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Financial Innovation and Adoption of Public Private Partnerships in Kenyan Public Universities

Francis Mukatia Asakania[1*] Gregory S. Namusonge[2] Maurice Sakwa[3]
1. Professor, Scholar, Jomo Kenyatta University of Agriculture and Technology, Kenya
2. Professor, Jomo Kenyatta University of Agriculture and Technology, Kenya
3. Professor, Jomo Kenyatta University of Agriculture and Technology, Kenya

Abstract
Public private partnerships have gained prominence as a means of service delivery in the recent past. This has been attributed to a number of factors including room for financial innovation. The ability of public private partnerships to incorporate financial innovation enhances access to funds, an important element in ensuring successful implementation of the project especially for projects which require huge initial capital outlay. The study purposed to determine the effect of financial innovation on adoption of public private partnerships in Kenyan public universities. The specific objectives were to evaluate the influence of syndicated loans and innovative debt instruments on adoption of public private partnerships. The research employed a descriptive research design targeting a population of 223 comprising of purposively selected employees from nine public universities. A sample size of 143 was used. Data collection was conducted by way of administering a structured questionnaire. From the findings, it was established that use of syndicated loans and innovative debt instruments had a statistically significant effect on adoption of public private partnerships. Based on the study findings was concluded that financial innovation has a significant positive influence on adoption of public private partnerships in Kenyan public universities. It is therefore recommended that the government should create an enabling environment for introduction of more innovative debt instruments in the financial market in order to guarantee availability of funds for public private partnership projects in Kenyan public universities.

Key Words: *Public Private Partnerships, Adoption, Financial Innovation, Syndicated Loans, Debt Instruments.*

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I. Introduction

1.1 Background of the Study

While the responsibility of providing infrastructure was solely bestowed on governments in the past, over the years there has been a shift towards participation of the private sector. This has been enabled through formation of public private partnerships (PPP). This relates to an arrangement where the public sector entity engages a private entity in to provide public goods or serviceswhich would ordinarily be delivered by a public entity (Mohammed, Abdulkadir and Usman, 2018). The recent past has witnessed an enormous increase in use of public private partnerships in provision of public goods and services (Mouraviev and Kakabadse 2016). This has been attributed to a multiplicity of variables including ability of public private partnerships to raise huge sums of capital through employment of innovative financing techniques. Financial innovation can be attained through adoption of new financial instruments which serve to avail additional funding required in PPP projects (Kolodiziev, Tyschenko and Azizova, 2017). The ability to generate more funding through use of innovative financing techniques guarantees completion of the project especially in cases where heavy initial capital outlay is required.

1.2 Objectives of the Study

The overall objective of this study was to assess the influence of financial innovation on adoption of public private partnership in Kenyan public universities. Specifically the objectives of the study were as follows.

i) To assess the influence of syndicated loans on adoption of public private partnerships in Kenyan public universities

ii) To determine the influence of innovative debt instruments on adoption of public private partnerships in Kenyan public universities.

II. Literature Review

The essence of innovation is to create a new thing in order to solve societal problems. Innovation may also be described as design improvement (Zhang and Chen, 2013).Lerner and Tufano (2011) describe financial innovation as a situation where new financial instruments, technologies, markets and institutions are developed and then popularized. Financial innovation is promoted by risk-averse financiers on the basis that such innovations help in dealing with the inherent risks in financial transactions (Lember, Peterson and Scherer, 2014). The management of financial transactions is therefore enhanced through use of innovative financing techniques. Public private partnerships enhance adoption of latest financial instruments by giving latitude to the private sector entities to fund the project in the way they deem fit(Kolodiziev, Tyschenko and Azizova, 2017). Generally the level of financial innovation is related to the level of capital markets development in a given country. More developed capital markets has the potential of availing greater financial resources needed in financing public infrastructural projects (Pedo, Kabare&Makori, 2018). Financial innovation is therefore seen as a critical factor in public-private partnership discussions due to its ability to enhance availability of funds (Akhmetshina and Mustafin, 2015). However, it should be noted that in certain cases innovation may bring undesirable effects hence there is need to assess the expected outcomes before application in public private partnerships to ensure value for money is realized by the public entity (Soete, 2013).

