EuroMid
ACADEMY OF BUSINESS AND TECHNOLOGY

EuroMid Journal of Business and Tech-Innovation (EJBTI)
https://ejbti.com

Online ISSN: 3062-2131
Print ISSN: xxxx-xxxx

A Methodology for Measuring the Financial Sustainability of Non-Profit Organizations-An Empirical Investigation Using Financial Ratios

Reshma Roy
Government Arts College, University of Kerala, India
E-mail: reshmaroy660@gmail.com

Nadia Mansour
University of Salamanca, Salamanca, Spain
Email: mansournadia@usal.es

Satheesh Babu. A. T*
Government Arts College, University of Kerala, India
E-mail: satheeshbat@gmail.com
*Corresponding Author

Received: June 2023; **Accepted**: January 2024

Abstract: Non-profit organizations (NPOs) are increasingly recognized as key actors that mobilize people, resources, and knowledge to address pressing social challenges. Ensuring fiscal sustainability is essential for these organizations to remain viable and effective over the long term. However, the measurement and evaluation of financial sustainability in NPOs remain a persistent challenge for both scholars and practitioners. This article proposes a structured framework for assessing financial sustainability using four key dimensions: (i) Financial Efficiency (FE), (ii) Profitability Performance (PP), (iii) Solvency Performance (SP), and (iv) Liquidity Performance (LP). This quantifiable framework is applied to analyze the annual reports of Indian NPOs. The empirical findings suggest that most organizations are in a transitional phase, gradually evolving toward financial sustainability. The study's unique contributions lie in its context-specific methodology for evaluating NPO financial health in India, its use of robust archival data, the development of a comprehensive and nuanced scoring system, and its multi-year analytical perspective that uncovers key financial trends and patterns. Together, these contributions advance the academic literature and offer actionable insights for NPO managers in India—particularly valuable given the current lack of standardized approaches for assessing financial sustainability in the non-profit sector.

Keywords: Liquidity, Profitability, Solvency, Financial Sustainability, Non-profit organizations.

Type: Research paper

DOI: 10.51325/ejbti.v3i1.195

1. Introduction

Voluntary Organizations (VOs) contribute significantly to society through their efforts to fulfill human requirements, often operating in conjunction with for-

profit businesses and government initiatives (Murray Svidroňová et al., 2016; Soriano & Galindo-Martin, 2012; Svidroňová et al., 2016). How sustainability is defined, assessed, and enhanced has been a significant topic of debate in the nonprofit arts and cultural industry for the last 20 years (Scurto-Davis, 2014). For nonprofit organizations to be viable and successful over the long run, fiscal sustainability is crucial (Roberts,2003). Although studying the financial sustainability of nonprofit organizations has always been a difficult undertaking, the current financial crisis has also spurred more attempts to quantify financial sustainability in the nonprofit sector. The lack of formalized procedures for classifying NPOs into uniform subgroups and acquiring similar data across organizations for extensive, qualitative study has made the task even more difficult (Froelich et al., 2000). These nonprofit organizations do not operate for financial gain, whether individual or corporate. NPOs' mechanisms for measuring financial sustainability have frequently evolved on an as-needed basis, simply because they were founded to achieve charitable rather than commercial objectives.

This article proposes the need for a clear and precise definition of the term 'nonprofit organization' (NPO). The Society for Participatory Research in Asia (PRIA) has established a definition for a nonprofit organization (NPO) based on international recommendations. According to PRIA, an NPO must fulfill five criteria simultaneously: it must have an institutional identity, be independent of the government, not distribute profits, be self-governing, and be voluntarily established.

Despite their substantial contributions to social and economic development, NPOs face persistent challenges in securing sustainable financial support—an issue widely discussed in the literature (Gajdová & Majdúchová, 2018). Ensuring long-term financial sustainability is therefore vital for the continued survival and effectiveness of nonprofit organizations (Varghese & Ajukurian, 2021). Although NPOs deliver essential services both domestically and internationally, questions remain about their performance and accountability (Herman & Renz, 1999; Jackson & Holland, 1998). The measurement and evaluation of the overall sustainability of NPOs have proven to be challenges for both scholars and professionals (Ritchie & Kolodinsky, 2003). Evaluating their sustainability is complicated by a fragmented set of financial indicators and the lack of convergence on standard performance metrics (Herman & Renz, 1998).

Table 1 illustrates the economic contribution of nonprofit institutions to national GDP across a selection of countries. While nations such as Canada (8.21%), Israel (7.34%), and the United States (6.23%) report substantial contributions from the nonprofit sector, India's nonprofit institutions contribute only around 2% of GDP. This stark disparity underscores the need for deeper investigation into the financial sustainability of Indian NPOs and the development of context-specific evaluation frameworks.

Accordingly, this study proposes a structured and standardized methodology to evaluate the fiscal sustainability of Indian NPOs. Using a weighted scoring system, the financial sustainability of organizations is assessed across three performance tiers: Sustainability Enhanced, Sustainability Evolving, and Sustainability Impeded. This framework is designed to provide both

researchers and practitioners with clearer insights into the financial resilience of NPOs in an emerging economy context.

Table 1: Contribution of Nonprofit Institutions to GDP

Countries	Country Non-Profit Contribution to GDP (in %)
Canada	8.21
Israel	7.34
Mozambique	6.67
United States	6.23
Belgium	5.91
Japan	5.30
France	4.71
Brazil	3.43
Kyrgyzstan	2.32
India	2.00

(Source: Author's Compilation)
Note: These figures reflect the contribution of Nonprofit Institutions to GDP based on data from the last decade.

1.1. Indian Scenario

Nonprofit organizations address problems, innovate, create jobs, generate income, and develop community leaders in all fields of endeavor. With 2.6 million jobs and 2.4 million full-time volunteers, these organizations are economic engines of growth that provide employment numbers greater than those of the public sector. Nonprofit organizations have established themselves as one of India's most significant humanitarian forces during the last 75 years. The industry has had a significant positive impact on women's development, education, health, livelihoods, skill development, disability, and the arts and culture. By 2030, these civil society organizations have a greater chance of achieving all of the Sustainable Development Goals (SDGs) through collaboration with governments. They have made a vital and admirable contribution to the nation-building of the next generation (Sarin, 2023).

Table 2: Estimates of the economic contribution of the NPO sector in India (2009-10 to 2021-22)

Year	Estimated GVA of the NPO sector (INR crore)	Share in GDP (percent)
2008-09	74,058	1.41
2009-10	86,139	1.46
2010-11	1,05,884	1.47
2011-12	1,22,747	1.49
2012-13	1,30,992	1.53
2013-14	1,69,971	1.54
2014-15	1,94,825	1.60
2015-16	2,10,257	1.67
2016-17	2,52,974	1.74
2017-18	2,82,489	1.75
2018-19	3,13,512	1.83
2019-20	3,66,871	1.94
2020-21	3,87,754	1.97
2021-22	4,15,786	2

(Source: Author's Compilation)

Table 2 provides estimates of the magnitude and growth of the NPO sector's economic impact over time. According to estimates, the NPO sector's economic contribution to the Indian economy grew from around Rs. 74,058 crores in 2008–09 to almost Rs. 4,15,786 crores in 2021–2022. The NPO sector's economic contribution as a percentage of GDP grew from around 1.41% in 2008–09 to 2% in 2021–2022. Assessing the financial sustainability of NPOs in India is essential due to their significant and growing economic contribution. In addition to creating a significant number of jobs and volunteer work, NPOs are essential to the advancement of the Sustainable Development Goals (SDGs) and addressing socio-economic challenges. Evaluating their financial sustainability ensures effective resource allocation, enhances transparency and donor confidence, and supports long-term resilience and impact. This assessment is vital for optimizing operational efficiency, maintaining accountability, and sustaining their crucial contributions to community development and nation-building.

