Exploring the influence of regional economic pillars on library service equity in Indonesia

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ABSTRACT

This study investigates how various factors - innovation capabilities, labour market conditions, health, business dynamics, ICT adoption, and market size - affect the distribution of library services across 34 provinces in Indonesia. Using multiple linear regression analysis, the study found that overall, these factors significantly influence library service distribution (F = 10.558, p < 0.001, R² = 0.701). Specifically, higher innovation capabilities, better health conditions, and greater ICT adoption positively impact the availability of library services. Conversely, challenges in the labour market, fluctuating business dynamics, and larger market size are associated with reduced library service distribution. The findings highlight the critical role of health and technology policies in promoting fair access to library services throughout the country.

Keywords: Library services distribution; Innovation capabilities; ICT adoption; Labour market condition; Health and technology policies.

INTRODUCTION

Ensuring an equitable distribution of library services is essential to promote fair access to information and knowledge across different regions. Research highlights differences in urban library systems, linking them to factors such as heterogeneous book collections, population behaviour, and operational policies (Atuase et al., 2024). It also emphasises the importance of a user-centred approach in academic libraries to improve resource utilisation, especially among distance learning students (Atuase et al., 2024). Additionally, the role of exceptions and limitations in the U.S. Copyright Act is critical in providing free access to information through libraries, supporting social justice and inclusion (Band & Butler, 2024). Libraries, as noted by Tyler-Wood et al. (2023), are based on the principles of equal access to information, with technology playing a key role in expanding access to diverse learning materials. By addressing gaps and implementing user-focused strategies, libraries can better serve their communities and promote knowledge equity.

The measurement of the Community Literacy Development Index (CLDI) in Salatiga City, Indonesia, highlights the importance of various aspects of libraries, including distribution, collections, staff, and users, in determining the success of literacy programmes (Warsito et al., 2023). Libraries in Indonesia, especially in rural areas, serve as an important resource for education and empowerment, aiming to improve the well-being of communities through social inclusion initiatives (Adriyana & Cahyaningtyas, 2022). In addition, community-based education, as explored through library research, emphasises the democratisation of education and community empowerment, despite challenges such as government hegemony and economic constraints (Purnomo & Solikhah, 2021). Special libraries, such as the Centre for Library and Agricultural Technology Dissemination, further contribute to education by expanding services to the public through social inclusion programmes, promoting agricultural literacy and improving community skills (Yanto et al., 2023).

Ensuring equal access to library services across Indonesia is crucial for promoting education and literacy. However, key factors that influence the distribution of these services, such as innovation capabilities, the labour market, health, business dynamics, information and communication technology (ICT) adoption, and market size, are often overlooked in the literature. Innovation capabilities play a significant role, especially in the development of digital libraries that adapt to local needs. Azubuike (2013) highlights that technological innovations can enhance organisational performance and expand library access. Similarly, Jing (2010) emphasises the importance of regional innovation in supporting local economic development through knowledge dissemination. The labour market also affects library service distribution. A competent and well-distributed workforce is vital for effective library operations. Huber (2007) argues that labour market imbalances can exacerbate regional disparities in library service provision. Public health impacts library accessibility as well, with Donnelly's (2014) study demonstrating that good health conditions increase library usage, while Fasihi (2014) links access to healthcare with equitable library distribution. Business dynamics, particularly in knowledge-intensive sectors, further influence library distribution. Rodríguez and Camacho (2011) found that such services tend to be concentrated in high-innovation regions. The adoption of ICT is another critical factor, as Zoughbi and Al-Nasrawi (2015) point out, enabling libraries to expand their reach and efficiency, especially in remote areas. Lastly, market size affects distribution complexity. Evstigneeva (2023) notes that publishing market dynamics shape the development of library collections, while Basyuk et al. (2017) suggest that an efficient distribution strategy is necessary to ensure equitable library services across regions.

