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Developing rules of thumb for the financial conditions of city livability: a study of municipal governments in Indonesia

Irwan Taufiq Ritonga^{1*} and Vogy Gautama Buanaputra¹

Abstract: This study aims to develop rules of thumb for the financial conditions of city livability. These rules will provide a practical guide for local government leaders managing local government finances on how to realize a livable city. This study identifies three indicators for the financial conditions that characterize a city's livability, namely its operating capacity, financial flexibility, and commitment to maintain services. The standards for each of these three indicators is 1.20 times for the operating capacity ratio, 0.18 times for the financial flexibility ratio, and 0.25 times for the commitment to maintain services ratio.

Subjects: Financial Accounting; Government & Non-Profit Accounting; Management Accounting

Keywords: municipal government; city livability; financial conditions; Indonesia; rules of thumb

1. Background

Drawing on the context of an emerging economy, this study aims to develop rules of thumb for the financial conditions of city livability by introducing five indicators. Such rules for the financial management of business entities have been around for a long time. For example, the rule of thumb for the current ratio that indicates a business organization is in good financial condition is 2:1, whereby debt is ideally less than 50% of capital (Subramanyam, 2014). For local government organizations, however, it remains unclear which indicators are the most salient for measuring financial conditions/health (Alam et al., 2019; Stone et al., 2015). If there are any, they tend to be "localized" rules of thumb that only apply to developed countries, or a specific country (e.g., Navarro-Galera et al., 2017; Stone et al., 2015). It is essential for local governments to maintain and monitor their financial condition in order to provide public services (Tran & Dollery, 2021c; Zafra-Gómez et al., 2016) and avoid financial collapse (R. M. Hendrick, 2011). Thus, developing and examining rules of thumb for the financial condition of local governments is extremely important. The authors aim to develop rules of thumb for measuring the financial conditions of local government that align with a city's livability.

City livability in general concerns the quality of the living conditions of a city. The living conditions of a place rely heavily on local government policies regarding the provision of basic needs and facilities to its residents, which in turn improves their welfare (Alam et al., 2019) and life satisfaction (Tran & Dollery, 2021c; Y. Wang et al., 2022). This can be achieved through sound financial management in providing public services (García-Sánchez et al., 2012; Zafra-Gómez et al., 2009). In other words, a city's livability depends on the financial condition of its government. However, studies that provide a sound understanding of the role financial conditions play in a city's

livability are scarce. Also, indicators of “modes” are needed to understand the complexity of local government financial reports since, theoretically, the users of these government accountability mechanisms, including financial reports, are the citizens (Mack & Ryan, 2007). It is unlikely that all citizens—who will be very diverse in terms of their backgrounds—will possess sufficient understanding of government financial reports to comprehend the government’s financial condition (Mack & Ryan, 2007). Butterworth et al. (1989) argue that, due to their complexity, local government annual reports are not an effective means of communicating with the general public. Thus, rules of thumb for the financial conditions for a livable city are necessary.

Prior studies seeking to develop such rules of thumb for determining the financial conditions of a local government have mainly focused on developing formulas to signal potential financial distress. R. M. Hendrick (2011) argues that this approach can help local government officials to grasp the complex interacting factors that affect financial conditions and identify ways to maintain and improve financial conditions. In the context of developed countries, some studies conclude that a city’s financial conditions are a function of its revenue capacity and spending pressure influenced by diverse socioeconomic factors (Navarro-Galera et al., 2017; Zafra-Gómez et al., 2009). Other research employs financial ratios to evaluate local governments’ financial conditions (Johnson et al., 2012; Rivenbark et al., 2010; Singla et al., 2014; X. Wang et al., 2007). Recently, studies have attempted to connect financial performance with citizen satisfaction (Tran & Dollery, 2021c, 2021b), including by employing machine learning and alternative data sources to determine the quality of life (Y. Wang et al., 2022).

Nevertheless, there are some points that require further investigation. First, the studies described above were mainly undertaken in the context of developed countries, so they may not render an accurate picture of how to analyze the financial conditions of local government in the context of an emerging economy. Municipal governments in developed countries are typically financially independent, self-governing, and mainly influenced by the population and job market losses caused by negative migration. As a result, they tend to employ strategies to attract people to move there in order to avoid financial distress (Alam et al., 2019). On the other hand, local governments in emerging economies are financially dependent, less autonomous and, more importantly, they suffer from population growth caused by rapid urbanization (Chauvin et al., 2017; R. M. Hendrick, 2011). Thus, the determinants of the financial conditions of municipal organizations in the context of emerging economies need further consideration.

Second, various indicators and ratios are applied by many of the extant studies. However, it is not clear which of these indicators and ratios provide the clearest picture of the soundness of government’s financial condition (Stone et al., 2015). As such, there is a need to further evaluate these indicators, particularly in the context of emerging economies, in order to obtain better means to reflect on and develop rules of thumb for establishing sound financial conditions for local governments. In turn, this may determine the livability of a city.