2. Literature Review

2.1. Defining Financial Sustainability

Previous research on financial sustainability and assessment has been inconsistent; the definitions used, the methods of analysis, and the interpretations of the results all vary depending on the study's objectives (Groves et al., 1981). Financial sustainability is a multifaceted concept that has been defined differently in most studies (Bowman, 2011b; Tuckman & Chang, 1991). Because it depends on the particular goals and organizational structure of each organization, financial sustainability lacks a universally accepted definition (Sontag-Padilla et al., 2012). The terms financial health, financial condition, vulnerability, predictability, flexibility, capacity, financial efficiency, and financial performance were used by Myser to characterize the financial sustainability of nonprofit organizations. Vulnerability, stability, capacity, and flexibility were the top four dimensions of financial sustainability (Myser, 2016). According to Patricia León, 'Financial sustainability is an organization’s capacity to obtain revenues (grants or otherwise) to sustain productive processes (projects) at a steady or growing rate to produce results (accomplish the mission, goals, or objectives)' (León, n.d.). Building on the consensus established by earlier research's definitions, this paper broadly defines financial sustainability as the capacity of an organization to manage its financial resources effectively and maintain its operations over the long term. This definition incorporates four key indicators: Financial Efficiency (FE), Profitability Performance (PP), Liquidity Performance (LP), and Solvency. By evaluating financial sustainability through these four dimensions, the study provides a comprehensive framework for assessing the long-term financial health and operational viability of nonprofit organizations.

2.2. Methodology to Measure Financial Sustainability

The evaluation of financial sustainability in NPOs is a relatively underexplored area, with limited methodologies available in the existing literature. The majority

of existing literature predominantly focuses on assessing financial health and performance; there is a significant disparity in evaluating sustainability. This imbalance highlights the need for more comprehensive studies that integrate sustainability metrics alongside traditional financial indicators to provide a fuller picture of organizational health. Several approaches have been proposed, but the focus has often been on related concepts such as financial vulnerability rather than sustainability. One of the most prominent works in this field is the methodology developed by Tuckman & Chang (1991), which measures financial vulnerability. Their approach emphasizes the ability of NPOs to withstand financial shocks by examining four key metrics: equity balance, revenue concentration, administrative cost ratio, and operating margin. However, while their work was influential, it was more concerned with the organization's ability to survive sudden financial shocks rather than ensuring its sustainability in the long run. Another notable contribution is the framework suggested by Woods Bowman (2011b). He underlined that both short-term and long-term periods were part of NPO viability. The rate at which financial capacity changes throughout both short-term sustainability (annual surpluses) and long-term financial sustainability (asset growth) is how NPO leaders gauge financial sustainability according to Bowman's sustainability principle. However, Bowman stated that yearly surpluses are required to sustain asset values at replacement costs over time for NPO leaders to retain financial viability. His methodology lacks clarity on classifying organizations into different sustainability levels, making it difficult for practitioners to apply his criteria consistently. Ryan & Irvine (2012) proposed a set of important financial ratios that management and nonprofit boards can employ. By applying the ratios to financial data from the 2009 reports of international aid organizations connected with the Australian Council for International Development (ACFID), they illustrated its utility in practice. McLaren & Struwig (2019) suggest a set of financial ratios, including those for performance, liquidity, asset management, debt management, and reserves, that are useful for evaluating financial sustainability in South African universities. Dinova (2019) underscores the significance of financial sustainability in long-term performance and uses a system of quantitative and qualitative indicators to assess it. Zietlow (2012) provides a novel approach for evaluating the financial health of an organization using the financial sustainability model. To help NGOs better manage their financial health and more confidently ensure their continued financial sustainability, three new financial indicators have been introduced. A more intricate model incorporating numerous financial parameters is proposed, along with usable measures of solvency, liquidity, and financial flexibility. This comprehensive approach provides a detailed analysis of an organization's financial condition. However, the complexity of Zietlow's metrics poses a challenge, particularly in contexts where financial data may not be readily available or reliable. This method is best suited for countries with robust financial reporting systems. In the 2003 NGO Sustainability Index, the United States Agency for International Development Bureau for Europe and Eurasia examined seven aspects of the NGO sector: public perception, advocacy, service delivery, organizational capacity, financial viability, legal environment, and NGO infrastructure (Europe, 2002). This index offers a clear bifurcation of

sustainability, distinguishing various aspects of nonprofit organization sustainability. However, the metrics used in this index are primarily based on perceptual analysis rather than actual financial data, limiting its applicability for rigorous financial assessment.

2.3. Financial Metrics for Measuring Sustainability

Based on the literature review, the most commonly used financial metrics for evaluating financial sustainability include liquidity, profitability, financial efficiency, and solvency.

Liquidity refers to an organization's ability to meet its short-term financial obligations as they arise. Effective liquidity management involves the prudent administration of current assets and current liabilities. Current assets include cash and other assets readily convertible into cash, while current liabilities comprise bank overdrafts, trade payables, bills payable, accrued expenses, and any obligations due within one year. Liquidity is essential for the ongoing viability of any organization (Kk, 2014). According to Bowman (2011b), liquidity can be defined as "cash or financial resources that are readily convertible into cash and are not subject to donor restrictions." Another relevant metric is the cash reserve ratio (Bowman, 2011a, 2011b), which measures "the number of months an organization could sustain its operations without incurring further expenses."

Profitability represents the surplus remaining after deducting expenses and is generally viewed as a proxy for the long-term viability of nonprofit organizations. In this study, profitability is measured using Return on Total Assets. Profitability ratios also illustrate how debt and liquidity influence asset utilization and operational outcomes (Al Omari, 2020). A widely used accounting-based indicator of nonprofit profitability is Return on Equity (ROE), calculated as after-tax profit divided by equity. ROE is a critical metric that reflects how effectively an organization uses its capital to generate earnings. It is particularly useful for assessing how well nonprofits can generate internal surplus to support future initiatives.

Organizational efficiency indicates how effectively an organization generates revenue relative to its resources. It also reflects the short-term operational viability of a nonprofit. The most commonly used metric in this context is Return on Assets (ROA), which evaluates the organization's ability to convert investments into income or program outputs.

Solvency measures the degree to which an organization is financially leveraged. It indicates the extent of debt and other liabilities relative to owner equity (Hanaffie Bin MD Yusoff, 2017). Solvency ratios assess whether an organization can continue operating during periods of financial stress and whether it could repay its obligations if its assets were liquidated. Maintaining solvency is critical to an organization's survival. An insolvent organization, unable to meet its liabilities, may face bankruptcy or forced restructuring. This study measures solvency using the Total Equity to Total Assets ratio.

