



## **EFFECT OF PUBLIC SECTOR INSTABILITY ON PPP PROJECTS IN THE AFRICAN SUB-SAHARAN REGION**

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### **Abstract**

*Public private projects or PPPs have acquired importance as a progressive approach to finance infrastructure and services in the SSA area, since the link between infrastructural deficit and funding has always been a burden to all developing nations - SSA region in particular. However, studies have shown that the relationship between a country's socioeconomic characteristics and the performance of PPP projects has an impact. Using a binary logit regression model, we investigated the extent to which socio-economic characteristics impact the success or failure of earlier PPP initiatives in the SSA area, as well as the amount to which these characteristics played a moderating effect in PPP project performance. Our findings further confirmed the link between the performance of PPP projects during the period 1996 to 2019 in 33 countries.*

*Keywords: Public Private Partnership, Infrastructure Project, Public sector, Governance Indicator*

### **INTRODUCTION**

Establishing sophisticated, sustainable and reliable infrastructure is critical to meet the expanding aspirations of billions of people across the world. Nevertheless, the relationship between Infrastructural gap and funding have always been a burden to all developing countries. High Upfront Cost, Procurement Cost, expertise and public debt are

huge challenges to the capabilities of the public sector to execute and expand in more complicated infrastructure projects for a long period of time. After the introduction of the public private partnership PPP investment model between the 1990s and 2000s it had a great impact on the growth infrastructure development in developing countries. In particular Many countries according to world bank organization: Brazil, China, India, Mexico, and Turkey earned the distinction of being the top five countries in terms of total investment commitments in infrastructure PPPs. public-private partnerships PPP are being increasingly used to deliver critical infrastructure projects within developing countries. Public-private partnership PPP are arrangements between two or more public and private sectors of a long-term nature. Private capital often finances government projects and services up front, then reaps returns from taxpayers and/or customers over the life of the PPP contract.

According to the World Bank PPP refers to arrangements, typically medium to long term, between the public and private sectors whereby some of the services that fall under the responsibilities of the public sector are provided by the private sector, with clear agreement on shared objectives for delivery of public infrastructure and/ or public services (What are Public Private Partnerships, 2014). In another definition, the World Bank and other Institutions adopt a broader view to define PPP as a long-term contract between a private party and a government entity, for providing a particular public asset or service, in which the private party bears significant risk and management responsibility, and remuneration, is linked to performance (Public Private Partnerships Reference Guide, 2014). Multiple nations have adopted public-private partnerships, which are typically utilized for infrastructure projects. They've been used to construct, equip, operate, and maintain schools, hospitals, transportation networks, and water and sewerage systems, among other things. Private actors, companies, and governments have collaborated since the founding of independent nations, mostly for the sake of tax collection and colonization. Contemporary "public-private partnerships," on the other hand, emerged at the turn of the century. They were linked to neoliberal policies aimed at increasing private sector engagement in government management for providing a public asset or service. Initially, governments throughout the globe saw them as a way to fund new or renovated public-sector assets outside of their financial sheets. This image of PPPs was heavily criticized around the turn of the 2000, as taxpayers or users were still required to pay for those PPP projects, with hefty interest.

PPPs are still divisive as a funding method, owing to concerns that the public return on investment is smaller than that of the private donor. Privatization and contracting out of

