Statistical analysis of the impact of e-procurement practices and technological capability on innovation and organizational performance: Evidence from Ghana

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ABSTRACT

Within the specific context of the dynamic capabilities theory, this paper examines the role of e-procurement practices and technological adequacy in innovation and organizational performance within the institutions of the public sector in Ghana. The current study used a cross-sectional design to collect empirical data in the form of organizations that use a system of e-procurement. The target population was the procurement officers and the staff whose work is directly related to procurement in the selected organizations that are in the public sector. The purposive sampling method was applied to select respondents who had relevant experience, and a sample of 122 people was obtained. A structured questionnaire was used to capture data based on the perception of respondents of e-procurement practices, technological capability, innovation, and organizational performance. Preliminary analysis was carried out with the help of descriptive statistics, and the structural equation modelling was conducted to analyze the measurement model and to determine the structural association between the variables of the study. The results have shown that technological capability is a significantly higher determinant of innovation compared to e-procurement practices, and its effects on organizational performance are rather indirect, i.e., via innovation, but not through a direct channel. E-procurement practices have a great positive influence on organizational performance, but in comparison, the effect on innovation is not so strong. These findings indicate that innovation plays a key mediating role in the performance outcomes in digitally enabled procurement settings. The research finds that enhancing technological capability is critical to promoting innovation that in itself improves performance within the government. Based on these insights, the study recommends that public sector institutions increase investment in technological infrastructure to strengthen their capability base, prioritize continuous capacity building to improve the digital competencies of procurement personnel, and integrate innovation-driven approaches into e-procurement strategies to maximize performance gains.

Keywords: E-Procurement, Innovation, Organization, Structural Equation Modelling

1. INTRODUCTION

Procurement has seen severe changes in recent years, and the lack of technological capacity was defined as one of the biggest barriers to the development of the individual organisations as well as the entire nation (Figueiredo, 2016). Modern organisations are increasingly relying on such innovations to provide cost effective solutions, customer loyalty, as well as creative strategies. The introduction and use of information technologies have an enormous effect on organisational performance, as it has triggered a transition toward sustainable e-procurement methods, rather than conventional ones, due to the increasing power of technological potential and innovations (Ibem et al., 2016). These innovations do not only make procurement processes smoother, but they also foster various environments in which solution innovation is encouraged. The procurement and acquisition management field has significantly evolved due to the technological inventions. Contemporary digital acquisition management systems are now accessible in real time to procurement data, contract requirements and supplier relations and, as such, give stakeholders the ability to oversee and control tendering processes with more efficiency.

These systems streamline administrative operations by automating them and enhance increased transparency in sourcing decisions. According to Harland et al. (2021), digitalisation has strengthened procurement resilience and flexibility and allowed organisations to quickly make changes in times of disruption, including those associated with the COVID 19 pandemic. The centralised acquisition management systems enhance the visibility of contracts and performance control through the adoption of complex analytics and data visualisation strategies. The use of predictive analytics in procurement portals is one of the ways through which organisations have been able to minimise waiting times, as well as enhance accuracy in their supply chains, especially when there are many suppliers in the supply chain. They provide a customisable dashboard that will unify procurement performance indicators, helping managers make

contracts aligned with the organisational goals and objectives and comply with the regulatory standards and contractual obligations (Shaw et al., 2022).

In addition to realizing efficiency benefits, acquisition portals reduce operational and strategic risks across the supply chain by a significant margin. Audit trails and real time visibility help in the early detection of risks and strategic diversification of suppliers. Advances in blockchain technology and artificial intelligence also enhance the security and auditability of their procurement by ensuring the stability of their data on transactions (Kshetri & Voas, 2022). As Ahmad et al. (2019) note, Technological Capability (TC) concept implies the usage of all tools facilitating the innovation process and acquisition of theoretical and practical competence. The power of technological capability is realised both directly and indirectly but ultimately, the power has a great influence on organisational performance. The weaknesses peculiar to e-procurement in Ghana are lack of legal frameworks, opposition by users and practitioners, inability to computerize procurement processes, expensive acquisition, ineffective infrastructure, and sensitivity issues. These issues impede the potential and advantages of e-procurement systems, which form a dichotomy between the barriers to the adoption of e-procurement and the advantages that the organisations have reaped after adopting the system. The benefits include cost, sharing of information and increased transparency, which is essential to the modern organisational performance (Oteki, 2019).

