



The Role of Complex Systems Theory in Harmonising Non-Financial Reporting for Sustainable Finance in Zimbabwean Commercial Banks



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Abstract: This study investigates the harmonising potential of complex systems theory in non-financial reporting of sustainable finance practices within Zimbabwean commercial banks. The increasing prominence of sustainable finance in Zimbabwe can be attributed to the adoption of international frameworks such as the United Nations' 2030 Agenda and the Paris Agreement, which have led to its integration into banks' non-financial reporting. Sustainable finance, however, is recognised as a wicked problem—an issue characterised by its complexity, involving numerous interacting agents, emergent properties, and the need for a holistic approach. Such problems cannot be adequately addressed through conventional financial theories, which are often insufficient to capture their complexity. Despite the existence of various sustainability reporting standards, a unified framework to harmonise non-financial reporting and enable comparability across banks is still lacking. Using content analysis, this research examines annual reports from 17 Zimbabwean commercial banks, analysing 136 reports spanning from 2016 to 2023. The findings suggest that most banks have adopted a weak sustainability approach, guided by complex systems theory, which enables some degree of harmonisation in reporting standards but ultimately compromises long-term sustainability. This weak approach has been found to encourage greenwashing practices, with policies and strategies that, while aligned with sustainability rhetoric, may perpetuate environmental and social harm. The study makes several key contributions: it provides empirical evidence on the current state of sustainable finance reporting in Zimbabwean banks, offers a theoretical framework for harmonising non-financial reporting using complex systems theory, and proposes the adoption of a stronger sustainability-oriented framework to ensure genuine, long-term sustainability outcomes.

Keywords: Sustainable finance; Complex systems theory; Non-financial reporting; Sustainability reporting; Content analysis; Greenwashing; Weak sustainability; Strong sustainability

JEL Classification: D81; G34; M41

1. Introduction

In pursuit of a sustainable and low-carbon society, the Zimbabwean government adopted the United Nations Sustainable Development Goals and the Paris Accord. Spurred by these international policies, sustainability reporting has spilled over into financial sectors and is now at the core of Zimbabwean banks (Mushayavanhu, 2024; Zimbabwe Stock Exchange, 2023). Sustainability reporting involves the disclosure of non-financial information on environmental, economic, social, and governance aspects that affect an entity (Schoenmaker & Schramade, 2019). However, sustainability reporting in Zimbabwean banks is still in its infancy, as reflected by an absence of a clear, homogenous framework, policy direction from the government, and empirical evidence on practices adopted by banks. Second, sustainable finance reporting is plagued by multiple heterogeneous standards, making reporting incomparable. This paper closes these gaps in knowledge by applying a novel complex system theoretical framework developed from literature by amalgamating concepts from various disciplines. Complex systems theories were applied in this research because sustainable finance is a wicked problem (Weber et al.,

2021). Wicked problems are complex challenges characterized by holism, evolution, emergence, non-linearity, multiple solutions, multidimensionality, and unpredictability (Arthur, 2013; Weber et al., 2021). Moreover, sustainability reporting entails focusing on the environment, economy, and society, which are also interlinked, networked, and adaptive complex systems (Clark & Harley, 2020).

Precisely, this study applied two complex systems theories to determine the strength, direction, and harmonizing role of sustainability reporting in banks. Firstly, the worldview aligned to strong complex systems theory postulates that sustainable finance is a system of nested concentric circles where the economy and society are subsystems of the environment (Elkington, 1998; Hariram et al., 2023; Passet, 1979; Porritt, 2012; Raworth, 2017). Firms that adopt this view believe that natural capital is not a substitute for human capital. Hence their sustainability reports and standards advocate for strong implementation of policies and business strategies aimed at repairing the planet, observing planetary boundaries, maintaining ecological limits, preserving carrying capacities, and providing a symbiotic relationship amongst environment, society, and economy (Demastus & Landrum, 2024). These policies generally target degrowth. The adoption of strong sustainability theory harmonizes sustainability standards and provides a solution to current sustainability problems (Demastus & Landrum, 2024). Secondly, the worldview aligned to weak complex system theory contends that sustainable finance is the intersection of environmental, economic, and social systems (Barbier, 1987; Crowther & Seifi, 2022; Stubbs & Cocklin, 2008). This theory postulates that the economy, society, and environment are distinct systems that are regarded as equal, balanced, and integrated. Firms that adopt this theory accept that natural capital is a substitute for human capital. Hence their sustainability reports and standards indicate strong adoption of policies and strategies that aim to increase profits through increased economic growth, increased consumption, and increased production and intensive exploitation of natural resources. The adoption of weak complex systems sustainability theory harmonizes sustainability reporting at the expense of prolonging unsustainability and maintaining the status quo. Weak complex systems theory adoption in sustainability reporting is likely to increase greenwashing and image management by firms. As can be seen, these two theories provide different implications of sustainability reporting in terms of the pursuit of profitability, economic growth, financial policy, business strategies, the extraction of natural resources, and greenwashing.