2.4. Revenue Diversification

The concept of revenue diversification originates from Modern Portfolio Theory (Markowitz, 1952), which explains how investors select portfolios by balancing

expected returns against risk (i.e., variance of returns). Although nonprofit organizations operate under different constraints than for-profit firms, they benefit similarly from diversifying revenue sources to reduce risk and enhance financial stability.

Tuckman and Chang (1991) argue that nonprofits with a greater number of income sources and a more equitable distribution among these sources tend to be more financially resilient. Similarly, Greenlee and Trussel (2000) found that a higher degree of income diversification reduces the likelihood of nonprofits cutting program expenditures or experiencing asset losses over three consecutive years.

Key revenue sources include:

- Commercial Revenue: Income generated from commercial activities such as product sales, service fees, or membership dues.
- Investment Income: Earnings derived from interest, dividends, or capital gains on investments.
- Grants: Financial contributions provided by governmental bodies, foundations, or international donors to fund specific programs aligned with the organization's mission.
- Others: This broad category may include rental income, agricultural proceeds, tax refunds, and miscellaneous income. These revenues often stem from activities not central to the organization's primary mission but nonetheless, enhance financial flexibility.

2.5. Research Gap

While the existing literature identifies a wide array of financial indicators to assess the sustainability of nonprofit organizations, it lacks clear and standardized methodologies for definitively classifying whether an organization is financially sustainable. Most prior studies rely on complex financial metrics that may not be practical in contexts where data access is limited.

This study proposes a simplified methodology based on essential and easy-to-calculate indicators, particularly relevant for regions like India where nonprofit organizations are often hesitant to disclose detailed financial statements. The scarcity of publicly available financial data on Indian NPOs may explain the limited empirical research on their financial sustainability. In contrast, studies in the United States have benefited from access to IRS Form 990 data, which has facilitated the development of sustainability indices (Despard et al., 2017).

Despite these limitations, this study seeks to bridge this gap by offering a transparent, replicable framework for assessing nonprofit sustainability. Furthermore, the proposed approach allows for the classification of organizations into various levels of financial sustainability, providing both diagnostic and comparative insights.

3. Data and Methodology

3.1. Population and Sampling

The population for this study consists of non-profit organizations registered under the Indian Ministry of Corporate Affairs, which have been operational and

maintained comprehensive financial records from 2019 to 2022. A list of 80 eligible organizations was compiled from the Ministry's website. A random sampling technique was used to select 20 NPOs, ensuring objectivity and equal selection probability. Each organization was assigned a number from 1 to 80, and a random number generator was used to select 20 unique organizations for the final sample.

3.2. Data Sources

This study uses secondary data, specifically audited annual reports containing statements of financial position, income statements, and cash flow statements. Interviews with key informants, including accountants and financial managers, were also conducted to validate and enrich the analysis. The study period covers four fiscal years: 2019 to 2022.

3.3. Analytical Framework

The evaluation of financial sustainability relies on performance metrics and a weighted scoring methodology adapted from previous research by Ritchie & Kolodinsky (2003), Zdanovskis & Pilvere (2019), Kangari, Farid, & Elgharib (1992), and scoring frameworks proposed by Daryanto (2019), Daryanto & Samidi (2018), and Masri (2020).

3.4. Research Objectives

The objectives of this research are threefold. First, it aims to analyze the revenue structure and revenue diversification capacity of non-profit organizations (NPOs). Second, it evaluates the liquidity, profitability, solvency, and financial efficiency performance of selected NPOs. Third, the study seeks to develop a standardized methodology for assessing the fiscal sustainability of NPOs.

4. Financial Performance Indicators

4.1. Financial Metrics and Formulas

To evaluate the fiscal sustainability of nonprofit organizations (NPOs), this study employs four key categories of financial indicators: liquidity, efficiency, profitability, and solvency. These indicators were selected based on their established relevance and frequent use in nonprofit financial assessments across global studies (Kangari et al., 1992; Ritchie & Kolodinsky, 2003; Zdanovskis & Pilvere, 2019).

Liquidity is assessed using the current ratio and cash ratio, both of which capture short-term fiscal health and an organization's ability to meet immediate obligations. Financial efficiency is measured via return on assets (ROA), which evaluates how effectively an organization utilizes its asset base. Profitability is represented by return on net worth (RONW), reflecting the capacity to generate a financial surplus. Solvency, a measure of long-term financial viability, is captured through the equity-to-asset ratio, assessing how much of an organization's asset base is financed by equity.

Table 3 summarizes the financial indicators, their formulas, and the sources from which they are derived. This standardized set of measures provides a robust foundation for assessing financial sustainability in an NPO context.

Table 3: Financial measures and formulas used to assess NPO performance.

Financial Measure	Ratio	Formula	Source
Liquidity Performance	Current Ratio	Current Assets/Current Liabilities	(Kangari et al., 1992; Zdanovskis & Pilvere,2019)
	Cash Ratio	Cash& Equivalents/Current CashLiabilities	(Ritchie & Kolodinsky, 2003)
Financial Efficiency	Return on Assets	Net Income/Total Assets	(Ritchie & Kolodinsky, 2003)
Profitability Performance	Return on Net Worth	Profit after tax/Net worth	(Kangari et al., 1992)
Solvency Performance	Total Equity to Total Assets	Net Worth/Total Assets	(Zdanovskis & Pilvere 2019)

4.2. Weighting Scheme

Recognizing that not all financial indicators contribute equally to sustainability, this study adopts a weighted scoring approach to reflect their relative importance. Greater weight is assigned to profitability and efficiency metrics, highlighting their central role in long-term viability. Liquidity and solvency indicators remain essential but are weighted slightly less, reflecting their relevance to short- and medium-term operational performance.

The specific weighting of each indicator is presented in Table 4, informed by previous nonprofit studies (Daryanto, 2019; Daryanto & Samidi, 2018; Masri, 2020). The total maximum score across all indicators is 50. This structured weighting model enhances comparability and enables the aggregation of individual financial measures into a holistic sustainability score.

Table 4: Financial indicators and corresponding weight scores

Indicators	Weight Score
Liquidity Performance	
Current Ratio	5
Cash Ratio	5
Profitability Performance	
Return on Net Worth	20
Financial Efficiency	
Return on Assets	10
Solvency	
Total Equity to Total Assets	10
Total	50

Source: (Daryanto, 2019; Daryanto & Samidi, 2018; Masri, 2020)
Note: The weight scores were chosen for NPO applicability.

4.3. Rating System

To translate raw financial performance into actionable insights, this study develops a quantitative rating system based on a detailed score classification framework. Each financial indicator is assigned a sub-score based on its observed

value, using percentage thresholds tailored to NPO financial benchmarks. These sub-scores are then aggregated using the weighted scheme described in Section 4.2.

The scoring intervals and their corresponding rating points for each indicator are shown in Table 5. This scoring rubric allows for a granular and context-sensitive evaluation of financial performance, offering insights into how well each organization performs relative to established norms.

