Article

Upgrading Data Governance to Improve Disability-Related Services in Thailand

Sitthisak Chaiyasuk , Krish Rugchatjaroen * , Somboon Sirisunhirun , Nopraenue Sajjarax Dhirathiti , Somsak Amornsiriphong , Phut Ploywan

Posted Date: 13 February 2025

doi: 10.20944/preprints202502.0995.v1

Keywords: Data Governance for Accountability; Data-Driven Culture; Public Service Delivery; People with Disabilities; Thailand

 doi:10.20944/preprints202502.0995.v1

Article

Upgrading Data Governance to Improve Disability-Related Services in Thailand

Sitthisak Chaiyasuk [1], Krish Rugchatjaroen [2,*], Somboon Sirisunhirun [2], Nopraenue Sajjarax Dhirathiti [2], Somsak Amornsiriphong [2] and Phut Ploywan [2]

[1] Doctor of Public Administration (Public Policy and Public Management), Faculty of Social Sciences and Humanities, Mahidol University, Nakhon Pathom 73170, Thailand

[2] Faculty of Social Science and Humanities, Mahidol University, Thailand

* Correspondence: krish.rug@mahidol.ac.th; Tel.: +66 8 1711 7105

Abstract: Ensuring effective data governance is essential for delivering transparent, accessible, and equitable public services, particularly for people with disabilities. However, challenges such as gaps in data oversight and accountability hinder service efficiency and transparency. This study examines the relationship between data-driven culture, audit data governance, and public service performance, employing Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Path Analysis. The findings indicate that a strong data-driven culture enhances audit data governance, improving service transparency, accessibility, and user satisfaction for people with disabilities. Public service delivery significantly influences audit data governance through data accessibility, ethical management, and efficient administrative processes. To promote inclusive governance, this study highlights the need for open data policies, inter-agency collaboration, and emerging technologies such as AI and blockchain. Policy recommendations focus on data-driven decision-making frameworks that align with OECD principles, ensuring equitable and accountable public services for people with disabilities.

Keywords: data governance for accountability; data-driven culture; public service delivery; people with disabilities; Thailand

1. Introduction

Ensuring accessible and high-quality public services for people with disabilities remains a pressing challenge in Thailand. Despite national policies promoting inclusivity, people with disabilities continue to face barriers in healthcare, education, employment, and social welfare services. These challenges arise from fragmented service coordination, inconsistent policy enforcement, and inefficient data governance, leading to disparities in service delivery. According to the Department of Empowerment of Persons with Disabilities (2020), only 65% of registered people with disabilities in Thailand receive the full benefits to which they are entitled, highlighting persistent gaps in service accessibility and administrative inefficiencies.

In the era of digital transformation, data governance plays a crucial role in ensuring transparency, accountability, and equitable service provision for people with disabilities. Effective data management enables policymakers to monitor service efficiency, assess policy effectiveness, and implement data-driven reforms. However, Thailand faces significant obstacles in utilizing data to improve public services for people with disabilities, including data fragmentation, lack of interoperability between agencies, and inconsistent data governance frameworks. Without accurate and well-managed data, policymakers struggle to develop responsive and inclusive service models.

Globally, countries such as Australia and the European Union have successfully integrated data-driven governance models to enhance service accessibility and operational efficiency (Australian Government, 2022; European Commission, 2022). These reforms demonstrate how streamlined data

 doi:10.20944/preprints202502.0995.v1

governance frameworks contribute to more inclusive and efficient public administration. However, limited research has examined the role of data governance in improving service outcomes for people with disabilities in Thailand, particularly concerning data-driven decision-making, inter-agency collaboration, and policy implementation.

This study examines the impact of data governance on public service delivery for people with disabilities, focusing on how organizational culture, public service mechanisms, and digitalization contribute to inclusive service provision. By employing quantitative modeling techniques, this research provides empirical insights to inform policy innovation, strategic planning, and governance reforms that enhance service accessibility, efficiency, and equity for people with disabilities.

2. Literature Review

Public service delivery for people with disabilities requires equitable, efficient, and accessible governance mechanisms to ensure full social participation and rights-based inclusion. The OECD (2019) Principles of Public Administration emphasize four key dimensions: (1) citizen-oriented services, (2) fair and efficient administrative procedures, (3) enablers for service delivery, and (4) equitable access to public services. These principles align with the New Public Service (Denhardt & Denhardt, 2000), New Public Governance (Osborne, 2006), and Public Value Management (Bovaird & Löffler, 2003), all of which stress citizen engagement, service co-production, and inclusive policy design.

Incorporating data-driven governance enhances transparency and decision-making in public administration (Anderson, 2015). The DAMA International (2017) Data Governance Framework highlights ethical data handling and structured frameworks to improve public service efficiency and accountability. Audit data governance plays a critical role in ensuring accessibility, financial transparency, and service quality (IDI, 2020). Transform Health (2022) further emphasizes that equity-focused data governance is essential for achieving sustainable and inclusive public sector reforms.

The Biopsychosocial Model (ICF, WHO 2012) is widely used to conceptualize how disability outcomes are shaped by interactions between individuals and their environments. This model highlights the importance of removing systemic barriers to ensure equitable access to education, healthcare, employment, and welfare services. As digital transformation accelerates, Digital Accessibility Governance is increasingly recognized as a core component of inclusive public administration. The Web Content Accessibility Guidelines (WCAG) and United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) provide global standards for ensuring digital inclusion and accessibility in public services.

This study builds upon these frameworks to examine how audit data governance influences People with disabilities service delivery outcomes. It conceptualizes audit governance as a framework ensuring data accuracy, compliance, integration, and accessibility. The State Audit Office of Thailand's data policies shape service provision in education, employment, and social welfare. Within this framework, Service Delivery and Digitalization is one of the six governance pillars that drive inclusive, transparent, and accountable administration for People with disabilities.