This study makes original contributions to knowledge in the form of an explicit complex systems theoretical framework that can be used by companies for sustainable finance reporting. The framework is holistic, harmonizes various standards, and allows for comparability and homogeneity of non-financial reports among banks. The framework is beneficial to banks if implemented from the perspective of strong complex systems sustainability theory. Moreover, this study contributes empirical evidence on the application of complex systems to sustainability reporting in Zimbabwean commercial banks in settings of a developing country. This paper sought to answer these questions: What are complex systems theoretical worldviews that influence sustainable finance reporting in commercial banks? What is the level of complex systems framework adoption in sustainability reporting of Zimbabwean banks? What is the role of these complex systems worldviews in harmonizing non-financial reporting in banks?

2. Defining Sustainable Finance and Sustainability Reporting in Banks

Recently, sustainable finance has been a core subject of intense discussion in banks due to environmental, economic, social, and governance issues faced by our society (Bressan et al., 2022). Banks adopt sustainable finance to address these four cited problematic issues. For example, environmentally sustainable finance handles problems posed by impacts of climate change, land degradation, biodiversity loss, natural resources exhaustion, and earth system destabilization. Economically and socially sustainable finance addresses problems such as poverty, inequality, poor education, hunger, human rights abuses, poor infrastructure, economic decay, and poor healthcare. Banks are crucial in the sustainable finance journey because of their unique functions of intermediation and fund mobilization (Aracil et al., 2021; Battiston et al., 2021).

While there is no consensus on the definition of sustainable finance, most practitioners and scholars view sustainable finance as long-term investment decisions that account for environmental, social, economic, and corporate governance matters to save current and future generations (Schoemaker & Schramade, 2019). According to Migliorelli (2021), sustainable finance is a broad subject that covers finance for economic, environmental, social, and other sustainable development goals and any government spending programs directed towards the achievement of sustainability. To this end, he acknowledges that sustainable finance is the flow of capital for sustainable development. The adoption of sustainable finance by a company entails sustainability reporting.

Sustainability reporting is non-financial reporting that focuses on economic, environmental, social, and governance issues (Denhere & Mhlanga, 2023; World Economic Forum, 2020). According to James (2015), sustainability reporting increases profits, optimizes shareholder value, enhances a firm's reputation, creates customer loyalty, improves employee engagement, boosts access to finance, ameliorates performance, and promotes industry leadership. Sustainability reports are made in a way that satisfies all stakeholders of a company

(Schwab & Vanham, 2021). Sustainability reporting can be achieved by aligning to state, shareholder, and stakeholder capitalism. State capitalism is a model of operation where the central bank enforces reforms and sets standards for sustainability reporting (Dikau & Volz, 2021; Park & Kim, 2020). This produces standard and homogenous sustainable reports because all organizations follow mandatory rules (Bolton et al., 2020). Shareholder capitalism refers to a state of operation where private firms voluntarily lead sustainability reporting (Park & Kim, 2020). The challenge with shareholder capitalism lies in its promotion of the status quo on profit maximization doctrine and increased natural resource extraction in pursuit of economic growth, which destroys the environment. Stakeholder capitalism is the notion that a company exists to satisfy the needs of its stakeholders, namely shareholders, customers, employees, investors, lenders, regulators, suppliers, and society (Schwab & Vanham, 2021). The view postulates that a business is an ethically, lawfully, economically, and morally responsible entity that exists to save the planet, people, prosperity, profit, and current and future generations equally (Schwab & Vanham, 2021). Although there are heterogeneous sustainability standards, there is no agreed framework that harmonizes sustainability reporting for Zimbabwean commercial banks. Section 2.2 develops a complex system theoretical framework to fill this gap.

2.1 Worldviews of Complex Systems Theory of Sustainability Reporting

A complex system is defined as a system that has various interacting elements such that the whole is not the sum of its parts (Estrada, 2024; Mitleton-Kelly, 2003). Complex systems display emergence, non-equilibrium, chaos, lack of central control, hysteresis, creation of new order, and self-organization (Estrada, 2024). A non-exhaustive list of examples of complex systems includes crowd behavior, culture, financial systems, the World Wide Web, organizations, the immune system, and the economy (Rovelli, 2018). Complex systems theories were applied in this study because sustainability reporting is a wicked problem. Due to their complexity, wicked problems cannot be studied with conventional theories (Rittel & Webber, 1973; Weber et al., 2021). This is because wicked problems are highly interconnected, have multiple solutions, lack theoretical models, and are characterized by fundamental uncertainty, unique solutions, inadequate scientific knowledge, and open-ended timeframes (Weber et al., 2021). Furthermore, according to Arthur (2013), the economy, environment, social systems, and financial systems are complex systems that cannot be understood with conventional economic, financial, and accounting tools.

Sustainability reporting is shaped by two polar views of complex systems (Purvis et al., 2018; Raworth, 2017). These two worldviews present different assumptions and implications on sustainability reporting in terms of the pursuit of profitability, economic growth, financial policy, business strategies, the extraction of natural resources, and greenwashing. The first complex systems worldview of sustainable reporting is the strong sustainability theory, which argues that the economy and society are subsystems of the environment depicted in the form of nested concentric circles (Elkington, 1998; Hariram et al., 2023; Passet, 1979; Porritt, 2012). Researchers in this cohort believe that society and economy are dependent on the environment.