Turnaround time in procurements has been a phenomenon in the Ghanaian case, which has resulted in a shortfall in monetary and time costs. Such delays highlight the importance of effective e-procurement activities to facilitate business operations and help minimize wastage. This research will fit in the existing literature by empirically exploring how e-procurement could be used to improve the performance of procurement in public sector organisations in Ghana, a place where the subject has not been extensively researched, especially in developing economies. Despite the fact that the previous studies have largely relied on the adoption of e-procurement in the private sector or in developed economies, this study provides the contextual observation of the impacts of e-procurement on procurement efficiency, transparency, and accountability within the public sector setting. The study offers evidence-based suggestions to policy makers and practitioners through quantitative analysis and primary data hence filling both the geospatial and empirical gaps in the existing literature on e-procurement and government performance.

1.1 Statement of the Problem

Existing studies have explored e-procurement, technological capabilities and organization performance through empirical observation but most of the time, it is lacking a sound theoretical context. This part is a synthesis of key viewpoints and defines the gaps that are leading to the current investigation. One of the existing opinions is that e-procurement enhances the performance of organizations and cultivates efficiency, minimising expenses, and improving transparency (Ahmad et al., 2019; Daniel & Ngugi, 2018; Oteki, 2019). Even more recent studies by Demeter et al. (2025) prove that supplier-group stability produces a quantifiable effect on procurement performance in the realm of the public sector, thus, proving the topicality of the institutional and capability-based models. However, this line of research is prone to viewing e-procurement as a technical intervention project and not as an integration of larger organizational capacity being blind to how such technologies inter-relate with underlying resources and competencies. Conversely, the theory of dynamic capabilities argues that performance gains are a result of the ability of an organisation to be flexible and make internal capabilities realign to fit the requirements of the environment (Teece et al., 1997).

In this view, technological capability is not merely a tool, an asset of strategy that enables innovation and agility (Wu et al., 2020; Lestari & Ardianti, 2019). In spite of the fact that a number of studies document the fact that technological capability increases performance (Otiso, 2017; Melián et al., 2020), they often do not consider the mediating role of innovation. As a result, there is a theoretical gap; is it that better performance occurs since organisations have advanced technologies or is better performance as a result of the fact that the better technologies bring about an innovativeness which in turn leads to better performance? Our paper interacts directly with this question by developing and testing a mediation model whereby the technological capability and e-procurement practices mediate the consequences of innovation on the performance of organisations. The strategy is a response to the academic demands to move beyond the descriptive accounts and shift to theory formation by incorporating the explanatory mechanisms (Sandberg & Alvesson, 2021; Rouse et al., 2025). The study was placed in the under-researched setting of the public sector procurement in developing nations thus providing a theoretical understanding of how dynamic capabilities should work in the face of institutional limitations. This contribution is a continuation and addition to existing discussions about the scalability and adaptability of the theories of supply chain management in different settings (Cornelissen et al., 2024; Pflueger et al., 2024).

1.2 Research Objective

The objective of this study is to investigate the impact of e-procurement practices and technological capability on both Innovation and Organizational Performance.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Dynamic Capabilities Theory

Dynamic Capabilities Theory (Teece et al., 1997) provides a theoretical framework through which it is possible to understand how organisations change and strategically use internal resources in order to gain competitive advantage. The theory highlights the value of technological capability as a competitive tool contributing to organisational agility and innovation (Wu et al., 2020; Lestari & Ardianti, 2019). Reconstrueing technological capability as more than an instrumental tool in technical capability, the theory can be seen to play a crucial role in helping firms re-arrange resources and react appropriately to environmental changes.

2.1.2 Innovation-Mediation Framework

Recent theoretical developments support the mediation between the technological capability and organisational performance by innovation. This opinion spotlights that technological ability is the greatest influence on performance outcomes, but indirectly through the increase in innovation capacity in organisations (Sandberg & Alvesson, 2021; Rouse et al., 2025). The framework poses a more sophisticated question about the way in which digital and technological resources can be converted into direct organisational benefits by means of emergent innovative processes.

