THE ROLE OF MANAGEMENT PRACTICES IN ESTABLISHING RESILIENT PROJECT NETWORKS AMONG AGRICULTURAL INNOVATION PLATFORMS IN CENTRAL AND SOUTH WESTERN UGANDA

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ABSTRACT

The rising trajectory of project networks due to globalization and quest for sustainable project delivery has continued to attract critical interest and attention. This study assessed effects of management practices on resilience of project networks among agricultural innovation platforms in Central and South Western Uganda. The study concluded that management practices has a significant effect on resilience of project networks among agricultural innovation platforms. Based on this conclusion, the study recommends that during AIP functioning, leaders should cultivate and enhance good management practices such as coordination, accountability, and monitoring and evaluation since these practices are key antecedents project network resilience.

Key Words: *management practices, resilience, project networks, agricultural innovation platforms, systems theory*

INTRODUCTION

The rising trajectory of project networks due to globalization and quest for sustainable project delivery has continued to attract critical interest and attention from both practitioners and scholars. Practitioners' interest is understandably driven by quest for project success, while scholars' interest is driven by the need to understand how such temporary endeavours can be made sustainable and resilient (Gustafsoon, Larson & Svensson, 2014). Actors therefore come together to form project networks in search of scarce resources and complementarities. The last few decades have seen a significant increase in technological advancement, leading to knowledge gaps and uncertainty. This trend coupled with increasing costs of implementing projects and shortened life cycles of innovations present a serious challenge to project practitioners and scholars (Liu, Hull & Hung 2016). There is therefore increased demand for collaboration between various actors in project management to bring down implementation costs and guarantee project success. More so, project networks play a compensating role between the contrasting temporary organizational configuration of projects and their permanent environments (Bakker, DeFillippi, Schwab & Sydow, 2016).

Depending on who initiates them, project networks can be categorized as goal-directed or serendipitous. According to Burström and Jacobsson (2012), goal-directed networks are purpose-specific, formed either by those who participate in the network or mandated by a certain authority, and develop majorly through deliberate efforts to build a well-coordinated entity that can deliver a common objective. On the other hand, serendipitous networks spontaneously emerge to take advantage of existing opportunities .Whether goal-directed or serendipitous there is need for the network withstand any externalities that may adversely affect its structure and operations. This, Kutsch and Hall (2016) referred to it as resilience. Resilience in this sense refer to the ability of the network to develop structures that would enable it overcome shocks, learn from them, and

emerge strengthened and transformed. It is the networks capacity to quickly reconstitute and regain its original state after experiencing a shock (Aranda, Zeeman, Scholes & Morales, 2012).

In project management, the term resilience was used by Borgert (2013) and, Kutsch and Hall (2016) to mean establishing mechanisms that enable leaders to detect and foresee situations, realistically interpret challenges, better prepare themselves, and quickly and appropriately recover from such challenges at the minimum cost possible. Consequently, Kutsch and Hall (2016) concluded that resilience in the context of projects involves management's ability to foresee risks, quickly adapt towards unavoidable changing environments, and rapidly mobilizing internal energies to recover from adversity. As such, any system's resilience is premised on its capacity to overcome a disturbance and yet keep its strategic focus, identity and structure, with strength to re-constitute while increasing learning and adaptability to new realities (Laursen & Salter, 2006; MacKinnon & Derickson, 2013).

In the agricultural sector, project networks are implemented in form Agricultural Innovation Platform (AIPs). The AIP approach was introduced in Africa under the International Fund for Agricultural Development (IFAD) project called Sub-Saharan Africa challenge program (SSACP), coordinated by Forum for Agricultural Research (FARA) with an overall objective of testing a concept whether such networks could deliver projects cheaper and more sustainably (Adekunle, Oluwole, Buruchara, & Nyamwaro, 2013). SSACP established twelve AIPs in each Pilot Learning Site (PLS) of Eastern and Central Africa (the area around Lake Kivu basin), Western Africa and Southern Africa.

In the Lake Kivu region, four (4) AIPs were formed in south western Uganda, North-eastern Rwanda and Eastern Democratic Republic of Congo. Each AIP focused on a specific value chain (as an entry point) bringing together stakeholders along a commodity continuum from resource to consumption (Tenywa et al, 2011). The underlying objective was to attract diverse knowledge capacities and skills sets, transform and learn from them, and share resource products thereby testing the concept of AIPS as a cheaper and sustainable approach to agricultural transformation.