Theoretical Framework

Audit data governance plays a crucial role in ensuring data accuracy, compliance, and integration in People with disabilities service delivery. The State Audit Office of Thailand's audit data serves as a foundation for public service provision in education, employment, accessibility, and welfare support. Within this governance framework, Service Delivery and Digitalization is one of six key principles influencing audit data governance, alongside Strategy, Organizational Structure, Accountability, Policy Coordination, and Public Financial Management.

Public service delivery for People with disabilities is shaped by four key elements: (1) Citizen-oriented services, (2) Fair and efficient administrative procedures, (3) Enablers for service delivery, and (4) Equitable access to public services. These dimensions align with New Public Service

 doi:10.20944/preprints202502.0995.v1

(Denhardt & Denhardt, 2000), New Public Governance (Osborne, 2006), and Public Value Management (Bovaird & Löffler, 2003), emphasizing service quality and citizen engagement.

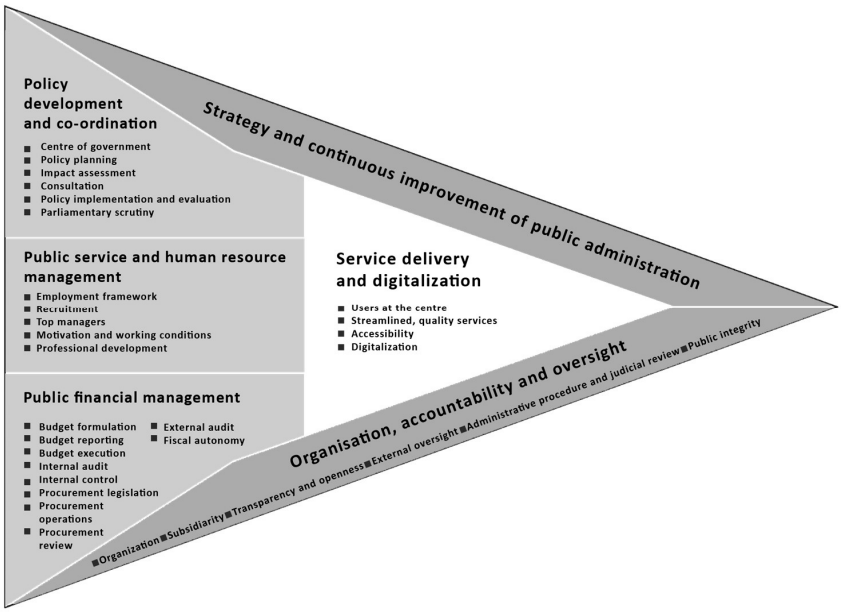


Figure 1. Principles of Public Administration (OECD, 2023).

Hypothesis Development

Based on this framework, three key hypotheses are proposed:

H1: Public service delivery for People with disabilities is positively influenced by: (1) Citizen-oriented policies, (2) Efficient administrative procedures, (3) Service enablers, and (4) Access to public services. The European Commission (2022) highlights digitalization as a critical factor in improving People with disabilities service accessibility and efficiency, while the WHO & World Bank (2011) emphasize the role of healthcare and education accessibility in enhancing service outcomes.

H2: Public service delivery for People with disabilities is positively associated with audit data governance. The OECD (2019) framework integrates New Public Management (NPM) principles, reinforcing accountability and efficiency-driven auditing in public service governance (Cordery & Hay, 2024).

H3: A data-driven organizational culture positively impacts audit data governance. Anderson (2015) links data-driven decision-making to improved audit governance. Empirical studies confirm that strong data literacy and big data integration enhance audit accuracy and risk prediction (Fattah, 2024; Prakash, 2024).

3. Materials and Methods

3.1. Data Collection

Audit data governance factors for People with disabilities services were identified based on public administration principles (OECD, 2019) and the concept of data-driven organizations. These factors were refined and validated through an Exploratory Factor Analysis (EFA). The finalized questionnaire was designed to assess expert perceptions of factor relationships and underwent content and face validity checks by an expert panel before being piloted.

The validated questionnaire was then administered to two target groups: 1) Government Officials involved in People with disabilities service delivery (340 valid responses from 500 distributed). 2) Individuals with Disabilities holding disability ID cards (371 valid responses from 500

 doi:10.20944/preprints202502.0995.v1

distributed). In total, 711 valid responses were collected in June 2024 across eight provinces in Thailand.

3.2. Data Analysis

Exploratory Factor Analysis (EFA) was conducted to refine variables, followed by Confirmatory Factor Analysis (CFA) to validate the measurement model. Path Analysis and Structural Equation Modeling (SEM) were then used to test hypotheses and assess causal relationships. The analytical criteria followed established standards for factor analysis, model fit, and validity, as summarized in Table 1.

Table 1. Standards and Thresholds for EFA, CFA, and SEM.

Measure	Criteria	Source
EFA (Exploratory Factor Analysis)		
KMO	> 0.80 (excellent), 0.70–0.79 (good), 0.60–0.69 (moderate), < 0.50 (unacceptable)	Kline (2016)
Bartlett's Test	p-value < 0.05 (H_1 acceptance)	Bartlett (1950)
Eigenvalues	> 1.00	Kaiser (1960)
Communalities	> 0.50	Hair et al. (2019)
Factor Loadings	> 0.40	
CFA (Confirmatory Factor Analysis)		
Relative Chi-Square or χ^2/df	< 5	Hair et al. (2019) and Prabowo et al. (2022)
T-Value or C.R. (Critical Ratio)	> 3.29 (p-value < 0.001)	Kline (2016)
ASV & MSV	< AVE (Discriminant Validity)	Fornell & Larcker (1981)
AVE (Average Variance Extracted)	> 0.50	Fornell & Larcker (1981) and Hair et al. (2019)
CR (Composite Reliability)	> 0.70	
Chi-Square or χ^2	Significant p-values expected	Hair et al. (2019)
CFI or TLI	> 0.92	
RMSEA	< 0.07	
SRMR	< 0.08	
Path Analysis		
Relative Chi-Square or χ^2/df	< 5	Hair et al. (2019) and Prabowo et al. (2022)
R^2 (Coefficient of Determination)	0.75 (substantial), 0.50 (moderate), 0.25 (weak)	Hair et al. (2019)
Chi-Square or χ^2	Significant p-values expected	
CFI or TLI	> 0.92	
RMSEA	< 0.07	
SRMR	< 0.08	
SEM (Structural Equation Modeling)		