This study therefore aims to develop rules of thumb for the relevant indicators of a city’s financial condition and then determine ratios for each one as a feature of a city’s livability. The study employs a two-stage correlation analysis between the financial condition indicators and city livability indexes, and then strengthened by a mean difference test analysis of financial condition indicators between two groups of cities. Three indicators are identified for local government financial conditions that characterize a city’s livability: operating capacity, financial flexibility, and commitment to maintain services. The estimated ratios for use as rules of thumb for achieving the best city livability are 1.20 times for the operating capacity ratio, 0.18 times for the financial flexibility ratio, and 0.25 times for the commitment to maintain services ratio.

The indicators and ratios identified in this study are useful benchmarks for use by local government leaders to manage local government finances in the right way towards creating a livable city. For local government stakeholders, including those making decisions, the rules of thumb produced

by this study will serve as practical guidelines for assessing the performance of local government leaders in managing cities. The practicality of the rules of thumb will increase the usefulness of accounting information for local government stakeholders when making decisions.

This paper is presented in five main sections. The first section provides the background to the research and why it needed to be undertaken. The second section discusses the literature underpinning the model used to develop the rules of thumb for the financial conditions of city livability. Following on, the third section describes the method used to develop the rules of thumb. The fourth and fifth sections present the findings, discussion, and conclusions.

2. Literature review

2.1. City financial condition

“Financial condition” is a complicated concept and there is no consensus about how to define it (Brusca et al., 2015). A range of terms is used to refer to different aspects or measurements of a “financial condition” such as “fiscal stress” (Jimenez, 2009; Kloha et al., 2005), “financial position” (R. Hendrick, 2004; Sohl et al., 2009), and “fiscal shock” (Poterba, 1994). Among these, “financial condition” is a commonly used term and appears in many extant studies (Kravchuk & Stone, 2010; X. Wang et al., 2007).

Rivenbark et al. (2010) define the financial condition of a government as “a local government’s ability to meet its ongoing financial, service and capital obligations based on the status of its resource flow and stock, as interpreted from its annual financial statements”. Similarly, Wang and Liou (2009) use the term financial condition as a means to express a government’s solvency in relation to its ability to fulfil its financial and service obligations in both the short- and long-term.

The financial condition of a government can also represent its ability to comply with existing and future obligations through a proper inflow of funds from taxes, transfers and services to maintain a certain level of service, consistent with the needs of the people (Brusca et al., 2015; Honadle et al., 2004). It can be synthesized as the budgetary, cash, long run and service solvency of the entity from an internal perspective (Nollenberger et al., 2003). Of the various definitions that have been developed by the researchers and professional institutions mentioned above, the most widely accepted definition of the financial condition of local governments is their ability to meet their financial obligations in a timely manner and maintain the services provided to the public (Brusca et al., 2015; Rivenbark et al., 2010; Tran & Dollery, 2021c).

Previous studies have developed several models to assess the financial condition of local governments in order to prevent financial distress. Some studies focus on analyzing the financial equilibrium of a government on a yearly basis (e.g., Jones & Walker, 2007), employing basic approaches such as accounting information and financial ratios (e.g., Manes Rossi, 2011; Rivenbark et al., 2010; Singla et al., 2014). Other research has attempted to forecast the future ability of local governments to maintain their financial equilibrium and concluded that financial condition is a function of revenue capacity and spending pressure influenced by diverse socio-economic factors (e.g., Cohen et al., 2012; García-Sánchez et al., 2012; Navarro-Galera et al., 2017; Zafra-Gómez et al., 2009). These studies tend to employ more sophisticated statistical modeling approaches.

From the above-mentioned studies, it can be inferred that an understanding of what constitutes the financial condition of an entity requires the conceptualization of a complex function of various factors and processes, described as the “fiscal space” by Heller (2005). According to Jacob and Hendrick (2012), fiscal space reflects various exogenous and uncontrollable factors that affect a local government’s economic situation, spending needs and demands. It determines the demarcation within which government officials operate and depicts the set of opportunities available to increase revenue to achieve the government’s targets, such as meeting its financial obligations

and fulfilling the demand for goods and services from its citizens (Heller, 2005; Pagano & Hoene, 2010). In other words, formulating the financial condition of a local government requires an understanding of its capacities to obtain revenue as resources to meet its liabilities and financial obligations, and deliver public services (R. M. Hendrick, 2011). Hence, prior studies have tended to focus on developing financial indicator models based on various assumptions, but there is no consensus on which indicators should be used widely, especially in emerging economies.

