Research Paper

Leveraging Intellectual Capital to Strengthen the Performance of Public Sector Procurement

Septian Dwi Cahyo[1], Nimmi Zulbainarni[2], Asep Taryana[3]

[1,2,3]Management and Business, School of Business, IPB University, Bogor, Indonesia.

Corresponding Author: Septian Dwi Cahyo

ABSTRACT

This study aims to investigate the link between intellectual capital and the performance outcomes of public procurement processes. The study adopts the Public Intellectual Capital framework, which encompasses five distinct elements: public human capital, public organizational capital, public social capital, public technological capital, and public relational capital. The study was conducted at the Ministry of Finance of the Republic of Indonesia. Data were acquired from 298 respondents through questionnaire distribution and analyzed afterwards employing the PLS-SEM method. The results suggest that procurement performance is significantly and positively impacted by public human capital, public social capital, and public relational capital. Public organizational and technological capital, on the other hand, did not show any statistically significant impact.

Keywords: *Public Intelectual Capital, Public Procurement, Human Capital*

INTRODUCTION

Public procurement of goods and services is a critical factor in the stimulation of the economy, and a substantial portion of government spending is allocated to this purpose. Procurement process management by the government has the potential to support micro small and medium-sized businesses create new markets and promote sustainability and innovation (OECD 2020, Uyarra et al. 2020). As a result public sector organizations now consider improving procurement performance to be a strategic priority.

Intellectual capital has historically received less attention than the amount of tangible assets owned when evaluating an organizations performance. But in todays knowledge-based economy the idea of intellectual capital has become more important. This transition is characterized by the growing significance of intangible assets and the diminishing contribution of financial and fixed assets to organizational success (Gogan 2016). The study intends to explores how intellectual capital affects government procurement performance, adopting Structural Equation Modeling–Partial Least Squares (SEM-PLS), a quantitative research tool, to explores how intellectual capital can enhance procurement performance.

The results provide a thorough framework for negotiating the intricacies of procurement operations and enhancing organizational outcomes which advances both scholarly discussion and real-world application.

LITERATURE REVIEW

Government Procurement of Goods and Services is undertaken by ministries/institutions/regional apparatuses, financed through APBN/APBD. According

to Iswoyo, et al. (2021) government procurement of goods/services is not for profit purposes but is of a public service nature in order to improve public services based on logical and systematic thinking, in accordance with principles and ethics and based on applicable methods and regulations.

The procurement of goods and services holds a pivotal role in shaping organizational performance. Keith et al. (2016) emphasize that the implementation of appropriate procurement strategies can significantly influence both organizational outcomes and national economic performance. In line with this perspective, Mebrate (2024) identified a significant relationship between procurement practices and organizational performance. Procurement performance is shaped by multiple contributing factors. Changalima (2023) highlighted that procurement skills are positively correlated with procurement performance, and that effective procurement planning has a significant and positive impact. Similarly, Mebrate (2024) found that both procurement planning and staff competency are positively and significantly associated with improvements in organizational performance.

Intellectual capital is recognized as an intangible resource encompassing knowledge that contributes to enhancing organizational performance and competitiveness. Its role is particularly significant in knowledge-intensive sectors, including technology and services. Gogan (2016) identified a strong positive correlation between intellectual capital and firm performance. Ongoing efforts toward modernization and increased efficiency within the public sector have elevated the strategic importance of intangible assets (Campos, 2006). To support this shift, Campos (2006) introduced a framework for intellectual capital tailored to public organizations.

Similarly, Eldin (2019) highlighted that effective procurement practices contribute to improved overall performance. Furthermore, he emphasized the significant positive influence of knowledge management on organizational outcomes. Intellectual capital includes intangible elements such as information resources, innovation, knowledge, organizational culture, and learning capabilities. Pinzon (2017) argued that public institutions must enhance their service delivery competitiveness to satisfy the demands of stakeholders and the general public. This can be achieved by leveraging key intangible assets included talent, organizational learning, and information. A growing body of study has confirmed the positive effect of intellectual capital on organizational performance (Rengganis, 2023; Farah, 2017; Ling, 2013) and its critical role in driving value creation (Ognjanović, 2016).