 doi:10.20944/preprints202502.0995.v1

Relative Chi-Square or χ^2/df	< 5	Hair et al. (2019) and Prabowo et al. (2022)
Chi-Square or χ^2	Significant *p*-values expected	Hair et al. (2019)
CFI or TLI	> 0.92	
RMSEA	< 0.07	
SRMR	< 0.08	

4. Results

4.1. Exploratory Factor Analysis

This study employed SPSS AMOS 24.0 to conduct reliability testing and Exploratory Factor Analysis (EFA) on the questionnaire items to refine the predefined scale. The Cronbach's alpha (α) values for all dimensions indicated excellent internal consistency, with values above 0.80 (George & Mallery, 2003). The results confirmed that 49 key factors were identified across six primary dimensions: Citizen-Oriented Services, Fair & Efficient Administrative Procedures, Enablers for Service Delivery, Access to Public Services, Data-Driven Organization, and Audit Data Governance.

Sampling adequacy was evaluated using the Kaiser–Meyer–Olkin (KMO) measure, which yielded a value of 0.970, exceeding the recommended threshold of 0.900, indicating strong factorability of the dataset. Bartlett's test of sphericity produced a p-value of 0.001, confirming that inter-variable relationships were suitable for factor analysis. The principal component analysis method was used for factor extraction, and based on eigenvalues of 21.359, 7.262, and 1.872, three key dimensions were identified, explaining 60.986% of the total variance.

Varimax rotation was applied to refine the factor structure, generating a matrix that categorized audit data governance factors for public services for People with disabilities in Thailand into three dimensions, as presented in Table 2. The results largely aligned with pre-specified theoretical dimensions. However, variations emerged within public service delivery, where component structures differed from initial assumptions. Furthermore, within the data-driven organizational culture dimension, executive intuitive decision-making did not adequately explain variance due to a communalities value below 0.4, which is considered a lower threshold in social sciences (Preuss, 2014; Hair, 2010). Consequently, this factor was merged with the Anti-HiPPO Culture component, extracted from the same factor category.

Table 2. Model matrix and dimension comparison of influence factors of Data Governance for Auditing Public Services for People with disabilities in Thailand.

Dimension	EFA Factor		Composition			Commu-nalities	KMO	*p*-Value
			1	2	3			
Public Service Delivery: Perception of Public Services	s23	General service accessibility satisfaction	0.696			0.825	0.970	0.001
	s05	Service quality satisfaction	0.644			0.755		
	s24	Digital service	0.626			0.788		

 doi:10.20944/preprints202502.0995.v1

		accessibility satisfaction			
	s25	Time and cost accessibility satisfaction	0.585		0.738
Public Service Delivery: Enablers for Access to Data	s20	Public disclosure of disability statistics		0.747	0.686
	s17	Digital disability registry		0.744	0.682
	s22	WCAG compliance testing		0.740	0.716
	s21	Government website accessibility		0.713	0.700
	s18	Interoperable data exchange framework		0.687	0.708
	s14	Use of electronic or digital signatures		0.648	0.545
	s19	One-stop service for People with disabilities		0.637	0.594
	s15	Service management tools		0.608	0.695
	s16	Consultation services for people with disabilities		0.597	0.657
Public Service Delivery: Fair&Efficient Administrati	s10	Comprehensive public service legislation		0.711	0.763
	s11	Service quality audit against		0.710	0.763

 doi:10.20944/preprints202502.0995.v1

ve Procedures		resource usage				
	s09	Efficiency and resource optimization	0.696		0.748	
	s08	Legal framework for service delivery	0.677		0.667	
	s12	Value-for-money reporting	0.656		0.738	
	s07	Service process efficiency	0.585		0.679	
	s13	Compliance with international service standards	0.508		0.620	
Public Service Delivery: Citizen-Oriented Policy	s01	Joint planning and responsibility assignment		0.744	0.691	
	s02	Budget allocation and monitoring		0.740	0.745	
	s03	Information Tech. Policy		0.730	0.697	
	s04	Budget allocation and monitoring		0.705	0.701	
	s06	Provincial-level coordination		0.348	0.568	
Data-Driven Organization	c08	Open, Trusting Culture		0.841	0.707	0.939 0.000
	c06	Inquisitive, Questioning Culture		0.831	0.690	
	c07	Goals-First Culture		0.805	0.648	

 doi:10.20944/preprints202502.0995.v1

	c09	Data analysis training and team communication skills	0.800	0.640		
	c10	Data Handling Ethics	0.783	0.612		
	c01	Data Leadership	0.768	0.590		
	c0304	Anti-HiPPO Culture	0.765	0.586		
	c05	Iterative, Learning Culture	0.761	0.578		
	c02	Data leadership career paths and incentives	0.724	0.525		
Audit Data Governance	a12	Metadata management	0.842	0.708	0.970	0.000
	a07	Data sharing and collaboration	0.842	0.708		
	a08	Big data management	0.828	0.686		
	a11	Innovation creation	0.828	0.686		
	a15	Data quality	0.827	0.684		
	a14	Promotion of equitable data benefits	0.824	0.680		
	a06	Data model design and development/ Data Architecture	0.819	0.671		
	a09	In-depth data analysis/ Data Science	0.818	0.670		

 doi:10.20944/preprints202502.0995.v1

a13	Data ownership and access rights					0.81 5	0.664
a02	Trust-building in data systems					0.80 7	0.652
a05	Master and reference data management					0.80 0	0.639
a10	Application of data to emerging digital technologies					0.79 8	0.638
a03	Ensure data security					0.79 6	0.633
a04	Data system and service enhancement					0.78 9	0.623
a01	Protection of individuals or communities					0.78 2	0.612
	% of Variance	3.257	3.698	5.860	57.068	61.956	66.358