To achieve a more equitable distribution of library services in Indonesia, a comprehensive analysis of these regional competitiveness pillars is essential. Innovation capabilities can foster advanced and responsive library programmes, including digital libraries that meet community needs. A strong labour market ensures a skilled workforce for effective library management, while good public health conditions enable optimal library utilisation. High business dynamics can enhance infrastructure and create opportunities for collaboration between libraries and the private sector. The adoption of ICT allows libraries to extend services to remote areas, and understanding market size helps address the challenges of equitable distribution. By recognising and optimising these factors, Indonesia can ensure that all communities, regardless of location, have access to the information and educational resources needed to improve their quality of life.

Although previous research has examined these factors within the broader context of regional competitiveness, there remains a significant gap in understanding their specific impact on the distribution and accessibility of library services. This study aims to address that gap by providing a comprehensive analysis of how each factor - innovation capabilities, labour market conditions, public health, business dynamics, ICT adoption, and market size - affects the equitable distribution of library services. The central research question of this study is: *How do these regional factors collectively influence the equitable distribution and accessibility of library services throughout Indonesia*? By investigating this, the study seeks to clarify how each pillar contributes to or hinders the fair distribution of library services, thus advancing our understanding and addressing a critical area of regional development.

LITERATURE REVIEW

Understanding the equitable distribution of library services is essential for promoting community literacy and enhancing regional development. An equitable distribution of library services a key component of the Community Literacy Development Index (CLDI) (Perpusnas RI, 2024). The CLDI measures local governments' efforts in promoting libraries as resources for lifelong learning and community literacy. Literature on regional competitiveness highlights the significant role of innovation capabilities in influencing the distribution of services, including library services (Lee & Kwon, 2023). Regional competitiveness is closely associated with factors such as innovation, knowledge transfer, and regional engagement i.e. critical elements for the development of successful and prosperous regions (Kouskoura et al., 2024; Prasetyo et al., 2023). Innovation drives not only global urban competitiveness but also regional innovation capabilities, reflecting the interconnectedness of economic, social, and environmental factors in shaping a thriving society (Prasetyo et al., 2022; Prasetyo et al., 2022a). Furthermore, the concept of a regional innovation system emphasizes the importance of interactive learning and collaboration among various actors to stimulate innovation and economic growth (Prasetyo et al., 2023). Consequently, enhancing innovation capabilities is essential for achieving a fair distribution of critical services, such as library facilities, across different regions.

The labour market has been extensively examined in the literature, with an emphasis on how improvements in labour market conditions often correlate with enhancements in the quality of public services. Regional disparities in the labour market can significantly impact a region's overall competitiveness (Blien, 2023; Zierahn, 2011). Traditional models suggest that regional differences are quickly adjusted through mechanisms such as migration, yet the wage curve literature highlights a negative relationship between wages and unemployment, which may pose challenges in achieving equitable service distribution due

to labour market disparities (Blien, 2023). Furthermore, the role of the public sector in regional development is pivotal; public institutions can enhance regional competitiveness by implementing policies that address labour market disparities and promote fair employment opportunities (Colley & Brown, 2015). Addressing these labour market dynamics is essential for ensuring equal access to services, such as libraries, across different regions.

Regional competitiveness in the provision of library services, particularly in the health sector, has been a key focus in the literature (Landi et al., 2021; Spang & Baker, 2000). Research underscores the significant impact of health libraries on improving clinical decision-making, patient care, and staff education, highlighting the essential contributions they make to healthcare organizations (Siemensma et al., 2022; Siemensma & Clayworth, 2021). As the landscape of healthcare information continues to evolve, libraries are adapting to the increasing demand for reliable and accessible health information (Spang & Baker, 2000). However, regional disparities in access to health services, shaped by socioeconomic and administrative factors, further highlight the need for equitable distribution of library resources to support diverse populations and address existing inequalities in healthcare access (Landi et al., 2021). By acknowledging the critical role health libraries play in fostering equal access to information and services, regional competitiveness can be strengthened, ultimately enhancing healthcare delivery and improving patient outcomes.