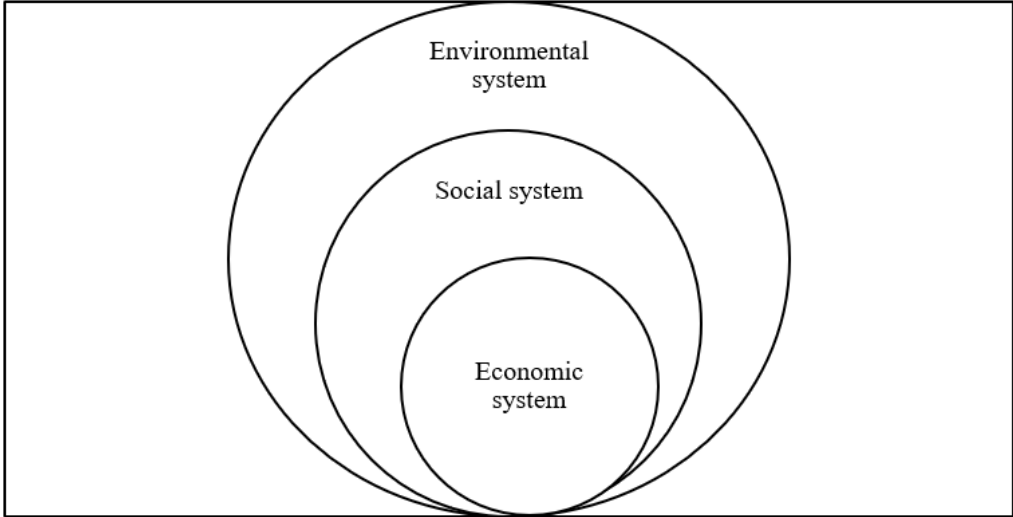


Figure 1. Strong sustainability world view: Nested concentric circles approach
 Source: Adapted from Purvis et al. (2018)

Figure 1 shows the strong complex systems sustainability theory. Examples of versions of this concept are the doughnut model (Raworth, 2017) and the sustainalism theory (Hariram et al., 2023). The doughnut model is based

on planetary boundaries, the United Nations 17 Sustainable Goals, and rejection of gross domestic product as a measure of the economy's growth. Sustainability theory argues that sustainability comprises six interlinked systems, namely environment, social, economics, politics, culture, and ethics (Hariram et al., 2023). Firms influenced by strong sustainability theory believe that natural capital is not a substitute for human capital. Thus, their sustainable reports reflect a strong concern for restoring the planet, observing planetary boundaries, maintaining ecological limits, and preserving carrying capacities in line with stakeholder capitalism. Hence, they prioritize policies and business strategies that aim to repair and restore the environment, such as degrowth, adopting green methods of resource extraction, and implementing safer technologies (Demastus & Landrum, 2024). Supporters of this theory believe that adopting strong sustainability theory provides a solution to current sustainable finance problems.

The second polar complex systems theory of sustainability reporting is the weak sustainability doctrine, which depicts sustainable finance as the equilibrium of environmental, social, and economic systems (Barbier, 1987; Barbier & Burgess, 2017; Crowther & Seifi, 2022; Stubbs & Cocklin, 2008). Researchers in this bracket depict these goals in the form of either equal, balanced, and integrated pillars or intersecting circles. Figure 2 shows sustainable finance as the intersection of three interlinked systems.

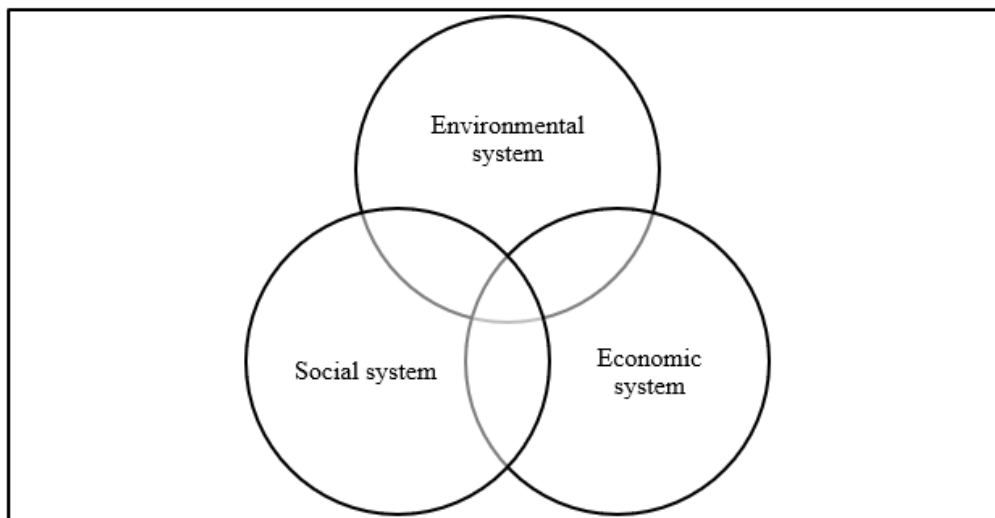


Figure 2. Weak sustainability reporting: Intersecting circles complex system approach
Source: Adapted from Purvis et al. (2018)

