



PUBLIC VALUE CREATION IN EDUCATION: AN INTEGRATED FRAMEWORK OF POLICY CAPACITY, ALGORITHMIC MANAGEMENT, AND GOVERNANCE ADAPTABILITY

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Abstract

Purpose: This study examines the impact of Education Policy Implementation Capacity and Algorithmic Performance Management on Public Value Creation in Education. Specifically, it investigates how education policy implementation capacity and algorithm-driven performance systems contribute to value creation in educational institutions through the mediating roles of Managerial Sensemaking of Performance Information and Adaptive Governance Mechanisms. The study aims to provide a comprehensive understanding of how institutional capability, technological systems, managerial cognition, and governance adaptability collectively influence public value creation in education.

Method: A quantitative, cross-sectional research design was employed. Data were collected from 185 principals of government schools located in major cities of South Punjab, Pakistan, using structured questionnaires based on adopted scales from prior studies. The collected data were analyzed using Partial Least Squares Structural Equation Modeling through SmartPLS. Measurement and structural models were assessed using reliability, validity, path coefficients, and mediation analysis. Common method bias was also examined and found not to be a significant concern.

Findings: The findings revealed that Education Policy Implementation Capacity and Algorithmic Performance Management positively and significantly influence Public Value Creation in Education. Furthermore, Managerial Sensemaking of Performance Information and Adaptive Governance Mechanisms significantly mediated these relationships. All proposed hypotheses were supported.

Originality/Implications: This study extends public value literature by integrating organizational capability, algorithmic management, managerial cognition, and adaptive governance into a unified framework, offering valuable theoretical and practical insights for improving educational governance and public value creation.

Keywords: Education Policy Implementation Capacity, Algorithmic Performance Management, Public Value Creation, Managerial Sensemaking, Adaptive Governance Mechanisms.

1. Introduction

Increasingly, the education sector is a key area for public sector change, given the pressure for greater accountability, service quality, equity and societal benefits. Governments and educational institutions the world over are continually challenged to not only develop educational policies, but to put them into practice to produce real, public results (Alakoum et al., 2025). In such a context, the capacity of institutions to implement policy has emerged as an important research and policy issue (Sagar & Singh, 2026). The ability of educational institutions and administrators to proactively manage the implementation of change, to put knowledge into use, to persevere in implementation obstacles, to uphold standards of performance, and to effectively execute policy directives has become a key factor in determining effectiveness (Li & Zhang, 2025). Concurrently, the rapid development of technologies has brought algorithmic systems into the functioning of organizations and into the management of organizational performance (Alakoum et al., 2025). The advent of



algorithmic performance management has revolutionized the way managers make performance-based decisions, combining automated monitoring, goal setting, scheduling, performance rating and compensation into one, seamless package (Xu, 2025). The changes have impacted the way institutions assess performance, distribute resources and react to the needs of stakeholders (Boateng & Boateng, 2025). Organizational capacity and technological management systems have become the focus of interest because they are seen as playing a dual role in public value creation in education, as they can enhance transparency, efficiency, service quality and trust in society (Liljeroos-Cork & Laitinen, 2024; Ojuri et al., 2025).

The context has been further developing; past empirical studies have largely shown positive relationships between organizational implementation capacity, performance management systems, and institutional outcomes. Research has demonstrated that higher implementation capacity is linked to better ability to implement reforms effectively, to enhance service delivery and to deliver policy outcomes (Kloos et al., 2023; Muthanna & Sang, 2023; Yele & Speciozza, 2024). Algorithmic performance management can also be found to boost operational efficiency, increase the capacity to monitor performance, decrease administrative delays and enable evidence-based decision making, as seen in the empirical evidence (Boateng & Boateng, 2025; Karim-Abdallah et al., 2025; Keegan & Meijerink, 2025). Further studies in public value creation also show that good managerial systems lead to people's satisfaction, higher trust in institutions, and better public service results (Moore, 2013). But there is not a complete agreement on the empirical findings. Some research has found that algorithmic management has improved institutional performance, whereas other research has raised concerns about the emphasis on quantitative indicators and the reduction of autonomy in teachers and staff (Becker & Wurm, 2025; Liu et al., 2025). Similarly, effective policy implementation does not always lead to positive outcomes, especially in settings where there is a high level of rigidity in the bureaucracy, political interference and limited resources (Hezam et al., 2025). The mixed results indicate that value creation in educational institutions cannot be solely attributed to direct relationships.

The inconsistencies raise several important research gaps that exist in the literature. The first is that previous work has focused mainly on either the capacity to implement education policy or algorithmic performance management, and few studies have studied the combined effects of these two metrics on public value creation in education (Asrulla & Mahmud, 2025). Second, much of the extant literature emphasizes the direct connections, without considering the processes by which these predictors affect public value outcomes (Mulloth et al., 2025). In particular, there has been an increasing awareness of the central role of managers in sense making and interpreting complex policy and performance information before implementing strategies into action; however, little attention has been paid to the mediating role of managerial sensemaking in the analysis (Kulkarni et al., 2024; van der Woerd & van der Scheer, 2026). Further, while educational flexibility and responsiveness have become key elements of adaptive governance in dynamic educational context, adaptive governance mechanisms have been underexplored as a mediating process. Third, there is a lack of empirical studies in algorithmic management in educational context, as this is markedly different from the private sector, especially in terms of public accountability, service orientation and social outcomes (Kefalis et al., 2025; Leavitt et al., 2025). Moreover, the field of studying how managerial cognition and algorithmic governance collaborate to produce public value is still very fragmented, with little awareness of how the technology-based management systems work with the organizational capabilities to generate public value (Hjaltalin & Sigurdarson, 2024; Nolte & Lindenmeier, 2024). The present gaps underscore the necessity for a more integrated approach to model both direct and indirect pathways.

To fill these gaps, the present study is based on the Public Administration Public Value Theory (Moore, 2013), which states that public value is produced through the successful coordination of public institutions' capabilities, processes, systems and structures with the expectations and needs of their stakeholders. This theory gives a solid basis to explain the proposed relationship in this study. Both education policy implementation capacity and algorithmic performance management are proposed as strategic capabilities of the organisation which can help to improve public value creation, but their impact may be contingent on mediating capabilities that enable the interpretation and adaptation of the education policies. Institutional sensemaking of performance information provides an understanding of how managers make



sense of the performance information produced by policy processes and algorithmic systems that they use to inform strategic decisions, and adaptive governance mechanisms provides an understanding of how institutions are flexible and responsive to new challenges. These constructs are combined into a holistic picture of how value is generated in today's educational system. Thus, this study seeks to explore the effect of the capacity to implement education policies and the performance of the algorithms used to manage performance on the creation of public value in education, as well as on the mediating effect of managerial sensemaking of the performance information and the adaptive governance mechanisms involved. The study aims at enhancing theories of public value creation and empirical evidence of the co-creation of public value in education from the perspective of their institutional capability, technological systems, managerial cognition and governance adaptability (Hartley et al., 2017).

