successfully manage construction projects. Alvarenga et. al. (2019) investigation revealed that project integration management on success of project has direct and significant positive association. Rogers (2019) highlighted that success of project and project team individuals are statically significant for an integration of a project. Rogers investigation also showed a significant positive association among project integration management and project success. Albert et. al., (2017) Conducted a structured literature review to evaluation of project success. And he reveals that no patterns have so far been developed to assess project success. But significant positive association found among project integration management and project success.

But, (Nicholas & Steyn, 2020) in their investigation stated differently. There investigation found a project negative association among integrated project management processes on project success. Wu et. al., (2017) manifested that by application of integrated project management process had negative consequence on project success. Similar results are confirmed by the studies like Ul Musawir et. al., (2017); Mavi & Standing (2018) and Banihashemi et. al., (2017).

Thus because of these above mentioned contradictory evidences researchers want to conduct the present research to fulfill the evidence gap.

Literature Review

In each project, a five-phased PIMP is necessary. Internal dependencies exist inside the process groups, and they are frequently iterated numerous times before a project is

completed. A process group is made up of project management procedures that are connected because the output of one becomes the input for another (Dimmler, 2021).The process groups should not be thought of as project stages that terminate when a component or section of the project is finished. The process groups are repeated in every step of major projects with separate phases or sub-projects, and there are continual interactions among the groups throughout the project. Dimmler (2021) found five PIMPs, which are Initiating Process, Planning Process, Executing Process, Monitoring and Controlling Process and Closing Process.

Pereira et al.(2022), as success of project criteria, we summed up time, cost, quality, and stakeholder appreciation. The success components were recognized as human management, process, and organization, contractual and technical, team and leadership, project manager, stakeholder management, planning, scheduling, organization, control and monitoring, financial resources, and quality management. Project managers or specialists with at least 6 years of experience who can manage projects from planning to completion should be included in the research group (Pereira et al. 2022). The population was from the business sector of the agency (Elmezain, Hamidon, Baduruzzaman, & Khoiry, 2021). Project managers, members of the project team, resident engineers, locally accredited engineers, and architects with project management expertise are all needed.

According to Rasool et al.(2022), Project initiating, project planning, project execution, project monitoring and controlling, and project closure are the five phases of the project life cycle. Among these, the project beginning phase is given special attention since it is at this phase that significant project choices and resource allocation decisions are made.

Objectives

- To identify the main determinants of project integration management that effected the project success.
- To examine the association among project integration management process and project success.
- To analysis the extent to which project integration management process consequence project success.

RESEARCH METHODOLOGY

The methodological nature of this paper is hypotheses testing. This can be achieved by structural equation modeling (SEM), where Confirmatory determinant analysis (CFA) is employed for model fit, validity, and reliability of the data, while path analysis is used to estimate the impact of project integration on success of project , with the Maximum Likelihood (ML) estimation method. Confirmatory determinant analysis is deemed one of the best-known statistical procedures for testing a hypothesized determinant structure (Bollen, 1989 and Byrne, 2001). The statistical software AMOS 4.0 was used to perform confirmatory determinant analysis. To achieve this, the investigation has used a predesigned model of success of project and project integration. Project integration construct is composed of 5 components totaling 20 items, while success of project construct is composed of 5 components with 24 items. These constructs were tested for model fit validity and reliability. For this, a total of 418 self-administered questionnaires, covering the 44 items of project integration and project success, alongside the demographic questions, as shown in the appendix (1) and (2), were distributed to employees in universities in Jordan, where only 392 questionnaires were returned valid after data screening which represents 94% of the distributed questionnaires. The questionnaire uses a 5-point Likert scale; 5=Not at All, 4=Once in a While, 3=Sometimes, 2=Fairly Often, 1=Frequently If Not Always

The model fitness is evaluated using several criteria, including the Chi-square Goodness-of-Fit test statistic, degree of freedom, Chi-square/df, Joreskog and Sorbom's Goodness-of-Fit index (GFI), Adjusted Goodness-of-Fit index (AGFI), the rescaled noncentrality parameter (NCP), Root-Mean-Square Residual (RMR), Normed Fit Index (NFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and PCLOSE. The first regression path in each measurement component is fixed at (1) for model identification purposes. All items of both constructs were initially incorporated into the model testing for First-order confirmatory determinant analysis and the remaining were incorporated in the Second-order confirmatory determinant analysis. Several criteria were used to evaluate the items, including each item's error variance estimate; evidence of items needing to cross-load on more than one component determinant as indicated by large modification indices; the extent to which items gave rise to significant residual covariance; parsimony purpose; regression coefficient of each item; reliability of the item and the reliability of the whole construct. Additionally, the logic and consistency of data with the theoretical framework were considered when evaluating each item.

