

Strengthening financial sustainability: Evaluating strategic revenue diversification at the sci-bono discovery centre, South Africa

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ABSTRACT

The study examines various evidence-based strategies for diversifying revenue streams to mitigate Sci-Bono's financial deficiencies and issues, aiming to decrease dependence on conventional sources. Social capital theory (SCT), in conjunction with resource dependency theory (RDT) and stakeholder theory, elucidates dependence on external resources and the necessity of stakeholder engagement in financing diversification, emphasizing the importance of networks and trust in obtaining funding options. The study employed a mixed-methods approach grounded in a pragmatic paradigm to encourage methodological heterogeneity. It incorporated qualitative interviews with significant stakeholders and quantitative surveys of relevant demographics to establish validity through triangulation, pilot testing, and member verification. The study utilized purposive sampling with 30 respondents possessing extensive knowledge of science centre operations. Qualitative data was analyzed through thematic techniques, and surveys for qualitative constructs employed NVivo and SPSS for qualitative and quantitative analyses, respectively. To ensure financial sustainability, the study considers government grants, business partnerships, and community-based initiatives, including crowdsourcing and local fundraising, as well as governmental policies. Based on effective case studies from various institutions worldwide, the research offers tips that enable Sci-Bono to diversify its funding sources. The report emphasizes that maintaining Sci-Bono's sustainability and expansion depends on a deliberate mix of thematic diversity, stakeholder involvement, digital visibility, and cooperation with both national and international organizations. The study concludes that Sci-Bono should prioritize strengthening relationships between companies and communities, utilizing digital channels to enhance outreach and support bases, and adopting science-aligned programs to diversify income streams.

Keywords: *Funding strategies, revenue diversification, financing options, sponsorship, stakeholder involvement, financial sustainability.*

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Highlights of this paper

- Collaborating with local enterprises enables Sci-Bono to diversify its funding sources and ensure its long-term viability.
- Sci-Bono Discovery Centre needs to diversify its sources of income by investing in eco-gardens, planetariums, telescopes, and expanding into cultural and heritage industries.
- There is a pressing necessity for Sci-Bono to implement science education-aligned programs to diversify its operations and activities, thereby achieving various income generation streams while ensuring adherence to its fundamental goal.

1. INTRODUCTION

Sci-Bono Discovery Centre (Sci-Bono) is the largest science centre in sub-Saharan Africa and the second largest in Africa that supports mathematics, science, and technology. It offers innovative, dynamic learning experiences that contribute to building South Africa's expertise in science, engineering, and technology. Sci-Bono aims to stimulate curiosity and inspire children, particularly those from disadvantaged backgrounds, to explore STREAM (science, technology, engineering, research, reading, arts, and mathematics) disciplines essential for the nation's future (Mwale, Ntsohi, & Nyamkure, 2025). The Centre has effectively supported students from disadvantaged backgrounds in cultivating innovative ideas and enhancing their scientific literacy. However, Sci-Bono, like other non-profit organizations, experiences constrained cash inflows and faces difficulties in accumulating sufficient resources to sustain its operations, primarily depending on a single source of funding. This situation poses a significant risk to Sci-Bono's ability to maintain its operations if the sole source of financing reduces its financial support.

Sci-Bono must implement various revenue diversification strategies to protect and sustain its programs, aiming to enhance its current funding model that heavily relies on support from the Gauteng government, corporate sponsorships, and visitor gate receipts. It is imperative that Sci-Bono investigate innovative approaches since these sources of income have gradually diminished over the years, posing a significant financial risk. Increased mobilization of funding shall enable the Centre to fund its infrastructure needs, extend its educational initiatives, and increase its interaction with students, who are its primary clientele. This paper examines potential options, such as increased government subsidies, stakeholder engagement strategies, diverse investment approaches, and community funding initiatives that could help enhance Sci-Bono's revenue diversification and resource mobilization strategies (OECD, 2020). This study reviews the best global practices and cases of comparable institutions within the science center and edu-tourism environment to provide Sci-Bono and other science centers in Southern Africa with realistic, evidence-based advice on ensuring their finances remain stable and expand over the long term.