2. Literature Review

2.1 Education Policy Implementation Capacity and Public Value Creation in Education

The capacity to successfully implement education policy is known to be an important determinant in whether or not education reforms result in public outcomes (Amiri et al., 2025). Research in the field has confirmed that high levels of implementing capacity, as evidenced by proactive behaviour, knowledge of policies, perseverance, compliance with performance standards and effective execution of tasks, boost institutional efficiency and service delivery, which in turn leads to creation of public value (Kanju & Masabo, 2025; Ranjan & Mohapatra, 2023). Educational institutions with high implementation capacity can be more efficient in resource allocation, compliance with policies, and provision of quality educational services to stakeholders and society, according to scholars (Baran & Demirkasımoğlu, 2025; Meijer & Boon, 2024). This capacity supports accountability, transparency, and responsiveness—all elements of public value. The literature also contains some interesting paradoxes, however (Asrulla & Mahmud, 2025). In some cases, it has been found that public value creation is not necessarily achieved when implementation capacity is strong, as external factors like political interference, bureaucratic rigidity, limited funds, and institutional resistance can weaken the outcomes of policies (Bell, 2024). Others argue that over-emphasis on procedural compliance and performance standards can result in administrative practices that are too rule-driven, rather than responding to innovative ideas and the needs of stakeholders, that may diminish rather than increase public value (Maulana et al., 2025). Moreover, a proactive and knowledgeable implementer can help to make reform a success, but their ability to do so can be limited in systems with high centralization and low decision-making autonomy (Mohammadi & Shariati, 2023). These opposing findings suggest that the capacity for implementing education policy is generally related to creation of public value, but that the linkage of strength and direction of this relationship may depend on organizational, structural and contextual conditions (Yang et al., 2023). It is, therefore, hypothesized that the capacity to implement education policies positively impacts the creation of public value in education.

H1: Education Policy Implementation Capacity positively influences Public Value Creation in Education.

2.2 Algorithmic Performance Management and Public Value Creation in Education

Algorithmic performance management has become a growing managerial trend, getting hold of data-driven performance monitoring systems to set targets, optimize scheduling, measure results and calculate remuneration, which has implications for value creation in educational institutions (Alakoum et al., 2025). Previous research predominantly indicates that algorithmic PM can help improve the efficiency of an organization through improving the accuracy of decision making, minimizing human bias, and reinforcing accountability, which in turn can support public value creation (Boateng & Boateng, 2025; Xu, 2025). In the educational domain, algorithmic systems can help monitor performance in real-time, ensure that evaluation is transparent, and enhance the allocation of resources, which ultimately leads to a better quality of services and the responsiveness of the institution (Keegan & Meijerink, 2025). These enhancements can lead to positive stakeholder satisfaction, trust and overall educational outcomes, fundamental measures of public value. But the literature also has significant conflicts with respect to its effectiveness (Becker & Wurm, 2025; Kyriakidou, 2025). Others have raised the concern that depending too heavily on algorithmic systems could



develop into rigid or overly standardized management practices, losing sight of the many complexities and nuances involved in context and human judgment (Liu et al., 2025). They can have unintended consequences of lowering autonomy, raising stress among educators, and fostering performance-based behaviours to simple metrics rather than meaningful educational outcomes (Khalid et al., 2025). Other studies also indicate that algorithmic decision making could perpetuate unconscious biases in the data or assessment processes used, thus the result could be unfair evaluations and loss of trust in the institutional process (Leavitt et al., 2025). Others point to issues of transparency, ethical regulation and staff welfare. Some stress efficiency and objectivity in algorithmic management, some raise the issues of transparency, ethical governance and employee welfare (Kefalis et al., 2025). The divergent views suggest that while algorithmic PVM has promising potential to improve the creation of public values in education, it requires careful implementation, fairness, and human oversight.

H2: Algorithmic Performance Management positively influences Public Value Creation in Education.

2.3 Managerial Sensemaking of Performance Information

The way organizations process performance information to make sense of it, called sensemaking, is increasingly acknowledged as an important way that organizations and technology affect public value creation in educational institutions (de Metz et al., 2024). Sensemaking is an interpretive process that managers engage in to analyse and connect performance-related information, to provide context and to develop meaning; to inform strategic and operational decisions (Calvard, 2025). The empirical evidence indicates that considerable performance information is created in the implementation of education policies and in the performance management by algorithms, but how effective they are when it comes to generating public value is heavily dependent on the capacity of managers to understand and use them meaningfully (Stansberry Beard, 2025; Urquhart et al., 2025). Building education policy implementation capacity is argued to enable institutions with structural and informational capacity to inform the managerial interpretation of the policy; which, in turn, comprises proactive behaviour, knowledge, persistence, performance standards and execution capability (Chaaban et al., 2025). Likewise, algorithmic performance management offers managers timely and data-driven performance insights via monitoring, goal setting, scheduling, performance evaluation, and compensation systems, enabling easier access to structured performance metrics (Lacroix, 2025). Followed by supportive literature, it is concluded that when managers are able to engage in sensemaking effectively, they are able to convert policy-related and algorithmically-generated data into actionable insights which improve the quality of their decisions, accountability, efficiency of services, and level of satisfaction of the stakeholders, ultimately enhancing public value creation (Liljenberg, 2025; Ojuri et al., 2025). But there is also significant academic disagreement about this intervening process in the literature. However, it is argued by some that too much performance information will not necessarily result in better outcomes as managers can suffer from information overload, cognitive biases and selective interpretation, which can lead to suboptimal decision making (Bell, 2024; Yang et al., 2023). Others argue that the performance information that is created by policy or algorithms is not "true" or "objective" and should be understood within its context to prevent misinterpretation (Becker & Wurm, 2025). For algorithmic systems, some argue that automation minimizes the need for managerial interpretation, as objective recommendations take the place of human interpretation, while others believe that algorithmic outputs may contain biases, overlook complex realities, and ignore some aspects of educational performance, making human sensemaking even more important (Baran & Demirkasımoğlu, 2025). Similarly, robust policy implementation capacity can be undermined by 'bureaucratic structures' which limit reflective analysis and adaptive decision making resulting in no public value (de Metz et al., 2024; Kulkarni et al., 2024). The contrasting views imply that the capacity to implement and the capability of an algorithm do not sufficiently ensure the creation of public value, as it is reinforced by managers' ability to interpret and use the information on performance.