This study develops five indicators as proxies for local government financial conditions; these align with two main aspects of local government financial conditions, namely the ability to meet financial obligations and the ability to provide services to the community (Ritonga et al., 2012). The ability to meet financial obligations is represented by two indicators, namely operating capacity and the financial flexibility. Operating capacity reflects the ability of a local government to obtain the necessary funds to provide public services. Financial flexibility refers to the availability of free financial resources to fund attempts to improve public services.

The ability to provide services is represented by three indicators: the commitment to maintain services, the commitment to improve services, and the capacity to serve the community. The commitment to maintain services is a local government's efforts to maintain the current level of services, quantitatively and qualitatively, while commitment to improve services indicates its willingness to improve the quantity and quality of its public services. Serving capacity reflects the level of resources possessed by local governments to provide public services as demanded by the citizens. Further explanation of these five indicators will be provided in the hypothesis development section.

2.2. City livability

The term city livability describes the levels of comfort and atmosphere of a city as a place to live and work, as related to various aspects, both physical (urban facilities, infrastructure, spatial planning, etc.) and non-physical (social relations, economic activities, etc.). Some studies also associate the livability of a city with how satisfied the people are with the quality of life and performance of the government in providing public services (Tran & Dollery, 2021c, 2021b, 2021a; Y. Wang et al., 2022). The main principles of a livable city concern how a city caters to basic needs, the availability of public and social facilities, the availability of public spaces as a space for interaction between community members, its security and safety, environmental quality, support for the economic, social and cultural functions, and the community's participation in its development (Ikatan Ahli Perencana Indonesia (IAP), 2017).

To date, surveys of city livability has only been carried out four times in Indonesia, in 2009, 2011, 2014 and 2017. The number of cities surveyed has increased from 12, to 15, to 18, and then 26 in 2009, 2011, 2014, and 2017, respectively. The surveys were conducted by the Indonesian Association of Urban and Regional Planners (IAP). The IAP, founded in 1971, is the oldest and largest urban and regional professional planning organization in Indonesia and Southeast Asia. The IAP's city livability survey results are published in the form of a city livability index known as the Indonesia Most Livable City Index (MLCI). The Indonesia MLCI is the only study in the country that measures the level of satisfaction of urban residents with the city where they live and the sole reference regarding the habitability of the most livable cities in Indonesia (Ikatan Ahli Perencana Indonesia (IAP), 2017).

The Indonesia MLCI is conducted by surveying residents' perceptions of their cities based on their experiences of living in them. Data and information are obtained using a questionnaire to elicit the opinions of city residents on elements/criteria for livability. The Indonesia MLCI measures 29 aspects: security, security facilities, politics, safety, health, health facilities, cleanliness, waste, the economy, economic facilities, the informal sector, information on development and community participation, food sufficiency, housing, educational facilities, government administration facilities and public services, facilities for worship/religious services, city park facilities, sports facilities, arts and cultural facilities, recreational facilities, pedestrian facilities, facilities for vulnerable groups, transportation, drainage and dirty water management, clean water management,

telecommunications networks, electricity, and urban planning. The 2017 survey reports a national average livability index of 62.3 out of a maximum score of 100. This national average index shows that many urban residents feel uncomfortable living in their cities (Ikatan Ahli Perencana Indonesia (IAP), 2017).

2.3. Relationship between city livability and the municipal's financial condition

A municipal's financial condition is a consequence of the efforts of the local government to achieve national objectives (Ritonga et al., 2012). Universally, the objective of government at any level is to create a prosperous society. To support the welfare of its people, the municipal government provides facilities across all facets of life (Tran & Dollery, 2021a). The ability to provide these facilities is influenced by the local government's financial condition. The healthier this condition, the better the local government will be at providing services and facilities to the local community. The more and better the facilities provided by the local government, the more comfortable the community will be and the more livable the city becomes. In turn, the more comfortable life becomes for the community, the more the quality of life will improve for the people.

Based on the arguments above, the main hypothesis is proposed as follows:

Ha: There is a positive relationship between a city's livability and its financial condition.

The main hypothesis is further detailed based on the indicators of a city financial condition as follows.

2.3.1. Operating capacity

Operational capacity refers to the ability of a local government to obtain resources to fulfill its obligations regarding providing goods and services to the public. To carry out their operations, local governments are granted autonomy to use all the resources they have in accordance with the situation and conditions in their respective regions. Although granted autonomy in the allocation of their respective resources to carry out operations, local governments are tasked with using all resources economically, effectively and efficiently (Republik Indonesia, 2003). The economy, efficiency and effectiveness achieved in managing resources are described in local government operational reports. Economical and efficient operating practices will reduce the cost per unit of services and goods (Ritonga et al., 2019). Effective operating practices ensure the timely delivery of quality goods and services by local governments (Republik Indonesia, 2020). As a result, local governments will be able to provide more goods and services to the community (Ritonga et al., 2019). In turn, people will enjoy better services, which then enhances the city's livability. Thus, the following hypothesis is proposed:

Ha1: There is a positive relationship between a city's livability and its operating capacity.