2.2 Empirical Review

Numerous empirical studies report the beneficial effects of e-procurement to organisational performance, cost management, and transparency (Ahmad et al., 2019; Daniel & Ngugi, 2018; Oteki, 2019). These researches affirm that e-procurement activities simplify procurement processes and promote accountability in both the government and the business world in general. As shown by Melin-Alzola et al. (2020) and Wu et al. (2020), an organisation that has a greater technological endowment exhibits a greater innovation performance, which further develops greater organisational performance. This claim is supported by the research by Runtuk et al. (2025) that highlights the more significant effect of technological capability on the innovation over the e-procurement in the organisations of the government. The operational efficiencies brought by e-procurement have a relatively low effect on performance of organisations in comparison with a mediated effect of technological capability through innovation (Demeter et al., 2025; Otiso, 2017). Such persistent issues as infrastructural constraints, the unwillingness to use technology, and inadequate supportive legislation are also difficult to overcome in the context of developing countries, including Ghana (Oteki, 2019; Kshetri & Voas, 2022). However, the combination of blockchain and AI technologies has already initiated the improvement of procurement security and audit to open opportunities to surpass these barriers (Shaw et al., 2022).

Improved literature on e- procurement and technological capabilities notwithstanding, there exists a vast disparity on the mediating role of innovation on the relationship between innovation and organisational performance especially in the institution of the public sector in developing countries. Most studies that are carried out before largely concentrate on the private sector or view e-procurement as an independent technical treatment. This gap has been filled in the present paper through empirical modelling and testing innovation as a mediator, therefore, supplying more theoretical and contextual understanding that can be considered relevant in the context of digital transformation of public procurement systems in resource-constrained settings.

III. METHODOLOGY

3.1 Research Design

The current study used a cross-sectional design to collect empirical data in the form of organizations that use a system of e-procurement. This methodological decision was considered to be suitable as it allows gathering the data at a single period in time among those participants who are actively working with e-procurement systems in the Ghanaian state-run organizations. By extension, the design makes it easy to appraise efficiently the interrelations between e-procurement practices, technological capability, innovation and organizational performance. Furthermore, it in line with the requirements of Structural Equation Modeling which requires that the data must be quantitative and has to accumulate over a specified period.

3.2 Target Population and Sample Size Determination

The target population included the procurement officers and personnel who are directly engaged in procurement-related processes in the Ghanaian institutions in the public sector. They were chosen based on their experience in the area of operations in e-procurement systems such that the information that would be obtained would be both pertinent and meaningful. It was to this effect that the sample size was settled on 122 respondents as a result of a pragmatic evaluation of accessibility and willingness of the respondents to take part in the study. The sample size

meets the lower limit of the confidence threshold of latent-variable analysis in Structural Equation Modeling, thus permitting a strong estimation of model parameters.

$$n_0 = \frac{z^2 p(1-p)}{e^2}$$

Where:

Z = for 95 percent confidence, $p = 0.5$, $e = 0.05$

$$n_0 = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.05)^2}$$

n_0 =384.16

$$N = \frac{\left(\frac{n}{n_0}\right) - 1}{n_0 - 1}$$

$$N = \frac{\left(\frac{122}{384.16}\right) - 1}{384.16 - 1}$$

$$N = \frac{2.14967213}{383.16}$$

N≈178.31

3.3 Sampling Method

Purposive sampling was used in the study to choose participants who worked as procurement officers or other employees directly engaged in procurement operations in Ghanaian public sector organizations. We chose this strategy to ensure that only participants in the study possessed relevant knowledge and expertise in e-procurement systems. A list of public sector organisations was provided by the Public Procurement Authority (PPA) and the administrative contacts were used to find procurement personnel working in each organisation. Since respondents were selected based on their positions this meant that the information was collected on individuals who were actively involved in the e-procurement processes. Out of the available 122 respondents were the ones chosen based on accessibility and their wish to take part hence portrayed the objectives of the study.

3.4 Data Collection Instruments and Procedures

Data collection was done in a structured questionnaire that was used to measure e-procurement practices, technological capability, innovation, and organisational performance. The questionnaire used a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) in order to portray views and opinions of the respondents. This scale made the response easy and made it possible to conduct a detailed analysis of the degree of agreement. The questionnaire was sent through electronic means in order to have high response rate.