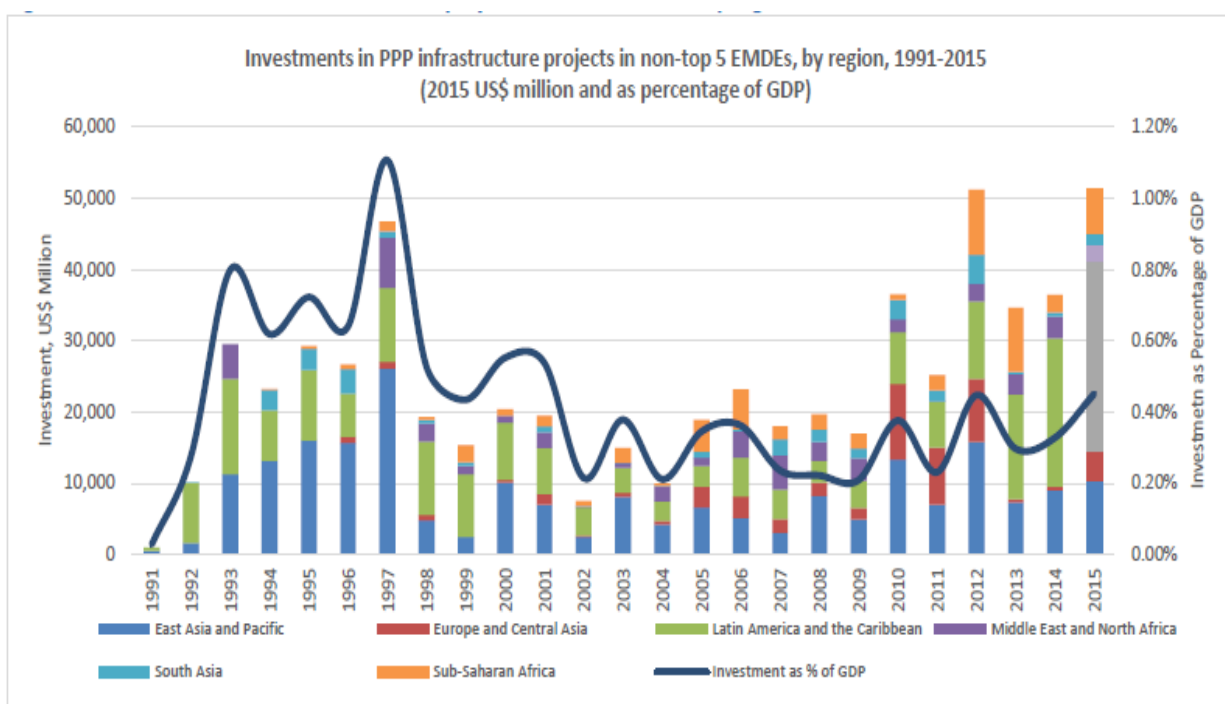
government services are closely connected topics in PPPs. The absence of a common knowledge of what a PPP is, as well as the secrecy surrounding its financial specifics, makes determining whether PPPs are effective a difficult task (Hodge, G. A and Greve, C.2007). Proponents of PPP emphasize risk sharing and innovation creation, while detractors complain about greater costs and accountability difficulties (Hodge, G.A. and Greve, C. 2016). For instance, evidence of PPP success in terms of value for money and efficiency is uneven and frequently lacking (Mols, F. 2010).

PPPs drew rapid attention in developing countries, despite their origins in first-world countries. This is because the PPP model offered new sources of finance for infrastructure projects, which might lead to job creation and economic growth. However, in these nations, the lack of investor rights guarantees, commercial secrecy rules, and specific state investment on public infrastructure made the implementation of public–private partnerships challenging. In most cases, PPPs in the nations are unable to rely on consistent income from user fees. The Public-Private Infrastructure Advisory Forum of the World Bank aims to address these issues. However, the success of PPP projects in developed markets is unlikely to be easily transferrable to developing markets, and the usefulness of contractual framework unpinning PPPs in such countries is worth questioning. Basic infrastructure is often not accessible to the developing countries: the number of challenges facing public private partnership projects (PPP) has always shown higher risks when it comes to Africa and more specifically sub-Saharan region<sup>[1]</sup> (compared to other developing regions such as East-Asia and pacific region).