Aranda et al. (2012), alluded that when project networks become resilient, they bring about consistency in project conceptualization and operationalization, relative permanency and reliability of critical governance structures, which together and overtime generate enormous efficiencies necessary for effective project delivery. Moreover, as proposed by systems theory, any system needs well-facilitated, organized, and coordinated mechanisms to sustain its structure and functions. This argument is relevant to this study in supporting the proposition that facilitation, organization, and coordination efforts are key network management practices (Kilelu, Laurens & Cees, 2013). In addition, stakeholder theory also supports the study by imploring management to carefully consider external pressures arising from various stakeholder interests (Eskerod & Huemann, 2013).

However, even with the increased adoption of project network approach, majority of AIPs still do not exhibit resilience. For instance, SSACP (2011) report indicated that resilience of AIPS formed

in the Lake Kivu region of Uganda, Rwanda, and DRC was not encouraging. Majority had either collapsed or not moved beyond locality borders. In 2018, the National Agricultural Research Organization (NARO) conducted an inventory of AIPS in Uganda. From this inventory, it was established that of all AIPs formed in Uganda between 2006 and 2017, only 59% of them were functioning by 2018 while 41% were either existing but not functioning or had collapsed all together. Particularly, Ngetta Zone was the hard hit with all AIPS established in the zone having failed followed by Bulindi Zone with 75% of non-functional AIPS. More than 70% of AIPS established in Buginyanya- Mt. Elgon region had collapsed while, 29% of AIPS established in Mukono Zone had also collapsed.

These statistics suggest that there is a problem in management of AIPS. Huemann (2013) reported that some of the causes of collapse of AIPS include conflicts between key actors such as farmers and processors, vulnerable networks, corruption, lack of commitment by AIP leaders, and unmet stakeholders expectations. All these challenges point towards weaknesses in the type and quality of management practices applied by project network leadership. There is thus need to establish the influence management practices have on resilience of project networks. Burström and Jacobsson (2012) opined that there are several management practices applicable to different forms of organizations all aimed at sustaining and strengthening existing relationships in a network. In this study, management practices refer to facilitative roles necessary for the effective functioning of a project network. These practices are vital in generating trust and learning necessary for cooperation and collective action. They include transparency and accountability, monitoring and evaluation, and coordination activities.

THEORETICAL FRAMEWORK

The study was anchored on systems theory and stakeholder theory. The systems theory assumes the concept of synergy such that the whole is more than the sum of its parts. As such, every part is committed to developing strategies that preserve the benefits of having their system in place (Laszlo & Kripper, 1998). On the other hand, stakeholder theory considers external pressures arising out of various stakeholder interests. It considers the focal organization as a facilitator/broker, which bears the responsibility of accounting to other stakeholders according to their respective stakes (Freeman & McVea, 2001).

EMPIRICAL REVIEW

In a study to establish the influence of network structure on integration and external control, Provan and Kenis (2008) found that integrated network structures, which are centralized and externally controlled, have a positive propensity to effectiveness. They also established that stability of a given system and availability of resources moderate the relationship between network structure and network effectiveness.

Ojasalo (2008) on the other hand examined various companies and confirmed that undertakings involved in collaborated innovative activities prefer no hierarchies, because the benefits arising out of collaborative efficiencies get lost through red tapes and rigidity. In their study, Eskerod and Huemann (2013) used desk research by applying an analytical framework developed from stakeholder theory to analyse how various stakeholder management approaches and principles of sustainable development are embedded in international project management standards. They found that project management standards treat issues related to stakeholders in a superficial manner.

Gustafsoon et al. (2014) on governance in multi-project networks observed that whereas appropriate governance structures (for example committees and boards) are necessary to regulate and generate compromise between different interests, sustaining constructive interactions within those structures is a difficult endeavour. This is mainly because Project networks comprise of many stakeholders including governments, private sector, non-governmental organizations, different special interest groups, and beneficiary communities. Management practices in project networks is therefore about modelling how these actors interact, reach consensus (or not) and solve joint problems.

In their study on integration and governance of multiple project management offices (PMOs) at large organizations, Tsaturyan and Müller (2015) conceptually developed a four-dimensional framework of PMO governance, consisting of structural, procedural, relational and regulative dimensions, which were qualitatively tested through a case study at a large European bank. The study found a predominance of relational and regulative dimensions for integration of multiple-PMO governance structures, and proposed variables for observation and analysis of integration efforts in PMO governance. Results conclude that there is need for increased understanding of network governance in project management and development of associated governance dimensions.