A number of innovative financing options such as project bonds, green bonds, municipal and sovereign bonds as well as syndicated loans are available for PPP projects (ICPAK, 2018). The choice of the instrument to use will depend on the needs of the financier. Use of syndicated loans guarantees availability of adequate funds to complete a project especially where heavy capital outlay is needed on the onset of a project and also helps in spreading risk across a number of financiers (BIS, 2014). In the same spirit use of innovative debt instruments such as green bonds in financing of infrastructural projects continues to receive wide recognition all over the world going by the high volume of new issues (Thomas, 2014). The case is similar for infrastructure bonds which have increasingly been adopted as a way of financing PPP undertakings (Kim, 2016). Additionally SukukIjarah, which is sharia compliant instrument, may also be floated to raise more funds in a PPP project (PwC, 2017). Such instruments are not interest bearing but instead provide for sharing of the income generated between the holders over time. The underlying principle for such instruments is that risk and return is shared between the holder and issuer of the instrument. In general the ability of private sector parties to employ innovative financing techniques has led to increase in formation of PPP arrangements. This ensures that sufficient capital is availed to meet the requirements of the project in good time hence enhancing value for money to the procuring public entity.

III. Methodology

The study employed a descriptive design. A population of 223 comprising of university employees from public universities in Kenya with a record of involvement in public private partnerships was targeted. The study used a sample size of 143. Data collection was realized through use of a structured questionnaire. Respondents responded to statements paused on the basis a five point likert scale. Data collected was subjected to both descriptive and inferential statistics.

IV. Findings And Discussions

The study purposed to determine the effectthat financial innovation had on adoption of public private partnerships in Kenyan public universities. The indicators of financial innovation were syndicated loans and innovative debt instruments.

4.1 Descriptive Statistics for Financial Innovation on adoption of PPP

The descriptive statistics for financial innovation and its influence on adoption of public private partnership in Kenyan public universities are shown in Table 1. The findings show that majority of respondents were in agreement that floatation of innovative debt instruments leads to greater adoption of PPP as indicated by a mean of 3.93 which coincides with “agree” on the ranking scale. In addition the findings indicate that there was concurrence among respondents that provision for cofounding of projects encourages adoption of PPP as evidenced by a mean of 3.86. This corresponds to agree on the provided ranking scale. The findings also show that the period required for loan repayment PPP projects is usually long as indicated by a mean of 3.90 which coincides with agree on the ranking scale. This can be related to the fact that the funds involved are usually huge therefore immediate repayment would occasion cash flow crisis to the project.

Table 1.
Descriptive Statistics for Financial Innovation on Adoption of PPP in Kenyan Public Universities

Statement	N	Min	Max	Mean	SD
1. Use of innovative Debt instruments leads to raising of large funds for a PPP project.	123	2	5	3.8	0.893
2. Some debt instruments have a long repayment period hence suitable to fund a PPP.	123	1	5	3.81	0.899
3. Ability to float innovative debt instruments leads to initiation of PPP projects,	122	1	5	3.93	0.771
4. PPP encourages co-funding of projects by way of syndicated loans.	121	2	5	3.67	0.910
5. Co-funding of projects ensures availability of funds to complete a PPP project.	123	1	5	3.75	0.845
6. Provision for co-funding encourages initiation of PPP projects.	123	2	5	3.86	0.813
7. PPPs have flexible repayment modes.	123	1	5	3.66	0.913
8. Repayment period for PPP capital is usually long.	123	1	5	3.90	0.936
9. Flexibility in repayments leads to increase in the number of PPP proposals initiated.	122	1	5	3.81	0.705

Key: N= Sample size, Ranking scale for the mean: 1.00-1.80 (Strongly Disagree), 1.80-2.60 (Disagree), 2.60-3.40 (Neutral), 3.40-4.20 (Agree), 4.20-5.00 (Strongly Agree), Min = Minimum, Max = Maximum, SD = Standard Deviation.

4.2. Testing Adequacy of Sample for Factor Analysis on Financial Innovation

Kaiser-Meyer-Olkin (K.M.O) measure and the Bartlett's test of Sphericity were employed in determining sample adequacy. The results in Table 2 show a KMO value of 0.838, which is greater than the minimum recommended value of 0.5. Additionally at 95% level of significance,a significant Bartlett's Test of Sphericity was found as represented by p-value of 0.001 which is less than 0.05.

Table 2
Kaiser-Meyer-Olkin and Bartlett's Test on Financial Innovation

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.838
Bartlett's Test of Sphericity	Approx. Chi-Square	55.645
	Df	36
	Sig.	.001

4.3 Factor Analysis for Financial Innovation

Factor analysis was undertaken so as to explain the variability among the observations and also to ascertain the presence of any correlation between the variables with a view to eliminating redundant data. Nine (9) items comprising measures of financial innovation were subjected to a variance test. Based on the factor loadings, seven (7) items were found to be valid. Normally 0.5 factor loading is the minimum acceptable. The outcome of factor analysis as shown in Table 3 indicate that there were two major factors that had highest influence on financial innovation, cumulatively accounting for a total of 42.7 percent of the entire variation. This means that, 42.7 percent of the common variance shared by the nine constructs was attributed to just two factors. Component 1 accounted for 22.1 percent while component 2 explained 20.6 percent of the aggregate variance. The two major factors had Eigen values greater than 1.