Many factors are involved in making a successful PPP project, Edwards (2010) explained that PPP projects are faced with challenges like the following: High Upfront Cost, High Procurement Cost, Inadequate Expert Knowledge, Citizenry Rejection and Public Opposition. Mittal and Kalampukah (2009) listed the following points as partnership challenges: Conflict of interest of partner organizations, diversity of underlying goals among partner organizations, Insurance of Power Balance, Communication barriers among partner organizations, Difficulty in Resource Commitment, Ambiguous Definition of Contracts and Agreements.

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<sup>1</sup> With SSA region countries being Angola, Botswana, Burkina Faso, Cameroon, Congo Democratic Republic, Congo Republic, Cote d'Ivoire, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo and Uganda.



Source: PPI Database, World Bank, as of November 2015.

Note: Data covers projects in energy, transport, and water and sanitation that reached financial closure from 1991-2015, excluding telecom, divestitures and merchants. All investment is at 2015 US\$ price level.

Figure 1. investment of PPP in infrastructure per region

According to the world bank organization (2019) the PPP projects faces more specific problems such as: Monopoly of service providers, Unnecessary/inappropriate engineering and quality standards, Judicial system, Regulator, Community engagement through consultations and Billing collection. However, it is important to note that without a proper enabling environment (such as strong regulators) and proper project structuring, PPPs may not achieve improved services delivery to the targeted group of beneficiaries, and may only deepen existing structural fault-lines. Figure 1 illustrates the investment of PPP in infrastructure per region as it may reflect the influence of these factors on the PPP growth. Thus, this study focuses on the effect of socio-economic stability on PPP projects in the African sub-Saharan region SSA: given that the region has the lowest growth rate in PPPs compared to other regions. And most countries in the region experience low levels of political instabilities and development. AbdulGaniyu Otairua (2013) denoted that the socio-economic characters are an important variable in any phase of growth, and it appears to be among most recognizable factors between developing and developed countries. In our study our interest is trying to unveil the relationship in these characters and their influence on PPP projects in the SSA region. By trying to answer *whether if the socio-economic characteristics played an influential role in the success/failure of*

*previous PPP project in the SSA region? And what extend influence of these characteristics play a moderating role?*

Answering some of these Points may facilitate the planning, design, implementation and maintenance of programs and public services, PPPs typically need new approaches, policies and skills. And formulating these approaches dose not entail without a clear understanding on the socio-economic characters of a given country. This study highlights these socio-economic characters and their influence on previous PPP projects.

## **LITERATURE REVIEW**

Even though PPP has been reputed as an effective mechanism for developing facilities in all industries, it has its limitations, as any good idea. Over the year 2004 about 205 national PPP contracts were signed worldwide, costing \$52 billion. Julie De Brux (2010), and the demand for PPP procurement strategy has expanded. Given the fact that one of the major reasons that gained this strategy its attractiveness among developing countries is the constraint on public sector revenues, it is not surprising that resource rich countries in the SAA region would find PPPs attractive. However, two influential studies\_ Sachs and other (2004) and the united nation commission for Africa (2005) \_ identify significant infrastructure expenditure needs in the sub-Saharan Africa. Their estimates of annual needs range from 9 to 13 percent of GDP for at least the next 10 years. Moreover, there are preconditions for introducing a good PPP process which must be on the ground to promote the process; top of these are PPP legislation, cost-benefit analysis and creating the right environment were critical for PPP success, J. Babalola and O. Odunowo (2010).

Political stabilization is an important variable in any phase of growth, and it appears to be among the most recognizable influences between developing and developed countries. Political stability does not mean the absence of violence alone; it also includes program continuity, which is responsible for development failures in developing countries, Often, New regime tends to see past government services termination as their first step of office thereby creating additional risks for PPP investors, C.M. Tam (1999). Although PPP is not a panacea for solving all the problems of the building industry and infrastructure but its focus on risk control, value management , integrated architecture and development; Costing the life-cycle and mutual relations; makes it an outstanding method of procurement, AbdulGaniyu Otairua (2013). The primary significant benefit of the PPP strategy is its versatility in adjusting the compensation framework and risk-sharing to project characteristics and to the economic and operational climate. But due to this mobility, it could be unwise to look for a specific PPP model that can be repeated across countries, Patricia Galilea (2010).