The literature on regional competitiveness underscores the critical role of business dynamics in shaping the distribution of library services. Regional competitiveness, a key concept in economic and social development (Grassia et al., 2024), highlights how business activities influence the availability and quality of public information services (Wilson & Train, 2006). For policymakers, understanding regional competitiveness dynamics is crucial, as it involves assessing how region-specific factors affect the long-term effectiveness of policies (Chernyshova et al., 2022). Economic complexity, a method frequently used to examine regional competitiveness, offers insights into the productive structures of regions and their impact on development and competitiveness (Bahrami et al., 2023). Therefore, considering business dynamics within this framework is essential for ensuring the equitable distribution and effectiveness of library services across different regions.

The adoption of ICT is a crucial factor in the digital era, as information and communication technology has been shown to significantly enhance access to public services, including libraries. The literature highlights the vital role of ICT in ensuring equitable distribution of library services, particularly within the context of regional competitiveness. Studies indicate that the adoption and utilisation of ICT in libraries leads to improved information products and services, more comprehensive search results, and greater efficiency in accessing information (Yadav & Khan, 2023). Additionally, the integration of ICT in academic libraries is recognised as a key trend that enhances service delivery, boosts effectiveness and efficiency, reduces the time required to access information, and optimises the use of physical library space (Kulshreshtha & Bajpai, 2018). However, challenges such as shortages of technical staff, limited internet bandwidth, and power supply disruptions pose significant barriers to the effective adoption of ICT in libraries. Addressing these issues is crucial to ensuring equitable access to library services across different regions (Yadav & Khan, 2023).

Market size plays a significant role in influencing the distribution of library services, with regions boasting larger markets and high business dynamics often facing challenges in ensuring fair distribution. A larger market, coupled with vibrant business activities, can

complicate efforts to maintain equitable access to services (Hall, 2007). Additionally, shifts in government policies, such as the decentralisation of funding to individual institutions rather than central authorities, can impact library services, as evidenced by the case of school library services in the United Kingdom and Wales following the implementation of the 'Reasonable Funding Policy' (Stearn, 2001).

Despite existing research, gaps remain in understanding the effects of regional competitiveness on the distribution of library services. This leads to the central research hypothesis: Factors of regional competitiveness - innovation capability, labour market conditions, health, business dynamics, ICT adoption, and market size - significantly affect the equitable distribution of library services across the 34 provinces in Indonesia. This study aims to address these gaps, providing new insights that contribute to the literature and offering policymakers valuable strategies to enhance fairness in the distribution of library services.

METHOD

This study employs a quantitative research design using a multiple linear regression approach (Creswell & Creswell, 2018) to examine the impact of various economic pillars on the equitable distribution of library services. This approach is chosen for its ability to simultaneously analyse the relationships between independent and dependent variables, and for providing statistically measurable results. The study sample consists of 34 provinces, selected based on criteria including innovation capability, labour market conditions, health, business dynamics, ICT adoption, and market size (Badan Riset dan Inovasi Nasional (BRIN), 2024), as well as library services (Perpusnas RI, 2024). This sampling strategy is deemed appropriate because it offers sufficient variation to assess the influence of the different variables analysed. Data is gathered through surveys and secondary sources, including government reports and relevant publications[1]. The data collection instruments include validated datasheets designed to measure variables such as innovation capability, labour market conditions, health, business dynamics, ICT adoption, and market size, as summarised in Table 1.