DeFillippi and Sydow (2016) studied project networks from two perspectives and observed that in facilitating actor interactions, network governance should emphasize management of project stakeholders, that is, individual actors (for simple networks and personal nodes) and organizational actors (for complex networks and organizational nodes). Thordur (2018) in his study found that inter-organizational projects are based on contractual agreements, which must bring together all actors if project networks are to be sustainable.

However, it should be noted that majority of studies existing on project networks were conducted in contexts such as banking sector, ICT projects and European Union projects, which has a different operational scope from agricultural innovation platforms in Central and South western Uganda. Other studies were conducted on constructs such as network effectiveness, management approaches, governance mechanisms, network dynamics and coordination but not resilience of project networks as envisaged in this study. Some studies based their conclusions on desktop research involving review of existing literature thereby leaving an empirical and contextual lacuna that call for further investigation. To contribute in filling these gaps, this study sought to determine

the effect of management practices on network resilience among agricultural innovation platforms in Central and South Western Uganda.

RESEARCH METHODOLOGY

The researcher adopted a positivist research philosophy which contends that a researcher is independent of research subjects, is able to design a research strategy based on existing theory to draw research hypotheses, use a rigorous methodology to enable replication, and quantify all the responses to allow for statistical analysis (Almalki, 2016). Explanatory design was used in this study because it enables characterization and understanding of study subjects, while explaining casual relationships between study variables as advised by Saunders, et al. (2009). The study target population was drawn from actors who participate in Agricultural Innovation Platforms located in Central and South Western Uganda. South Western Uganda was selected because it is in that region where initial Agricultural Innovation Platforms were established thus hosting some of the oldest AIPs in the country. A total of twenty-two (22) active AIPs, each with six (6) actor organizations i.e. farmers, processors/ traders, researchers, extension agents, government agents and NGOs. Five (5) members represent farmers while one member each represents the other five actor organizations. The population was stratified into farmers, processors, researchers, extension agents, government agents and NGO representatives in each of the AIPs. From the five farmers' representatives, the chairperson was purposively selected to represent the farmers. Six (6) respondents, each one representing the different categories of actors, were selected from each of the 22 AIPs making a total of 132 respondents. Data was collected using a semi-structured questionnaire. The questionnaire was designed to collect background information of the respondents as well as on management practices and resilience of project networks among agricultural innovation platforms in central and south-western Uganda. The study used a survey strategy for data collection, because it allows the researcher to collect data from a sizeable sample at a reasonable cost. Analysis of data was conducted using both descriptive and inferential techniques. In order to characterize variables of interest in the study, descriptive statistics such as mean scores, standard deviation, percentages, and frequency distribution was computed. The study also applied inferential statistics to establish the nature and strength of relationship between management practices and resilience of project networks among agricultural innovation platforms. The direction and strength of relationship between variables was measured using Pearson Correlation Coefficient. In addition, the coefficient of determination, R2, was computed to measure the extent by which the changes in resilience of project networks are attributable to changes in management practices. The study also carried out the Analysis of Variance (ANOVA) test to confirm whether the selected empirical model was fit for the study. All hypothesized relationship, was analysed using multiple regression. The research hypothesis was tested at 95% confidence interval. Moreover, to facilitate regression analysis, an average of values obtained from Likert scale responses were computed to generate composite indices for individual indicators under each study variable. A weighted average of the composite indices derived for each indicator was computed to obtain values representing each study variable. Multiple regression analysis was

conducted at 95 percent confidence level (0.05 level of significance). The multiple regression model tested was as follows:

$$RAIP = \beta 0 + \beta 1ME + \beta 2A + \beta 3C + \varepsilon$$

Where: RAIP: - Resilience of project networks among the AIPs; β0: - intercept; β1: - coefficient of Monitoring and Evaluation; β2: - coefficient of Accountability; β3: - coefficient of Coordination; ε: - Error Term

RESEARCH RESULTS

Descriptive statistics and inferential analysis were used to make conclusions on the relationship between the study variables. The study sought to determine the effect of management practices on network resilience among agricultural innovation platforms in Central and South Western Uganda. Mean score for all the measurements of management practices and their respective standard deviations. Research findings indicated that the average mean for management practices was 3.35 suggesting that the respondents agreed that management practices were adopted to a moderate extent among AIPs in Central and South Western regions in Uganda. The results of the study also indicated that coordination was the predominantly practiced aspect of management practices among AIPs as shown by a mean score of 3.80. Similarly, accountability was embraced in the AIPS but to a moderate extent as indicated by a mean score of 3.33. Monitoring and evaluation was found to have a mean score of 2.91. This means that monitoring and evaluation was the least embraced management practice in the AIPs as compared to coordination and accountability. Consequently, in an attempt to improve on their management practices, AIP management should seek to put more effort on the aspect of monitoring and evaluation.