One of the most common criticisms associated with public-private partnerships is the lack of accountability and transparency. Part of the reason for the lack of proof of PPP effectiveness is that most financial information of PPPs is hidden behind commercial confidentiality restrictions, making them inaccessible to researchers and the general public. Moreover, throughout the late 1990s and the early 2000s Some studies, such as those conducted by economist Antonio Estache, are now being used to support PPP critiques provided by civil society organizations (e.g., Alexander 2013). International Rivers (Bosshard, 2012); Public Services International (Hall 2015); Heinrich Boell Foundation (Alexander 2013); CEE Bankwatch Network (2008); Oxfam (Marriott 2014); the Bretton Woods Project (Alexander 2013); the Heinrich Boell Foundation (Alexander 2013). These organizations have long been skeptical of PPPs, but their justifications against them have tended to be more ideological than evidence-based in the past, making them less persuasive. However, the increasing use of evidence-based research reported on by recognized social scientists such as Estache, Klein, and others has given their arguments greater weight, necessitating more careful consideration by PPP proponents.

The literature devotes special attention to the difficulties in PPP agreements between the public and private sector (Grout, 1997; Hart, 2003; Laffont, 2000; Laffont & Martimort, 2002). While many countries use PPP frameworks, due to differing cultural factors and practices in planning and maintaining public works, shortcomings in legislative and institutional frameworks and varying degrees of political understanding and recognition of the PPP definition, we find diverse ways of implementing this approach. Hammami, Ruhashyankiko, and Yehoue (2006). highlight the potential significance of a country's past experience in PPPs in attracting further PPP projects to that country. Several research on corruption and its effect on economic development have been carried out (Gould & Amaro-Reyes, 1983; Huntington, 1968; Klitgaard, 1991; Leff, 1964; Mauro, 1995; Schleifer & Vishny, 1993; United Nations, 1989), and none were carried out using a direct microeconomic paradigm.

This research, therefore, examines the impact of socioeconomic instability on PPP projects in sub-Saharan Africa (SSA), given the level of institutions, For two factors, the area is of special significance. First, compared to other regions of the world, the region faces lower levels of financial growth. (Allen et al., 2014; David, Mlachila, & Moheeput, 2014). Second, in most SSA countries, poor institutions are underlying behind slow growth rates. There is a presumption that the inadequate efficiency of institutions is the primary cause of the lower levels of SSA's financial and economic growth, Olufemi A. Aluko (2020).

## HYPOTHESIS DEVELOPMENT

As PPP strategies played a crucial factor in developing infrastructure in other regions, we view it's not the same case for our region of interest. Studies such as AbdulGaniyu Otairua (2013) denoted that the socio-economic characters are an important variable in any phase of growth, and it appears to be among most recognizable factors between developing and developed countries. Our interest is trying to unveil the socioeconomic deterrents and PPPs performance.

### Country's socio-economics deterrents

The public sector (sometimes known as the state sector) is a component of the economy that includes both government services and government-owned businesses. The public sector encompasses public goods and governmental services such as the military, law enforcement, infrastructure, public transit, public education, health care, and government employees such as elected politicians. The public sector may offer services that a non-payer cannot be denied, services that benefit society as a whole rather than simply the person who utilizes them. The stability of a country, based on its socio-economic conditions, is important in order to attract private and foreign investors, (Dailami & Klein, 1998). and has also proved to be important in limiting the number of PPPs in a country (Hammami et al, 2006). We will analyze its effects on the performance of a PPP project. Poor socio-economic conditions may hinder the success of a PPP project, whereas a good socio-economic performance may foster better outcomes.