In addition, secondary data on the distribution of library services are sourced from annual reports of library institutions and relevant government agencies. The collected data were analysed using multiple linear regression techniques with SPSS. The regression equations employed in this study are as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \epsilon \qquad (1)$$

where:

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[1] The census data collection process for the Community Literacy Development Index Study for Fiscal Year 2023 is designed to ensure an effective and efficient technical mechanism, aiming to obtain accurate and reliable data. The process begins with a coordination meeting to plan and organise the study. This is followed by the dissemination of online questionnaire links to participants, who then complete the questionnaires. Assistance is provided to those needing help with the questionnaire filling. Field surveys are conducted to gather additional data. The collected data undergoes a quality assurance review to verify its accuracy and completeness. Documentation of data submission is maintained, and data synchronization ensures all information is properly integrated. Finally, the data is finalised for analysis and reporting. This structured approach aims to achieve the desired census outcomes and ensure the validity of the collected data.

Y is a dependent variable that represents an equivalent distribution of library services.

X_1 to X_6 are independent variables consisting of innovation capability pillar index (X_1), labour market pillar index (X_2), health pillar index (X_3), business dynamism pillar index (X_4), ICT adoption pillar index (X_5), and market size pillar index (X_6).

β_0 is a regression constant.

β_1 to β_6 is the regression coefficient for each of the independent variables.

ε is a residual error.

This regression technique was chosen because it aligns with the study's objective of examining the relationships between variables. To ensure the validity and reliability of the model, we employed F and t tests, as well as Variance Inflation Factor (VIF) measurements to detect any issues with multicollinearity.

Table 1: Data Analysis of Library Service Distribution, Innovation Capability, Labour Market, Health, Business Dynamics, ICT Adoption, and Market Size of 34 Provinces in Indonesia

Provinces	Equitable Distribution of Library Services	Innovation Capability Pillar Index	Labour Market Pillar Index	Health Pillar Index	Business Dynamism Pillar Index	ICT Adoption Pillar Index	Market Size Pillar Index
Aceh	0,2841	3,16	3,51	3,77	2,97	2,93	4,33
Sumatera Utara	0,3318	3,98	3,28	3,72	3,63	3,52	4,85
Sumatera Barat	0,5838	3,88	3,79	3,75	3,73	3,29	3,59
Riau	0,3518	2,31	3,60	3,91	3,20	3,41	4,82
Jambi	0,4393	2,53	3,78	3,88	3,25	3,45	4,38
Sumatera Selatan	0,4196	3,34	3,23	3,78	3,45	3,58	4,66
Bengkulu	0,5833	2,28	4,50	3,73	2,52	4,26	3,95
Lampung	0,4248	2,80	3,41	3,84	3,81	3,66	4,55
Kepulauan Bangka Belitung	0,7599	1,99	4,36	3,84	2,47	4,09	4,01
Kepulauan Riau	0,6337	2,59	4,57	3,79	2,31	4,86	4,44
DKI Jakarta	0,5952	3,51	4,75	4,03	2,18	4,99	5,00
Jawa Barat	0,4907	4,40	3,79	4,05	4,21	4,13	5,00
Jawa Tengah	0,603	4,51	3,39	4,14	4,47	3,80	5,00
DI Yogyakarta	0,7841	4,48	4,02	4,18	4,00	4,46	4,25
Jawa Timur	0,3668	4,44	3,53	3,90	4,15	3,93	5,00
Banten	0,3092	3,27	4,00	3,78	3,77	4,15	4,78
Bali	0,6738	3,85	3,73	3,97	3,52	4,80	4,36
Nusa Tenggara Barat	0,3554	3,27	3,35	3,51	3,37	3,26	4,21
Nusa Tenggara Timur	0,4108	3,39	3,18	3,54	2,64	3,00	4,09
Kalimantan Barat	0,5111	2,58	3,65	3,84	2,53	3,16	4,35
Kalimantan Tengah	0,3326	1,89	4,05	3,75	2,88	3,43	4,24
Kalimantan Selatan	0,605	2,89	3,83	3,68	3,14	3,88	4,34
Kalimantan Timur	0,5637	2,31	4,16	4,14	2,82	4,02	4,80
Kalimantan Utara	0,2829	1,81	4,53	3,97	3,30	3,98	4,06
Sulawesi Utara	0,3427	2,62	4,41	3,93	3,55	3,74	4,19
Sulawesi Tengah	0,4114	2,47	3,96	3,66	2,89	2,88	4,41
Sulawesi Selatan	0,5259	3,70	3,35	3,83	4,02	3,49	4,68
Sulawesi Tenggara	0,4731	2,88	3,87	3,87	3,02	3,30	4,23
Gorontalo	0,4323	3,16	4,42	3,63	2,95	3,31	3,77
Sulawesi Barat	0,3323	2,21	3,96	3,39	3,16	3,63	3,81
Maluku	0,339	2,67	4,11	3,46	2,77	2,87	3,81
Maluku Utara	0,2872	2,16	3,89	3,65	2,59	2,34	3,88
Papua Barat	0,2071	2,72	3,99	3,46	3,06	2,81	4,04
Papua	0,1912	2,88	3,05	3,44	3,32	1,45	4,41