H3a: Managerial Sensemaking of Performance Information mediates the relationship between Education Policy Implementation Capacity and Public Value Creation in Education.

H3b: Managerial Sensemaking of Performance Information mediates the relationship between Algorithmic Performance Management and Public Value Creation in Education.



2.4 Adaptive Governance Mechanisms as Mediator

Adaptive governance mechanisms have become increasingly recognised as key to allowing them to adapt to dynamic policy environments, changing technologies and shifting expectations of educational stakeholders as a means to creating public value (Demartini et al., 2024). Adaptive governance is about flexible, collaborative and responsive governance that enables institutions to adapt to new challenges and opportunities by adjusting strategies, decision-making processes and resource allocation (Pratiwi et al., 2026). Previous research indicates that the capacity of education policy implementation and algorithmic performance management have a potential effect on public value creation, through building and strengthening adaptive governance mechanisms (Nolte & Lindenmeier, 2024). A strong capacity for the implementation of education policy is said to enable institutions to be pro-active in their approach to policy, knowledge about it, perseverance in following it, standards, and its ability to execute it, which will make the organization ready to apply flexible governance, coordinate stakeholders, and effectively respond to uncertainties in education policy (Akther & Evans, 2024). Algorithmic performance management supports this, too, as it is now possible to have timely performance data from monitoring, goal setting, scheduling, performance evaluation, and compensation systems that can lead to more evidence-based and responsive governance systems (Akther & Evans, 2024; Kyriakidou, 2025).

Some of the supporting studies suggest that the presence of adaptive governance mechanisms can enable institutions to better align policy priorities with real time performance insights, better coordinate departmental action, increase transparency and take timely action to improve service delivery, strengthen stakeholder trust, and ultimately increase public value (Alakoum et al., 2025; Boateng & Boateng, 2025). It has been found, however, that there are significant contradictions in the literature as well. Others have suggested that as implementation increases, adaptive governance does not necessarily increase, as is the case in rigid-bureaucratic structures where formal rules, central authority, and resistance to change restrict flexibility and innovation (Al-Mansour & Al-Khalidi, 2024; Keegan & Meijerink, 2025). Similarly, the use of algorithmic systems to improve responsiveness would require a continuous feedback mechanism; however, some other research indicates that over-dependence on algorithmic management may result in the standardization of every aspect, and in a loss of 2026). Critics further argue that adaptive governance may be hindered when algorithmic systems lack transparency or when decision-makers become overly dependent on technological outputs, reducing collaborative deliberation and human discretion (Hakiman & Sheely, 2025). Additionally, some researchers contend that adaptive governance itself may create inconsistencies in policy implementation if flexibility leads to ambiguity or fragmented decision-making (Hezam et al., 2025). These contrasting perspectives suggest that neither education policy implementation capacity nor algorithmic performance management directly guarantees public value creation; rather, their effectiveness may depend on the presence of governance mechanisms capable of balancing flexibility, accountability, and responsiveness (Sagar & Singh, 2026).

H4a: Adaptive Governance Mechanisms mediate the relationship between Education Policy Implementation Capacity and Public Value Creation in Education.

H4b: Adaptive Governance Mechanisms mediate the relationship between Algorithmic Performance Management and Public Value Creation in Education.

2.5 Theoretical Framework Supporting the Research

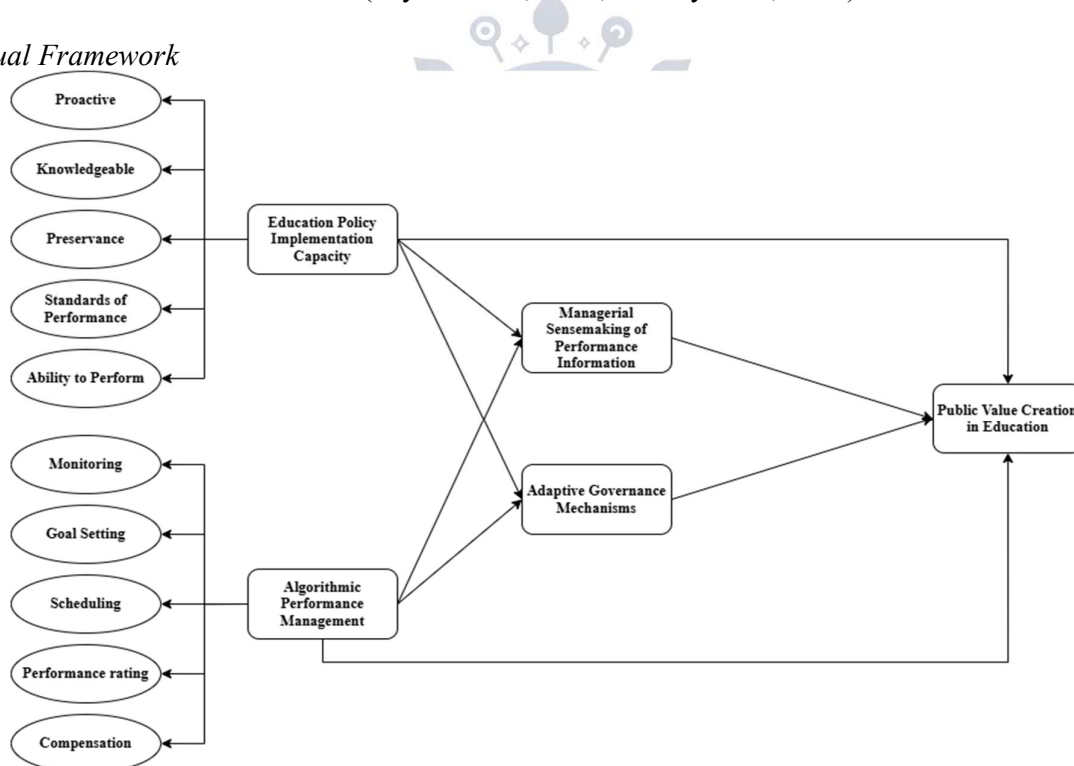
The main theoretical framework which underpins this study is Public Administration Public Value Theory (1995) by Mark Moore, which describes how public sector institutions create value for citizens by the effective management, institutional capacity and responsive governance that they deliver. According to the theory, the value creation process takes place when public organisations manage to bridge the gap between their operational capabilities and the needs in society, expectations of various stakeholders and legitimate governance processes (Moore, 2013). In education, public value is realised when education institutions provide high quality, equitable, transparent and socially useful educational services. This theoretical approach is well suited to the relationships suggested in this study. EPIC is a key organizational ability that helps educational institutions to implement policy intentions into meaningful results by means of proactive