*Hypothesis 1. probabilities of successful PPP projects are correlated with the Socio-economic conditions in the country.*

**Voice and accountability:** pertain to capturing perceptions of the extent to which a country's citizens are able to participate in selecting their government. If a developed country's democracy is considered to have a low level of voice and accountability, it means the government is less responsive to its people. Which can have significant negative impact on the public support of a PPP project. Moreover, in a country with a low voice and accountability index, a PPP agreement will have government support, but it may be subject to a shift in support due to unanticipated change via democratic vote.

*Hypothesis 1a. The more a country is perceived as having a high/low voice & accountability index, the more it is likely that the PPP has a positive/negative outcome.*

**Political Stability and Absence of Violence/Terrorism (PV):** tests public expectations of the possibility of the regime being destabilized or overthrown by illegal or aggressive means, such as politically motivated violence and terrorism. Which is noted to have destructive results in SSA region countries, where its more possible to trigger a civil war, impacting a country's economy and growth rate including PPP projects.

*Hypothesis 1b. previous PPP projects correlates positive/negative in relationship with low political stability index.*

**Government Effectiveness (GE) & Regulatory Quality (RQ):** the ability to detect and interact with obstacles hindering PPP project performance requires a level of quality in civil services and a degree of independence judicial & legislative departments from political pressures. Moreover, a sound agency for formulation and implementation policies with credibility from the government's commitment to policies.

*Hypothesis 1c. SSA region country with the highest/lowest government effectiveness, Regulatory Quality (RQ) index have a higher/lower chance to obtain more concluded projects.*

**Regulatory Quality (RQ):** capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

*Hypothesis 1d. The more a country is perceived as having a high/low Regulatory quality index, the more it is likely that the PPP has a positive/negative outcome.*

**Rule of Law (RL):** perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, police, and courts are a good indicator for the country's ability to combat corruption.

*Hypothesis 1e. The more a country is perceived as having a high/low rule of law index, the more it is likely that the PPP has a positive/negative outcome.*

## RESEARCH METHODOLOGY

### Population and Sampling

To test our hypotheses, we collectively processed a set of 550 project over the period from 1993 to 2018, project status varies from concluded, active, distressed and cancelled or distressed projects in the Sub-Saharan region between 1993 to 2019 details given in table 1.



Table 1. SSA region study population and projects status

PROJECT STATUS	concluded	active	cancelled	distressed
<b>y = 1</b>	33	505	0	0
<b>y = 0</b>	0	0	32	13
				Subtotal= 587
	(37 projects are excluded for missing data )			total = 550

All projects' details are a part of the Private Participation in Infrastructure Projects Database, which has projects from four sectors: energy, telecommunications, transport, and water. The original database is a joint product between the World Bank and the Public-Private Infrastructure Advisory Facility (PPIAF). The PPI Database represents the best efforts of a research team to compile publicly available information such as: Country, year, status, total investment, type of PPP and revenue which sources needed information for our dependent variable.

### Independent variables

Traditions and structures through which a country's authority is exercised are referred to as governance. This encompasses the process of selecting, monitoring, and replacing governments; the government's ability to devise and implement sensible policies; and people' and the state's respect for the institutions that control economic and social relations between them. We are employing the worldwide governance indicator WGI annual report, which source's measurements for our independent variables: voice & accountability, political stability, rule of law, regulatory quality and government effectiveness.

### Worldwide governance indicator

The Worldwide Governance Indicators (WGI) is a research dataset that compiles the opinions of a significant number of business, citizen, and expert survey respondents from both developed and developing nations on the quality of governance. These figures come from a variety of sources, including survey institutions, think tanks, non-governmental organizations, international organizations, and private sector businesses. The World Governance Institute, the Brookings Institutions, the World Bank, its Executive Directors, or the countries they represent do not necessarily reflect the official views of the Natural Resource Governance Institute, the Brookings Institutions, the World Bank, or the countries

they represent. The World Bank Group does not utilize the WGI to distribute resources. Reports aggregate and individual governance indicators for over 200 countries and territories over the period 1996–2020, for dimensions of governance: voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law. The data base uses five indices and averaged to range between –2.5 and 2.5, with higher (lower) scores indicating strong (weak) governance institutions. The Worldwide Governance Indicators (WGI) are a long-standing research project to develop cross-country indicators of governance. These indicators are based on several hundred variables obtained from 31 different data sources, capturing governance perceptions as reported by survey respondents, nongovernmental organizations, commercial business information providers, and public sector organizations worldwide.