Framework
Drawing upon the contextual backdrop and an examination of pertinent previous research, the conceptual framework for this research is formulated as follows:

H1: Public human capital has a statistically significant influence on procurement performance in the public sector

H2: Public organizational capital has a statistically significant influence on procurement performance in the public sector.

H3: Public social capital has a statistically significant influence on procurement performance in the public sector.

H4: Public technological capital has a statistically significant influence on procurement performance in the public sector.

H5: Public relational capital has a statistically significant influence on procurement performance in the public sector.
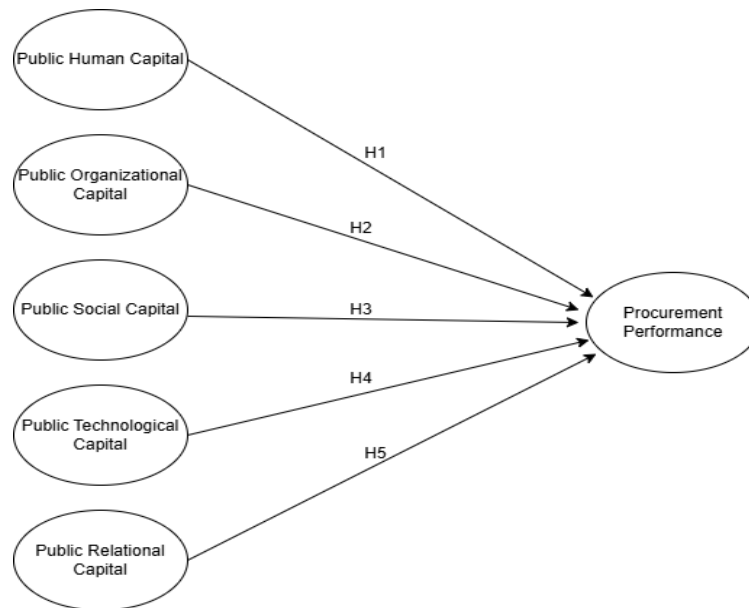
Figure 1. Conceptual Framework

MATERIALS & METHODS

This research used a causal design to investigate the cause-and-effect correlations among variables, as described by Sugiyono (2019). Specifically, the research investigates the influence of various components of intellectual capital on procurement performance within the Ministry of Finance. A survey-based field research method was adopted, wherein data were gathered thorugh a structured questionnaire distributed to a defined sample drawn from the target population. As stated by Sugiyono (2019), survey methods are widely used to gather data from specific contexts, either through questionnaires or interviews.

This study employs a Nonprobability Sampling – Purposive Sampling technique. The respondents in this study consist of employees assigned to carry out procurement-related duties within the Ministry of Finance of the Republic of Indonesia, as they possess the requisite knowledge and direct experience in public procurement processes. A total of 298 valid responses were obtained and used in the analysis.

Data were measured using a five-point Likert scale, from 1 (Strongly Disagree) to 5 (Strongly Agree). Then data were analyzed employing PLS-SEM to evaluate both the measurement and structural models, and to test the hypothesized relationships among the constructs.

RESULT

Measurement Model Evaluation

The objective of measurement model evaluation is to determine the degree to which observed indicators accurately reflect their associated latent constructs. Validity testing is conducted by evaluating convergent validity and discriminant validity. Convergent validity assesses the extent to which various indicators of the same construct are associated, hence validating their consistent measurement of the intended underlying notion.

a) Outer Loading Factor

An Indicator may retain even if its outer loadings fall between 0.40 and 0.70, provided their exclusion does not lead to a substantial enhance CR or AVE values (Hair et al., 2022). Furthermore, loading values within the 0.60 to 0.70 interval are typically regarded as acceptable (Ghozali and Kusumadewi, 2023). For the purposes of this analysis, indicators are deemed valid if their outer loading exceeds 0.60. The outer loading values for each observed item adopted in the measurement model are summarized in Table 1.