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

4.2. Confirmatory Factor Analysis

CFA was conducted to assess the fit between the measurement model and the actual data. In this study, CFA was used to evaluate the relationships among the various components of audit data governance in public services for People with disabilities. The model's fit was assessed using structural indicators such as the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). The results indicated that the measurement model demonstrated a good fit, confirming its consistency with the empirical data, as shown in Table 3.

Table 3. CFA results.

Path	*b*	*λ*	*S.E.*	T-Value	R^2	*ASV*	*MSV*	*AVE*	*CR*	Fit index
Perception of Public Services <--- Public Service Delivery for People with disabilities	1.000	0.901	-	-	0.811	0.705	0.832	0.839	0.954	χ^2 = 742.855, df = 249, Relative χ^2= 2.983, p-value = .000, RMSEA = .053, SRMR = .025, CFI = .965,
Citizen-Oriented Policy <--- Public Service Delivery for People with disabilities	0.904	0.894	0.047	21.283	0.799					
Fair & Efficient Admin. Procedures <---	0.959	0.955	0.045	19.864	0.912					

 doi:10.20944/preprints202502.0995.v1

Public Service Delivery for People with disabilities										TLI = .958
Enablers for Access to Data <--- Public Service Delivery for People with disabilities	0.918	0.912	0.04	22.676	0.832					
s15 <--- Enablers for Access to Data	1.000	0.850	-	-	0.723	0.378	0.523	0.609	0.933	χ^2 = 719.291,
s17 <--- Enablers for Access to Data	0.986	0.788	0.042	23.419	0.622					df = 247,
s18 <--- Enablers for Access to Data	0.985	0.840	0.034	28.501	0.705					Relative χ^2= 2.912
s19 <--- Enablers for Access to Data	0.958	0.728	0.042	22.866	0.531					p-value = .000,
s14 <--- Enablers for Access to Data	0.940	0.690	0.044	25.572	0.476					RMSEA = .052,
s22 <--- Enablers for Access to Data	0.938	0.780	0.037	21.143	0.608					SRMR = .023,
s16 <--- Enablers for Access to Data	0.933	0.824	0.034	24.329	0.679					CFI = .967,
s20 <--- Enablers for Access to Data	0.927	0.760	0.038	27.242	0.577					TLI = .960
s21 <--- Enablers for Access to Data	0.868	0.751	0.036	24.177	0.565					
s13 <--- Fair & Efficient Admin. Procedures	1.000	0.778	-	-	0.606	0.410	0.520	0.638	0.925	
s11 <--- Fair & Efficient Admin. Procedures	0.974	0.827	0.040	23.961	0.683					
s10 <--- Fair & Efficient Admin. Procedures	0.966	0.849	0.039	24.826	0.721					
s12 <--- Fair & Efficient Admin. Procedures	0.944	0.801	0.041	23.581	0.642					
s09 <--- Fair & Efficient Admin. Procedures	0.941	0.813	0.040	23.063	0.661					
s07 <--- Fair & Efficient Admin. Procedures	0.859	0.744	0.040	21.152	0.554					
s08 <--- Fair & Efficient Admin. Procedures	0.849	0.776	0.041	21.987	0.602					
s02 <--- Citizen-Oriented Policy	1.000	0.763	-	-	0.583	0.311	0.370	0.555	0.861	
s04 <--- Citizen-Oriented Policy	0.902	0.780	0.040	22.216	0.608					
s06 <--- Citizen-Oriented Policy	0.846	0.772	0.048	18.461	0.596					
s03 <--- Citizen-Oriented Policy	0.790	0.724	0.043	19.902	0.523					
s01 <--- Citizen-Oriented Policy	0.738	0.681	0.037	20.616	0.464					
s23 <--- Perception of Public Services	1.000	0.860	-	-	0.739	0.525	0.601	0.724	0.913	
s24 <--- Perception of Public Services	0.999	0.881	0.032	30.855	0.775					
s25 <--- Perception of Public Services	0.982	0.851	0.034	29.062	0.725					
s05 <--- Perception of Public Services	0.916	0.809	0.036	25.844	0.654					
c06 <--- Data-Driven Organization	1.000	0.826	-	-	0.682	0.321	0.483	0.559	0.919	χ^2 = 63.382,
c08 <--- Data-Driven Organization	0.990	0.834	0.038	25.842	0.682					df = 22,
c09 <--- Data-Driven Organization	0.926	0.759	0.041	22.843	0.695					Relative χ^2= 2.881
c07 <--- Data-Driven Organization	0.923	0.803	0.038	24.594	0.577					p-value = .000,
c05 <--- Data-Driven Organization	0.897	0.726	0.042	21.189	0.644					RMSEA = .051,
c10 <--- Data-Driven Organization	0.860	0.726	0.041	21.205	0.527					SRMR = .008,