2.3.2. Financial flexibility

Financial flexibility refers to the amount of free financial resources owned by a local government that are available to be allocated to improving its capacity to serve its people (Ritonga et al., 2012). Free financial resources is a function of the difference between operating revenues and mandatory expenditures. Operating revenues are routine in nature and derived from the normal activities of local governments. Mandatory expenditures refer to expenditures that must be met by local governments to maintain existing services. Examples of mandatory expenditures include personnel expenditure, spending on building/equipment maintenance, and interest and principal debt payments. The more freely available resources owned by a local government, the better its financial condition and therefore capacity to improve its services to the public. Running alongside this increased capacity to fund public services will be an increase in the city's livability and the prosperity of its people.

Ha2: There is a positive relationship between a city's livability and its financial flexibility.

2.3.3. *Commitment to maintain services*

Commitment to maintain services refers to the efforts made by local governments to ensure the quantity and quality of existing services do not decrease. These efforts are reported in the budget statement. In providing services to the community, a local government uses its resources, which are reported as fixed assets in the balance sheet. Over time, these resources experience a decrease in capacity (i.e., depreciation). This reduction in capacity will be reflected in the depreciation expense account in the operational statement. Local governments must maintain their resources so that their capacity does not decrease. Local governments that are in a sound financial condition have the ability to maintain their resources properly and so increase their cities' livability.

Ha3: There is a positive relationship between a city's livability and its commitment to maintain services.

2.3.4. *Commitment to improving services*

Commitment to improving services refers to the efforts made by local governments to increase the quantity and quality of their services to the public, in other words increasing service capacity. This capacity-building commitment is demonstrated by the allocation of capital expenditure as reported in the budget statement (Republik Indonesia, 2019). The greater the allocation of capital expenditure, the greater the effort to improve services, in turn resulting in improved city livability.

Efforts to increase the quantity and quality of public services can only be implemented if the local government is in a healthy financial condition. The better the local government's financial condition, the easier it will be to increase the quantity and quality of its services.

Ha4: There is a positive relationship between a city's livability and its commitment to improving services.

2.3.5. *Serving capacity*

Serving capacity refers to the availability of the resources owned by a local government to serve the community at the level needed and as requested by the people (Chaney et al., 2002; Groves et al., 1981; Kamnikar et al., 2006; Nollenberger et al., 2003; X. Wang et al., 2007). These resources can be in the form of human resources, natural resources, and the facilities and assets owned by local government. From a financial accounting perspective, information on the capacity of local governments to serve their communities is represented by the value of the assets in their balance sheets (Ritonga, 2014). Total assets indicate the accumulation of resources owned by a local government to provide services and goods to its communities. The greater its resource capacity, the better its financial condition and capability for providing services to its people, both in terms of the quantity and quality of the services, in turn improving the livability of cities.

Ha5: There is a positive relationship between a city's livability and its capacity to serve public.

3. Research methods

This is an exploratory study. This kind of study is an important means of finding out what is happening, seeking new insights, asking questions, and assessing phenomena in a new light (Robson, 2002). It is useful approach for clarifying understanding of a problem, especially if the precise problem is unclear, such as the financial conditions for a city's livability, which this study wishes to develop (Saunders et al., 2009). According to Adams and Schvaneveldt (1991), exploratory research can be likened to the activities of an explorer or traveler, who has the flexibility and

adaptability to change direction depending on the situation he or she is in. However, this does not mean an exploratory study is directionless. Instead, the focus of an exploratory study is initially broad and becomes progressively narrower as the research progresses (Saunders et al., 2009).

This study therefore begins with a common understanding of local government financial conditions, and then links them to the city livability context, seeking to construct rules of thumb for local government financial conditions that lead to improved city livability. Exploratory studies can take varied approaches. This study opts for a quantitative approach to explore the possibility of identifying indicators for local government financial conditions that reflect city livability.

3.1. Population and sample

The population for this study was all 94 municipal governments in Indonesia, from which a sample of 25 municipal governments was chosen based on the latest data available from the city livability index in Indonesia, which came from only 26 cities in 2017. Of those 26 cities, the city of Jakarta was not used due to comparability issues. Jakarta is not at the same level as the other 25 municipal governments because it has a provincial level government.

3.2. Data and data collection technique

Most of data used in this study are secondary data. The 2017 data used to measure city livability are from the most recent Most Livable City Index (MLCI), developed by the IAP. These data can be downloaded from the IAP website.¹

The financial condition indicators for the municipal governments in the sample were measured using data derived from their financial statements for the 2017 fiscal year, which had been audited by the Supreme Audit Board of the Republic of Indonesia (the SAB), augmented by population data for 2017 from the Indonesian Central Bureau of Statistics (the BPS Indonesia). Financial reports were obtained by requesting them directly from the SAB, while population data are available on BPS Indonesia's website. The authors also collected other relevant documents, namely all regulations (from local regulations to national regulations) related to regional development planning and regional financial management.