Table 1. Outer Loading Factor

Variable	Indicator code	Outer Loading	Description
Procurement Performance	kp1	0,880	Valid
	kp2	0,853	Valid
	kp3	0,846	Valid
	kp4	0,640	Valid
	kp5	0,776	Valid
Public Human Capital	mm1	0,698	Valid
	mm2	0,757	Valid
	mm3	0,706	Valid
	mm4	0,494	Invalid
	mm5	0,652	Valid
	mm6	0,761	Valid
	mm7	0,755	Valid
	mm8	0,710	Valid
Public Organizational Capital	mo1	0,855	Valid
	mo2	0,851	Valid
	mo3	0,807	Valid
	mo4	0,777	Valid
	mo5	0,631	Valid
	mo6	0,780	Valid
	mo7	0,843	Valid
	mo8	0,849	Valid
Public Relational Capital	mr1	0,694	Valid
	mr2	0,783	Valid
	mr3	0,807	Valid
	mr4	0,661	Valid
	mr5	0,782	Valid
Public Social Capital	ms1	0,799	Valid
	ms2	0,756	Valid
	ms3	0,766	Valid
	ms4	0,745	Valid
Public Technological Capital	mt1	0,616	Valid
	mt2	0,903	Valid
	mt3	0,850	Valid
	mt4	0,757	Valid

The indicator mm4 did not meet the validity criteria and was consequently removed from the analysis.

b) Reliability Test

The application of Cronbach's Alpha and Composite Reliability (CR) to evaluate the internal consistency of measurement instruments. Hair et al. (2022) argued that acceptable values are ≥ 0.70 for both measures. Average Variance Extracted (AVE) is adopted to evaluate convergent validity, with a minimum threshold of 0.50 reflects that the construct explains the majority of the variance in its indicators. Based on Table 2, all variables satisfy the suggested thresholds for Cronbach's Alpha, CR, and AVE, confirming their reliability and validity.

Table 2. Reliability Test Result

Variable	Cronbach's alpha	Composite reliability (CR)	Average variance extracted (AVE)
Procurement Performance	0,859	0,900	0,646
Public Human Capital	0,859	0,885	0,525
Public Organizational Capital	0,850	0,935	0,644
Public Relational Capital	0,919	0,863	0,559
Public Social Capital	0,802	0,851	0,588
Public Technological Capital	0,771	0,866	0,622

c) Discriminant Correlation Test

Discriminant validity was evaluated to ascertain the degree to which indicators of a specific construct are differentiated from those of other constructs. Hair et al. (2022) assert that a common method for evaluating discriminant validity is the Fornell-Larcker criterion, involves comparing the square root of AVE between constructs in the model.

Table 3. Fornell-Larcker Analysis

	Procurement Performance	Public Human Capital	Public Organizational Capital	Public Relational Capital	Public Social Capital	Public Technological Capital
Procurement Performance	0,804					
Public Human Capital	0,572	0,725				
Public Organizational Capital	0,554	0,565	0,802			
Public Relational Capital	0,675	0,602	0,655	0,748		
Public Social Capital	0,660	0,573	0,756	0,714	0,767	
Public Technological Capital	0,521	0,458	0,545	0,670	0,603	0,789

Table 3 illustrates that the Fornell-Larcker Criterion analysis reveals that each construct's AVE exceeds its correlations with other constructs, confirming that the constructs is empirically different and has sufficient discriminant validity.

d) Structural Model Testing

The structural model was evaluated to examine the link among the constructs, assess their significance levels, and determine the coefficient of determination (R^2) for the endogenous variables. The R^2 estimates for the endogenous constructs are presented in Table 4.

Table 4. R-Square Value

Variable	R-square
Procurement Performance	0,543

The R^2 value indicates how much of the variance in the dependent variable can be explained by the independent variables. Table 4 demonstrates that the R^2 value for Procurement Performance is 0.543, signifying that public human capital, organisational capital, technological capital, social capital, and relational capital collectively account for 54.3% of the variance in procurement performance. The unexplained 45.7% is influenced by other factors not encompassed in this model.

e) Hypothesis Test

In this study, hypothesis testing was carried out by analyzing the path coefficients, t-statistics, and p-values. According to Hair et al. (2022), the significance and predictive power of the structural model can be evaluated through the magnitude of the path coefficients and their associated t-statistics. The p-value is adopted to evaluating the statistical significance of each relationship. A hypothesis is considered supported if the t-statistic exceeds 1.64 and the p-value is below 0.05. Table 5 presents a detailed summary of the hypothesis testing results.