Figure 1 illustrates how regional competitiveness factors - such as innovation capabilities, labour markets, health, business dynamics, ICT adoption, and market size - contribute to the equitable availability and distribution of library services across different regions. It highlights the relevance of examining the relationships between these regional competitiveness pillars and the distribution of library services in Indonesia. The figure demonstrates how each of the six pillars (innovation capability, labour market, health, business dynamics, ICT adoption, and market size) influences the equitable distribution of library services in 34 Indonesian provinces. Each pillar is linked to two key elements: the distribution of library services and its impact on ensuring fair distribution. This framework underscores that each regional competitiveness pillar plays a distinct role in determining how library services are evenly distributed throughout Indonesia's provinces.
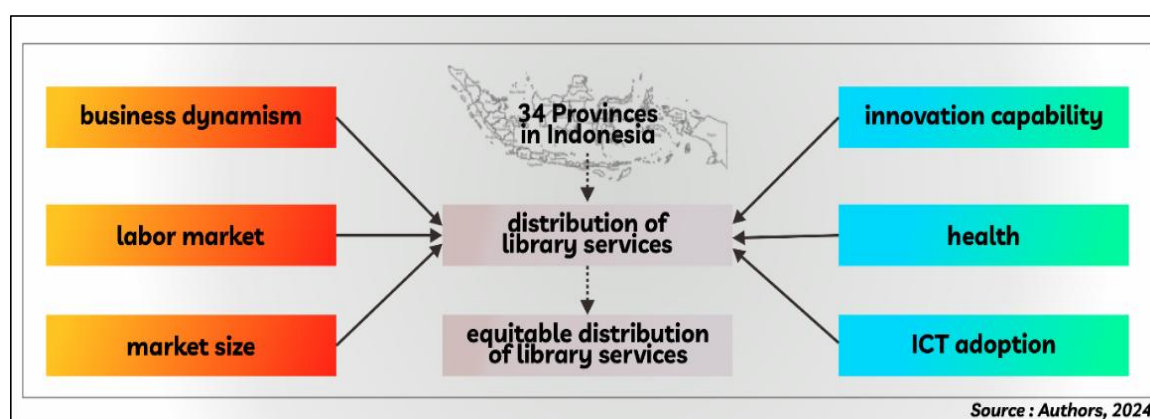

Figure 1: Framework for Analysing the Influence of Regional Competitiveness Factors on the Equitable Distribution of Library Services in Indonesia.

RESULTS

An R value of 0.837 indicates a strong positive relationship between the independent variables - such as innovation capability, labour market, health, business dynamics, ICT adoption, and market size - and the dependent variable. The closer the R value is to 1, the stronger the correlation, which suggests a meaningful relationship between the variables (Jianlong et al., 2015).

An R Square value of 0.701 means that 70.1% of the variation in the dependent variable is explained by the independent variables in the model. However, R Square alone can sometimes present an overly optimistic view of the model's fit, as it does not account for the complexity or the practical significance of the predictors (Miles, 2005).