Table 5: Scoring matrix for financial indicators

Cash Ratio=x%	**Score**	**Return on Equity=x%**	**Score**
x>=35	5	15<ROE	20
25<=x<35	4	13<x<=15	18
15<=x<25	3	11<x<=13	16
10<=x<15	2	9<x<=11	14
5<=x<10	1	7<x<=9	12
0<=x<5	0	6<x<=7	10
Current Ratio=x%	**Score**	5<x<=6	8.5
x<=125	5	4<x<=5	7
110<=x<125	4	2<x<=4	5.5
100<=x<110	3	1<x<=0	4
95<=x<100	2	0<x<=1	2
90<=x<95	1	ROE<0	0
x<90	0	**Total Equity to Total Assets=x%**	**Score**
Return on Assets=x%	**Score**	x<0	0
x<0	0	0<=x<10	4
0<=x<1	4	10<=x<20	6
1<=x<2	6	20<=x<30	7.25
2<=x<3	7.25	30<=x<40	10
3<=x<4	10	40<=x<50	9
4<=x<5	9	50<=x<60	8.5
5<=x<6	8.5	60<=x<70	8
6<=x<7	8	70<=x<80	7.5
7<=x<8	7.5	80<=x<90	7
8<=x<9	7	90<=x<100	6.5
9<=x<10	6.5		

Finally, organizations are categorized into performance tiers based on their total scores. NPOs scoring above 95 are classified as “Exceptional”, while those in the 80–95 range are considered “Outstanding.” The middle tiers (65–80: “Strong”; 50–65: “Satisfactory”; 40–50: “Advancing”; 30–40: “Improving”) denote evolving levels of sustainability. Scores between 10–30 indicate “Limited” or “Concerning” performance, while scores below 10 are categorized as “Critical”, indicating severe fiscal vulnerability. This classification model provides a standardized, evidence-based tool for evaluating and comparing nonprofit financial health across time and organizational types.

5. Results

5.1. Total Revenue and Revenue Diversification (2019–2022)

This section analyzes the total revenue trends and revenue diversification capacity of 20 nonprofit organizations (NPOs) in India over the period 2019 to 2022. The financial trends reflect the impact of both global and domestic events—most notably the COVID-19 pandemic—on the fiscal health of the nonprofit sector.
Overall, the total revenue of these organizations declined by 6.16% over the four years. This decline reflects the adverse effects of the global health crisis and the broader economic slowdown on philanthropic and institutional funding (Finchum-Mason et al., 2020). In general, higher total revenue is indicative of stronger financial health and institutional resilience, with classification into "above average" or "below average" based on comparative performance levels (Omondi-Ochieng, 2018). Table 6 summarizes the annual revenue data for each organization, highlighting the year-on-year changes and classifying them by average performance levels.

Table 6: Total revenue results of selected NPOs from 2019 to 2022

Series	2019	2020	2021	2022	Increase/Decrease			Above/Below Average
					2019-2020	2020-2021	2021-2022	
1	3687588	3098543	2519400	2537800	Decrease	Decrease	Increase	Below
2	12670341	11623304	9561700	9716200	Decrease	Decrease	Increase	Above
3	7676572	6464634	5535321	3319112	Decrease	Decrease	Decrease	Above
4	129250	26622	24120	15768	Decrease	Decrease	Decrease	Below
5	96597366	61587994	33062481	30394880	Decrease	Decrease	Decrease	Above
6	1794329	2064514	1640225	1562048	Increase	Decrease	Decrease	Below
7	1357364	1407473	1232700	1171200	Increase	Decrease	Decrease	Below
8	9686	10786	8800	3600	Increase	Decrease	Decrease	Below
9	206498	206498	133185	109808	No change	Decrease	Decrease	Below
10	451801	445547	145493	569350	Decrease	Decrease	Decrease	Below
11	0	636950	18710	1300000	Increase	Increase	Increase	Below
12	6932871	7190605	7654124	1337926	Increase	Increase	Decrease	Above
13	1618675	1925256	1857726	2547133	Increase	Decrease	Increase	Below
14	7267311	6524491	7165722	6026801	Decrease	Increase	Decrease	Above
15	77197	71919	60283	59036	Decrease	Decrease	Decrease	Below
16	1468106	1898138	1710495	1690040	Increase	Decrease	Decrease	Below
17	557318	574464	188347	245671	Increase	Decrease	Increase	Below
18	800000	700000	700000	700000	Decrease	No change	No change	Below
19	4263000	4279000	3244000	4086000	Increase	Decrease	Increase	Above
20	38000	33000	43900	119777	Decrease	Increase	Increase	Below
Mean	7401339	5536837	3877876	3349987				

The data show that although a few organizations experienced intermittent revenue recovery, most exhibited consistent declines across the period. This pattern suggests persistent structural challenges in sustaining income flows. Notably, organizations categorized as "above average" maintained relatively stable or high revenue bases, likely due to diversified funding streams or established donor relationships. Conversely, "below average" organizations demonstrated more volatile trends, often lacking robust income buffers. Figure 1 illustrates the primary sources of finance for these organizations, offering insight into the composition of income portfolios.

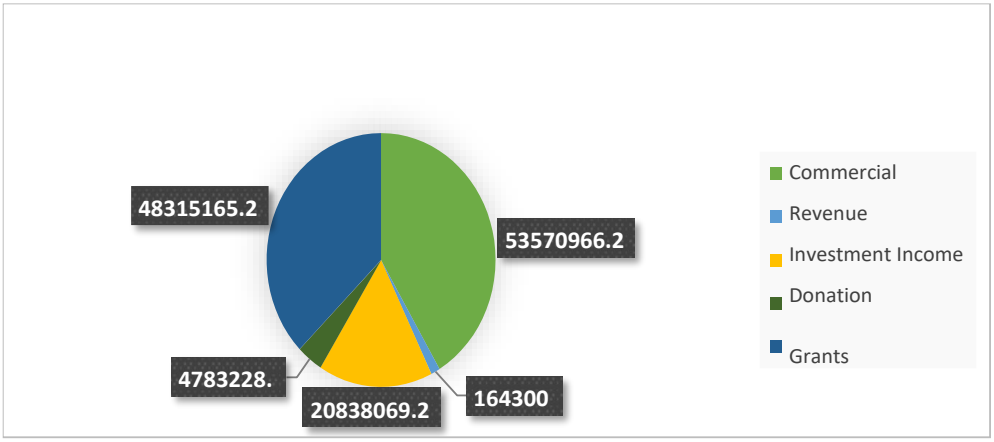

Figure 1: Sources of finance for selected NPOs (2019–2022).

To assess the concentration or diversification of revenue sources, the Herfindahl-Hirschman Index (HHI) was used—a widely recognized tool in nonprofit finance (D. Carroll, 2005; Hendrick, 2002; Tuckman & Chang, 1991). This index is calculated by summing the squares of each revenue source's percentage share of an organization's total income. The five categories used in this study include: commercial/earned income, investment income, donative income, grants, and miscellaneous income.

The HHI score ranges from 0 to 1, where 0 represents perfect diversification (equal income from all sources), and 1 indicates complete concentration in a single source. A high HHI signals dependency on a narrow set of revenue channels, potentially posing long-term financial risk (Carroll & Stater, 2009). Table 7 provides the interpretation framework used to evaluate the HHI scores for each organization in the dataset and Figure 2 plots the HHI values for the 20 NPOs in the sample, visualizing the degree of income concentration.

Table 7: Interpretation of HHI scores for revenue diversification.