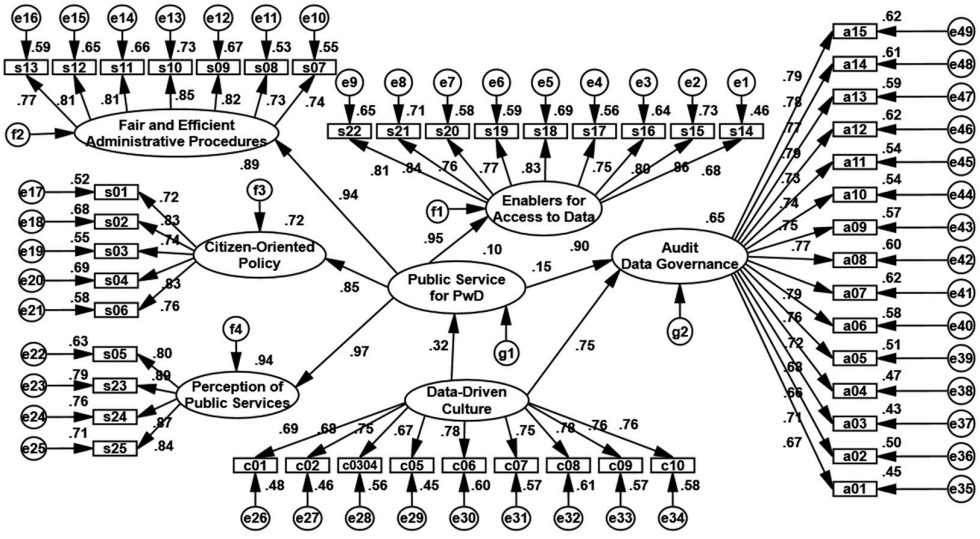
 doi:10.20944/preprints202502.0995.v1

c01 <--- Data-Driven Organization	0.817	0.706	0.040	20.444	0.527					CFI = .989,
c0304 <--- Data-Driven Organization	0.816	0.690	0.041	19.925	0.498					TLI = .982
c02 <--- Data-Driven Organization	0.721	0.632	0.041	17.689	0.477					
a08 <--- Audit Data Governance	1.000	0.821	-	-	0.675	0.400	0.503	0.630	0.962	χ^2 = 228.482,
a09 <--- Audit Data Governance	0.998	0.820	0.038	26.345	0.673					df = 77,
a12 <--- Audit Data Governance	0.993	0.842	0.036	27.409	0.709					Relative χ^2= 2.967
a06 <--- Audit Data Governance	0.977	0.805	0.038	25.568	0.648					p-value = .000,
a15 <--- Audit Data Governance	0.963	0.818	0.037	26.228	0.669					RMSEA = .053,
a14 <--- Audit Data Governance	0.959	0.815	0.040	24.093	0.665					SRMR = .009,
a07 <--- Audit Data Governance	0.954	0.827	0.036	26.659	0.684					CFI = .983,
a10 <--- Audit Data Governance	0.951	0.795	0.038	25.118	0.631					TLI = .977
a05 <--- Audit Data Governance	0.946	0.783	0.039	24.559	0.613					
a11 <--- Audit Data Governance	0.929	0.814	0.036	26.029	0.663					
a13 <--- Audit Data Governance	0.922	0.794	0.037	25.028	0.630					
a03 <--- Audit Data Governance	0.882	0.745	0.039	22.892	0.555					
a02 <--- Audit Data Governance	0.856	0.759	0.036	23.491	0.576					
a04 <--- Audit Data Governance	0.854	0.737	0.038	22.518	0.543					
a01 <--- Audit Data Governance	0.810	0.717	0.035	23.447	0.514					

Note: *b* is the estimate, λ is standardized estimate, S.E. is standard error, R^2 is squared multiple correlations, *ASV* is average shared variance, *MSV* is maximum shared variance, *AVE* is average variance extracted, *CR* is composite reliability, χ^2 is chi-square, df is the degree of freedom, RMSEA is the root mean square error of approximation, SRMR is standardized root mean square residual, CFI is the comparative fit index, TLI is the Tacker-Lewis index.

4.3. Path Analysis and Structural Equation Modeling

A Structural Equation Model (SEM) was developed to examine factors influencing audit data governance, integrating data-driven organizations and public services for People with disabilities within a 3D model framework. The analysis, based on 711 valid responses, was conducted using AMOS 24.0, applying Maximum Likelihood Estimation (MLE) to estimate model parameters. The standardized solution after fitting the model is illustrated in Figure 2.



 doi:10.20944/preprints202502.0995.v1

Figure 2. Data Governance Factors for Auditing Public Services for People with disabilities in Thailand Model.

Analysis of Audit Data Governance, the outcome variable (Table 4), used Standardized Regression Weights (Estimate), along with Total Effect (TE), Direct Effect (DE), and Indirect Effect (IE). Results showed that Data-Driven Organization had the strongest impact, with a TE of 0.796, primarily a direct effect. All observed variables were indirectly affected, and the latent variables within Data-Driven Organization exhibited strong positive relationships with observed variables.

Table 4. Key Drivers of Audit Data Governance: Standardized Effects of a Data-Driven Organization Model.

Explanatory Variable		Data-Driven Organization			
Latent Variable	**Observed Variable**	**TE**	**DE**	**IE**	**Estimate**
Data-Driven Organization	c08	0.783	0.783	0	0.783
	c06	0.777	0.777	0	0.777
	c10	0.759	0.759	0	0.759
	c09	0.756	0.756	0	0.756
	c07	0.752	0.752	0	0.752
	c0304	0.745	0.745	0	0.745
	c01	0.692	0.692	0	0.692
	c02	0.681	0.681	0	0.681
	c05	0.674	0.674	0	0.674
Audit Data Governance	**Outcome Variable**	0.796	0.748	0.048	0.748
	a07	0.629	0	0.629	0.790
	a12	0.625	0	0.625	0.786
	a15	0.625	0	0.625	0.785
	a14	0.622	0	0.622	0.781
	a08	0.615	0	0.615	0.772
	a13	0.609	0	0.609	0.765
	a06	0.607	0	0.607	0.763
	a09	0.598	0	0.598	0.752
	a10	0.585	0	0.585	0.735
	a11	0.582	0	0.582	0.732
	a05	0.571	0	0.571	0.717
	a02	0.561	0	0.561	0.705
	a04	0.544	0	0.544	0.683
	a01	0.533	0	0.533	0.670
	a03	0.522	0	0.522	0.656

Note: TE is the total effect, DE is the direct effect, IE is the indirect effect, and Estimate is standardized regression weights.