To address this, an Adjusted R Square of 0.635 is reported, which accounts for the number of predictors and provides a more realistic measure of the model's explanatory power. This adjustment helps to prevent overfitting, especially in models with multiple variables (Willett & Singer, 1988).

The Standard Error of 0.09074 indicates the average distance between the observed and predicted values of the dependent variable, offering insight into the accuracy of the model's predictions. The lower this value, the more reliable the predictions; it should be interpreted relative to the scale of the dependent variable (Helland, 1987).

Overall, the regression model (Table 2) shows that the selected independent variables significantly explain the variation in the dependent variable. However, the slight drop from R Square to Adjusted R Square suggests that the model may require refinement to avoid overfitting. It is also crucial to consider the practical significance of the independent variables, ensuring that they provide actionable insights rather than just statistical relevance.

Table 2: Model Summary Analysing the Impact of Regional Competitiveness Pillars on the Equitable Distribution of Library Services

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.837[a]	.701	.635	.09074

a. Predictors: (Constant), Market Size Pillar Index, Labour Market Pillar Index, Innovation Capability Pillar Index, Health Pillar Index, Business Dynamism Pillar Index, ICT Adoption Pillar Index

The ANOVA results (Table 3) indicate that the regression model is highly significant in explaining the dependent variable, which is the equitable distribution of library services. The significance level confirms that the model effectively captures the relationship between the independent variables and the dependent variable, suggesting that the factors included in the model - such as innovation capability, labour market, health, business dynamics, ICT adoption, and market size - meaningfully contribute to explaining the variance in library service distribution.

Table 3: Regression Model Analysing the Impact of Regional Competitiveness Pillars on the Equitable Distribution of Library Services

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	.522	6	.087	10.558	.000[b]
1	Residual	.222	27	.008		
	Total	.744	33			

a. Dependent Variable: Equitable Distribution of Library Services
b. Predictors: (Constant), Market Size Pillar Index, Labour Market Pillar Index, Innovation Capability Pillar Index, Health Pillar Index, Business Dynamism Pillar Index, ICT Adoption Pillar Index

The Total Sum of Squares (0.744) represents the overall variation in the data that the model attempts to account for. The Regression Sum of Squares (0.522) reflects the portion of this total variation that is explained by the independent variables in the model, such as market size, labour market, and other pillars. This indicates that a substantial part of the variation is attributable to these factors. Meanwhile, the Residual Sum of Squares (0.222) represents the unexplained variation, indicating that while the model performs well, there is still a portion of variability in library service distribution that is not accounted for by the included variables.

The Mean Square for Regression (0.087) is obtained by dividing the Regression Sum of Squares by the degrees of freedom (df = 6), showing the average contribution of each independent variable to the explained variation. On the other hand, the Mean Square for Residual (0.008) reflects the average variation that the model is unable to explain. This balance between explained and unexplained variation suggests the model is effective but still leaves room for improvement in accounting for the complexities of the distribution of library services.

The F-value of 10.558 indicates that the overall regression model is highly significant. A high F-value suggests that at least one of the independent variables - innovation capability, labour market, health, business dynamics, ICT adoption, or market size - is significantly correlated with the dependent variable. The significance level (Sig. = 0.000) further confirms this, as it is extremely low ($p < 0.001$), allowing us to reject the null hypothesis, which states that no relationship exists between the independent and dependent variables. This indicates that the regression model (Table 4) effectively explains the variation in the equitable distribution of library services based on the pillar indices used. It demonstrates that factors such as innovation capability, labour market conditions, and ICT adoption, among others, significantly influence the fair distribution of library services. The high F-value and very low significance level validate the strength and reliability of the model, even though there are still some variations unaccounted for by the selected variables, suggesting potential room for further refinement.