HHI value	**Interpretation**
HHI =0	• This indicates perfect revenue diversification, with the NGO having an equal share of revenue from all sources. • Unlikely in practice, but this theoretical scenario represents maximum diversification.
HHI Close to 0	• This suggests a highly diversified revenue base. • The NGO receives revenue from a broad range ofsources with relatively equal contributions.
HHI Value Between 0.1 and 0.25	• This suggests some concentration in revenue sources. • The NGO may rely more on specific funding streams, but there is still a reasonable degree of diversification.
HHI Value Above 0.25	• This indicates a higher concentration. • The NGO may have a notable dependence on a few key funding sources, potentially posing a risk if those sources are disrupted.
HHI Value Approaching 1	• This represents high concentration. • The NGO is heavily reliant on one or a few sources,

	posing a significant risk if those sources are lost or reduced.
HHI Value of 1	• This indicates perfect concentration. • The NGO relies entirely on one revenue source, which may pose a substantial risk to financial stability.

Source: Author

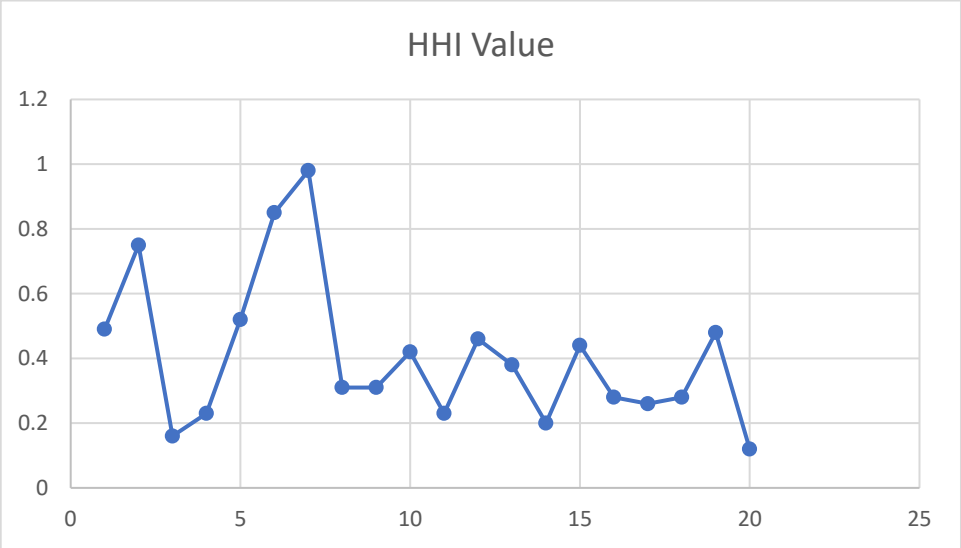

Figure 2: HHI scores of nonprofit organizations, 2019–2022.

The HHI values for the sample range from 0.12 to 0.98, with a mean of 0.41, indicating moderate to high concentration. This suggests that, on average, these NPOs are heavily dependent on a small number of income sources. While some demonstrate relatively balanced income portfolios, others rely on a single dominant revenue stream—making them vulnerable to funding shocks. Organizations with high concentration should consider strategic diversification initiatives, such as expanding donor bases, developing earned income models, or increasing public-private partnerships. This approach can enhance their financial resilience and reduce dependency-related risks.

In addition to revenue and diversification trends, this study also analyzes the liquidity, profitability, solvency, and financial efficiency of the selected NPOs. These dimensions are evaluated using the standardized financial metrics and weighting framework presented in Section 4, offering a multidimensional perspective on organizational sustainability. The next section discusses these performance dimensions in detail, comparing indicator scores across organizations and years to derive patterns of financial health and weakness.

5.2. Analysis of Liquidity

Liquidity performance evaluates an organization's ability to meet its short-term financial obligations. The current ratio and cash ratio are the two primary metrics used in this study to assess liquidity. According to Zdanovskis and Pilvere (2019), these indicators reflect an organization's financial soundness and capacity to pay liabilities when they come due. A higher ratio suggests greater financial flexibility and short-term solvency. Based on the computed values, each nonprofit

organization (NPO) is classified into one of four categories: strong, moderate, low, or volatile performers. Table 8 presents the current and cash ratios for 20 selected NPOs from 2019 to 2022, along with interpretive classifications.

Table 8: Liquidity performance results from 2019 to 2022

	Current Ratio				Cash Ratio				Interpretation
	2022	2021	2020	2019	2022	2021	2020	2019	
1	4.25	3.82	3.22	3.37	3.18	2.83	2.45	2.49	Strong
2	9.80	13.05	12.26	12.35	19.61	20.32	1.66	1.02	Strong
3	0.79	0.80	0.79	0.78	0.01	0.02	0.01	0.01	Low
4	1.24	1.26	1.27	1.09	0.32	0.31	0.30	0.10	Moderate
5	1.55	1.46	1.77	1.37	0.92	0.08	0.88	0.85	Moderate
6	3.05	1.80	1.52	3.03	1.74	0.59	0.33	1.26	Strong
7	0.78	0.77	3.49	11.87	0.72	0.63	0.64	2.90	Low
8	0	0.15	0.14	0.20	0	0.15	0.14	0.20	Low
9	5.63	5.24	4.96	4.94	0.05	0.31	0.06	0.04	Volatile
10	0	0.46	0.13	0.20	0	0.46	0.13	0.20	Low
11	0.88	0.83	1.15	1.15	5.85	0.83	1.15	1.15	Strong
12	0.69	0.69	0.82	0.72	0.44	0.48	0.82	0.72	Low
13	2.82	2.76	9.68	8.11	1.02	2.47	9.50	7.34	Moderate
14	0.22	0.39	0.38	0.35	0.22	0.37	0.38	0.33	Low
15	3.23	2.13	7.37	2.23	3.23	2.13	7.37	22.5	Strong
16	2.56	2.10	1.19	2.36	2.15	1.76	1.29	1.09	Moderate
17	0.062	0.06	0.10	0.17	0.06	0.06	0.05	0.17	Low
18	3.99	4.39	4.47	4.42	2.2	2.2	2.2	2.4	Strong
19	10.38	12.34	12.61	7.35	10.05	11.96	12.19	7.10	Strong
20	0.68	0.67	0.04	0.46	0.68	0.67	0.04	0.46	Volatile

Source: Annual Reports (2019–2022).

The results indicate that a majority of NPOs exhibit fluctuating liquidity over time. While some, such as Series 1, 2, 6, and 19, consistently maintain high ratios indicative of strong performance, others—like Series 3, 7, 10, and 14—repeatedly fall into the low-performance category. Notably, Series 9 and 20 exhibit volatile behavior, showing significant inconsistencies across the years. These disparities suggest uneven short-term financial resilience across the sector.

5.3. Analysis of Profitability

Profitability reflects an organization's capacity to generate a financial surplus that can support ongoing operations and future contingencies. Although NPOs are not profit-driven by design, sustaining some level of profitability is crucial for stability and reinvestment in their social mission (Zdanovskis & Pilvere, 2019). This study employs the Return on Net Worth (RoNW) to evaluate profitability across organizations. Table 9 presents RoNW values from 2019 to 2022 for the 20 NPOs in the sample.