To triangulate the statistical test, the authors employed semi-structured interviews. This type of interview is mainly used to gain a deeper understanding of actors' perspectives on a phenomenon (Bryman & Bell, 2011; Silverman, 2010). Key informants were approached to participate in the interviews (Silverman, 2010). The authors interviewed informants from several local governments to obtain explanations for the insignificant test results. The informants were budget department heads who had extensive knowledge on the planning and budgeting processes in their respective local governments.

3.3. Operational definition of research variables

The research variables identified in the literature review were operationalized in the study. [Table 1](#) below outlines the operational measurements applied to the variables used in this study.

3.4. Data analysis method

To build financial condition rules of thumb for a city's livability, the authors undertook two main research phases. The first phase was determining the relevant indicators of each city's financial condition as a function of city livability by analyzing the correlation between these indicators and the city's livability index. This correlation analysis was strengthened by a mean difference test analysis of the financial condition indicators between two tiers of cities, top-half cities and bottom-half cities.

Before performing the correlation test using the Pearson Correlation test, the data on the financial condition ratios were standardized to the z-score² because there were different ratio measurement units. For example, the unit of measurement for the ratio of capital expenditure to

Table 1. Research variables and their measurement

Variables	Measurement (unit)
City livability	Index of city livability (index)
Operating capacity	Ratio of operating surplus or deficit to operating revenues (times)
Financial flexibility	Ratio of (Total Revenues—Special Allocation Fund Revenues—Payment of Principal Payable—Operating Expenses) to (Payment of Principal Payable + Operating Expenses) (times)
Commitment to maintain services	Ratio of maintenance expenditure to depreciation of fixed assets expense (times)
Commitment to improve services	Ratio of capital expenditure to population (Indonesia Rupiah (IDR) per capita)
Capacity to serve community	Ratio of total fixed assets (book value) to population (Indonesia Rupiah (IDR) per capita).

population is rupiah per capita with figure values reaching millions of rupiah, while the other ratios are measured by times with small figure values. Data and standardized data are presented in [Table 2](#) below.

A test of data normality using the Shapiro-Wilk test was carried out before performing the mean difference test. The results confirmed that the data were normally distributed, so the mean difference test was carried out using the t-test. The hypotheses on the basis of this mean difference test as follows:

Ha1: The mean of the operating capacity ratio of cities in the top-half group is greater than the mean of the operating capacity ratio of cities in the bottom-half group.

Ha2: The mean of the financial flexibility ratio of cities in the top-half group is greater than the mean of the financial flexibility ratio of cities in the bottom-half group.

Ha3: The mean of the commitment to maintain services ratio of cities in the top-half group is greater than the mean of the commitment to maintain services ratio of cities in the bottom-half group

Ha4: The mean of the commitment to improve services ratio of cities in the top-half group is greater than the mean of the commitment to improve services ratio of cities in the bottom-half group

Ha5: The mean of the serving capacity ratio of cities in the top-half group is greater than the mean of the capacity to serve ratio of cities in the bottom-half group

The second phase involved determining the figure ratios of the relevant indicators of the financial conditions of city livability by calculating the average ratio of the financial condition indicators that have a significant correlation with the livability index of municipal governments located in the top-tier for city livability. Top-tier cities are those ranked 1 to 7 in the Indonesia MLCI ranking (Ikatan Ahli Perencana Indonesia (IAP), 2017). The average ratio is hereinafter referred to as a rule of thumb for municipal government financial conditions.