Table 4: Summary of Regression Model Analysing the Impact of Regional Competitiveness Pillars on the Equitable Distribution of Library Services

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.044	.400		-.111	.913		
	Innovation capability pillar index	.065	.031	.334	2.085	.047	.431	2.321
	Labour market pillar index	-.134	.063	-.394	-2.123	.043	.322	3.106
	Health pillar index	.421	.121	.574	3.481	.002	.406	2.461
	Business dynamism pillar index	-.119	.041	-.458	-2.872	.008	.435	2.298
	Ict adoption pillar index	.133	.037	.632	3.594	.001	.358	2.797
	Market size pillar index	-.201	.057	-.527	-3.491	.002	.486	2.059

a. Dependent Variable: Equitable Distribution of Library Services

The coefficient table (Table 4) illustrates the impact of each independent variable on the equitable distribution of library services. Key findings indicate that several factors significantly affect the dependent variable. The innovation capability pillar index shows a positive coefficient (B = 0.065, p = 0.047), suggesting increased innovation capability enhances the equitable distribution of library services (Jang et al., 2023), by enabling adaptation and new service introduction (Mishra et al., 2019). The labour market pillar index, with a negative coefficient (B = -0.134, p = 0.043), suggests that labour market instability negatively impacts library services (Awoyemi & Agbetuyi, 2023) by affecting the availability of qualified staff (Madukoma et al., 2023). The health pillar index (B = 0.421, p = 0.002) indicates that better workforce health improves operational efficiency and service quality (Phillips, 2022).

The business dynamism pillar index has a negative coefficient (B = -0.119, p = 0.008), implying that high business dynamism can disrupt service distribution due to resource uncertainty (Clark, 2022). The ICT adoption pillar index shows a positive coefficient (B = 0.133, p = 0.001), highlighting that ICT adoption enhances access and service quality (Mustafa & Noorhidawati, 2020) through improved efficiency and innovation (Fakandu & Yabagi, 2023). Finally, the market size pillar index has a negative coefficient (B = -0.201, p = 0.002), suggesting that larger markets pose challenges to equitable service distribution due to their complexity and diverse needs (Mishra et al., 2019). These results highlight that innovation capability, workforce health, and ICT adoption are key factors positively influencing the equitable distribution of library services, while labour market instability, business dynamism, and larger market sizes present challenges that need to be addressed.

The Variance Inflation Factor (VIF) values for all variables fall below the general threshold of 10, indicating no serious multicollinearity within the model. However, a higher VIF value for the labour market pillar index suggests a strong relationship between this and other independent variables. The regression results (Table 4) indicate that the health pillar index and the ICT adoption pillar index exert a positive and significant influence on the equitable distribution of library services, while the labour market pillar index and the market size pillar index have a significant negative impact. This underscores the importance of factors such as health and technology in promoting service equity, while market size and business dynamics may pose specific challenges.

DISCUSSION

The findings of this study highlight that various pillars of regional competitiveness—such as innovation capability, labour market, health, business dynamics, ICT adoption, and market size—significantly impact the equitable distribution of library services. The analysis confirms that factors such as ICT innovation, health, and technology adoption positively contribute to achieving more equitable library services, while the labour market, business dynamics, and market size have negative effects. These results support the hypothesis that regional competitiveness plays a vital role in the distribution of library services across Indonesia's 34 provinces. Innovation, public health, and ICT adoption are key drivers in improving access and service quality, whereas challenges tied to business dynamism, the labour market, and larger market sizes hinder equitable service distribution.

High business dynamism, labour market challenges, and large market sizes can obstruct the fair distribution of library services. Regional competitiveness thus has a critical influence on this distribution, with business dynamics, labour market issues, and market size being key factors. Business dynamism can divert resources away from public services such as libraries (Kim, 2015), while an unstable labour market limits funding and staffing (Gendina et al., 2023). Larger market sizes often exacerbate inequalities, where libraries in more affluent regions receive greater resources. This leads to spatial inequalities, with libraries in different demographic and socioeconomic areas having unequal access (Guo et al., 2017). Although some libraries are adapting to local needs through innovation (Melissa Yuliani et al., 2022), disparities in services remain. Targeted strategies are therefore essential to addressing these inequalities and ensuring fair access to library services across all regions.