3.5 Data Analysis Technique

The method of data analysis involved an initial descriptive analysis, which involved some summary of data using percentages. In the main analysis, Structural Equation Modelling (SEM) was used and such software as R were used. The measurement model under review was to establish that the variables measured reflected the constructs. The hypothesis relationship of e-procurement practice, technological ability, innovation, and organisational performance was then tested using the structural model. Lastly, the comparative fit index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Educational Approval (RMSEA), and Standardised Root Mean Square Residual were considered as important indices in determining the adequacy of the model to facilitate the strength of the model.

3.6 Model Description

Structural Equation Modeling (SEM) frequently utilizes moderation and mediation analysis to elucidate the relationships. The incorporation of moderation and mediation in Structural Equation Modelling (SEM) is common, and it is used to explain the relationship between variables. In mediation analysis, one tries to establish whether the relationship between an Independent Variable (IV) and a Dependent Variable (DV) is mediated, or moderated, by a third variable, the Mediator (M). The path model typically has three variables which are the Independent Variable (IV), the mediator and the Dependent Variable (DV). The moderation analysis is used to examine how the interrelationship between the independent variable (X) and the dependent variable (Y) is altered by the level of a third variable, referred to as the moderator (Z). The moderator variable (Z) interacts with the independent variable (X) in influencing the dependent variable (Y). In some cases, both the moderation and mediation effects can be combined into one SEM framework. Through this model, it is possible to establish the impact of a third variable on the effect of the mediator.

Mediation path:

$$M = \alpha_0 + \alpha_1 X + \varepsilon M \quad (1)$$

$$Y = \beta_0 + \beta_1 X + \beta_2 M + \varepsilon Y \quad (2)$$

Moderation Path:

$$Y = \beta_0 + \beta_1 X + \beta_2 M + \beta_3 Z + \beta_4 (X \times Z) + \varepsilon Y \quad (3)$$

Where β_4 represents the interaction effect, testing if the relationship between X and Y or M and Y is moderated by Z.

3.7 Ethical Considerations

The research was conducted in conformity to ethical standards of research in order to protect the integrity and rights of the participants. There was an informed consent, where the participants were adequately informed about the purpose of the study, their rights and confidentiality of their responses. All the data gathered were treated with many secrets and were only used in research. The responses were voluntary and the participants were allowed to withdraw any time with no repercussions. These measures were aimed at fostering the creation of an ethical research atmosphere and promoting open and honest involvement.

IV. FINDINGS & DISCUSSION

4.1 Findings

Table 1 presented selected demographic characteristics of the respondents. These include gender, job experience and level of education.

Table 1

Demographic Characteristics of Respondents

Category	Frequency	Percent
Gender		
Male	75	61.5%
Female	47	38.5%
Job Experience		
1-5 years	46	37.7%
6-10 years	44	36.1%
11-15 years	20	16.4%
16-20 years	8	6.6%
21 and above	4	3.3%
Level of Education		
Diploma/HND	15	12.3%
BSc	62	50.8%
Postgraduate	45	36.9%
Total	122	100.0%

The result in Table 1 indicates that the majority of respondents (61.5%) are male, while few (38.5%) are female. Majority of the respondents (37.7%) have 1-5 years job experience, with few (3.3%) possessing 21 years and above work experience. Regarding education level, the majority of respondents (50.8%) hold a BSc degree, while few (12.3%) have a diploma or HND.

Table 2

Comparison of Fit Indices between the User Model and the Baseline Model

Fit Index	User Model	Baseline Model	Robust User Model
Comparative Fit Index (CFI)	0.984	0.985	–
Tucker-Lewis Index (TLI)	0.958	0.959	–
Robust Comparative Fit Index (CFI)	–	–	0.998
Robust Tucker-Lewis Index (TLI)	–	–	–

The Comparative Fit Index (CFI = 0.984–0.985) and the Tucker-Lewis Index (TLI = 0.958–0.959) both reveal that the model fits the data perfectly. Both scores are higher than the standard 0.95, which means the model fits perfectly. The robust CFI (0.998) and robust TLI (0.973) numbers indicate that the model works very well, even when non-

normality or other changes are taken into account. The results indicate that the user model performs better than the baseline model and explains most of the variation in the data.