Model fit indices (Table 5) confirmed the model's adequacy: Relative Chi-square/df = 1.871 (<5), RMSEA = 0.051 (<0.07), SRMR = 0.033 (<0.08), CFI & TLI > 0.92, all meeting established criteria. CFA results indicated a strong model fit, effectively capturing the relationship between public service delivery, data-driven organization, and audit data governance, requiring no further adjustments.

Table 5. Fit index calculation.

 doi:10.20944/preprints202502.0995.v1

Index Name	Results	Evaluation
χ^2	1983.192	Significant
df	1060	
p-value	.000	
Relative χ^2 (χ^2 /df)	1.871	Well
RMSEA	.051	Well
SRMR	.033	Well
CFI	.930	Well
TLI	.922	Well

Note: CMIN is the chi-square, df is the degree of freedom, RMSEA is the root mean square error of approximation, CFI is the comparative fit index, TLI is the Tacker-Lewis index.

Path analysis further revealed that Audit Data Governance was significantly influenced by Data-Driven Organization (TE = 0.796, DE = 0.748, IE = 0.048), while Public Service Delivery had a weaker effect (TE = 0.150, direct and indirect). The model explained 65.3% of the variance in Audit Data Governance, whereas Public Service Delivery was influenced solely by Data-Driven Organization (TE = 0.320), with no indirect effects. The R^2 value indicated that the model explained only 10.3% of the variance in Public Service Delivery.

Table 6. Path Analysis.

Path coefficient	Latent Exogenous Variables						
	Data-Driven Organization			Public Service Delivery for People with disabilities			R^2
Latent Endogenous Variables	TE	DE	IE	TE	DE	IE	
Audit Data Governance	0.796	0.748	0.048	0.150	0.150	0	0.653
Public Service Delivery for People with disabilities	0.320	0.320	0	0	0	0	0.103
Perception of Public Services	0.311	0	0.311	0.972	0.972	0	0.944
Enablers for Access to Data	0.303	0	0.303	0.948	0.948	0	0.898
Fair & Efficient Admin. Procedures	0.302	0	0.302	0.942	0.942	0	0.887
Citizen-Oriented Policy	0.271	0	0.271	0.848	0.848	0	0.718

Note: TE is the total effect, DE is the direct effect, IE is the indirect effect, and R^2 is the coefficient of determination.

5. Discussion

5.1. Enhancing Data-Driven Organizations for Audit Governance in People with disabilities Service Delivery

This study developed a model identifying key factors influencing audit data governance in public services for People with disabilities in Thailand. Findings confirmed that a data-driven organization significantly enhances both public service delivery and audit data governance, aligning with the governance principles of DAMA International (2017) and Transform Health (2022).

Results from EFA and CFA highlighted crucial factors affecting People with disabilities service delivery, particularly public service quality perception (user satisfaction), data accessibility, and enablers for digital service access. International examples illustrate the impact of these factors: Australia's Disability Gateway enables one-stop access to essential services (Australian Government, 2022), while Sweden's digital government improves public service accuracy and efficiency through

 doi:10.20944/preprints202502.0995.v1

advanced data systems (European Commission, 2022). Additionally, fair administrative procedures and citizen-oriented policies promote equitable access to public information and services for People with disabilities.

Within the data-driven organization dimension, fostering an open, trusting culture encourages transparent data sharing (Abraham et al., 2019), while a questioning culture improves decision-making accuracy by stimulating critical inquiry (Schein, 2010). Furthermore, adherence to data ethics enhances organizational trust and supports evidence-based policymaking (Lemke et al., 2023; Rajasegar et al., 2024). In the audit data governance dimension, factors such as data sharing and metadata management play a critical role in promoting transparency, improving audit quality, and ensuring financial reporting accuracy (Hinrichs & Wilkens, 2000; Thompson et al., 2015; Alshehadeh et al., 2024).

5.2. Policy Recommendations for Strengthening Data Governance in Public Services

This study proposes two policy pathways to enhance service efficiency and audit data governance:

1) Main Pathway – Data-Driven Decision-Making for Governance and Efficiency

- Fostering a Data-Driven Culture: Promote data analysis skills, transparent data disclosure, and effective data sharing within public sector organizations to establish high-quality, evidence-based decision-making (OECD, 2019; United Nations, 2020).
- Developing Centralized Data and Cross-Agency Collaboration: Enhance data integration and metadata management across agencies to improve data consistency, accessibility, and auditability, leading to more efficient and transparent governance (United Nations, 2020).

2) Supporting Pathway – Data Protection and Technology Integration

- Enhancing Data Protection and Security: Implement robust data security policies (e.g., GDPR and Thailand's PDPA) to safeguard public trust and ensure People with disabilities's data is handled securely (European Commission, 2016; World Bank, 2024).
- Leveraging Emerging Technologies for Public Service Innovation: Integrate AI, blockchain, and advanced digital solutions to improve data accuracy, transparency, and responsiveness, particularly in enhancing People with disabilities's access to public services (World Bank, 2024).

6. Conclusions

6.1. Key Factors Influencing Audit Data Governance in People with disabilities Services

This study confirms that a data-driven organizational culture enhances both People with disabilities service delivery and audit data governance. Additionally, People with disabilities service delivery positively impacts audit data governance, reinforcing its role in ensuring transparency and efficiency.