Table 2. Data and standardized-data

No	Municipal Government	Commitment to Maintain Services		Commitment to Improve Services		Operating Capacity		Financial Flexibility		Capacity to Serve Community		City Livability Index	
		Xi	z-score	Xi	z-score	Xi	z-score	Xi	z-score	Xi	z-score	Xi	z-score
1	Kota Surakarta	0.32	0.65	3,426,349.76	1.08	1.21	1.03	0.21	1.11	12,447,341.98	0.69	66.90	1.36
2	Kota Palembang	0.63	2.55	1,935,709.81	(0.77)	1.26	1.43	0.16	0.59	7,268,230.86	(0.28)	66.60	1.27
3	Kota Balikpapan	0.13	(0.46)	2,768,407.34	0.26	1.15	0.51	0.15	0.58	10,443,426.27	0.32	65.80	1.03
4	Kota Denpasar	0.24	0.21	2,151,713.13	(0.51)	1.12	0.20	0.12	0.25	2,785,766.35	(1.12)	65.50	0.94
5	Kota Semarang	0.23	0.12	2,462,864.61	(0.12)	1.25	1.34	0.25	1.42	16,261,218.16	1.41	65.40	0.91
6	Kota Tangerang Selatan	0.07	(0.85)	1,804,143.18	(0.94)	1.33	2.01	0.33	2.13	10,888,514.98	0.40	65.40	0.91
7	Kota Banjarmasin	0.10	(0.65)	1,898,195.35	(0.82)	1.06	(0.30)	0.06	(0.27)	4,908,494.00	(0.72)	65.10	0.82
8	Kota Pekanbaru	0.16	(0.30)	3,061,492.42	0.63	1.03	(0.55)	0.03	(0.53)	6,645,173.77	(0.40)	64.70	0.70
9	Kota Yogyakarta	0.36	0.94	3,512,676.35	1.19	1.14	0.38	0.14	0.44	7,236,448.71	(0.29)	63.60	0.38
10	Kota Bandung	0.44	1.41	2,218,515.30	(0.42)	1.03	(0.55)	0.03	(0.53)	8,404,414.03	(0.07)	63.60	0.38
11	Kota Malang	0.43	1.36	2,105,751.62	(0.56)	1.12	0.22	0.12	0.27	5,844,841.48	(0.55)	63.50	0.35
12	Kota Surabaya	0.25	0.25	2,752,430.48	0.24	1.24	1.22	0.24	1.31	12,664,010.95	0.74	63.20	0.26
13	Kota Bogor	0.55	2.05	2,077,307.34	(0.60)	0.97	(1.07)	(0.03)	(1.07)	6,091,365.10	(0.50)	63.20	0.26
14	Kota Palangka Raya	0.16	(0.32)	3,994,915.79	1.79	1.09	(0.08)	0.08	(0.05)	9,409,409.64	0.12	62.90	0.17
15	Kota Manado	0.15	(0.37)	3,594,309.34	1.29	1.06	(0.29)	0.06	(0.26)	5,817,147.83	(0.55)	62.50	0.05
16	Kota Pontianak	0.19	(0.14)	2,412,161.73	(0.18)	1.06	(0.30)	0.06	(0.26)	3,283,481.80	(1.03)	62.00	(0.10)
17	Kota Depok	0.06	(0.87)	1,185,252.69	(1.71)	1.22	1.12	0.22	1.21	3,405,560.03	(1.01)	61.80	(0.16)
18	Kota Mataram	0.03	(1.11)	3,014,685.38	0.57	0.90	(1.69)	(0.10)	(1.70)	4,812,131.35	(0.74)	61.60	(0.22)
19	Kota Tangerang	0.25	0.23	1,820,677.34	(0.92)	1.12	0.23	0.12	0.28	2,889,467.88	(1.10)	61.10	(0.36)
20	Kota Banda Aceh	0.14	(0.39)	4,714,050.95	2.68	1.09	(0.05)	0.09	(0.03)	20,422,709.43	2.20	60.90	(0.42)

(Continued)

Table 2. (Continued)

No	Municipal Government	Commitment to Maintain Services		Commitment to Improve Services		Operating Capacity		Financial Flexibility		Capacity to Serve Community		City Livability Index	
		Xi	z-score	Xi	z-score	Xi	z-score	Xi	z-score	Xi	z-score	Xi	z-score
21	Kota Pekanbaru	0.03	(1.06)	1,989,955.53	(0.71)	0.92	(1.52)	(0.08)	(1.53)	4,070,967.65	(0.88)	57.80	(1.34)
22	Kota Samarinda	0.05	(0.96)	2,706,790.58	0.18	1.07	(0.25)	0.07	(0.21)	20,046,203.45	2.12	56.90	(1.61)
23	Kota Bandar Lampung	0.03	(1.06)	2,173,201.99	(0.48)	1.04	(0.47)	0.03	(0.56)	3,555,335.81	(0.98)	56.40	(1.76)
24	Kota Medan	0.15	(0.35)	1,955,938.54	(0.75)	1.03	(0.56)	0.03	(0.54)	12,552,579.18	0.71	56.10	(1.85)
25	Kota Makassar	0.06	(0.89)	2,225,385.59	(0.41)	0.86	(2.00)	(0.14)	(2.04)	16,814,790.59	1.52	55.70	(1.97)

4. Findings and discussion

4.1. Determining the relevant ratios of the financial condition of local governments

4.1.1. Correlation test

The correlation test between each financial condition indicator and the city livability index was carried out based on standardized data. The data normality test concluded that all the data are normally distributed. Thus, the correlation test was carried out using a parametric test approach—the Pearson Correlation Test. The results of the correlation test are shown in the following Table 3.