behavior, knowledge, persistence, committing to standards and execution. Like Algorithmic Performance Management, the Algorithmic Management of Learning is a contemporary managerial capability, which, by means of data-based monitoring, goal setting, scheduling, performance evaluation, and compensation, helps to enhance institutional performance. Public Value Theory implies that the capabilities themselves do not necessarily lead to value creation directly, but their impact on value depends on how institutions interpret performance information and how they adjust governance processes to the new environmental requirements. Mediating roles of Managerial Sensemaking of Performance Information and Adaptive Governance Mechanisms are explained in the proposed model. Managerial sensemaking helps administrators make sense of the complex policy and algorithmic performance data, turning information into strategy and decision making that enhances accountability and service delivery. Adaptive governance mechanisms also support this process by fostering flexibility, responsiveness, collaboration, and quick decision-making in dynamic learning contexts. In the model, shown below in Figure 1: Conceptual Framework, Education Policy Implementation Capacity is expected to affect Public Value Creation in Education both directly and indirectly via Managerial Sensemaking of Performance Information and Adaptive Governance Mechanisms, and in turn to affect both of these in turn. In this sense, Public Value Theory provides a holistic perspective on how the capacity of an organisation, technological systems, managerial cognition, and governance adaptability, all come together to create value in educational institutions (Bryson et al., 2014; Hartley et al., 2017).

Figure 1

Conceptual Framework



The figure presents the hypothesized direct and indirect relationships among Education Policy Implementation Capacity, Algorithmic Performance Management, Managerial Sensemaking of Performance Information, Adaptive Governance Mechanisms, and Public Value Creation in Education.

3. Methodology

3.1 Method

3.1.1 Research Design. This study was a quantitative and cross-sectional research design with an examination of the relationships between Education Policy Implementation Capacity, Algorithmic Performance Management, Managerial Sensemaking of Performance Information, Adaptive Governance Mechanisms and Public Value Creation in Education. A survey-based approach was deemed appropriate



because allows systematic collection of standardized responses from a large number of respondents and it is particularly suitable to study latent constructs and to test complex causal relationships between several variables. The deductive research method was used, which was based on theory and empirical hypothesis. The goals of this study were best met through a quantitative design, as the model proposed was predictive and there were several mediation pathways.

3.2 Population and Sample

The study involved the government school principals from major cities of South Punjab, Pakistan. School principals were chosen as the respondents as they have central administrative positions and are greatly involved in policy implementation and performance management, adaptation of governance and decision-making within the school. They are extremely relevant for measuring organizational capability, technology-enabled management practices, and value creation in educational contexts as they are involved in administrative tasks. There were 185 principals who participated in the study. The samples consisted of government schools of the major cities of South Punjab having Multan, Bahawalpur, Dera Ghazi Khan, Rahim Yar Khan, Muzaffargarh and Vehari. The number of the samples ($n = 185$) were concluded as adequate for PLS-SEM because it is an efficient method with relatively small to medium sized samples with complex predictive models. The sample also met the minimal statistical power criteria for structural model estimation.

3.3 Data Collection Procedure

A structured questionnaire with previously validated measurement scales from previous studies was used to collect data. The questionnaire was mailed and also handed out electronically to ensure that it was accessible and easy to answer. Respondents were invited to contribute answers to questions about their experiences as school administrators, and their participation in educational policy implementation and institutional governance. Responses collected were screened for missing values, incomplete responses and extreme outliers before final analysis. Every questionnaire received, included in the final data set, was complete and appropriate for analysis. Common method bias was also a concern because only one source of data was obtained at one time.

3.4 Common Method Bias Assessment

Since the data for this study was self-reported and obtained from a single questionnaire, common method bias was checked to ensure that the relationships found are not artificial, as a result of measurement method. To reduce and quantify common method bias, several procedures and statistics suggested in previous literature were followed. Respondents were assured of anonymity and confidentiality in the procedure to minimize evaluation apprehension and social desirability bias. Care was taken in the wording of the items in order to minimise ambiguity and ensure clarity of the items. Harman's single-factor test was done statistically by factoring all measurement items into an exploratory factor analysis for the purpose of determining if there was one factor accounting for the most covariance among the variables. The results showed that the first factor accounted for less than 50% of the variance, thus implying that the common method bias was not a serious issue in this study. Furthermore, full collinearity variance inflation factor values were checked in SmartPLS and all the VIF values were under the recommended value of 3.3, which indicated that there was no significant common method bias in the data.

3.5 Measures

All constructs in this study were assessed by scales that were previously validated and used in previous studies. Responses were scored on a 5-point scale (1 = strongly disagree and 5 = strongly agree). Education Policy Implementation Capacity was evaluated by an adopted scale of five dimensions: Proactive behaviour, Knowledgeable capacity, Perseverance, Standards of performance, and Ability to perform (Source: Author, Year). The dimensions of Algorithmic Performance Management were measured in terms of monitoring, goal setting, scheduling, performance rating and compensation (Source: Author, Year). The study Managerial Sensemaking of Performance Information measured the level of principals' perception and use of performance information in strategic and operational decisions (Source: Author and Year). Adaptive Governance Mechanisms assessed governance flexibility, responsiveness, collaboration and adaptability to evolving institutional requirements (Author, Year). Public Value Creation in Education assessed the degree



to which educational institutions generated value through improved service quality, accountability, transparency, and stakeholder satisfaction (Source: Author, Year). The use of adopted scales ensured content validity and improved measurement reliability.

3.6 Data Analysis Technique

The collected data were analysed by using software named SmartPLS which conducted by the technique of Partial Least Squares Structural Equation Modelling (PLS-SEM). SmartPLS has been chosen because it is very appropriate for predictive and exploratory research with complex structural relationships, multiple latent constructs and mediation analysis. The analysis was conducted in two stages: measurement model assessment and structural model assessment. The reliability and validity of the measurement model were determined by factor loadings, Cronbach's alpha, composite reliability, average variance extracted, and by calculating the ratio of heterotrait-monotrait. The path coefficients, coefficient of determination, predictive relevance, effect size and mediation effects were analysed in the structural model to test the proposed hypotheses. For the purpose of assessing the significance of the direct and indirect relationships among the constructs, bootstrapping with 5000 resamples was carried out. This analytical method would be useful for conducting a comprehensive test of the study hypotheses, and would provide a strong examination of the proposed conceptual framework.