Firms that are influenced by weak sustainability theory believe that natural capital is a substitute for human capital. Hence their sustainability reports reflect the shareholder capitalism doctrine. Such reports are directly shaped by policies and business strategies that aim to maximize profits through increased economic growth, increased consumption, increased production, and intensive exploitation of natural resources (Demastus & Landrum, 2024). It is believed that the adoption of weak sustainability theory prolongs unsustainability, maintains the status quo of natural resource exploitation, supports greenwashing, and image management.

DesRoches (2019) argues that weak and strong sustainability debates amongst scholars do not lead to different policies, business strategies, and states of sustainable finance adoption. Rather, these two theories collapse into the same position to produce the same business strategies and public policy prescriptions.

2.2 Four Pillar Conceptual Framework of Sustainable Finance Reporting

The complex system framework that harmonizes sustainable finance reporting is based on four simple and holistic fundamental pillars (4Ps). These are planet, people, prosperity, and principles of governance (Mensah, 2019; Schwab & Vanham, 2021; World Economic Forum, 2020). First, planet (environmental) sustainability aims to maintain the carrying capacity of the earth and natural systems to satisfy the planetary boundary principles (Bolton et al., 2020; Denhere, 2022; Mensah, 2019). According to the planetary boundaries' principles, the sustainable economy protects and preserves nature by pursuing investments that provide safeguards against biodiversity loss, soil, water, land, and air pollution (Denhere, 2022). A sustainable report should have planet metrics on carbon emissions, waste management, water consumption, biodiversity loss, and energy utilization (World Economic Forum, 2020). Second, people (social) sustainability means that people are given a central focus to satisfy well-being and justice principles of a sustainable economy (Denhere, 2022; Mensah, 2019). People sustainability is a long-term value creation ambition to eradicate poverty and hunger. According to the United

Nations 2030 Agenda, people sustainability aims to promote dignity and equality, decent working standards, diversity and inclusion, the highest standards of living, social justice, cultural identity, and institutional stability (Saith, 2006; World Economic Forum, 2020). The well-being principle states that a sustainable economy is people-centered because it entitles everyone to generate and enjoy wealth. The justice principles see a sustainable economy as inclusive and non-discriminatory (Denhere, 2022).

Third, prosperity (economic) sustainability aims to build an efficient and sufficient system of production and consumption that does not compromise the needs of present and future generations (Denhere, 2022; Mensah, 2019). Prosperity sustainability is measured by economic growth, innovation, and equitable growth (World Economic Forum, 2020). Firstly, economic growth is built upon employment creation, community vitality projects, levels of taxation, procurement, sustainable livelihoods, rising real incomes, social protection, low costs of production, energy efficiency, and access to financial services by all people. Secondly, innovation is built upon business models that create shared value, research & development, and investments in sustainable and resilient infrastructure, cities, settlements, industrialization, small and medium enterprises, energy, and technology. Finally, shared prosperity and equitable growth are founded on sustainable production and consumption.

Last, principles of corporate governance elaborate on the principles of good governance for a sustainable economy (Denhere, 2022; World Economic Forum, 2020). Firms are supposed to use corporate governance metrics that protect all stakeholders (inclusive of shareholders). Examples of governance metrics are quality of the board, board composition, board committees, sustainable finance competencies of the board, amounts of capital allocated to sustainable finance, profile disclosure, collective knowledge of the board, compliance with laws and regulations, stakeholder engagement, risk oversight, and ethical behavior (anticorruption, social policy, and monetary losses).

Conclusively, it must be mentioned that commercial banks in Zimbabwe are exposed to multiple standards of sustainability reporting. These standards can be classified as general, specific, and social standards (Galeone et al., 2023; Saha et al., 2024). General standards provide a holistic view of financial and non-financial reporting, for example, the United Nations 17 Sustainable Development Goals, Global Reporting Initiative, Principles of Responsible Investments, Principles of Responsible Banking, United Nations Global Compact Principles, International Integrated Reporting Council Framework, Sustainability Standards Accounting Board (SASB), and International Financial Reporting Standards (IFRS) Sustainability Disclosure Standards. Specific frameworks concentrate on one or two aspects of sustainability reporting: for example, standards such as the Carbon Disclosure Project, the Greenhouse Gas Protocol (GHG), the Taskforce on Climate-Related Risks Financial Disclosures (TCFD) Framework, and the Climate Disclosures Standards Board (CDSB) focus on the environment only. On the other hand, social standards focus on solving social problems such as labor practices, gender, equality, and diversity in the workplace, for example, the Workforce Disclosure Initiative, the United Nations Universal Declaration of Human Rights, the United Nations Principles on Business and Human Rights, and the International Labour Organisation on Fundamental Principles and Rights at Work. As can be seen, these multiple and heterogeneous sustainable standards hamper the quality and comparability of non-financial reporting because each organization chooses different standards of sustainability reporting (Ortiz-de-Mandojana & Antolin-Lopez, 2023). Hence this study aims to fill this gap by developing and investigating the role of complex system theory in harmonizing these different standards for comparable sustainability reporting in Zimbabwean commercial banks.