The Pearson correlation test showed that three of the indicators, the commitment to maintain services, operating capacity and financial flexibility, had significant correlations to the city livability index. The level of correlation intensity was moderate and ranged from 0.505 to 0.612 (Dancey & Reidy, 2007).

The insignificant correlation between city livability and commitment to improve services to the community, as measured by the ratio of capital expenditure per number in population, was due to the fact that the population count had not been considered by municipal government in planning and budgeting capital expenditure. This is consistent with statements made by the budget division heads from several local governments when the authors interviewed them. The following is an excerpt from one of the interviews.

“I don’t think we have (considered the population), sir. I have confirmed it with the Regional Planning and Development Agency and indeed the Agency has not considered the population, area, etc. in budgeting capital expenditures.” (Head of Budget Division Local Government P).

As the realization of the capital expenditure budget will then be capitalized in the fixed asset account, which is a proxy of local government’s capacity to serve the community, therefore the insignificant correlation between city livability index and the ratio of commitment to improve services to the community also results in an insignificant correlation between city livability index and local government’s service capacity to the public, as measured by the ratio of total book value of fixed assets divided by number in the population.

4.1.2. Mean difference test

The intention in carrying out a mean difference test for the indicators of local government financial conditions was to strengthen the conclusions obtained from the correlation test. Based on the data

Table 3. Results of Pearson correlation tests

Indicators of a City’s Financial Condition		Livability Index
Commitment to maintain services	Pearson Correlation	0.505*
	Sig. (2-tailed)	0.010
Operating capacity	Pearson Correlation	0.612**
	Sig. (2-tailed)	0.001
Financial flexibility	Pearson Correlation	0.593**
	Sig. (2-tailed)	0.002
Capacity to serve community	Pearson Correlation	-0.190
	Sig. (2-tailed)	0.362
Commitment to improve services	Pearson Correlation	0.104
	Sig. (2-tailed)	0.620

** Significant at the 5% level

in [Table 2](#), the results from calculating the mean values of the financial condition indicators for the two groups of municipal governments are as follows:

[Table 4](#) above shows that only one indicator of the financial condition of municipal governments in the top-half, namely the ratio of commitment to improve services, has a smaller value than the corresponding indicator in the bottom-half of municipal governments, but with a small absolute difference of only 3.72%. [Table 4](#) also shows that for the indicators ratio of the capacity to serve the community and ratio of the commitment to improve services, the absolute difference between municipal governments in the top-half and municipal governments in the bottom-half is quite small, at less than 5%. This result is consistent with the correlation test reported in the previous section.

The results of the mean difference test between municipal governments in the top-tier and bottom tier are presented in the following [Table 5](#).

The results of the t-test show that the mean value of the indicators of operating capacity, financial flexibility, and commitment to maintain services are significantly greater for municipal governments in the top-half compared to the bottom-half. Meanwhile, the results for the other two indicators, commitment to improve services and capacity to serve the community, show no difference in the average value. This result is consistent with the conclusions of the correlation test in the previous analysis. Thus, it can be stated conclusively that operating capacity, financial flexibility, and commitment to maintain services are the financial condition characteristics of city livability.

The findings of this study indicate that municipal governments in the sample had not considered the size of the population in their capital expenditure budgeting. Bearing in mind that population is extremely important, local governments must consider the number of residents in urban development planning and financial management. Population is one of the factors that affect the financial condition of local governments. Population will affect the level of public demand for the goods and services provided by local governments (Bergstrom & Goodman, 1973; Borchering & Deacon, 1972; Boyne, 1996; Groves et al., 1981; Hammer & Green, 1996; Nollenberger et al., 2003), which in turn will have an impact on the financial condition of local government, as proven in various studies (e.g., Brusca et al., 2015; Casal & Gomez, 2011; Jones & Walker, 2007; Ritonga et al., 2019; Stone et al., 2015). Based on the content analysis the authors carried out on all existing regulations (from local regulations to national regulations) related to regional development planning and regional financial management in Indonesia, there is no single regulation that mandates local governments to consider population size in regional development planning and financial management. Therefore, the local government would not consider the population size in the regional development planning and financial management process, possibly due to the absence of relevant regulations that mandate the local government to consider population in their regional development planning and financial management process.