4. Results

4.1 Construct Reliability and Validity

The construct reliability and the convergent validity statistics for all constructs used in the study are provided in Table 2. Cronbach's alpha and Composite Reliability (CR) were used to analyse reliability, and Average Variance Extracted (AVE) was used to analyse the convergent validity. The results showed that all constructs had Cronbach's alpha values greater than 0.70, with a range of 0.777 to 0.960, which indicated satisfactory internal consistency reliability. Likewise, the Composite Reliability for all constructs were above the acceptable value of 0.70 (ranging from 0.857 to 0.963) indicating high construct reliability. The convergent validity was tested by the AVE, and all constructs had AVE values greater than 0.50 (0.523–0.666), which mean that each construct captured over 50% of the variance of its indicators. These results indicate that the measurement model has good reliability and convergent validity, suggesting that the indicators observed would be reliable in measuring the latent constructs measured.

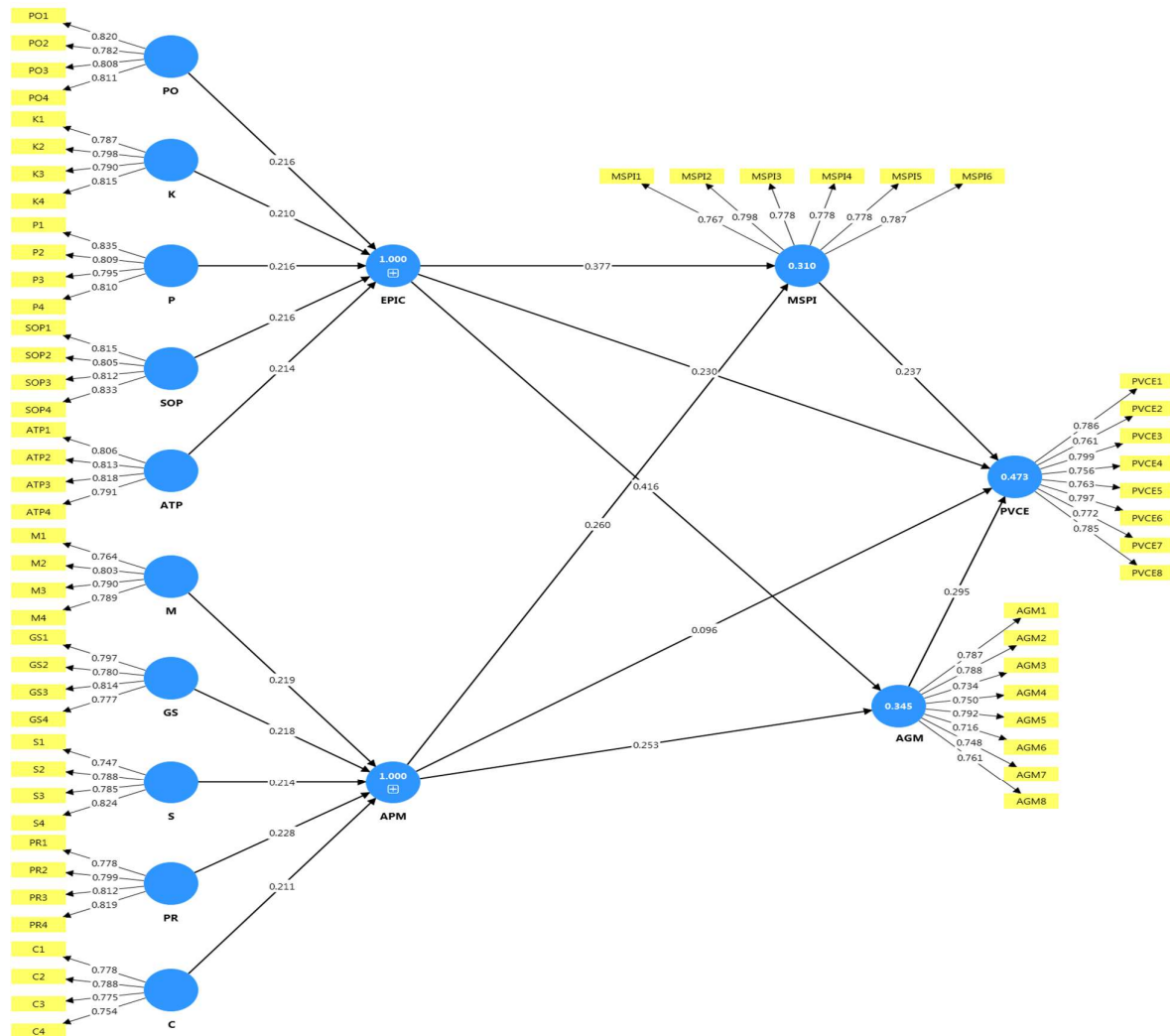
Table 1

Construct Reliability and Validity

Construct	Cronbach Alpha	CR	AVE
AGM	0.896	0.916	0.577
APM	0.952	0.956	0.523
ATP	0.821	0.882	0.651
C	0.777	0.857	0.599
EPIC	0.960	0.963	0.567
GS	0.802	0.871	0.627
K	0.810	0.875	0.636
M	0.795	0.867	0.619
MSPI	0.872	0.904	0.610
P	0.828	0.886	0.660
PO	0.820	0.881	0.649
PR	0.815	0.878	0.644
PVCE	0.907	0.924	0.605
S	0.794	0.866	0.619
SOP	0.833	0.889	0.666



Figure 2
Measurement Model



The figure presents the measurement model with outer loadings for all retained items.

4.2 Outer Loadings

The measurement model and outer loadings for all items retained are shown in Figure 2 and Table 3 respectively. Outer loading values exemplify the relationship between the items and the latent constructs. As per the recommended criteria, loadings exceeding 0.70 are acceptable, but may be retained if the overall reliability and validity of the instrument is satisfactory despite having lower loadings. The results indicate that all the retained indicators loaded well onto the constructs (outer loading between 0.716 and 0.835). The lowest loading was for AGM6 (0.716) and the highest loading was for P1 (0.835). All loadings were found beyond the minimum acceptable level and presented positive results in terms of construct reliability and AVE, thus it was decided to proceed with the analysis of the remaining items. The results suggest high indicator reliability and provide confirmation that the items observed are a reliable representation of the constructs.