Table 3

Loglikelihood and Information Criteria

	Value 1	**Value 2**
Loglikelihood User Model (H0)	-2828.269	-2828.269
Scaling Correction Factor (MLR) for H0	1.628	—
Loglikelihood Unrestricted Model (H1)	-2461.691	-2461.691
Scaling Correction Factor (MLR) for H1	1.261	—
Akaike Information Criterion (AIC)	5762.537	5762.537
Bayesian Information Criterion (BIC)	5911.15	5911.15
Sample size Adjusted BIC (SABIC)	5743.575	5743.575

Log-likelihood values indicate how well the model accounts for the data. The user model (H_0) has a loglikelihood of -2828.269; the unrestricted model (H_1) has a loglikelihood of -2461.691, suggesting that the unrestricted model (which includes more freely determined parameters) better fits the data. Particularly under the Maximum Likelihood Robust (MLR) estimate approach, which considers non-normality and heteroskedasticity in the data, the scaling correction factors (1.628 for H_0 and 1.261 for H_1) compensate for departures from normality.

Table 4

Root Mean Square Error of Approximation (RMSEA)

Statistic	**Value 1**	**Value 2**
RMSEA	0.027	0.012
P value for H_0: RMSEA $\leq$ 0.050	0	0
P value for H_0: RMSEA $\geq$ 0.080	0	0

Root Mean Square Error of Approximation (RMSEA) of 0.027, and 0.012 are also indicative of good model fit since these values are much less than the generally accepted standard of -0.05 as an adequate model fit. The p -values of H 0: RMSEA = 0.050 =0.000, which means that the null hypothesis of close fit is statistically acceptable. In addition, p-values on H 0 RMSEA =0.080 or more are 0.000, which supports the lack of evidence on the inappropriateness of fit.

Table 5

Measurement Model: Latent Variables and Indicator Loadings

Latent Variable	**Indicator**	**Estimate**	**Std. Err**	**z value**	**P value**	**Std. lv**
E Procurement	EP1	1	—	—	—	0.619
	EP2	1.115	0.122	9.169	0	0.69
	EP3	1.064	0.122	8.723	0	0.658
	EP4	1.289	0.156	8.274	0	0.798
	EP5	1.235	0.147	8.377	0	0.765
	EP6	1.134	0.142	7.996	0	0.702
	EP7	0.991	0.157	6.297	0	0.613
Technological Capability	TC1	1	—	—	—	0.78
	TC2	1.101	0.086	12.761	0	0.859
	TC3	1.08	0.107	10.063	0	0.842
	TC4	0.889	0.127	7.013	0	0.693
Innovation	I1	1	—	—	—	0.827
	I2	0.858	0.082	10.458	0	0.71
	I3	0.763	0.092	8.277	0	0.631
	I4	0.964	0.054	17.691	0	0.797
Organizational Performance	OP1	1	—	—	—	0.716
	OP2	0.997	0.073	13.656	0	0.714
	OP3	0.734	0.1	7.346	0	0.526
	OP4	0.969	0.148	6.527	0	0.694
	OP5	0.867	0.225	3.86	0	0.621
	OP6	0.733	0.198	3.703	0	0.525
	OP7	0.902	0.144	6.271	0	0.646
	OP8	0.949	0.222	4.266	0	0.68

Table 5 shows the estimates of the factor loading, standard error, z-, p-, and standardised loading (Std.lv) of the latent factors of the model. The factor loadings (p -values= 0.000) of all indicator (EP1 to EP7) in the E-Procurement latent variable are strong, where the standardised loading ranges between 0.613 and 0.798, and this means that these items are related closely to the latent variable. EP4 is the most standardised loading (0.798), indicating that it is the most effective indicator of the factor of E-Procurement. On the other hand, EP7 is least related with the latent variable (0.613), although it is significant. All indicators (TC1 to TC4) of the technological capability latent variable are statistically significant (p -values = 0.000). The standardised loadings fall between 0.693 and 0.859, with TC2 (0.859) having the greatest relationship with technological capacity. The correlation with TC4 is the least strong 0.693, but it still shows a moderate correlation with the hidden variable. Indicators have strong factor loadings in the innovation latent variable with standardised loadings ranging between 0.631 and 0.797. The greatest standardised loading is to I4 (0.797), which means that it is the most important measure of innovation, but I3 (0.631) has the weakest though significant relationship with the latent variable. The standardised loadings of the indicators of organisational performance (OP1 to OP8) are between 0.525 and 0.716 indicating a moderate fit to the organisational performance factor. The highest loading is of OP1 (0.716), and lowest of OP3 (0.526), but they are all statistically significant.