Table 4. Comparison of the mean values of financial condition indicators

Indicator of Financial Condition (1)	Municipal Government in the Top-half (2)	Municipal Government in the Bottom-half (3)	Absolute Difference (%) (4) = [(2)-(3)] *100%
Commitment to maintain services	0.28	0.14	100.00%
Operating capacity	1.16	1.03	12.62%
Financial flexibility	0.15	0.03	400.00%
Capacity to serve community	Rp8,816,490 per capita	Rp8,705,473 per capita	1.28%
Commitment to improve services	Rp2,508,187 per capita	Rp2,604,972 per capita	3.72%

Table 5. Results of mean difference test

		F	Sig.	t	df	Sig. (2-tailed)
Commitment to maintain services	Equal variances assumed	7.776	0.010	3.538	23	0.002*
	Equal variances not assumed			3.642	16.471	0.002*
Operating capacity	Equal variances assumed	0.237	0.631	2.606	23	0.016*
	Equal variances not assumed			2.612	22.985	0.016*
Financial flexibility	Equal variances assumed	0.024	0.879	2.535	23	0.019*
	Equal variances not assumed			2.536	22.880	0.019*
Capacity to serve community	Equal variances assumed	6.851	0.015	-0.146	23	0.885
	Equal variances not assumed			-0.143	16.782	0.888
Commitment to improve services	Equal variances assumed	2.999	0.097	-0.532	23	0.600
	Equal variances not assumed			-0.521	17.195	0.609

*Significant at the 5% level

In order to accelerate improvement in city livability, municipal governments must consider the proportion of capital expenditure per head of population rather than the proportion of capital expenditure to total expenditure, as has been implemented in Indonesia (see Law Number 1 of 2022 concerning Financial Relations between the Central Government and Regional Governments). The relevant regulations should thus be revised so that local governments are mandated to consider population size in city development planning and financial management. Striving to increase per capita capital expenditure will lead to an increase in the number of fixed assets per capita. As a result, the quantity and quality of goods and services provided by municipal government will improve, in turn making people’s lives more comfortable and improving the city’s livability rating.

4.2. Determining the rules of thumb for the indicators

The results of the correlation and mean difference tests show that three indicators of the financial condition of a municipal government can characterize a city’s livability. By averaging the values of the ratios calculated for the seven local governments located in the top-tier (i.e., the highest livability), this study determines the following rules of thumb for the financial condition indicators of city livability: (1) the operating capacity ratio is 1.20, (2) the financial flexibility ratio is 0.18, and (3) the commitment to maintain services is 0.25. Furthermore, these indicators and their threshold figures can be used by stakeholders as a practical guide for making decisions affecting the financial condition of a municipal’s government.

5. Conclusions, research limitations and suggestions for future research

This study was conducted for the purpose of creating a practical guide for use as a reference by local government leaders in managing local government finances in order to realize a livable city. It has succeeded in determining the rules of thumb for the financial conditions necessary for a city’s livability. The correlation and mean difference tests identified a significant relationship between city livability and certain financial condition indicators, thus showing the predictive validity of the rules of thumb developed by this study. Three indicators are proposed—the operating capacity ratio, the financial flexibility ratio, and the commitment to maintain services ratio. The

rules of thumb for these ratios are 1.20 times for the operating capacity ratio, 0.18 times for the financial flexibility ratio, and 0.25 times for the commitment to maintain service ratio.

This study offers both academic and practical contributions. First, it provides a new method for determining the most relevant financial characteristics (the rules of thumb for financial condition) in relation to the ability of municipal governments to achieve their organizational goals, namely to improve the well-being of their citizens and create a livable city. In addition, this study offers new indicators to measure the financial condition of local governments. From the practical aspect, the results of this study provide indicators for use by municipal government stakeholders (legislative, community, central government, provincial government) to analyze government performance from the aspect of financial management. Based on these practical indicators, stakeholders can assess whether a municipal government has managed its resources properly to improve the welfare of city residents by realizing a livable city.

For municipal governments, this study provides benchmarks for managing their resources in order to achieve their stated goals. Ultimately, the existence of rules of thumb for the various financial conditions will increase the use of government financial reports for decision-making by various stakeholders, including citizens. Although accounting information is very critical for formulating policy, Mack and Ryan (2007) argue different public sector entities see annual reports differently in terms of their importance as information sources. This is perhaps due to the sophisticated nature of the accounting process and resulting information, meaning they are not always effective as a means for communicating government affairs (Butterworth et al., 1989). The results of this study are expected to provide a “modest” or “simple” means for stakeholders to understand the government’s performance in terms of providing public services, which in turn reflects the livability of a city.

One limitation of this study is the unavailability of more recent MLCI data from the IAP. This is likely to raise questions about the validity and therefore relevance of the research results to the current situation (i.e. the COVID-19 pandemic). Therefore, to address this issue, future research should thus use the most recent MLCI data to confirm the conclusions of this study. In addition, as the scope of this study only covers municipal governments; the research could be broadened by including other levels of government, such as district and provincial governments. Therefore, future research should broaden the topic of this research by covering all types of local or regional government.

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Notes

1. The MLCI data can be accessed via <https://iapindonesia.org/programs/5ee09b43140bc31fdd4630a2>.
2. z score is calculated with the formula: $z_i = (x_i - \mu) / \sigma$; where z_i is z score of data i, x_i is data i, μ is mean, and σ is standard deviation.

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