Table 9: Profitability performance results from 2019 to 2022

Organization Series	**Return on net worth**			
	2022	**2021**	**2020**	**2019**
1	6.917873	0.267943	0.060647	0.573262
2	7.098542	7.595265	10.67262	11.63672
3	0	0	9.163009	42.56667

4	0	0	0	0
5	16.58336	0	0	0
6	11.33902	9.17137	14.53796	10.43873
7	31.13034	38.32826	25.40006	65.83271
8	26.9	0	0	0.728948
9	1.029947	0	0	0
10	43.28572	1.103107	3.530647	2.660712
11	0	0	0	0
12	0	0	10.91482	38.89791
13	-154.961	-54.6049	-7.20186	-1.54665
14	-121.576	-5.71292	-14.8326	-52.2443
15	-21.144	0	0	-34.1012
16	-1.9697	-0.25037	1.860451	-3.78333
17	0.697894	1.355985	0.132457	1.401296
18	-5.34	-0.54	-0.53	0.33
19	5.78	-0.06	5.21	7.24
20	-4.22508	-133.028	58.92585	-61.8267
Mean	-9.13312	-6.81872	5.892205	1.44024
Maximum	43.28572	38.32826	58.92585	65.83271
Minimum	-154.961	-133.028	-14.8326	-61.8267

Source: Annual Reports (2019–2022).

The RoNW findings reveal a highly heterogeneous performance landscape. Some organizations, such as Series 7 and 10, consistently achieve strong profitability levels, whereas others—like Series 13, 14, and 20—report sustained or increasing losses over the four years. The mean RoNW trends were negative in the last two years of the study, suggesting growing financial stress in the nonprofit sector. These findings highlight the need for better strategic planning and financial management.

5.4. Analysis of Financial Efficiency

Financial efficiency refers to the optimal use of resources to achieve financial outcomes. It is commonly assessed by analyzing the relationship between revenue and asset utilization (Ritchie & Kolodinsky, 2003). In this study, Return on Assets (ROA) is used to evaluate the efficiency with which nonprofits generate income from their asset base. Table 10 reports ROA values for the sample organizations from 2019 through 2022.

Table 10: Return on assets ratio results from 2019 to 2022

Organization	**Return on assets**			
Series	**2022**	**2021**	**2020**	**2019**
1	1.091817	0.054233	0.007693	4.941446
2	4.323781	4.315562	5.71424	5.778184
3	-1.62134	-1.45868	0.080684	0.295893
4	-0.76347	-0.44369	-13.8445	-1.42873
5	5.496194	-5.31519	4.62334	0
6	9.376609	7.648786	12.17067	8.741774
7	5.935313	4.107643	3.277944	1.273872
8	-2.69	-0.23256	-1.15214	0.660036
9	1.029767	-1.07209	0.320067	-3.10735
10	28.62899	0.580231	1.846293	1.367619

11	9.98	-14.8878	-12.9482	-18.65
12	-5.14075	-16.916	2.918884	11.25937
13	-27.804	-17.7027	-2.64249	-1.53318
14	-22.585	-2.16631	-5.83626	1.181118
15	0	0	0	0
16	-1.93702	-0.24559	1.825014	-3.04701
17	0.602144	1.166551	0.11619	1.226362
18	-5.55556	0	0	0
19	41.60866	-0.23691	0.032762	0.05327
20	1.977683	63.89736	-14.0286	0.724114
Mean	2.097693	1.054645	-0.87592	0.486839
Maximum	41.60866	63.89736	12.17067	11.25937
Minimum	-27.804	-17.7027	-14.0286	-18.65

Source: Annual Reports (2019–2022).

The results show significant variability across organizations and years. While Series 6, 7, and 10 consistently demonstrate high ROA—indicating efficient asset use—others, including Series 11, 12, and 13, report negative returns, suggesting underutilization or asset-related financial strain. The overall mean ROA across the four years trends downward, signaling a sector-wide challenge in maintaining asset efficiency amid changing funding landscapes.

5.5. Analysis of Solvency

Solvency performance reflects an organization's long-term financial health and its ability to meet all financial obligations. This is measured by the Total Equity to Total Assets ratio, which indicates the proportion of total assets financed by equity. Table 11 presents the solvency ratios for the 20 organizations from 2019 to 2022.

Table 11: Total equity to total asset ratio from 2019 to 2022

Organization Series	**Total equity to total asset ratio**			
	2022	**2021**	**2020**	**2019**
1	15.78256	20.24051	12.68458	11.80466
2	60.91083	56.81911	53.54111	49.65473
3	-2.24	-0.31544	0.880546	0.695128
4	19.62524	20.6021	21.39001	8.838142
5	37.94963	31.16875	29.1542	25.03782
6	82.69322	83.39842	83.71644	83.74355
7	19.84336	10.8137	5.339607	2.50342
8	100	90.46512	90.43744	90.54636
9	99.98256	99.98128	99.98025	99.98013
10	66.13957	52.55672	52.27983	51.3822
11	99.74494	-32.1832	-14.3621	-1.25184
12	3.148469	9.067047	26.74238	28.94582
13	17.94261	57.82643	65.06593	99.12935
14	18.57687	37.91945	39.34759	45.90457
15	96.91055	95.31509	86.43962	95.56891
16	98.19511	98.08977	98.09444	80.53777
17	86.28013	86.02802	87.71953	87.51625
18	90.74074	89.47368	89.47368	91.22807
19	72.26295	74.2787	74.72625	73.23725
20	-46.5935	-48.0262	-23.8	-11.7

Mean	51.89479	46.67596	48.94257	50.66512
Maximum	100	99.98128	99.98013	99.98013
Minimum	-46.5935	-48.0262	-23.8	-11.7

Source: Annual Reports (2019–2022).

The findings reveal a wide range of solvency positions. Series 6, 8, 9, 15, and 16 consistently demonstrate high equity-to-asset ratios, suggesting strong financial independence and low reliance on external liabilities. In contrast, Series 11, 12, and 20 exhibit negative or declining ratios, indicating potential structural imbalances or financial distress. On average, the mean solvency ratio trends downward, reinforcing concerns about long-term sustainability for several organizations in the sector.

6. Assessment of Financial Health of Non-Profit Organizations

6.1. Weighted Average Score

To assess the comprehensive financial health of the nonprofit organizations under study, a weighted scoring model was employed. This model aggregates performance across four key dimensions: liquidity, profitability, solvency, and financial efficiency. The resulting composite score offers a standardized metric for benchmarking and categorizing organizational sustainability. Table 12 presents the weighted average financial scores for 20 nonprofit organizations between 2019 and 2022.

Table 12: Weighted average score of organizations from 2019 to 2022.

Organization series	2022	2021	2020	2019
1	30.5	23.25	22	27
2	33	35	36.5	36.5
3	0	0	20	28
4	14	16.25	16.25	8
5	48.5	16	26.25	17.25
6	37.5	36.5	40.5	38
7	39.5	40	46	40
8	26.5	9.5	8.5	15.5
9	16.5	15.5	16.5	11.5
10	34.5	14.5	19.5	19.5
11	9	16.5	16.5	16.5
12	9	9	33.5	38.75
13	16	18.5	18	16.5
14	9	15	15	19
15	20.5	24.5	25	20.5
16	16.5	16.5	26.5	17.5
17	18	22	18	22
18	12.5	17	16	20.5
19	35	17.5	30	33.5
20	5	5	11	12

Source: Annual Reports (2019–2022).