Table 5. Hypothesis Test Results

Variable	Original sample (O)	T statistics (|O/STDEV|)t	P values
Public Human Capital-> Procurement Performance	0,193	2,861	0,002
Public Organizational Capital -> Procurement Performance	-0,027	0,308	0,379
Public Relational Capital -> Procurement Performance	0,328	3,471	0,000
Public Social Capital -> Procurement Performance	0,311	3,116	0,001
Public Technological Capital -> Procurement Performance	0,041	0,564	0,286

DISCUSSION

The p-value for the influence of public human capital on the performance of government procurement is $0.002 < 0.05$, confirming a statistically significant effect. The path coefficient value of 0.193 suggests that a one-unit increase in public human capital leads to a 0.107 unit increase in procurement performance. These results imply that employee attitudes and competencies contribute positively to procurement outcomes. This is consistent with Bontis (2000), who found that human capital positively influences performance regardless of industry. Similarly, Farah (2017) emphasized the positive role of human capital in public sector performance, and Dewabrata (2022) confirmed its positive impact on government spending performance.

The p-value for public organizational capital is 0,379, indicating no significant effect on procurement performance. Despite a high perception of organizational capital, the analysis shows no substantial impact. This aligns with findings by Hakim et al. (2020). Organizational capital represents how resources are managed, knowledge is shared, and strategies are implemented. However, Government procurement activities operate under rigorous regulatory frameworks designed to ensure compliance, mitigate corruption risks, and promote fiscal efficiency. These institutional constraints may, therefore, attenuate the extent to which organizational capital directly influences procurement performance.

The p-value of 0.005 and t-statistic of 2.603 indicate a significant positive relationship between public relational capital and procurement performance. The path coefficient of 0.296 means a one-unit increase in relational capital enhances procurement performance by 0.296 units. These findings align with Hermawan et al. (2020), who reported a significant positive impact of relational capital on business performance.

Public social capital yields a p-value of 0.003 and a path coefficient of 0.374, signifying a significant positive effect. Subramaniam and Youndt (2005) assert that social capital enhances team performance and the quality of information exchange. These results are corroborated by Reed et al. (2006) and Youndt & Snell (2005), who confirmed the positive influence of social capital on performance outcomes.

With a p-value of 0.469, public technological capital shows no significant influence on procurement performance. This supports Croteau and Bergeron's (2001) assertion that technology does not directly affect organizational performance; rather, its impact depends on integration with business strategies. Similarly, Chen et al. (2013) observed that IT capability alone does not directly correlate with performance but gains relevance when aligned with business process flexibility. In procurement, performance is shaped not only by technology but also by supplier quality, regulatory frameworks, and negotiation processes. External factors such as government regulation, supplier dependency, and market price volatility play a more critical role than the mere presence of technological tools.

CONCLUSION

Of the several various dimensions of public intellectual capital, it was found that public human capital, social capital, and relational capital hold a pivotal role in enhancing the performance of government procurement. These forms of capital contribute directly through the competencies and integrity of personnel, the strength of social networks, and the effectiveness of external stakeholder relationships—factors that are essential in ensuring transparency, accountability, and efficiency within procurement processes.

Conversely, public organizational capital and technological capital did not demonstrate a statistically significant influence on procurement performance. This outcome can be explained by the rigid regulatory framework that governs public sector procurement, which often prioritizes compliance over adaptability. As a result, the strategic capacity of public organizations to leverage internal processes and technological tools may be constrained, thereby diminishing their direct impact on performance outcomes. Such limitations underscore the importance of human-centered and relational factors in driving procurement effectiveness in highly regulated public environments.

Future directions

In alignment with the objectives and conclusions of this study, several directions are recommended for future research to enhance the breadth and depth of findings. First, future studies should consider to utilize a larger sample size while adopting a stratified sampling technique. Such an approach would allow for greater representativeness of the target population and offer deeper insights of the heterogeneity among respondents. Additionally, the integration of qualitative methods alongside quantitative approaches is highly recommended. By incorporating interviews or focus group discussions, future researchers can gain deeper insights into the studied phenomena through the lived experiences and perspectives of participants. This methodological triangulation not only enriches the data but also allows for a more contextualized and holistic understanding of the dynamics at play in public sector procurement practices.

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