3. Methodology

The research investigated the harmonizing role of adopting complex systems theories in sustainability reporting of seventeen commercial banks in Zimbabwe. Following advocates for the application of heterodox and pluralistic research methods in finance, economics, and accounting, quantitative and qualitative content analysis based on pragmatism philosophy were employed (Arthur, 2013; Lagoarde-Segot, 2019; Lawson, 1997; Lee & Cronin, 2016; Oleinik, 2022). Content analysis is a method where patterns, associations, similarities, and differences are identified from textual analysis (Kleinheksel et al., 2020; Krippendorff, 2012). According to Krippendorff (2012), content analysis is grounded in both empirical and theory generation that transcends into quantitative and qualitative analysis, respectively. Previous studies have applied content analysis to examine sustainability reporting in banks and non-banking firms (Azizi et al., 2018; Galeone et al., 2023; Hummel & Szekely, 2022; Kumar & Prakash, 2019).

Data were collected by archival search over a period of six months. 136 annual reports from 2016-2023 were downloaded from banks' websites. Annual reports were selected for this study because they provide an accurate financial and corporate picture of commercial banks (Hummel & Szekely, 2022). The collected data were concurrently analyzed with manifest and latent content analysis (Kleinheksel et al., 2020). Manifest content analysis involved the statistical examination of the frequency of the appearance of themes and phrases (Krippendorff, 2012). The method was applied to obtain factual, objective, and measurable sustainability reporting practices from a positivism philosophy (Kleinheksel et al., 2020; Saunders et al., 2019). Latent content analysis involved examining whole texts on documents from a naturalistic setting and an interpretivism philosophy (Weber,

1990). In this case the author aimed to obtain interpretations, thick descriptions, and implied meanings beyond simple frequency analysis (Weber, 1990). To achieve this, latent pattern analysis was used where codes were developed from the theoretical framework and later refined from actual data. This is because complex systems are understood better with pattern-based management and analysis.

To carry out content analysis in this study, three issues were important. First was the determination of the unit of measurement and analysis (Bengtsson, 2016; Gamerschlag et al., 2011). Units of measurement for content analysis are generally variables such as words, themes, sentences, sections, phrases, paragraphs, and whole texts (Krippendorff, 2012; Neuendorf, 2002). In the case of manifest content analysis, themes and phrases identified from a complex systems framework involving planet, people, prosperity, and principles of governance were used. A sustainability disclosure checklist (see Table 1) was developed, and additional themes and/or questions from initial data analysis were used following extant studies of bank disclosures in banks (Galeone et al., 2023). For latent analysis, whole texts on annual reports were studied. Second was the determination of sample sizes. Random sampling determined to saturation was applied for latent analysis. As such, 136 audited reports were used to examine sustainability reporting. Similarly, 40 purposively sampled annual reports were used for latent analysis. Third was determining the approach to data collection and analysis. Following Hsieh & Shannon (2005) and Kleinheksel et al. (2020), this paper employed an abductive approach where deductive and inductive methods were mixed in data collection and analysis.

Table 1. Sustainable reporting disclosure checklist

Theme	Phrases
Principles of governance	Stated societal (ESG) purpose on mission statement, board composition, stakeholder representation, board ESG competencies, quality of governing board, ethical behaviour, anti-corruption, social governance policy, profile disclosures, risk and opportunity, compliance with laws and regulations, provide compliance statement, board committees.
Planet	Climate change, greenhouse gas emissions, carbon emissions, scope 1 emissions, scope 2 emissions, scope 3 emissions, waste management, water consumption, energy consumption, biodiversity loss.
Prosperity	Employment and wealth generation, net number of jobs created, economic performance, economic value generation and distribution, funding to local income generating projects for local communities, defined contribution schemes, procurement spending on local suppliers and foreign supplies, net contribution, net investment, innovation in better products and services, research and development spend ratio, financial inclusion, community investment projects, tax payments.
People	Employment headcount, recruitment and turnover, dignity and equality, gender ratios, gender pay equality, diversity and inclusion, wage levels, levels of forced labour, Health and well-being, occupational health and safety, workplace fatalities and incidents, training and education, average number of learning hours per employee, expenditure on employee education, skills for the future, local community, number of development projects.

Note: The disclosure checklist that was used to count the number of words from financial reports.

4. Results

The results are summarized in terms of multiple and heterogeneous standards, the level of complex systems theory adoption, and the status of four pillars implementation.