RESULT AND DISCUSSION

Data Analysis: Exploratory Determinant Analysis

kaiser-meyer-olkin is a *test* conducted to examine the strength of the partial corassociation (how the determinants explain each other) among the predicators. This table shows two tests that indicate the suitability of your data for structure detection. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is a statistic that indicates the proportion of variance in your predicators that might be caused by underlying determinants.

Measure Of Sampling Adequacy (Bartlett's Test Of Sphericity)

Table 1: KAISER-MEYER-OLKIN AND BARTLETT'S TEST

	Predicator	KMO	Approx. Chi-Square	df	Sig.	Initial Eigen values	Total Variance Explained (Cumulative %)	Result
1	**Project initiation**	.847	311.910	6	.000	1.548	54.489	Accepted
2	Project planning	.898	564.581	6	.000	1.103	64.972	Accepted
3	Project execution	.887	523.839	6	.000	1.327	61.940	Accepted
4	Project monitoring	.841	518.199	6	.000	1.306	57.758	Accepted
5	Project closure	.876	685.841	6	.000	1.842	68.547	Accepted
6	Project success	.865	636.111	6	.000	1.708	65.194	Accepted

Source: SPSS output (2022)

Extraction Method: Principal Component Analysis

The kaiser-meyer-olkin and Bartlett test evaluate all available data together. A kaiser-meyer-olkin value over 0.5 and a significance level for the Bartlett's test below 0.05 suggest there is substantial corassociation in the data. Predicator collinearity indicates how strongly a single predicator is correlated with other predicators.

Table 2: Residuals Statistics[a]

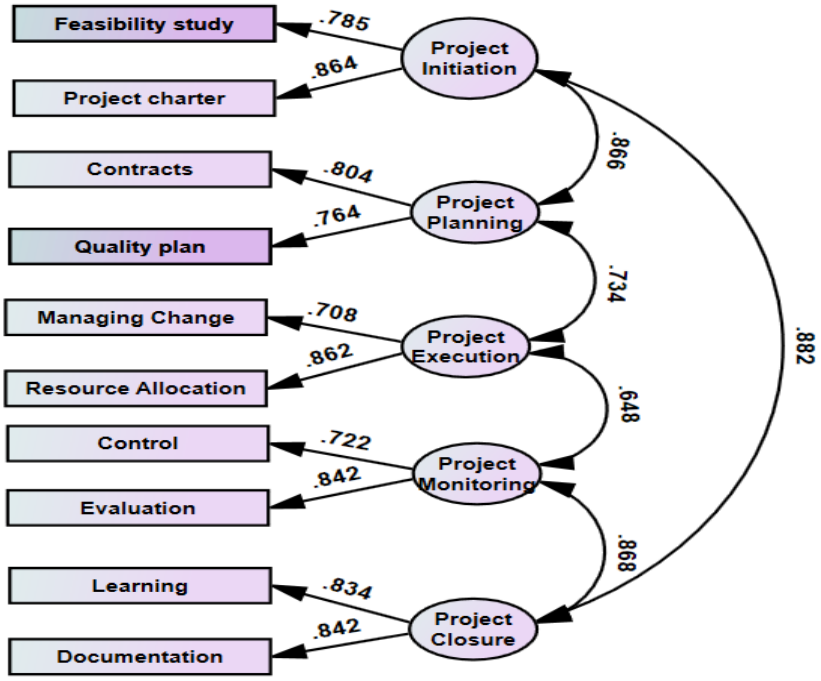
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.93	4.78	3.54	.492	569
Std. Predicted Value	-3.166	1.321	.000	1.000	569
Standard Error of Predicted	.048	.199	.107	.048	569
Adjusted Predicted Value	1.99	4.76	3.54	.493	569
Residual	-3.154	1.979	.000	.885	569
Std. Residual	-3.303	1.495	.000	.990	569
Stud. Residual	-3.312	1.599	.002	1.005	569
Deleted Residual	-3.428	1.147	.002	.810	569
Stud. Deleted Residual	-4.302	1.718	.001	1.009	569
Mahalanobis Distance	.503	57.869	7.981	8.559	569
Cook's Distance	.000	.105	.004	.010	569
Centered Leverage Value	.001	.140	.019	.021	569

a. Dependent Predicator: Customer Buying Behaviour

Source: SPSS output (2022)