6.2. Research Findings

Findings revealed that People with disabilities service delivery consists of four key dimensions: Perception of Public Services, Enablers for Data Access, Fair Administrative Procedures, and Citizen-Oriented Policy. Factors with the highest positive influence include service accessibility, management tools, comprehensive legal frameworks, and sufficient ICT budgets with systematic monitoring.

In data-driven organizations, critical elements include an open and trusting culture, a questioning mindset that promotes inquiry, and strong data ethics governing data lifecycle management. For audit data governance, key determinants include data sharing, metadata

 doi:10.20944/preprints202502.0995.v1

management, and data quality assurance, all of which significantly enhance transparency and decision-making.

6.3. Research Limitations and Future Research Directions

This study's findings may be limited by the sample group, requiring broader, more diverse studies for comprehensive insights. Future research should focus on developing data auditing tools and enhancing data quality evaluation to improve audit effectiveness and ensure sustainable, user-centered People with disabilities service delivery.

Author Contributions: Conceptualization, Sitthisak Chaiyasuk, Krish Rugchatjaroen, Somboon Sirisunhirun, Nopraenue Sajjarax Dhirathiti, Somsak Amornsiriphong, and Phut Ploywan; methodology, Sitthisak Chaiyasuk, Krish Rugchatjaroen, Somboon Sirisunhirun, Nopraenue Sajjarax Dhirathiti, Somsak Amornsiriphong, and Phut Ploywan; data curation, Sitthisak Chaiyasuk; formal analysis, Sitthisak Chaiyasuk; investigation, Sitthisak Chaiyasuk; project administration, Sitthisak Chaiyasuk and Krish Rugchatjaroen; resources, Sitthisak Chaiyasuk; software, Sitthisak Chaiyasuk; validation, Sitthisak Chaiyasuk; visualization, Sitthisak Chaiyasuk; supervision, Krish Rugchatjaroen, Somboon Sirisunhirun, Nopraenue Sajjarax Dhirathiti, Somsak Amornsiriphong, and Phut Ploywan; writing—original draft preparation, Sitthisak Chaiyasuk; writing—review and editing, Krish Rugchatjaroen, Somboon Sirisunhirun, Nopraenue Sajjarax Dhirathiti, Somsak Amornsiriphong, and Phut Ploywan. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Committee for Research Ethics (Social Sciences), Mahidol University (Approval No. 2024/041.2903, valid from 29 March 2024 to 28 March 2025).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors upon request.

Acknowledgments: We thank Associate Professor Dr. Krish Rugchatjaroen for his guidance, Associate Professor Dr. Poonpong Suksawang for support in structural equation modeling, and the five experts for questionnaire validation. We also appreciate all participants, especially People with disabilities, for their contributions. Additionally, OpenAI's ChatGPT-4 assisted with language refinement, while all intellectual work was solely by the authors.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Abraham, R., Schneider, J., & vom Brocke, J. (2019). Data governance: A conceptual framework, structured review, and research agenda. *International Journal of Information Management, 49*, 424-438. https://doi.org/10.1016/j.ijinfomgt.2019.07.008
2. Alshehadeh, A. R., El Refae, G. A., Yaseen, S. G., Aljawarneh, N. M., & Al-Khawaja, H. A. (2024). Accounting data governance and its influence on financial report quality: Insights from commercial banks. *Journal of Infrastructure, Policy and Development, 8*(4). https://doi.org/10.24294/jipd.v8i4.3222
3. Al-Ruithe, M., Benkhelifa, E., & Hameed, K. (2018). A conceptual framework for cloud data governance. *Personal and Ubiquitous Computing, 22*(5), 1013–1034. https://doi.org/10.1007/s00779-017-1104-3
4. Anderson, C. (2015). *Creating a data-driven organization: Practical advice from the trenches*. O'Reilly Media.
5. Australian Government. (2022). *National Disability Insurance Scheme (NDIS) Quarterly Report*. Australian Government. https://www.ndis.gov.au/about-us/publications/quarterly-reports
6. Bartlett, M. S. (1950). Tests of significance in factor analysis. *British Journal of Psychology, 3*(2), 77-85. https://doi.org/10.1111/j.2044-8317.1950.tb00285.x