The study also sought to determine the effect of management practices on network resilience among agricultural innovation platforms in Central and South Western Uganda. Descriptive analysis results showing the mean score and their respective standard deviations for all the measurements of project network resilience. The findings showed that resilience of project networks had a mean score of 3.812 indicating that a good number of the respondents agreed on the presence of resilience among the AIPs. The results also showed that there were minimal variations on the respondent opinions about resilience of project networks as indicated by a low standard deviation of 0.974. The results obtained on this variable were consistent with those of (Aranda, et al., 2012) who stated that a firm's inner strength or resourcefulness and ability to bounce back after a shock or sustained attack brings about resilience.

Further, the results showed that respondents generally agreed that network innovativeness was practised in the AIPs to a large extent as shown by a mean score of 4.145. A low standard deviation of 0.757 shows that majority of the respondents agreed that network innovativeness plays a major role in achieving network resilience. Additionally, the results showed a mean score of 3.825 for network reproduction meaning that a good number of respondents agreed that AIPs were showing indicators of network reproduction. The respondents however varied in their opinions concerning

network reproduction capabilities as shown by a high standard deviation of 1.025. Further, majority of the respondents agreed on the extent to which network sustainability was manifest in the AIPs as a shown by a mean score of 3.465. This implies that the AIPs were showing considerable signs of network sustainability. There was however a high variation of observations as shown by a high standard deviation of 1.3.

The study also conducted correlation analysis to establish direction and strength of the relationship between study variables. Dancey and Reidy (2004) recommended that correlation coefficient of 1 shows a perfect correlation while a correlation coefficient of between 0.7- 0.9 shows strong correlation. On the other hand, a correlation coefficient of between 0.4 and 0.6 indicates moderate correlation while a correlation of 0.1-0.3 shows a weak correlation. A zero (0) correlation coefficient indicate no correlation. The results were as shown in Table 1.

Table 1: Correlation coefficients for Management Practices

		Resilience	Monitoring & Evaluation	Coordination	Accountability
Resilience	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	103			
Monitoring and Evaluation	Pearson Correlation	.604**	1		
	Sig. (2-tailed)	.000			
	N	103	103		
Coordination	Pearson Correlation	.598**	.510**	1	
	Sig. (2-tailed)	.000	.000		
	N	103	103	103	
Accountability	Pearson Correlation	.704**	.730**	.599**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	103	103	103	103

**. Correlation is significant at the 0.01 level (2-tailed).

The results in Table 1 show that correlation coefficient between resilience of project networks and monitoring and evaluation was 0.604 indicating a moderate positive correlation. The results also showed that the correlation coefficient between resilience of project networks and coordination was 0.598 indicating a moderate positive correlation. Moreover, results showed that the correlation between resilience of project networks and accountability was 0.704, an indication of a strong positive correlation. All the coefficients had a significant P-value of 0.000.

Multiple regression analysis was conducted at 95 percent confidence level (0.05 level of significance). The multiple regression model tested was as follows:

$$RAIP = \beta 0 + \beta 1ME + \beta 2A + \beta 3C + \varepsilon$$

Where: RAIP: - Resilience of project networks among the AIPs; β0: - intercept; β1: - coefficient of Monitoring and Evaluation; β2: - coefficient of Accountability; β3: - coefficient of Coordination; ε: - Error Term

The results of the multiple regression analysis were as shown in tables 2, 3 and 4.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.745[a]	.555	.542	.49317

a. Predictors: (Constant), Accountability, Coordination, Monitoring and Evaluation

Table 2 indicates that the coefficient for R was 0.745 implying that there was a strong correlation between management practices and resilience of AIPs in Uganda. In addition, the coefficient of determination adjusted R^2 was 0.542 meaning that the model predicted 54.2% of the variations in resilience of project networks among agricultural innovation platforms in central and south western Uganda. The results show that the remaining 45.8% of the variations in resilience of project networks among agricultural innovation platforms in central and south western Uganda was contributed by factors other than management practices.