Table 2

Outer Loading

Variable	Item	Outer Loading
AGM	AGM1	0.787
AGM	AGM2	0.788

Variable	Item	Outer Loading
AGM	AGM3	0.734
AGM	AGM4	0.750



Variable	Item	Outer Loading	Variable	Item	Outer Loading
AGM	AGM5	0.792	P	P4	0.810
AGM	AGM6	0.716	PO	PO1	0.820
AGM	AGM7	0.748	PO	PO2	0.782
AGM	AGM8	0.761	PO	PO3	0.808
ATP	ATP1	0.806	PO	PO4	0.811
ATP	ATP2	0.813	PR	PR1	0.778
ATP	ATP3	0.818	PR	PR2	0.799
ATP	ATP4	0.791	PR	PR3	0.812
C	C1	0.778	PR	PR4	0.819
C	C4	0.754	PVCE	PVCE1	0.786
GS	GS1	0.797	PVCE	PVCE2	0.761
GS	GS3	0.814	PVCE	PVCE3	0.799
K	K1	0.787	PVCE	PVCE4	0.756
K	K3	0.790	PVCE	PVCE5	0.763
M	M1	0.764	PVCE	PVCE6	0.797
M	M3	0.790	PVCE	PVCE7	0.772
M	M4	0.789	PVCE	PVCE8	0.785
MSPI	MSPI1	0.767	S	S1	0.747
MSPI	MSPI2	0.798	S	S2	0.788
MSPI	MSPI3	0.778	S	S3	0.785
MSPI	MSPI4	0.778	S	S4	0.824
MSPI	MSPI5	0.778	SOP	SOP1	0.815
MSPI	MSPI6	0.787	SOP	SOP2	0.805
P	P1	0.835	SOP	SOP3	0.812
P	P2	0.809	SOP	SOP4	0.833
P	P3	0.795			

4.3 Discriminant Validity

Table 3

Discriminant Validity (HTMT)

Constructs	AGM	ATP	C	GS	K	M	MSPI	P	PO	PR	PVCE	S	SOP
AGM													
ATP	0.570												
C	0.530	0.491											
GS	0.499	0.607	0.724										
K	0.603	0.741	0.537	0.591									
M	0.497	0.531	0.682	0.773	0.517								
MSPI	0.552	0.555	0.512	0.494	0.559	0.506							
P	0.605	0.793	0.602	0.599	0.811	0.596	0.575						
PO	0.621	0.823	0.541	0.594	0.834	0.532	0.614	0.802					
PR	0.526	0.553	0.781	0.744	0.551	0.812	0.505	0.594	0.576				
PVCE	0.637	0.608	0.503	0.480	0.616	0.485	0.610	0.592	0.611	0.521			
S	0.444	0.491	0.803	0.761	0.453	0.794	0.474	0.538	0.505	0.732	0.479		
SOP	0.534	0.812	0.502	0.535	0.824	0.480	0.503	0.791	0.842	0.529	0.592	0.438	

The HTMT values are reported as provided in the original analysis.

4.4 Model Goodness of Fit

The coefficient of determination R^2 , adjusted R^2 and predictive relevance Q^2 values are shown for endogenous constructs in Table 4. The R^2 values are the percentage of variance in each endogenous construct accounted for by exogenous variables. Analysis of the results reveals that the overall predictive power of the



predictor variables on Managerial Sensemaking of Performance Information was 0.310, which indicates moderate predictive power. Public Value Creation in Education (PVCE) had an R^2 of 0.473, suggesting that the model had moderate to substantial predictive power as 47.3% of the variance of PVCE was explained. The values of Q^2 remained positive for all endogenous constructs, MSPI: 0.301 and PVCE: 0.345, indicating that the model has good predictive relevance. The results indicate that the model has a satisfactory explanation and predictive ability in the explanation of public value creation in educational institutions.

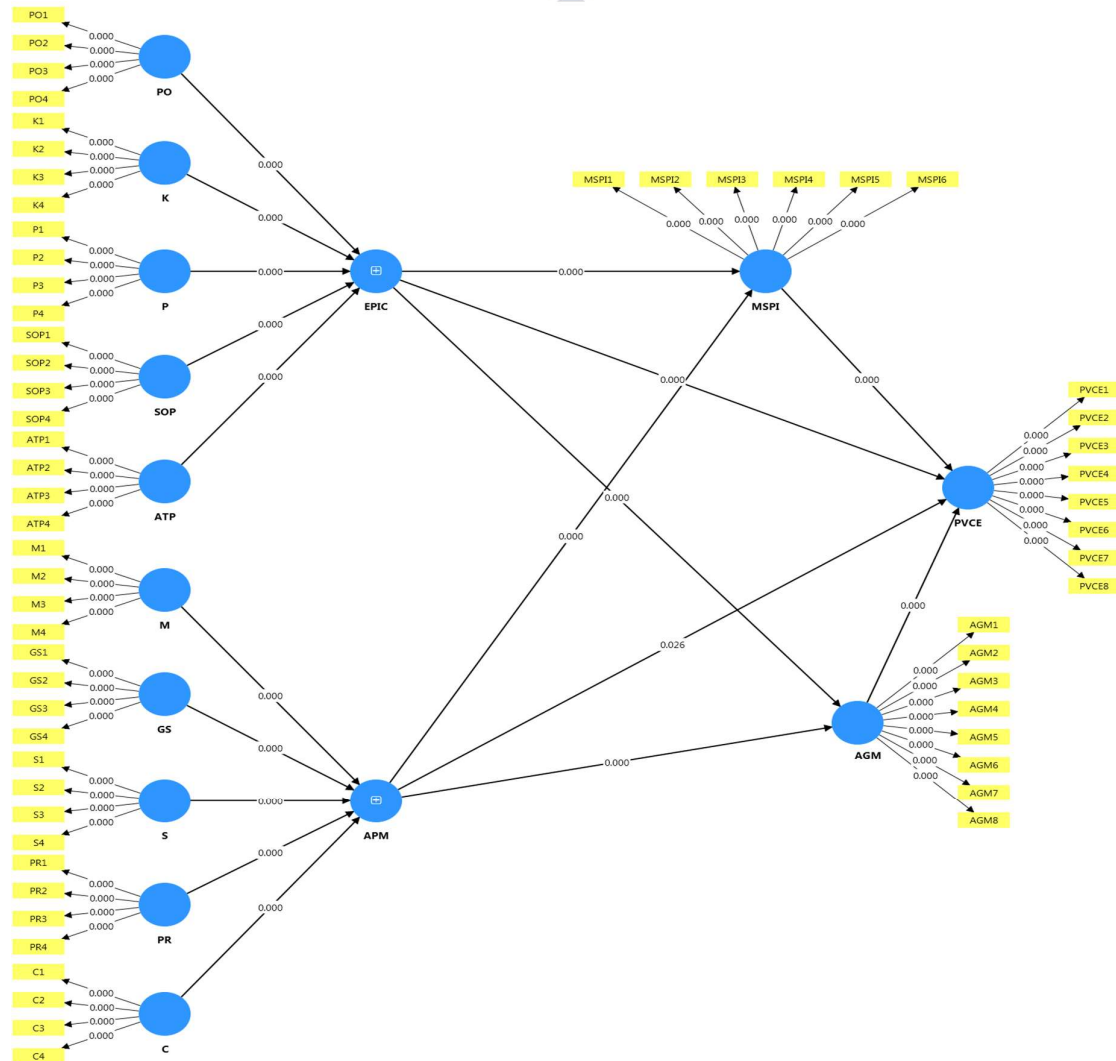
Table 4

R-Square Statistics Model Goodness of Fit Statistics

Endogenous Construct	R^2	Adjusted R^2	Q^2 Predictive Relevance
AGM	0.345	0.341	1.000
APM	1.000	1.000	1.000
EPIC	1.000	1.000	0.333
MSPI	0.310	0.305	0.301
PVCE	0.473	0.466	0.345

Figure 3

Structural Model



The figure presents the structural model with direct and indirect path estimates.