Table 3
Total Variance Explained for Financial Innovation

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.099	23.319	23.319	1.992	22.131	22.131
2	1.748	19.421	42.740	1.855	20.609	42.740
3	.901	10.010	52.750			

4	.897	9.965	62.715
5	.869	9.654	72.369
6	.830	9.223	81.592
7	.762	8.464	90.056
8	.483	5.368	95.424
9	.412	4.576	100.000

Extraction Method: Principal Component Analysis.

For purposes of further interpretation of the two components, a rotation component matrix was obtained with the findings indicate in Table 4. The coefficients of the rotation matrix show that the major loadings in component 1 relate to items on syndicated loans. Use of syndicated loans guarantees availability of funds necessary to complete the project. For component 2, the main loadings relate use of innovative debt instruments. Employment of innovative debt instruments such as infrastructure bonds enhances availability of funds

Table 4
Rotated Component Matrix for Financial Innovation

Statement	Syndicated Loans	Innovative Debt Instruments
1. PPP encourages co-funding of projects by way of syndicated loans.	.891	.213
2. Provision for co-funding encourages initiation of PPP projects.	.557	.062
3. Ability to float innovative debt instruments leads to initiation of PPP projects,	.696	-.108
4. Co-funding of projects ensures availability of funds to complete a PPP project.	.685	.173
5. Use of innovative Debt instruments leads to raising of large funds for a PPP project.	.123	.836
6. Some debt instruments have a long repayment period hence suitable to fund a PPP.	.243	.832
7. Ability to float innovative debt instruments leads to initiation.072 of PPP projects		.625

Further a descriptive analysis of the two extracted indicators of financial innovation (innovative debt instruments and syndicated loans) was conducted. The two indicators were extracted in the rotation matrix. From the analysis the standard deviation, mean and the Cronbach's alpha for two factors was determined. The results as indicated in Table 5 show that co-funding as measured by use of syndicated loans attained a Cronbach's alpha of 0.806 while use of innovative debt instruments achieved a Cronbach's alpha of 0.791. These findings were deemed to be reliable on the basis of the Cronbachs alpha values obtained, since they were greater than the recommended minimum of 0.7.

Table 5
Analysis of Mean and Reliability of Financial Innovation Factors.

Component	Mean	Standard deviation	Cronbach's Alpha
Syndicated Loans	4.268	0.628	.806
Innovative Debt Instruments	4.113	0.561	.791

Key: 1.00-1.80=Strongly Disagree, 1.80-2.60=Disagree, 2.60-3.40=Neutral 3.40-4.20=Agree, 4.20-5.00 =Strongly Agree

Based on the constructed scales for the two factors, it was observed that the adoption level of PPP was influenced by use of syndicated loans as represented by a mean of 4.288, coinciding with strongly agree on the provided rankings. Employment of syndicated loans in funding PPP guarantees availability of funds to undertake the project. The finding is in agreement with that of OECD (2014) who indicated that pooling of investor capital by way of syndicated loans guarantees availability of funds necessary for successful

implementation of public private partnership project. The findings also show that use of innovative debt instruments enhances uptake of PPP as indicated by a mean of 4.113 corresponding to "agree" on the ranking scale. This finding postulates that possibility of employing innovative debt instruments guarantees that adequate funding is made available for successful implementation of the PPP project. The finding concurs with that of PwC (2017) who found that use of innovative financing instruments such as SukukIjarah guarantees availability of adequate funds thereby enhancing uptake of public private partnership projects. Hence the guarantee that funds will be made available drives public entities to engage in public private partnerships.

4.4 Regression Analysis between Financial Innovation and Adoption of PPP in Kenyan Public Universities

Use of regression analysis was employed to ascertain the influence of financial innovation on adoption of PPP in Kenyan public universities. The financial innovation indicators were taken as the independent variables. The results indicated in Table 6 show an R^2 result of 0.185 or 18.5%. This means that financial Innovation as indicated by syndicated loans and innovative debt instruments explained a total of 18.5% of the total variability in the dependent variable, adoption of public private partnerships in Kenyan Public Universities. The balance of 81.5% of the change in adoption of public private partnerships in Kenyan public universities was as a result of other factors not included in the model.