Table 6

Regression Results

Dependent Variable	Predictor	Estimate	Std. Err	z value	P value	Std. lv
Organizational Performance	E_Prcrmnt (c1)	0.508	0.193	2.631	0.009	0.439
	Tchnlgc_C (c2)	0.129	0.156	0.825	0.41	0.14
	Intrctn_T (c3)	-0.033	0.04	-0.821	0.412	-0.046
Innovation	E_Prcrmnt (a1)	0.222	0.128	1.734	0.083	0.166
	Tchnlgc_C (a2)	0.8	0.12	6.666	0	0.754
Organizational Performance	Innovation (b1)	0.191	0.145	1.318	0.188	0.22

The regression results show the links between the latent variables. With a standardized estimate of 0.439 (p = 0.009), e-procurement (c1) significantly improves organizational performance by implying that enhancements in e-procurement are linked to greater organizational performance. With little standardized estimates of 0.140 and -0.046, technological capability (c2) and interaction technology (c3) do not much forecast organizational performance (p = 0.410 and p = 0.412, respectively). While technological capability (a2) strongly predicts innovation with a highly significant positive effect (p = 0.000) and a standardized estimate of 0.754, e-procurement (a1) has a marginally significant positive effect (p = 0.083) with a standardized estimate of 0.166. With a low standardized estimate of 0.220, innovation (b1) does not much forecast organizational performance (p = 0.188). The findings suggest that e-procurement and technical capability are major factors affecting organizational success, with technological capability being especially important for innovation.

Table 7

Covariances

Variable 1	Variable 2	Estimate	Std. Err	z value	P value	Std. lv	Std. all
E Procurement	Technological Capability	0.325	0.094	3.446	0.001	0.674	0.674

The relationship between E-Procurement and Technological Capability is 0.325, with a standardized estimate of 0.674, indicating a strong positive link between these two factors. The z-value of 3.446 and the p-value of 0.001 indicate that this covariance is statistically significant, implying that an increase in E-Procurement correlates with an increase in Technological Capability.

Table 7

Variances

Variable	Estimate	Std.Err	z-value	P-value	Std.lv	Std.all
EP1	0.461	0.085	5.397	0	0.461	0.546
EP2	0.278	0.067	4.126	0	0.278	0.368
EP3	0.169	0.041	4.097	0	0.169	0.28
EP4	0.266	0.047	5.696	0	0.266	0.295
EP5	0.31	0.066	4.714	0	0.31	0.347
EP6	0.335	0.075	4.474	0	0.335	0.405
EP7	0.309	0.067	4.592	0	0.309	0.451
TC1	0.347	0.091	3.836	0	0.347	0.364

TC2	0.236	0.076	3.117	0.002	0.236	0.242
TC3	0.155	0.045	3.434	0.001	0.155	0.179
TC4	0.346	0.086	4.02	0	0.346	0.419
I1	0.144	0.034	4.211	0	0.144	0.173
I2	0.225	0.065	3.481	0	0.225	0.309
I3	0.227	0.062	3.659	0	0.227	0.363
I4	0.332	0.077	4.319	0	0.332	0.343
OP1	0.746	0.166	4.491	0	0.746	0.592
OP2	0.62	0.175	3.548	0	0.62	0.549
OP3	0.411	0.101	4.047	0	0.411	0.598
OP4	0.454	0.104	4.356	0	0.454	0.485
OP5	0.343	0.11	3.107	0.002	0.343	0.471
OP6	0.294	0.065	4.509	0	0.294	0.516
OP7	0.653	0.101	6.459	0	0.653	0.61
OP8	0.305	0.084	3.626	0	0.305	0.398
E-Procurement	0.383	0.113	3.379	0.001	1	1
Tchnlgcl-Cpblt	0.608	0.145	4.181	0	1	1
Innovation	0.16	0.056	2.841	0.005	0.235	0.235
Orgnztnl_Prfrm	0.24	0.084	2.867	0.004	0.468	0.468