The data reveal notable inter-organizational and interannual variability in financial performance. Some organizations, such as Series 2, 6, and 7, maintain

consistently high scores across all four years, indicating relative financial resilience. Conversely, others—such as Series 3, 8, 11, and 20—report lower scores, reflecting either structural financial limitations or a lack of consistent fiscal strategy. Overall, the results suggest moderate improvement in financial sustainability over the four years. The upward trend in weighted scores for several organizations (e.g., Series 1, 5, 10, and 19) implies gradual progress toward financial stability, possibly due to improved financial planning, diversification of revenue, or more efficient resource allocation.

6.2. Categorization of Financial Sustainability Levels

To interpret the weighted scores, a classification system was applied that groups nonprofit organizations into nine categories, ranging from “Exceptional” to “Critical.” This allows for comparative benchmarking and strategic prioritization. Table 13 summarizes the number of organizations falling within each category based on their final scores.

Table 13: Level of financial sustainability assessment of NPOs

Level of Financial Sustainability Assessment	Number of Organizations
Exceptional	0
Outstanding	1
Strong	2
Satisfactory	3
Advancing	3
Improving	6
Concerning	4
Limited	1
Critical	0

Source: Author's Classification based on Weighted Score Model.

From the assessment, no organizations were classified as either "Exceptional" or "Critical", suggesting that none of the NPOs are currently operating at the extreme ends of the financial health spectrum. Only one organization achieved an “Outstanding” rating, while two were deemed “Strong.” The majority—12 organizations—fall into the mid-tier range: “Satisfactory,” “Advancing,” or “Improving.” Four organizations were labeled as “Concerning,” and one as “Limited,” suggesting vulnerability and a need for targeted financial intervention. The overall mean sustainability score across organizations was 42.96, indicating that, while most NPOs are not financially unstable, they are also not fully optimized in their financial sustainability. The highest score recorded was 82.75, while the lowest was 16.5. These results emphasize the importance of continuous financial monitoring, capacity building in financial management, and the implementation of robust sustainability strategies tailored to nonprofit contexts.

7. Discussion and Implications

This study evaluated the financial well-being of nonprofit organizations by analyzing indices of liquidity, profitability, solvency, and financial efficiency for the time frame of 2019-2022. The assessment of the overall fiscal well-being of nonprofit organizations from 2019 to 2022 reveals that six out of twenty organizations have demonstrated improved financial sustainability. An examination of the overall income patterns across NPOs from 2019 to 2022 indicates a significant decrease of 6.16 percent. The decrease in income highlights the impact of external causes, namely the worldwide pandemic and the resulting economic decline, on the nonprofit industry (Finchum-Mason et al., 2020). The observed decline in overall income indicates an urgent need for the sector to adjust and innovate to respond to the ever-changing external conditions, guaranteeing resilience and ongoing efficiency in the pursuit of their objectives (Omondi-Ochieng, 2018). As of 2022, NPOs exhibited a significant reliance on one or two funding sources, rendering them very vulnerable to default, insolvency, and potential cancellations of services and programs (Srivastava & Tandon, 2005). The primary goal of nonprofit organizations (NPOs) is to efficiently oversee their financial assets to maintain their operations and attain financial self-sufficiency, by pursuing revenue generation while minimizing costs.

The liquidity performance was examined from two angles, evaluating the NPO's ability to fulfill short-term commitments and preserve financial adaptability. This analysis explored the current ratio and cash ratio, which are both important indications of the organization's capacity to handle urgent financial requirements. The current ratio, which measures the proportion of current assets to current liabilities, offers valuable information about the NPO's financial status. Concurrently, the cash ratio, which only takes into account cash and cash equivalents in proportion to current liabilities, provides a more rigorous assessment of the organization's capacity to meet short-term commitments with easily accessible assets.

The evaluation of an NPO's profitability performance, measured by its return on net worth, reveals significant fluctuations over time. The net worth values achieved excellent maximum returns in the years 2022, 2021, 2020, and 2019, with percentages of 43.29%, 38.33%, 58.93%, and 65.83%, respectively. These highest values demonstrate an impressive capacity to create returns relative to net worth over these periods. In contrast, the lowest Return on Net Worth (RONW) numbers for the same years were -154.96%, -133.03%, -14.83%, and -61.83%. Negative returns indicate that the organization's net worth is not efficiently generating profits, indicating a need for strategic changes. NPOs could consider divesting some assets or implementing more creative programs and services, since this might be beneficial.

The measurement of financial efficiency used Return on Asset, a regularly employed metric in prior research. In 2021, the highest Return on Assets (ROA) achieved was 63.8 percent, while the lowest ROA recorded was 27.9 percent in 2022. The ratios reached significantly high maximum values in the years 2022, 2021, 2020, and 2019, with percentages of 100%, 99.98%, 99.98%, and 99.98%, respectively. These peak ratios indicate a strong correlation between equity and

assets, indicating a stable financial position throughout these eras. Conversely, the lowest ratios of Total Equity to Total Assets for the same years were -46.59%, -48.03%, -23.8%, and -11.7%. Negative ratios show situations where liabilities are more than equity, which suggests a possible imbalance in the financial structure. To tackle these occurrences, it may be necessary to evaluate the amount of debt or concentrate on enhancing the equity foundation. Implementing strategic changes, such as optimizing the ratio of debt to equity and strengthening the equity basis, may help NPOs achieve a more stable and robust financial structure. Analyzing the range of Total Equity to Total Asset ratios yields valuable information that may be used to make educated decisions and develop strategic plans. This helps align the organization's financial structure with its long-term goals.

8. Conclusion

Evaluating the financial well-being of non-profit organizations (NPOs) is a vital component of their management, especially within the multifaceted and ever-changing environment of India. The main aim of this study is to propose a methodology to assess the financial sustainability of NPOs in India, focusing specifically on key criteria such as liquidity, solvency, efficiency, and profitability. For NPOs to navigate the constantly shifting financial landscape successfully, it is crucial to maintain adequate liquidity, which refers to the ability to meet short-term financial obligations. Effective liquidity management ensures that NPOs can respond promptly to emerging needs. Solvency, which measures long-term sustainability, is essential for maintaining continued impact. Striking a balance between short-term cash availability and long-term financial stability is fundamental to ensuring overall fiscal health. Efficiency, which evaluates the optimal use of resources, reflects principles of financial prudence and operational oversight. NPOs must manage their working capital effectively and streamline operations to enhance efficiency. Profitability, often overlooked in the nonprofit sector, plays a critical role in ensuring long-term financial viability.

Generating surplus revenue enables NPOs to expand and diversify their programs, thereby increasing their overall impact on the communities they serve. Efficient service delivery and sound program management are essential complements to fundraising efforts. Any surplus resources, when available, can be leveraged to generate additional income, thus strengthening the organization’s financial well-being. This research underscores the importance of strong managerial capabilities and robust organizational policies. NPOs must also navigate a complex regulatory environment while maintaining compliance with efficiency and accountability mandates.