4.1 Multiple and Heterogenous Standards of Sustainability Reporting

This paper first investigated the common frameworks adopted by commercial banks in Zimbabwe. The study found that banks in Zimbabwe adopted heterogeneous and multiple standards and frameworks containing large numbers of indicators and complex metrics. This is because sustainability reporting is not distinctly harmonized and defined such that it encompasses various topics, metrics, activities, and policies. Heterogeneous reporting is further exacerbated by the different ways in which each firm, industry, and country interpret the meaning of sustainability. First, this paper corroborates extant studies (Crowther & Seifi, 2022; Galeone et al., 2023; Ortiz-de-Mandojana & Antolin-Lopez, 2023) by finding that Zimbabwean banks use different terms and nomenclatures to refer to sustainability reporting, such as corporate social responsibility, ethical and responsible banking, environmental social governance (ESG), corporate sustainability, and sustainable development goals. This lack of homogeneity in definitions and terms makes comparability of non-financial reports very difficult. Figure 3 illustrates the number of times Zimbabwean banks refer to main international sustainability frameworks and industry standards.

As shown in Figure 3, 76% of the banks in Zimbabwe apply multiple frameworks, and 24% utilize just one sustainability reporting framework. Second, this paper finds that sustainability reporting in Zimbabwean banks is Eurocentric, being largely influenced by the United Nations' 2030 Sustainable Development Agenda.

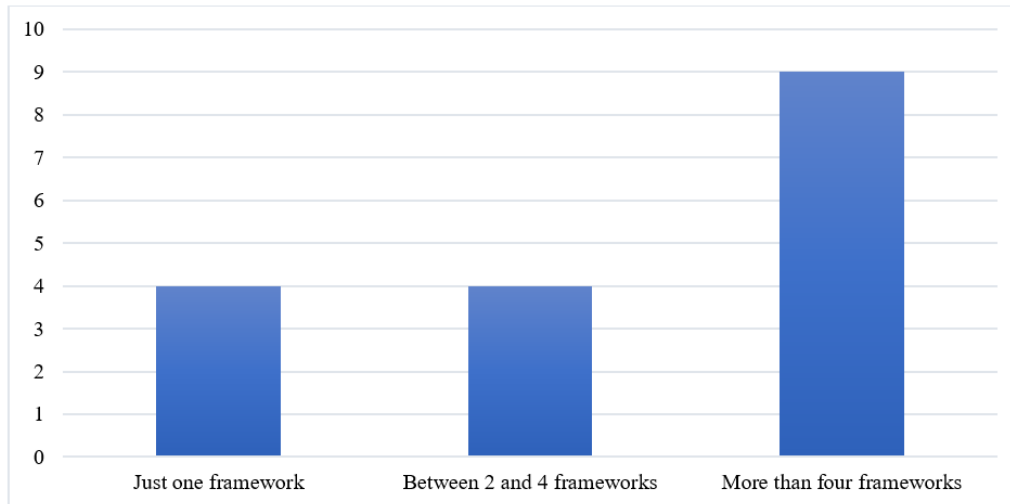


Figure 3. Number of frameworks adopted by Zimbabwean banks

Figure 4 shows that sustainability reporting in Zimbabwean commercial banks is largely influenced by multiple standards such as the Sustainable Development Goals (SDG), Global Reporting Initiative (GRI), Taskforce on Climate Related Financial Disclosures (TCFD), Principles of Responsible Banking, United Nations Global Compact, International Financial Reporting Standards (IFRS), Sustainability Disclosure Standards Board (SASB), and International Integrated Reporting Council Framework (IIRC). In an empirical study, Demastus & Landrum (2024) show that the adoption of these standards does not improve sustainability because these standards were developed on foundations of weak sustainability theory. Hence these standards continue to promote profit maximization, natural resource exploitation, and increased economic growth at the expense of planet sustainability.

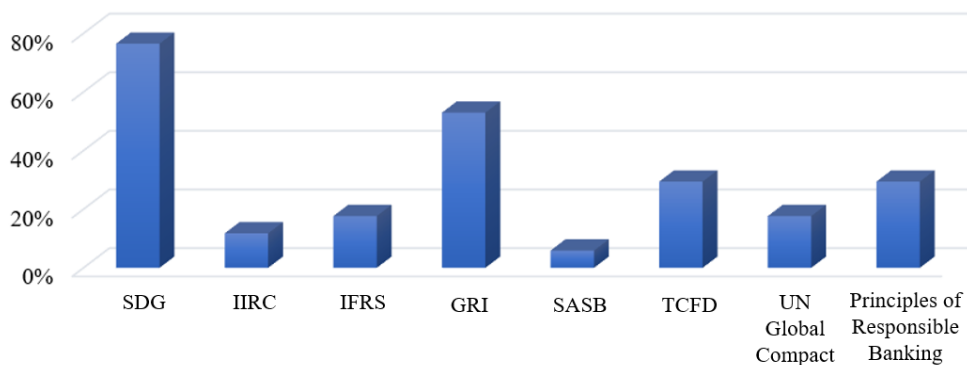


Figure 4. Common international frameworks adopted by banks in Zimbabwe

4.2 Level of Complex Systems Theories' World View Adoption

The level of sustainability reporting in a bank is influenced by the adoption of either of the two polar worldviews of complexity systems theory. First, extant studies on weak complexity systems sustainability theory argue that the intersection of economic, social, and environmental goals is the point of sustainability (Barbier, 1987; Crowther & Seifi, 2022; Elkington, 1998). Second, other previous studies on strong complex systems sustainability theory highlight that economy and society are subsystems of the environment (Demastus & Landrum, 2024; Passet, 1979; Porritt, 2012). This paper finds mixed views on how Zimbabwean banks view the relationship between economy, society, and environment in sustainability reporting. Figure 5 shows that 82% of the commercial banks are influenced by weak complex systems theory of sustainability shown by intersecting circles, and 18% are influenced by strong sustainability theory depicted by the nested circles.