4.5 Hypothesis Testing

The structural model and the results of the hypothesis testing using direct and indirect path analysis are shown in Figure 3 and Table 5. The direct effect of Education Policy Implementation Capacity on Public Value Creation in Education was positive and significant ($\beta = 0.230$, $t = 4.261$, $p < 0.001$), thus supporting H1. It implies that the capacity to implement policies effectively greatly improves the creation of public value within educational institutions. Likewise, Algorithmic Performance Management had a positive and significant effect on Public Value Creation in Education ($\beta = 0.096$, $t = 1.937$, $p = 0.026$), and confirmed H2. The effect size was smaller than EPIC, but the relationship was still statistically significant, meaning that algorithmic management does, indeed, have a positive impact on value creation. In terms of the mediation effect, Managerial sense making of performance information mediated the relationship between EPIC and PVCE ($\beta = 0.089$, $t = 3.912$, $p < 0.001$), supporting H3a. It also significantly mediated the relationship between APM and PVCE ($\beta = 0.062$, $t = 3.710$, $p < 0.001$) thus providing support for H3b. The findings indicate that these can play a role in the creation of public value by supporting the managerial interpretation of the performance information, both through the institutional capacity and algorithmic systems. Moreover, the relationship between EPIC and PVCE was significantly mediated by Adaptive Governance Mechanisms ($\beta = 0.123$, $t = 4.486$, $p < 0.001$), which supported H4a. Likewise, APM significantly mediated between AGM and PVCE ($\beta = 0.075$, $t = 3.550$, $p < 0.001$), thus supporting H4b. The significant mediation was found in EPIC in the case of all indirect effects. Overall, all proposed hypotheses were confirmed, meaning that Education Policy Implementation Capacity and Algorithmic Performance Management have direct and indirect effect on the Public Value Creation in Education via the mediating role of Managerial Sense making of Performance Information and Adaptive Governance Mechanisms.

Table 5

Direct Path Analysis

Path	β	t-Value	p-Value	Result
EPIC > PVCE	0.230	4.261	0.000	Supported
APM > PVCE	0.096	1.937	0.026	Supported
EPIC > MSPI > PVCE	0.089	3.912	0.000	Supported
EPIC > AGM > PVCE	0.123	4.486	0.000	Supported
APM > MSPI > PVCE	0.062	3.710	0.000	Supported
APM > AGM > PVCE	0.075	3.550	0.000	Supported

5. Discussion

The question of how a public value is created is becoming more important in an age where schools are required to not only abide by policy promises but also to undergo digital transformation and to produce tangible societal results. This research results provide a more nuanced view of the conditions that give rise to public value created in education, as it shows that public value is not only the result of organizational capacity, technological intelligence, managerial cognition, but also the result of dynamic interaction (Mohammadi & Shariati, 2023). The hypotheses are accepted by all, which implies that the public value of an educational institution is increased when the institution has good policy implementation abilities, when it leverages algorithm-driven performance systems and when it interprets the performance information in a meaningful way and is adaptive in its governance processes. These results all point to a need for value creation in today's education systems, which goes beyond administrative efficiency and calls for a more holistic approach to strategic action and decision-making, and ultimately, for responsive governance (Asrulla & Mahmud, 2025). This discussion draws on the literature and theories to interpret these findings in the context of previous research and theory, and to provide increased understanding of the manner in which these mutually reveals a transition from traditional administrative structures towards intelligent governance structures in which data and digital systems are the key enablers of institutional performance and societal outcomes.

The findings from the mediation on the managerial sensemaking of performance information are important both theoretically and practically and contribute to the support of H3a and H3b. The findings



suggest that the relationships between education policy implementation capacity, algorithmic performance management and public value creation are significantly mediated by managerial sensemaking. The discovery provides a basis for the conclusion that the capacity of the organization and systems of technology are not enough to provide public value without being interpreted and used by the managers (van der Woerd & van der Scheer, 2026). When it comes to performance information, the mediation effect means that the information gained has value only when it's used to reveal a strategic message to the manager.

For education policy implementation capacity, with strong institutional capacity comes policy-relevant information about implementation progress, challenges, and outcomes, but the nature of the interpretation by managers dictates how that information guides corrective action and strategic improvement. Likewise, algorithmic performance management provides managers with a wealth of performance metrics, but not improving outcomes is not the same as improving outcomes (Becker & Wurm, 2025). The results highlight the importance of managerial cognition as a link between information and action. This aligns with the theory of sensemaking, which suggests that decision quality relies on the way in which actors make sense of complicated information in unknown environments. In theory, it adds the cognitive processes as an important mechanism in the creation of Public Value to the Public Value Theory (de Metz et al., 2024). The results suggest not only that structural or technological resources are not the sole contributors to public value creation, but also that managerial intelligence and interpretive capacity are also important. In an educational setting, where performance can be measured both quantitatively and qualitatively, with the added complexity of contextual understanding, this interpretation will be particularly applicable.

The findings also validate H4a and H4b, showing that adaptive governance mechanisms can play a significant mediating role between the education policy implementation capacity, algorithmic performance management, and creation of public value. This finding suggests that governance flexibility and responsiveness is a necessary mechanism for the creation of value by institutional capability and technological systems. The mediation effect indicates that institutions that have higher implementation capacity are more likely to establish governance systems that are able to respond to the new challenges of education, adjust the policy, and allocate the resource (Al-Mansour & Al-Khalidi, 2024). Algorithmic performance management, similarly, plays a role in adaptive governance, by providing real-time data that allows institutions to more quickly and effectively adjust to environmental shifts. The importance of this result is that the static governance models that are not effective in educational contexts of uncertainty, fast technological transformations and changing demands of stakeholders are becoming more and more evident. Adaptive governance enables institutional structures to be responsive, accountable, and yet flexible, meaning that decisions are still evidence-based and context-specific (Akther & Evans, 2024). Theoretically, this discovery supports the notion of ongoing change and flexibility over rigid procedures to achieve public value creation. It builds on the current scholarship of governance by providing a compelling example of how governance becomes adaptive and not just a contextual variable that exists between organizational capacity and technological management and public outcomes. The findings highlight the need to shift away from hierarchical governance models and towards more flexible, participatory and responsive governance models in today's context to maximize the public value from educational institutions.