 doi:10.20944/preprints202502.0995.v1

7. Bovaird, T., & Löffler, E. (2003). Evaluating the quality of public governance: Indicators, models, and methodologies. *International Review of Administrative Sciences, 69*(3), 313-328. https://doi.org/10.1177/0020852303693001
8. Brynjolfsson, E., & McElheran, K. (2016). Data in action: Data-driven decision making in U.S. manufacturing. *MIT Initiative on the Digital Economy*.
9. Carlson, J., & Johnston, L. R. (Eds.). (2015). *Data information literacy: Librarians, data, and the education of a new generation of researchers*. Purdue University Press. http://www.jstor.org/stable/j.ctt6wq2vh
10. Chen, Y., & Li, Q. (2024). The impact of e-government on the new generation productive capacities: Evidence from cross-country data. *Sustainability, 16*(8), 3233.
11. Cordery, C. J., & Hay, D. (2024). Public sector audit: New public management influences and eco-system driven reforms. *Journal of Public Budgeting, Accounting & Financial Management*. https://doi.org/10.1108/jpbafm-07-2023-0124
12. DAMA International. (2017). *DAMA-DMBOK: Data management body of knowledge* (2nd ed.).
13. Data governance: A conceptual framework, structured review, and research agenda. (2019). *International Journal of Information Management, 49*, 424-438. https://doi.org/10.1016/j.ijinfomgt.2019.07.008
14. Denhardt, R. B., & Denhardt, J. V. (2000). The new public service: Serving rather than steering. *Public Administration Review, 60*(6), 549–559. https://doi.org/10.1111/0033-3352.00117
15. European Commission. (2016). *General Data Protection Regulation (GDPR)*. Official Journal of the European Union. https://eur-lex.europa.eu/eli/reg/2016/679/oj
16. European Commission. (2022). *Digital economy and society index (DESI) 2022 digital public services*. https://ec.europa.eu/newsroom/dae/redirection/document/88768
17. European Commission. (2022). *Digital public services for People with disabilities: Best practices in Europe*. European Commission. https://ec.europa.eu/digital-strategy/digital-public-services
18. European Commission. (2022). *Union of equality: Strategy for the rights of persons with disabilities 2021-2030*. Publications Office of the European Union.
19. Fattah, I. A. (2024). The mediating effect of data literacy competence in the relationship between data governance and data-driven culture. *Industrial Management & Data Systems, 124*(5), 1823-1845. https://doi.org/10.1108/IMDS-11-2023-0812
20. George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference* (4th ed.). Allyn & Bacon.
21. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective* (7th ed.). Pearson Education.
22. Hinrichs, H., & Wilkens, T. (2000). Metadata-based data auditing. *WIT Transactions on Information and Communication Technologies*.
23. IDI. (2020). *Strategic management handbook for supreme audit institutions*. Intosai Development Initiative. https://www.idi.no/
24. Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford Publications.
25. Lemke, C., Monett, D., & Mikoleit, M. (2023). Digital ethics in data-driven organizations and AI ethics as application example. In T. Barton & C. Müller (Eds.), *Apply data science* (pp. 45-67). Springer Vieweg, Wiesbaden. https://doi.org/10.1007/978-3-658-38798-3_3
26. Mladenov, T. (2016). Disability and social justice. *Disability & Society, 31*(9), 1226–1241. https://doi.org/10.1080/09687599.2016.1256273
27. Norris, M., & Lecavalier, L. (2010). Evaluating the use of exploratory factor analysis in developmental disability psychological research. *Journal of Autism and Developmental Disorders, 40*, 8–20. https://doi.org/10.1007/s10803-009-0816-2
28. OECD. (2019). *OECD digital government studies: Digital government review of Sweden*. OECD Publishing. https://www.oecd.org/digital/digital-government/
29. OECD. (2019). *Methodological framework of the principles of public administration*. OECD/SIGMA. https://par-portal.sigmaweb.org/
30. OECD. (2019). *Public service delivery: Managing the digital transformation*. OECD Publishing. https://doi.org/10.1787/5f74623c-en

 doi:10.20944/preprints202502.0995.v1

31. OECD. (2019). *The path to becoming a data-driven public sector*. OECD digital government studies. OECD Publishing. https://doi.org/10.1787/059814a7-en
32. OECD. (2023). *The principles of public administration*. OECD. https://www.sigmaweb.org/publications/Principles-of-Public-Administration-2023.pdf
33. OECD. (2024). Governing with artificial intelligence: Are governments ready? *OECD Artificial Intelligence Papers, 20*. https://doi.org/10.1787/26324bc2-en
34. Osborne, S. P. (2006). The new public governance? *Public Management Review, 8*(3), 377-387. https://doi.org/10.1080/14719030600853022
35. Prabowo, H., Ikhsan, R. B., & Yuniarty, Y. (2022). Student performance in online learning higher education: A preliminary research. *Frontiers in Education, 7*. https://doi.org/10.3389/feduc.2022.916721
36. Prakash, D. (2024). Data-driven management: The impact of big data analytics on organizational performance. *International Journal for Global Academic & Scientific Research, 3*(2), 12–23. https://doi.org/10.55938/ijgasr.v3i2.74
37. Preuss, C. (2014). *Retail marketing and sales performance: A definitive guide to optimizing service quality and sales effectiveness*. Springer Gabler.
38. Ronchi, E., & Reimsbach-Kounatze, C. (2022). A decade and a half of OECD action on data governance policy-making. *Réalités Industrielles, 223*(3), 71-74. https://doi.org/10.3917/rindu1.223.0071
39. Rajasegar, R. S., Gouthaman, P., Vijayakumar Ponnusamy, Arivazhagan, N., & Nallarasan, V. (2024). Data privacy and ethics in data analytics. In P. Singh, A. R. Mishra, & P. Garg (Eds.), *Data analytics and machine learning* (Vol. 145, pp. 125-150). Springer, Singapore. https://doi.org/10.1007/978-981-97-0448-4_10
40. Schein, E. H. (2010). *Organizational culture and leadership* (4th ed.). Jossey-Bass.
41. Thompson, N., Ravindran, R., & Nicosia, S. (2015). Government data does not mean data governance: Lessons learned from a public sector application audit. *Government Information Quarterly*. https://doi.org/10.1016/J.GIQ.2015.05.001
42. Transform Health. (2022). *Governing health data for equity: Unlocking data and digital technology for the benefit of everyone*. Transform Health Initiative.
43. Transform Health. (2022). *Health data governance principles*. https://transformhealth.org
44. United Nations. (2020). *United Nations e-government survey 2020: Digital government in the decade of action for sustainable development*. United Nations. https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2020
45. United Nations Department of Economic and Social Affairs (UN DESA). (2018). *Disability and development report: Realizing the sustainable development goals by, for and with persons with disabilities*. United Nations.
46. World Bank. (2024). *Artificial intelligence in public sector data management*. World Bank Publishing. https://www.worldbank.org/
47. World Health Organization. (2011). *World report on disability*. World Health Organization. https://www.who.int/publications/i/item/world-report-on-disability
48. World Health Organization. (2012). *International classification of functioning, disability and health (ICF)*. WHO Press.
49. World Health Organization, & World Bank. (2011). *World report on disability*. World Health Organization.