Overall, the adoption of weak sustainability theory dominates sustainability reporting in Zimbabwean commercial banks. This implies that many bank managers accept the view that natural capital is a substitute for human capital. Thus, banks are supporting business strategies and policies that aim to maximize profits through increased economic growth, increased consumption, increased production, and intensive exploitation of natural resources. It must be noted that the adoption of weak sustainability theory prolongs unsustainability and supports

greenwashing and image management. It also hinders the competitiveness, reputation, employee engagement, and accessibility to finance on the global market of sustainable finance as postulated by James (2015).

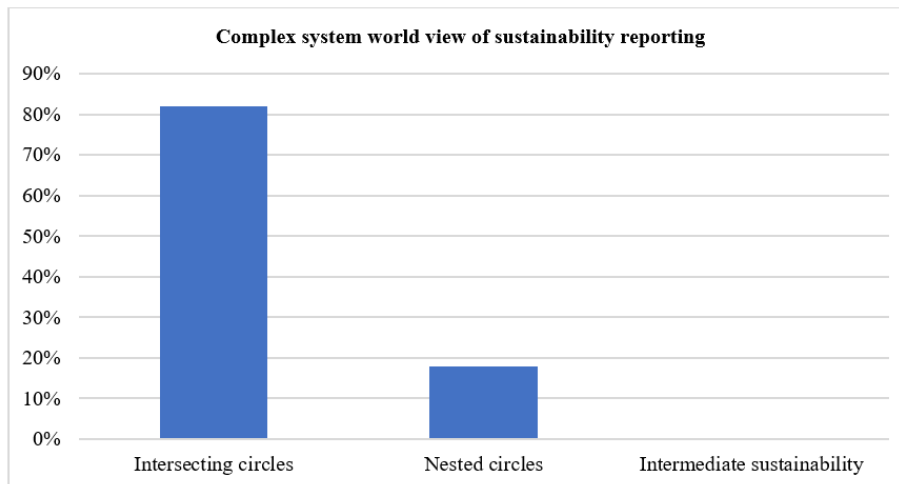


Figure 5. Level of complex systems approach adoption by Zimbabwean banks

4.3 Level of Adoption of Four Pillars’ Concept

As mentioned in the literature review, a sustainable report must indicate four complex systems dimensions (4Ps): planet, people, prosperity, and principles of governance. Figure 6 shows the state of adoption of four pillars of sustainable finance reporting by Zimbabwean banks.

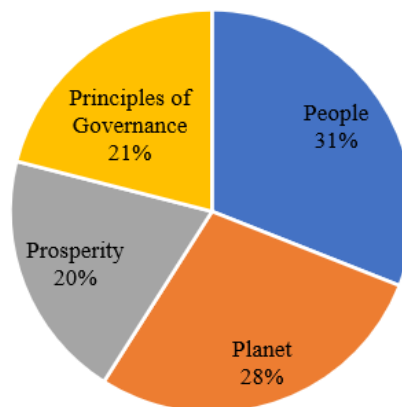


Figure 6. Level of four pillars conceptual framework adoption

First, sustainability reports analyzed indicate that Zimbabwean banks report on people (social) sustainability. The reporting level of the people dimension, or workplace responsibility, was 31%, which is the highest of all four dimensions. In tandem with the United Nations 2030 Sustainable Development Goals and other sustainable reporting frameworks, 76% of the banks report on people sustainability on these factors: dignity and equality, total headcount, employee recruitment, employee turnover, gender ratios, wage practices, level of training, and occupational health. Thus, banks in Zimbabwe are moving positively towards compliance with principles of social sustainability.

Second, 28% of sustainability reports studied indicate that banks in Zimbabwe report on planet (environmental) sustainability. 76% of commercial banks in Zimbabwe reported on sustainability in water usage, energy utilization, paper saving, and carbon footprint and their plans to reduce carbon footprints by reforestation, adopting solar energy, and digitization. However, banks are yet to improve on their reporting of metrics for emissions. Third, 21% of sustainability reports studied indicate that commercial banks in Zimbabwe report on the principles of the governance dimension. All banks in Zimbabwe report governance metrics on board size, board composition, board qualifications, and the purpose of the board on environmental and social governance. However, the sustainability reports still lag on revealing ESG competencies of board members and executives as well as ethical behavior on

corruption, money laundering, cybersecurity, and data privacy.