Overall results provide a comprehensive response to the question of the creation of public value in educational organizations through the interaction of organizational ability, technological systems and managerial cognition and governance adaptability. All the hypotheses were accepted: public value creation in education is multi-dimensional, direct relationships are not adequate to represent it. On the other hand, value is generated in a variety of modes: sensitivities in education policy implementation as an input; managerial sensemaking as a process of cognitive transformation; and adaptive governance as a response structural mechanism (Chaaban et al., 2025). This integrated model represents a great theoretical development because it takes Public Administration Public Value Theory out of the ability to create value and adds in mechanisms as explanatory factors for how value is created in practice. The study contributes to the literature by demonstrating that outcomes in the public sector are not the result of the capacity or sophistication of any institution or technology. Instead, it is the interpretation of performance information by managers and the



adjustment of governance systems to changing circumstances that determines their effectiveness (Stansberry Beard, 2025). This more sophisticated interpretation suggests that in the digital world, digital transformation in education is not only about policy change or new technologies being introduced but also about the smart management and flexible institutions that transform information into action and action into public value. As a result, the study gives a comprehensive overview of the current state of educational governance and sets a foundation for further research into the complex mechanisms which enable public institutions to create sustainable value for society.

6. Conclusion

Lastly, the study adds to the need for an overall understanding of the process of public value creation in which the capability of an organization, the technological system, the managerial cognition, and the adaptability of the educational governance are all intertwined. The results show that implementation capacity of educational policies and algorithmic performance management strongly contribute to the creation of public value in education, directly and indirectly, via the managerial sensemaking of performance information and via adaptive governance mechanisms. The results indicate that public value production is not only dependent on the policy of the government and on the use of technologies, but also on how the information obtained in the process of performance is meaningfully interpreted, and on how the structure of governance is changed in response to the different challenges of the environment. This study is a valuable contribution to theory and practice in the study of modern educational administration as it combines the traditional and new public administration concepts with the digital governance perspective. Results confirm that moving towards sustainable education is not only an efficient system, but competent institutions, smart leadership, thinking governance, and decisions that are transformative of the needs of a society towards sustainable education. Overall, the study adds to an emerging discussion on public value and offers a framework for articulating how a school might be a public one that is value adding over time in a rapidly changing, technologic world for its students, stakeholders and community.

7. Implications

The study makes important theoretical contributions by taking Public Administration Public Value Theory beyond its capability-based explanations about the performance of public sector and offer a more comprehensive understanding of public value creation in educational institutions. In this study, the evidence was presented that public value creation process is multidimensional and it has a mediating relationship in the form of complex interaction between institutional capability, algorithmic intelligence, managerial cognition and public governance adaptability, instead of the direct relationship between these factors and results of public value creation. The study also brings theory to life by offering empirical evidence for the validation of the mediators of managerial sensemaking of performance information and the adaptive governance mechanism between the organizational resources and the societal value. This extends the theoretical discussion about the public value of having strategic capability (such as policy capacity or digital infrastructure) as the outcome of the capacity of the institution to understand the performance information and then act flexibly and reactively to the complexity of the environment. Moreover, the embedding of the implementation capacity of education policy and the algorithmic performance management in one package is added to the existing literature on digital public governance, which combines public administration theory with management perspectives on the use of new technologies. The novelty of this study lies in the development of a new theoretical model, which enriches the theoretical understanding of sustainable creation of public values in modern education institutions in a context of growing complexity and information.

This research is also practically relevant to the public value creation in education, for policy makers, educators and institutional leaders who aim to enhance public value creation in education. Findings indicated that the capacity to implement a policy should be given more attention in educational institutions by providing training for their employees, strategic planning, building up their knowledge, and making them capable of implementing it by providing them with the necessary skills. Meanwhile, institutions need to be effectively implementing algorithmic performance management systems, which will increase monitoring, goal matching, scheduling efficiency, and evidence-based decisions. The study underscores, however, that technology is not



enough – managers need to be trained to be able to interpret performance data and to take meaningful action based on that data. This means that institutions need to focus their investments on strengthening managerial analytical skills, data literacy, and capability for decision making to improve sensemaking abilities. Furthermore, the importance of adaptive governance mechanisms suggests that a rigid bureaucratic structure should be replaced or supplemented with alternative governance arrangements that are more flexible, participatory and responsive, and, responsive to new education issues that emerge rapidly. Governance systems should be designed to be accountable and also flexible so as to be able to be responsive to evolving stakeholder expectations and technological advances. The overall study offers a useful blueprint for educational institutions in the pursuit of sustainable public value creation, highlighting how investment in the institutional capability, digital infrastructure, managerial competence, and governance flexibility must all occur simultaneously.

8. Limitations and Future Directions

This study has some limitations that are noted and may be directions for future study. The study did not allow for causal relationships to be established between the following variables: capacity for the implementation of education policies; performance management through algorithms; school manager sensemaking of performance information; adaptive governance mechanisms; and public value in education to be drawn from the data, due to the cross-sectional research design used. These relationships may be studied longitudinally or experimentally in future research to shed more light on the development of the relationships and to better understand causality. Second, the study was self-reported; common method bias, social desirability bias, and perceptual limitations of the respondents could affect the results. To overcome this, future researchers can utilize multiple data sources, objective institutional performance measures or a mixed method to gain further insights. Third, the study was conducted in educational institutions, which could prevent outcomes from being broadly applicable to other public sector areas like health, public administration or local governance. The proposed model should be tested in other institutional environments to evaluate the external validity of the model. Furthermore, this study explored two significant mediators; other factors that could also explain public value creation, including organisational culture, leadership style, digital readiness, trust in technology, and employee resistance to algorithmic systems, might also contribute to understanding the process of public value creation. Moderating variables such as institutional size, technological maturity and policy complexity can also be studied in future research, and their contexts can be determined where these relationships are stronger and weaker.

Author's Contributions

All authors participated in ideation, development, and writing the manuscript. All authors read and approved the final manuscript.

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Informed Consent

Informed consent was obtained from all participants prior to data collection. Participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any time without any consequences. The confidentiality and anonymity of respondents were guaranteed throughout the research process.

Data Availability

The datasets generated and analysed during the current study are available from the corresponding author upon reasonable request. The authors are committed to transparency and will provide detailed methodological information and analysis protocols upon request.



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