To establish the Fitness of the model in resilience of AIPs in South Western Uganda, the study conducted an Analysis of Variance (ANOVA) and the findings are as indicated in Table 3.

Table 3: ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	30.069	3	10.023	41.210	.000[b]
Residual	24.078	99	.243		
Total	54.147	102			

a. Dependent Variable: Resilience
b. Predictors: (Constant), Accountability, Coordination, Monitoring and Evaluation

The ANOVA result in table 3 shows F statistic of 41.210 greater than the F critical of 2.696 indicating that the model was fit to predict resilience of project networks. In addition, the P value was found to be significant at 0.000 implying that the F test statistic was significant in predicting resilience of project networks among AIPs in central and south western Uganda.

To determine the significance of the model coefficient and the constant, the study conducted a t-test for the study coefficients and the findings are as indicated in Table 4.

Table 4: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.473	.245		6.008	.000
Monitoring and Evaluation	.147	.096	.152	1.535	.128
Coordination	.226	.074	.258	3.052	.003
Accountability	.328	.079	.439	4.133	.000

a. Dependent Variable: Resilience

Table 4 shows that the constant had a coefficient of 1.473 indicating that holding all the factors constant at zero, resilience of project networks among the AIPs in central and south western Uganda would be 1.473. Monitoring and Evaluation had a coefficient of 0.147 indicating that if all other factors were held constant, by increasing monitoring and evaluation by one unit, resilience of project networks would increase by 14.7%. Coordination had a coefficient of 0.226 meaning that holding all other factors constant and increasing coordination by one unit, resilience of project networks would increase by 22.6%. Similarly, the coefficient for accountability was 0.328 indicating that holding all other factors constant, a unit increase in accountability would result in a 32.8% increase in resilience of project networks among AIPs in central and south western Uganda. Based on these findings, accountability had the highest effect on project resilience followed by coordination and, monitoring and evaluation had the least effect.

The results also indicated that the constant had a t-value of 6.008 greater than the t-critical of 1.660 implying that the constant was significant. In addition, monitoring and evaluation had a t-value of 1.535, coordination 3.052 and accountability 4.133. All the variables except monitoring and evaluation had a t-statistics greater than the t-critical of 1.660. Other than monitoring and evaluation, all the variables had a P-value of less than 0.005. These results imply that accountability and coordination had a significant effect on resilience of project networks among the AIPs in southwestern Uganda while monitoring and evaluation had no significant effect. The model is summarised as follows;

> RAIP = 1.473+ 0.147 Monitoring and Evaluation + 0.226 Coordination + 0.328 Accountability

The results obtained agree with Provan and Kenis (2007) who asserted that integrated network structures, system stability, availability and management of resources determine network effectiveness. Moreover, similar observations were reached by (Gustafsoon, et al., 2014) who observed that whereas appropriate governance structures are necessary, to regulate and generate compromise between different interests, sustaining constructive interactions within those structures is a difficult endeavour. DeFillippi and Sydow (2016) also concluded that in facilitating

actor interactions, network governance should emphasize management of project stakeholders, that is, individual actors for simple networks and organizational actors for complex networks.

CONCLUSION

The objective of the study was to determine the effect of management practices on resilience of project networks among Agricultural innovation platforms in the Central and southwestern Uganda. It was established that management practices were moderately adopted among AIPs in central and South-western Uganda. Among the management practices studied, coordination was predominantly practiced among the AIPs. Accountability was embraced but to a moderate extent while monitoring and evaluation was the least embraced management practice among the AIPs. Correlation results revealed that there exists a strong positive correlation between resilience and accountability and a moderate positive correlation between resilience of project networks and monitoring & evaluation, and coordination. Regression results showed that accountability and coordination had a significant effect on resilience of project networks among the AIPs in southwestern Uganda while monitoring and evaluation had no significant effect. Overall, the study concluded that management practices have a significant effect on resilience of project networks among the AIPs in central and south western Uganda.

RECOMMENDATION

The study concluded that management practices were significant in predicting resilience of project networks in central and southwestern Uganda. The study therefore recommends that during AIP functioning, leaders should cultivate and enhance good management practices such as coordination, accountability, and monitoring and evaluation. According to the study, these practices are key antecedents to proper project network governance and resilience. Additionally, AIP leadership should channel substantial resources towards training AIP actors on good management practices.

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