### Modeling procedure

Binary logit regression model was used to estimate the relationship between PPP performance and socio-economic characters of public sector (Hypotheses 1;1a,1b,1c,1d,1e). moreover, compared to other types of regression models, we verified that this model is most suitable for our study, cause its used to model dichotomous outcome variables log odds of the outcome is modeled as a linear combination of the predictor variables.

Model (1): generalized binary logit model - Berkson (1944)

$$\ln\left(\frac{P}{1-P}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_K X_K \quad (1)$$

Where,

P is the probability of dependent binary variable, taking the value zero, if the project's status was either cancelled or distressed, and the value of 1 if the project is active or concluded, x is the vector of independent variables, and  $\beta$  is the vector of parameters. The logistic function was developed as a model of population growth and named "logistic" by Pierre François Verhulst in the 1830s and 1840s, under the guidance of Adolphe Quetelet. (Cramer 2002). Furthermore, Joseph Berkson's work over several decades, beginning with Berkson (1944), where he created the term "logit," was crucial in the creation of the logistic model as a broad alternative to the probit model.

## RESULTS & FINDINGS

### Model fitness tests

Goodness of model fitness results indicated that the discrepancy between our determined value and observed values have no abnormalities, table 2 shows statistical

significance observed in Omnibus Tests of Model Coefficients which reflect that our model is significantly fit than the null model with a significance value of 0.002.

Table 2. Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	18.482	5	.002
	Block	18.482	5	.002
	Model	18.482	5	.002

We then compared our observed values with predicted values using our logit model – table 2.2 finding that 508 projects out of 508 were anticipated to succeed and zero projects out of 47 PPP Projects were predicted to fail, yielding a 91.5 percent overall statistically significant classification accuracy.

Table 3. Classification table

Observed		Predicted		Percentage Correct
		Y construct .00	1.00	
Step 1	Y construct .00	0	47	.0
	1.00	0	508	100.0
Overall Percentage				91.5

a. The cut value is .500

### Regression results

Our model was estimated as shown in table (), the model was our approach in modeling the hypothesis where we focused on the effect of the variable representing a countries socio-economic status with the combined PPP performance variables (hypothesis 1, H1a, H1b, H1c, H1d), As most of our variable were statistically significant. voice and accountability, Political stability, regulatory quality and rule of law showed statistical significance. Only Government effectiveness weren't high in significance. Yet still we are able to derive the nature of relationship. Moreover, the bulk of our hypotheses receive significant support. The variable expressing regulatory quality, as well as voice and accountability, has a substantial association with the success of a PPP project in all parameters. This appears since higher indexes of Regulatory quality, as well as Voice and accountability, indicate a more favorable climate for PPPs.

Table 4. Variable in the equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>								
Voice and Accountability	.586	.387	2.293	1	.130	1.797	.842	3.837
Political StabilityNoViolence	-.338	.303	1.247	1	.264	.713	.394	1.291
GovernmentEffectiveness	-.427	.712	.360	1	.548	.652	.162	2.633
RegulatoryQuality	2.064	.686	9.050	1	.003	7.879	2.053	30.235
RuleofLaw	-1.388	.716	3.758	1	.053	.250	.061	1.016
Constant	2.346	.208	127.817	1	.000	10.447		

a. Variable(s) entered on step 1: Voice and Accountability, Political StabilityNoViolence, GovernmentEffectiveness, RegulatoryQuality, RuleofLaw .