Table 7 shows the differences for the indicators of the hidden variables, all of which are statistically significant (p-values < 0.005), indicating strong connections between the indicators and their related hidden variables. The variances for E-Procurement (EP1 to EP7) range from 0.169 for EP3 to 0.461 for EP1, while the normalized variances span from 0.280 to 0.546. This indicates that EP1 exhibits the greatest volatility, hence contributing most substantially to the variation in the E-Procurement latent variable, whereas EP3 contributes the least, albeit still significantly. The indicators for technological capability (TC1 to TC4) exhibit considerable variances, with TC4 presenting the highest standardized variance of 0.419 and TC3 the lowest at 0.179, signifying a marginally weaker yet still significant contribution to the technological capability component.

In the context of innovation, the variances for indicators I1 to I4 are all statistically significant, with I4 exhibiting the largest standardized variance (0.343) and I1 the lowest (0.173), indicating that I4 is the most impactful in expressing the innovation latent variable. The organizational performance indicators (OP1 to OP8) exhibit notable differences, with OP1 displaying the highest standardized variance (0.592) and OP8 the lowest (0.398). The differences in the hidden factors are significant, with E-Procurement and Technological Capability showing variances of 0.383 and 0.608, respectively, both having normalized variances of 1.000, which means they are very important in the model.

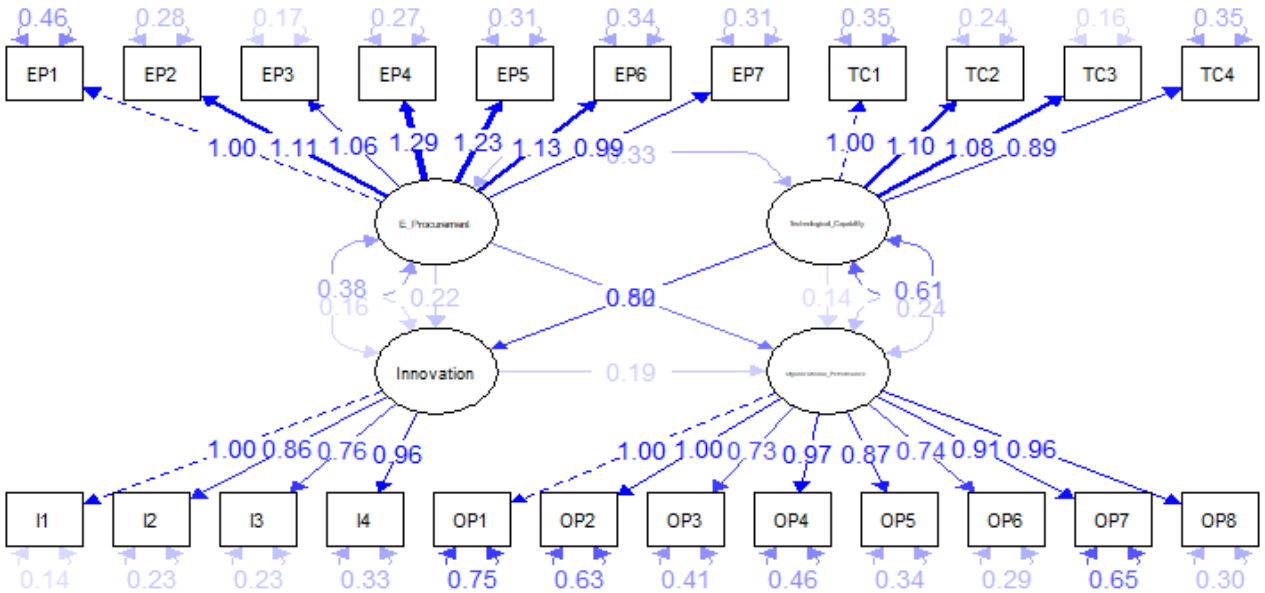

Figure 1

Structural Equation Model (SEM) Showing the Interrelations between E-Procurement Practices, Technological Capability, Innovation, and Organizational Performance