Mahalanobis' distance (MD) is a statistical measure of the extent to which cases are multivariate outliers, based on a chi-square distribution, assessed using p <. 001. The critical chi-square values for 2 to 10 degrees of freedom at a critical alpha of 0.001 as shown in above table indicated a good fit. The Cook's distance shown in above table, considered high as it is greater than 0.5 and extreme. It is greater than 1. As the point has been flagged by the Cook's distance, this point is considered highly influential and has a combination of unusual explanatory predicators and response values.

Second -Order Confirmatory Factor Analysis



Confirmatory factor analysis is a Structural Equation Modeling (SEM) and factor analysis method used to find out if observed variables contribute to latent or unobserved variables. The reliability and validity of the model are assessed using four different values i.e. convergent validity, internal consistency, composite reliability, and discriminant validity.

The results for the first three measures are shown below.

Table 1: Ideal values for establishing the reliability and validity of a confirmatory factor analysis model in *SEM*

	AVE	CR	Cronbach alpha
Project initiation	0.59	0.71	0.70
Project planning	0.57	0.73	0.72
Project execution	0.61	0.75	0.75
Project monitoring	0.64	0.76	0.74
Project closure	0.60	0.69	0.72

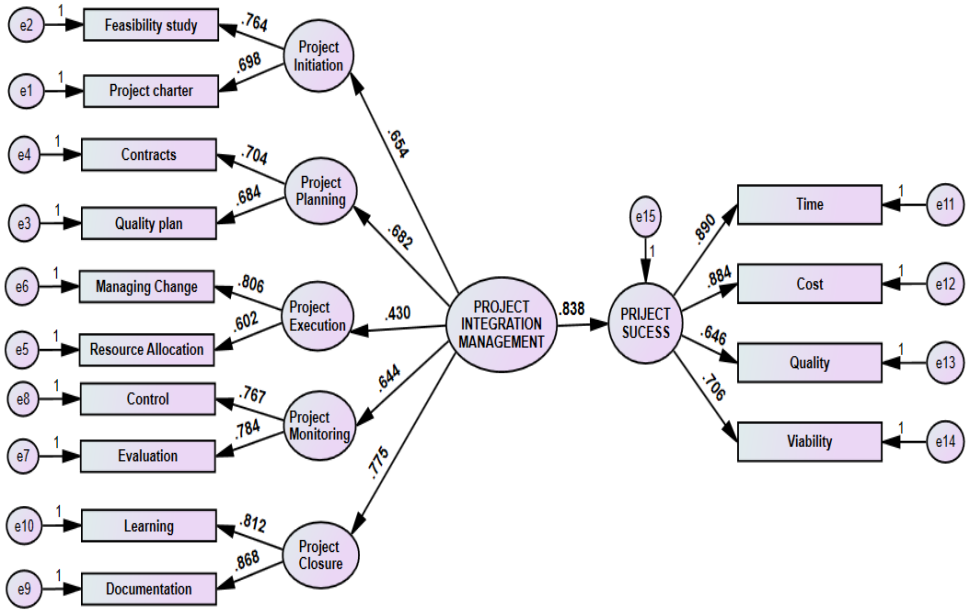
Average Variance Extracted (AVE): It is the measure for understanding convergent validity i.e. construct's ability to share items or statements used to depict it. Herein, the value of AVE for all the variables is more than 0.5 i.e. Project initiation – 0.59, Project planning – 0.57, Project execution – 0.61, and Project monitoring is 0.64. Thus, the model has convergent validity.

Composite Reliability (CR): It is the method for assessing the contribution or significance of an item by examining the factors loading. Herein, the value of CR is also more than 0.7 for all the constructs i.e. Project initiation – 0.71, Project planning – 0.73, Project execution – 0.75, and Project monitoring – 0.76. Thus, composite reliability is derived for the model.