Consistent with Hypothesis H1a, we observe a positive association between voice and accountability variable with PPP performance. This relationship highlights that a country with a high index of voice and accountability may be prepared to facilitate better PPP project environment along with more jurisdiction. Infrastructure projects (motorways, ports, bridges, and so on) that need big upfront expenditures and a long payback time may be viewed as a huge government failure if they are not completed. This is especially true in developing SSA region nations, wherein infrastructure development might significantly enhance citizens' quality of life. Governments with a higher voice and accountability index are more effective in PPP projects because they appear to be more prepared to meet long-term requirements, potentially to maintain a populist stance view for elections. In a similar way, hypothesis H1d also have a positive relationship between Regulatory quality and success of a PPP, which also proves the importance of high Regulatory quality for institutions that govern economic and social interactions on the interest of a PPP project.

In terms of the political stability variable and rule of law were shown to have a negative correlation with countries perceived with weak capacity for government to effectively formulate and implement sound policies and laws, as the higher indexes for political stability and rule of law the lesser chances of having a successful PPP project, which is consistent with our hypothesis H1b and H1e. as we observe that sudden political shifts and rivalry may greatly hinder a PPP project progress. Governments and private sector frequently misjudge the magnitude and impact of political resistance to privatization plans. Governments who work hard to explain the necessity for PPPs and openly explore choices well before deals are inked reduce dissent. On the other hand, historically, lawlessness has been a major issue in Africa's SSA region governmental project delivery. Officials have discovered a variety of tactics to route contracts to preferred bidders, even with basic bids. PPPs allow significantly more leeway for manipulations by foreign or local enterprises or government officials that are difficult for the

public and anti-corruption institutions to notice since they deal with far more complicated services and therefore Rule of law index plays a major role on the success of PPP project.

Hypothesis H1c is not significantly validated by our model, the variable representing government effectiveness proves to be statistically insignificant. But its negative sign presupposes an assumption for negative relationship. Previous research (Galilea & Medda, 2007) found that this variable was statistically significant before the addition of variables like political stability and rule of law, yet its importance declined, and thus its significance fell. As a result, we'll continue to assess their significance as more projects (with more data) become available.

## **CONCLUSION:**

The relationship between Infrastructural gap and funding have always been a burden to all developing countries – SSA region in particular, PPP projects have gained relevance as a progressive way to finance transport infrastructure and services in SSA region. However, extent studies highlighted the relationship between socio-economic characters of a country play an influential role on the PPP projects performance. In this study, we explored the extent to which socio-economic features influence the success or failure of prior PPP projects in the SSA region, and the extent to which these characteristics influenced the performance of PPP projects. Our findings further supported the relationship between the performance of PPP project in a timescale between 1996 to 2019 and the socio-economic parameters of 33 country. In the SSA region, public sector stability in PPP agreements is critical not just for attracting new PPP projects, but also for creating greater confidence in the viability of existing ones. Projects developed in countries with governments perceived as having higher regulatory quality may boost the odds of incubating PPP initiatives by eight times. Voice & accountability are noticed to have 70% higher chances to have more stabled PPP environment. In our opinion, the majority of successful PPP projects are the consequence of strong political support. Especially in nations where political stability and the rule of law have been lacking in governing major enterprises. To ensure that they would obtain a satisfactory return on their investment, the private sector will require more assurance or commitment from a prominent political entity.

## **LIMITATIONS & FURTHER RESEARCH**

The absence of other variables that may have a significant impact on PPP performance, such as geopolitical importance and GDP growth of each nation in the SSA region, is an important shortcoming in our research. since we're looking at a metric that relates to economic performance Our future research will focus on gathering more specific data in order to widen our

findings. We'll compare the findings to those of a comparable study on the impact of public sector instability on PPP projects in Africa's Sub-Saharan area.

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