Finally, 20% of sustainability reports studied indicate that banks in Zimbabwe report on the prosperity (economic) of sustainability. 76% of Zimbabwean commercial banks report on economic dimensions of financial inclusion, innovations, product responsibility, and contribution to education, health, and social protection. Undoubtedly, these empirical findings confirm that sustainability reporting in Zimbabwean commercial banks reflects the adoption of complexity systems theory. However, the view adopted leans heavily on weak sustainability, which does not harmonize non-financial reporting standards at the expense of planet sustainability.

5. Implications and Recommendations

As a result of this research, four key implications and recommendations are presented for practitioners in banks, policy makers, academics, standard-setting bodies, and developers of sustainability standards. First, this research developed an explicit complex systems framework of sustainability reporting from literature whose applicability has been investigated in the settings of banks in a developing country. This paper suggests sustainability reporting based on four pillars: planet, people, prosperity, and principles of good corporate governance. Contrary to current heterogeneous standards and frameworks, this novel complex system framework is holistic, straightforward, and harmonizes non-financial reporting in different banks. Thus, making sustainability reporting comparable amongst different banks. Chief Sustainability Officers, Boards, Executives of banks, and the Central Bank can adopt this framework to improve sustainable financial management in practice. This framework is applicable to other companies who wish to report on sustainable finance.

Second, empirical evidence has been provided on the state of adoption of two sustainability reporting worldviews in Zimbabwean banks. The empirical evidence shows that most banks are adopting a weak complex system of sustainability theory driven by neoclassical economics and financial theories. This implies that many banks in Zimbabwe accept the ideology that natural capital is a substitute for human capital. Subscription to this worldview means banks aim to maintain the current status quo where they are dominantly governed by shareholder capitalism, which promotes business-centric sustainable finance strategies that aim to maximize profits through increased economic growth, increased consumption, increased production, and intensive exploitation of natural resources. Essentially, the adoption of weak complex systems sustainability theory prolongs unsustainability, supports greenwashing, image management, and the adoption of technology that harm the environment, society, and economy. While the adoption of weak complex systems sustainability theory is beneficial in harmonizing sustainable finance standards, if banks continue in this trajectory, this benefit will be overshadowed by their failures to achieve planet sustainability.

Third, as in Demastus & Landrum (2024), results of this research indicate that most sustainability standards adopted by Zimbabwean commercial banks support weak complex systems theory. This means currently standard-setting bodies (United Nations, Basel Committee, accounting bodies, etc.), practitioners, policymakers, and academics are developing and promoting sustainability reporting standards that either further push organizations into unsustainability or delay the achievement of sustainability. With this argument in mind, achieving the commitments stipulated by the Paris Accords and the 2030 United Nations Agenda will be very difficult, if not impossible, given the present situation.

Finally, this study recommends the radical adoption of strong sustainability complex system theory in sustainable finance and sustainable development. This involves radically shifting from the present dominant economic science-based, weak sustainability and shareholder-centric doctrine to standards driven by ecological science and stakeholder capitalism, which focus on satisfying all stakeholders of the organization. Standard-setting bodies, sustainability standards developers, practitioners, and organizations should be ready to experiment and replace existing standards with strong, complex system standards. Further, academics must be ready to transform current courses on sustainability that reinforce weak rather than strong sustainability. In my view, organizations and societies influenced by strong sustainability have strong concern for the planet, people, prosperity, and principles of governance. A strong complex systems theory supports the achievement of sustainability from all angles, harmonization of sustainability standards, and comparability of reporting.

6. Conclusions

Using content analysis, this practitioner and academic paper investigated the harmonization role of complex systems theory in the sustainability reporting of Zimbabwean commercial banks. This study reports that commercial banks are currently adopting plural standards of sustainability reporting. Thus, making sustainability reporting heterogeneous, multidimensional, and incomparable. To solve this problem, a complex system theoretical framework for sustainability reporting was developed from literature, and its adoption by commercial banks was investigated. The paper reports a high level of complex systems theory adoption by commercial banks in Zimbabwe. However, evidence shows commercial banks are dominantly adopting a weak sustainability complex systems theory driven by neoclassical economics and financial theories. This means bank managers

accept the view that natural capital is a substitute for human capital. Adopting weak sustainability harmonizes standards at the expense of prolonging unsustainability through supporting business as usual strategies and financial policies that promote profit maximization, economic growth, intensive exploitation of natural resources, and adoption of technology that harms the environment. Essentially, the adoption of weak complex systems sustainability theory reveals high possibilities that Zimbabwean commercial banks are greenwashing. Finally, this study recommends radical adoption of strong sustainability complex system theory. Strong sustainability theory harmonizes standards, enhances comparability, builds firm reputation, and promotes sustainability. Future studies should apply the complex systems approach to other sectors of the Zimbabwean economy and explore the roles of artificial intelligence (Fourth Industrial Revolution) in harmonizing sustainability reporting standards.

Data Availability

The data used to support the research findings are available from the corresponding author upon request.

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Conflicts of Interest

The author declares no conflict of interest.

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