Internal Consistency: It is the reliability method for depicting the factor's linkage with other factors. Cronbach alpha is the method to measure internal consistency. Herein the value is more than 0.7 for all the variables i.e. Project initiation – 0.70, Project planning – 0.72, Project execution – 0.75, and Project monitoring – 0.74. Thus, there is the presence of internal consistency in the model.

Lastly, discriminant validity is the method for identifying the construct distinction from one another. Herein, the value of construct association is compared with the square root of AVE. The below table depicts that for each of the variables, the association value is less than the square root, i.e. 0.80 is more than 0.52, 0.58, and 0.58. Thus, the model has discriminant validity.

STRUCTURE EQUATION MODEL



In order to estimate the validity and reliability of the data of both main constructs, this investigation conducted and considered multiple model-fit indices provided by SEM. In the

model, the variances are fixed to 1 so that the scales of the factors are identified. This is conventionally done because the scale of latent factors is arbitrary (we do not measure latent variables directly so that they could be defined on any unit of measurement). The initial measurement model fit indices without any modification were: Chisquare = 2595.910, Chi-square/df= 3.029, df= 857 , GFI = .756 , AGFI= .718, CFI= .807, TLI= .787, IFI = .809, RMSEA = .072. However, Table 1 shows the Recommended and Acceptable Values or GOF Indices of the Measurement Model where otherwise is considered as a bad fit for the model

Table 2: the overall assessment of the model fit indices

Fit index	Recommended Values	Acceptable Values	Source
CMIN (χ2)			
p-value	> 0.05	≥ 0.000	Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010)..
χ2/df	≤ 3.00	≤ 5.00	Bagozzi, & Singh, (1991).
GFI	≥ 0.90	≥ 0.80	Hoyle & Kenny (1999)
AGFI	≥ 0.80	≥ 0.80	Hoyle & Kenny (1999)
CFI	≥ 0.90	≥ 0.90	Bagozzi, & Singh, (1991).
TLI	≥ 0.90	≥ 0.90	Hair et al., (2006)
IFI	≥ 0.90	≥ 0.90	Hair et al., (2006), *Karakaya and Aksu (2018).*
RMSEA	0.05 to 0.08	≤ 0.10	Schumacker, & Lomax(1996)

However, based on the values in table 2, the investigation found that the initial model can be improved to better fit the data. For this, one item was eliminated from idealized behavior and one item was eliminated from individual consideration, where only 18 items remained from 20 items in the final construct of (TLS). On the other hand, 3 items were eliminated from Conscientious, 2 items were eliminated from Sportsmanship, 2 items were eliminated from Civic Virtue, and none were eliminated from Courtesy and Altruism ending up with 17 items from 24 items for the final construct of (OCB). Actually, items were eliminated based on the low squared multiple corassociation s and low standardized regression weights below the cut-off 0.5 weight (Hair et al., 2017a). Consequently, the re-specified first-order model fit indices are: Chisquare = 1435.912 , Chi-square/df=3.0 , df= 510 , GFI = .820, AGFI=0.8, CFI= .869 , TLI= .847, IFI = .870, RMSEA = .068and these model fit indices of the constructs were all within the acceptable range, including factor loading. These results indicate that the specified model fits better to the sample data than did the original model.

CONCLUSION

The research focuses on the consequence of project integration management on the success of road building projects. As a consequence, the investigation was funded, and the results of the association analysis revealed that the five parameters had a substantial association with the success of project of road construction projects. According to CFA analysis project initiation, planning, monitor and controlling and project closure have strong association with project success. However, project execution has moderate association with project success. The EFA analysis shows that project initiation, planning, and project closure have statistical significant on project success. However, project execution, monitor and controlling have statistical insignificant on project success. The investigation recommend that the organization should improve the decision to implement the road construction project is based on the final output of feasibility investigation because it score low mean during the

project initiation. The organizations need to have consideration during the estimation probable duration of individually schedulable tasks and activities for further implementation of project planning. In order to have a strong monitoring and controlling mechanism, the organization should have well formulated the way of collecting and disseminating project progress information consequences and record the change request when it needed. The organization should have improve the way of making the Information to formalize project completion is gathered and disseminated to stakeholders for more understanding of whether the project was completed according to the planning or not.

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