Table 6

Model Summary of Financial Innovation and Adoption of PPP in Kenyan Public Universities

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.430[a]	.185	.173	1.65863

a. Predictors: (Constant), syndicated loans and innovative debt instruments

4.5 ANOVA for Financial Innovation and Adoption of PPP in Kenyan Public Universities

The results of ANOVA test were shown in Table 7. The findings indicate that the model fitted on the data was statistically significant as supported by F value of (3.887, 3, 119) with a p-value (.000) which is lower than the significance level of 0.05. Based on these findings the null hypothesis that "financial innovation has no statistically significant influence on adoption of public private partnerships in Kenyan public universities" is rejected.

Table 7

ANOVA for Financial Innovation and Adoption of PPP in Kenyan Public Universities

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	20.706	3	6.902	15.685	.000
	Residual	211.310	119	1.776		
	Total	232.972	122			

Regression coefficients were determined support the ANOVA findings on Financial Innovation and Adoption of public private partnerships in Kenyan Public Universities. The findings in Table 8 show that there was a positive relationship between financial innovation (as measured by syndicated loans and innovative debt instruments) and adoption of public private partnership in Kenyan Public Universities. The findings show presence of a statistically significant positive relationship between syndicated loans and adoption of PPP in the Kenyan public universities (β=0.152; t=3.486; p=0.002). P is < 0.05, the significance level. Public entities prefer to enter into PPP so as to benefit from use of syndicated loans which ensures availability of adequate funds by pooling of resources from a group of financiers. This result is in agreement with that in OECD (2014) who contends that bringing together a number of financiers ensures that sufficient funds are made available successful implementation public private partnership projects.

Further the outcome indicates that the relationship between use of innovative debt instruments and adoption of public private partnerships in Kenyan public universities is positive and statistically significant (β=0.127; t=3.629; p=0.000). The p value is < 0.05, the significance level. The result implies that public entities are driven to adopt public private partnerships with a view to employing innovative debt instruments to raise the needed funds. Such use of innovative debt instruments guarantee availability of necessary for successful implementation of PPP projects, which normally require heavy initial capital outlay. This result is in concurrence with that of PwC (2017) who indicated that employment of innovative financing instruments such as SukukIjarah guarantees availability of adequate funds hence enhancing uptake of public private partnership projects.

Table 8
Coefficients of Financial Innovation and Adoption of PPP in Kenyan Public Universities

	Unstandardized coefficients		Standardized Coefficients		
	B	Std. Error	B	t	Sig.
Constant	1.240	0.044	_	28.176	0.000
Syndicated Loans	0.164	0.047	0.152	3.486	0.002
Innovative Debt Instruments	0.138	0.038	0.127	3.629	0.000

On the basis of the summary presented in Table 8, a regression model in the nature, $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$ can be fitted as follows:

$Y= 1.240+ 0.152X_1 + 0.127X_2 + e$

Where

Y – Adoption of PPP

X_1 – Syndicate Loans

X_2 – Innovative Debt Instruments

e – Error term.

This means that holding other factors constant, a unit increase in availability of syndicated loans would result in a 15.2 percent increase in adoption of PPP in Kenyan public universities. On the other hand, holding all other factors constant, a unit increase in availability of innovative debt instruments would cause 12.7 percent hike in adoption of PPP in Kenyan public universities. Of the two indicators of financial innovation, it can be observed that employment of syndicated loans has a higher influence on adoption of public private partnership than use of innovative debt instruments.

V. Conclusions

The study purposed to evaluate influence of syndicated loans as well as innovative debt instruments on adoption of public private partnerships in Kenyan public universities. The results indicate that both independent variables had a positive influence on adoption of PPP in Kenyan public universities. This was shown by the positive coefficients of determination implying that the variations in adoption of PPP were as a result of the variables under study. At 5% significance level, the influence of syndicated loans and innovative debt instruments on adoption of PPP was found to be statistically significant. The null hypotheses were rejected. Therefore the alternate hypotheses were accepted. Thus syndicated loans and innovative debt instruments had a statistically significant positive influence on adoption of public private partnership in Kenyan public universities. This means that the change in the levels of adoption of PPP as a result of variation in the study variables was not by chance.

VI. Recommendations

The study recommends that the government should strive to create a conducive environment to enhance the financial system that will lead to introduction of more innovative financial instruments to increase availability of funds. This will enhance adoption of public private partnerships in Kenyan public universities. Secondly the study recommends cofounding of PPP projects through syndicated loans so as to guarantee availability of funds especially for projects requiring huge initial capital outlay.

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