Positive factors such as innovation and technology adoption must be further leveraged, while challenges posed by negative factors need to be addressed to achieve an equitable distribution of library services across provinces. These findings align with previous research demonstrating that innovation and technology play a crucial role in the equitable distribution of social services. However, the results also highlight the downside of economic dynamics, where a strong labour market and large market size can create inequalities in service distribution, supporting the argument about unequal access in developing regions.

The interaction between innovation, technology adoption, and the distribution of social services reveals a complex relationship, particularly in developing regions. While technology can improve service access, it can also exacerbate inequality, especially in regions with strong labour markets. For instance, ICT has revolutionized service delivery, but low penetration in social services contributes to a digital divide that disproportionately affects vulnerable populations (Moreno et al., 2023). In Indonesia, the initial expansion of

broadband increased income inequality, which only began to decrease once coverage exceeded 60 percent (Ariansyah et al., 2023). Similarly, access to financial services, such as bank branch density, correlates with reduced income inequality in underdeveloped areas (Fu & Liu, 2023). In sub-Saharan Africa, technological innovation has had mixed effects on poverty, with urbanization significantly influencing outcomes (Pilag Kakeu et al., 2024). Tailored policies are essential in BRICS-T countries to address income inequality exacerbated by technological advancements (Adebayo, 2024). Thus, while technology can improve service distribution, inadequate infrastructure in developing regions risks deepening access disparities.

In contrast to studies showing that business dynamics generally have a positive impact on the distribution of social services, this study finds a negative influence. The growing involvement of private providers in social services can reduce the availability of public services (Stárek & Zpěvák, 2024). In regions transitioning from state monopolies to competitive markets, institutional barriers often limit the diversity of services (Vlasova & Galanova, 2021). Moreover, the rise of social enterprises can hinder the entry of commercial ventures, creating a competitive environment that affects service distribution (Kachlami, 2017). This study opens avenues for further research on the interaction between various pillars of regional competitiveness and their impact on the equitable distribution of library services.

CONCLUSIONS

This study has demonstrated through regression analysis that various pillars of regional competitiveness significantly influence the equitable distribution of library services across 34 provinces in Indonesia, thereby reinforcing the hypothesis. Innovation capability emerged as a key positive factor, contributing to a more equitable distribution of services. Similarly, health and ICT adoption were found to have a significant positive impact, suggesting that a well-developed health environment and increased adoption of ICT play crucial roles in enhancing access to and quality of library services. In contrast, the labour market, business dynamism, and market size showed significant negative effects. Labour market instability, high business dynamism, and larger market sizes present challenges to achieving equitable service distribution. These findings underline the importance of harnessing positive factors such as innovation, health, and technology while addressing the challenges posed by economic dynamics that hinder fair distribution.

The study highlights the need for policies that focus on improving health systems and ICT infrastructure to promote more equitable service distribution. The regression model explained 70.1% of the variability in library service distribution, with a high level of significance. However, the study's quantitative approach limits its ability to explore qualitative factors that may also impact service distribution.

Future research should expand the sample scope and integrate qualitative approaches to provide deeper insights into the complex relationships between economic pillars and service distribution. Further exploration of the interaction between these pillars could inform the development of more effective and inclusive policies, contributing to fairer access to library and other social services in diverse contexts.

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CONFLICT OF INTERESTS

The authors declare that they have no competing interests, including no conflicts of interest

AUTHOR CONTRIBUTION

Conceptualization: [A.Prasetyo & M.Miftah], Methodology: [A.Prasetyo, M.H.Abdillah, Wahyudiyono & Wahab], Formal analysis and investigation: [A.Prasetyo, M.M.Taruna & A.M. Wibowo], Writing - original draft preparation: [A.Prasetyo, K. Ndoheba, Siswanto, & Basori], Writing - review and editing: [all authors]

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