References

Al Omari, R. (2020). The impact of liquidity and solvency on profitability: An analysis of Jordanian pharmaceutical industries sector. *Systematic Reviews in Pharmacy, 11*, 767–770. https://www.iiste.org

Bowman, W. (2011a). *Finance fundamentals for nonprofits: Building capacity and sustainability*. John Wiley & Sons. https://doi.org/10.1002/9781118385913

Bowman, W. (2011b). Financial capacity and sustainability of ordinary nonprofits. *Nonprofit Management and Leadership, 22*(1), 37–51. https://doi.org/10.1002/nml.20039

Carroll, D. A., & Stater, K. J. (2009). Revenue diversification in nonprofit organizations: Does it lead to financial stability? *Journal of Public Administration Research and Theory, 19*(4), 947–966. https://doi.org/10.1093/jopart/mun025

Daryanto, W. M. (2019). Measuring financial performance of state-owned enterprises under aviation in Indonesia: A case study of PT. Angkasa Pura I and PT. Angkasa Pura II. In *Proceedings of the 9th International Conference on Information Technology and Multimedia* (pp. 99–104). https://doi.org/10.5220/0008488800990104

Daryanto, W. M., & Samidi, S. (2018). Measuring the financial performance of enterprises under the Ministry of Energy and Mineral Resources (EMR): An Indonesia experience. *International Journal of Engineering and Technology, 7*(3), 16–23. https://doi.org/10.14419/ijet.v7i3.21.17086

Despard, M. R., Nafziger-Mayegun, R. N., Adjabeng, B. K., & Ansong, D. (2017). Does revenue diversification predict financial vulnerability among non-governmental organizations in sub-Saharan Africa? *Voluntas, 28*(5), 2124–2144. https://doi.org/10.1007/s11266-017-9835-3

Dinova, P. Y. (2019). Key indicators for the analysis of the financial sustainability of the enterprise. *Knowledge International Journal.*

Finchum-Mason, E., Husted, K., Gugerty, M. M. K., & Barnhart, E. (2020). *Local impacts of a global crisis: How Washington state nonprofits are responding to COVID-19.* University of Washington. https://digital.lib.washington.edu/researchworks/handle/1773/46585

Froelich, K. A., Knoepfle, T. W., & Pollak, T. H. (2000). Financial measures in nonprofit organization research: Comparing IRS 990 return and audited financial statement data. *Nonprofit and Voluntary Sector Quarterly, 29*(2), 232–254. https://doi.org/10.1177/0899764000292002

Gajdová, D., & Majdúchová, H. (2018). Financial sustainability criteria and their testing in the conditions of the Slovak non-profit sector. *Contemporary Economics, 12*(1), 33–56. https://doi.org/10.5709/ce.1897-9254.262

Groves, S. M., Godsey, W. M., & Shulman, M. A. (1981). Financial indicators for local government. *Public Budgeting & Finance, 1*(2), 5–19. https://doi.org/10.1111/1540-5850.00511

Hanaffie Bin Md Yusoff. (2017). The effect of liquidity and solvency on profitability: The case of public-listed consumer product companies in Malaysia. *Jurnal Pengurusan, 8*(1). https://core.ac.uk/download/pdf/196255896.pdf

Herman, R. D., & Renz, D. O. (1998). Nonprofit organizational effectiveness: Contrasts between especially effective and less effective organizations. *Nonprofit Management and Leadership, 9*(1), 23–38. https://doi.org/10.1002/nml.9102

Herman, R. D., & Renz, D. O. (1999). Theses on nonprofit organizational effectiveness. *Nonprofit and Voluntary Sector Quarterly, 28*(2), 107–126. https://doi.org/10.1177/0899764099282001

Jackson, D. K., & Holland, T. P. (1998). Measuring the effectiveness of nonprofit boards. *Nonprofit and Voluntary Sector Quarterly, 27*(2), 159–182. https://doi.org/10.1177/0899764098272004

Kangari, R., Farid, F., & Elgharib, H. M. (1992). Financial performance analysis for the construction industry. *Journal of Construction Engineering and Management, 118*(2), 349–361. https://doi.org/10.1061/(ASCE)0733-9364(1992)118:2(349)

Kk, P. A. (2014). *Asian Journal of Management Research*, 308–322. http://ssrn.com/abstract=2379986

León, P. (n.d.). *Four pillars of financial sustainability*.

Masri, Z. A. H. (2020). Analysis of financial health: State-owned enterprises (Case study at PT Aneka Tambang Tbk). *Journal of Applied Business and Economics, 6*(4), 287. https://doi.org/10.30998/jabe.v6i4.6416

McLaren, J. I., & Struwig, F. (2019). Financial ratios as indicators of financial sustainability at a South African university. *Journal of Contemporary Management*. https://doi.org/10.35683/jcm19030.0027

Myser, S. (2016). *Financial health of nonprofit organizations* [Master's thesis, University of Kansas].

Omondi-Ochieng, P. (2018). US Table Tennis Association: A case study of financial performance using effectiveness indicators and efficiency ratios. *Managerial Finance, 44*(2), 189–206. https://doi.org/10.1108/MF-10-2017-0393

Pina, V., Bachiller, P., & Ripoll, L. (2020). Testing the reliability of financial sustainability: The case of Spanish local governments. *Sustainability, 12*(17), 6880. https://doi.org/10.3390/su12176880

Ritchie, W. J., & Kolodinsky, R. W. (2003). Nonprofit organization financial performance measurement: An evaluation of new and existing financial performance measures. *Nonprofit Management and Leadership, 13*(4), 367–381. https://doi.org/10.1002/nml.5

Roberts, P. (2003). The principles of sustainability by Simon Dresner, 2002. *Business Strategy and the Environment, 12*(5), 341. https://doi.org/10.1002/bse.360

Ryan, C., & Irvine, H. (2012). Not-for-profit ratios for financial resilience and internal accountability: A study of Australian international aid organisations. *Australian Accounting Review, 22*(2), 177–194. https://doi.org/10.1111/j.1835-2561.2012.00163.x

Salamon, L. M., Anheier, H. K., List, R., Toepler, S., Sokolowski, W., & Associates, A. (1999). *Global civil society in comparative perspective in dimensions of the nonprofit sector*. Johns Hopkins University. http://ccss.jhu.edu/wp-content/uploads/downloads/2011/08/Global-Civil-Society-I.pdf

Scurto-Davis, T. (2014). *Earned revenue ratio: Its effect on non-profit financial sustainability* [Master's thesis].

Sontag-Padilla, L. M., Staplefoote, L., & Gonzalez Moganti, K. (2012). *Financial sustainability for nonprofit organizations*. RAND Corporation. www.rand.org

Soriano, D., & Galindo-Martin, M.-A. (2012). An overview of entrepreneurial activity in nonprofit organizations in the international context. *Small Business Economics, 38*, 265–269. https://doi.org/10.1007/s11187-010-9279-2

Svidroňová, M., Vaceková, G., & Valentinov, V. (2016). The theories of non-profits: A reality check from Slovakia.

Tuckman, H. P., & Chang, C. F. (1991). A methodology for measuring the financial vulnerability of charitable nonprofit organizations. *Nonprofit and Voluntary Sector Quarterly, 20*(4), 445–460. https://doi.org/10.1177/089976409102000407

Varghese, J., & Ajukurian. (2021). Financial sustainability of nonprofit organizations (NPOs): An empirical study. *Asian Journal of Management Research, 12*(7), 13096591. http://ssrn.com/abstract=2379986

Zdanovskis, K., & Pilvere, I. (2019). Methods of financial statement analysis for non-governmental organisations. *Research for Rural Development, 2*(June), 118–125. https://doi.org/10.22616/rrd.25.2019.058

Zietlow, J. (n.d.). *A financial health index for achieving financial sustainability*. http://ssrn.com/abstract=2049022