Figure 1 represents the Structural Equation Model (SEM) which is a graphical representation of delineations of the interrelations between e-procurement practices, technological capability, innovation, and organizational performance using both latent constructs and observed indicators. The path coefficients indicate that technological capability (0.61) has stronger impact on innovation than e-procurement practices (0.38), which means that companies with better technological capabilities are more likely to develop innovative activity. All these coefficients, also indicate that technological capability (0.61) has more significant influence on innovation, when compared to e-procurement practices (0.38) and this implies that firms with high levels of technological capability are better placed to foster innovation. The direct effect of technological capability on organizational performance is small (0.14), which means that innovation plays a major mediating role in its effect on performance. Moreover, the model proves that innovation has the strongest direct effect on the organizational performance (0.80) which underlines its central role in improving the business outcomes. Most of the variables observed are associated with high factor loading indicating strong reliability in the measurement of the underlying constructs. The implication of this observation is that e-procurement is more likely to increase the operational efficiencies compared to the innovation and performance improvements made upon advances in technology.

4.2 Discussion

The results support the main ideas expressed in the literature that remain, especially the special role of technological capability in driving innovation and organizational performance. The importance of technological and IT capabilities to enhance organizational success, particularly when combined with the procurement and innovation processes, was highlighted in the prior studies. Studies by Lestari and Ardianti (2019), Wu et al. (2020), and Melián-Alzola et al. (2020) highlight that being able to capitalize on the use of technology is important to become more agile and perform better. This suggestion is also confirmed in the current study, which shows that the technological capability (0.61) is more influential in innovation than e-procurement practices (0.38). This is in line with the claims in the literature that the integration of technology is indispensable in enhancing the performance of procurements and the general agility of the organization at large. In both the literature and this study, technology has been depicted as a pivotal force of success, especially in enhancing operational effectiveness, supply-chain, and competitiveness in various industries. However, this research paper provides a more nuanced approach by showing that the direct effect of technological capability on the performance of organizations is quite low (0.14) and is mostly mediated by innovation.

This observation differs with the general statements in the literature, where the impact of technological integration is often described as having a direct positive impact on performance in different industries, such as NGOs, textiles, and SMBs. To give an example, Daniel and Ngugi (2018), and Oteki (2019) suggest that e-procurements practices are conducive to performance because of efficiency, cost-reduction, and service delivery. These current path coefficient values have highlighted the fact that although e-procurement practices are regarded as a source of innovation, their performance implications are not as strong as technological capabilities, hence e-procurement though it is enhancing organizational performance through operational improvements, is not as effective as technological changes in directly influencing organizational performance. This study comes to the conclusion that the e-procurement practices and technological capability are helpful in the innovation, but the technological capability plays a more dominant role.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

This work provides three important contributions to the literature on supply-chain and procurement: Mediated Role of Innovation: We do not follow the traditional assumption that technological capability has a direct positive influence on organizational performance by showing that it is rather an indirect influence that happens via innovation. This observation builds on the Dynamic Capabilities Theory by bringing in innovation as an essential mediating variable. Theory Extension in Context: This research expands the scope of the Dynamic Capabilities Theory by applying it, not only to organisations in the private or developed-country settings, but also to the context of a developing country, specifically the public-sector organisations. This institutional in terms of geography contextualization enhances the theoretical discussion on the functioning of capabilities within an environment of resource and regulatory constraints.

E-procurement as an Enabler: Instead of viewing e-procurement as a mere technical instrument, our results place it as a component of a more general organisational resource that engages with technological resources to determine the results of innovation. This reconceptualisation welcomes more integrated perspective of the role played by digital tools in development of dynamic capability. We argue that the study is a solid basis of future research on the theoretical process by which digital transformation takes place in procurement systems because recent empirical research has raised the issue of foregrounding theory as the foundation of empirical studies.

5.2 Recommendations

Stakeholders should prioritize building dynamic capabilities that facilitate continuous sensing and seizing of opportunities, especially by fostering innovation through investments in technological infrastructure and organizational routines. Promote a culture that nurtures entrepreneurship and iterative learning within public organizations to strengthen their capacity for transformation and resilience in the face of crises and resource constraints. It is recommended that policy makers should come up with policies that enable the public-sector agencies to develop their routines of sensing, shaping and connecting-focal components of dynamic capabilities. Policy makers must come up with structures that can motivate innovations activities and digital transformation programs in the governmental institutions, thus creating path breaking innovations and resilience in the government.

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