2. SIGNIFICANT OF THE STUDY

Non-profit organizations (NPOs) and public benefit organizations (PBOs), such as Sci-Bono, continue to face challenges in securing funds for their operations and programs, despite the availability of many strategic initiatives, government grants, private sector grants, corporate sponsorships, and other funding avenues. Sci-Bono's reliance on a single funding source for most of its activities and operations has posed challenges in maintaining financial support. If Sci-Bono's primary funding source ceases or declines, this funding strategy could threaten the organization's stability. To identify and access more stable sources of support, Sci-Bono should examine the weaknesses of its current financial and revenue enhancement model to diversify its income streams. These findings are particularly relevant for science centers, museums, educational tourist sites, and other non-profits facing similar circumstances as Sci-Bono. Consequently, the study's results could be valuable for organizations of comparable size and status.

3. RESEARCH OBJECTIVES

The following are the objectives of the study:

- a) To investigate alternative financing options to diversify Sci-Bono's revenue sources and reduce reliance on historic funding sources such as government grants, subsidies, and private corporate sponsorships.
- b) To evaluate the potential impact of diversified funding and revenue enhancement on Sci-Bono's capacity to expand its educational programs, improve its infrastructure, and enhance outreach educational programmes.
- c) To provide tangible, evidence-based suggestions for improving Sci-Bono's funding strategy, thereby guaranteeing its sustainability and long-term expansion among national centers.

4. RESEARCH QUESTIONS

The study research questions are as follows:

- a) What alternative funding strategies can Sci-Bono adopt to diversify its revenue base and reduce reliance on certain funding sources?
- b) What are the potential impacts of diversified funding on Sci-Bono's ability to expand educational programs, improve facilities, and enhance outreach efforts?
- c) What strategies should be adopted to mobilize community-driven funding initiatives?

5. THE THEORETICAL LITERATURE OF THE STUDY

5.1. *The Resource Dependency Theory (RDT)*

Pfeffer and Salancik (2003) first developed the Resource Dependency Theory (RDT) in 1978. It claims that institutions depend on resources controlled by other institutions; hence, they are sensitive to changes in their environment. The theory emphasizes the importance of maintaining a stable and diverse resource base to reduce risks associated with resource shortages or changing donor objectives. Consequently, Sci-Bono relies heavily on government, corporate, and visitor funding (Hillman, Withers, & Collins, 2009).

5.2. *Stakeholder Theory*

Stakeholder theory, developed by Freeman (1984), emphasizes the need to include all stakeholders, government, corporate sponsors, community members, and foreign donors in making choices and obtaining funds. It supports cooperation in attaining financial stability by balancing the needs and wants of many funding sources. Guterman (2023) argues that stakeholder theory should guide institutions such as Sci-Bono in developing relationships and matching the interests of their members with the objectives of the center to ensure that it performs well.

5.3. *Social Capital Theory*

According to Nahapiet and Ghoshal (1998), companies can only reach their objectives by means of trust, networks, and connections. Social capital can help non-profits acquire partnerships and financial resources, as well as other assets. Strong social capital can help reduce transaction costs and facilitate the receipt of creative ideas, such as community crowdsourcing. Sci-Bono can investigate how its relationships with companies, colleges, and the community might support long-term financial sustainability.

6. CONCEPTUAL FRAMEWORK

The conceptual framework for this study is based on the premise that strategic revenue diversification is essential for the long-term financial sustainability and operational growth of public science centers such as Sci-Bono. The

framework connects strategic initiatives (independent variables) to their effects on institutions (dependent variables) through factors both within and beyond the organization, such as stakeholder support, organizational capability, and the regulatory environment, as shown in [Table 1](#).

Table 1. Description of conceptual construct.

#	Component	Description
1	Independent variables	Revenue diversification strategic initiatives: <ul style="list-style-type: none"> • Monetization of digital learning tools. • Research and development income streams. • Public-private partnership • Crowdfunding and community fundraising. • Capital funding through a new venture approach. • Social enterprise.
2	Dependent variables	Strategically oriented programmes: <ul style="list-style-type: none"> • Science Center and education programmes. • Infrastructure development and maintenance. • Collaborations and partnerships with local and international institutions. • Maintaining financial sustainability.
3	Mediating factors	<ul style="list-style-type: none"> • Based on institutional elements related to internal capacity to achieve strategic priorities: • Organizational capacity. • Stakeholder centrality. • Regulatory and policy outlook. • Information community and technology infrastructure.

7. METHODOLOGY AND DATA

This study used a mixed-methodology research design that combines qualitative and quantitative methods to provide a comprehensive understanding of how the Sci-Bono Discovery Centre is diversifying its strategic finance. Evaluating results from multiple data sources using a mixed-methods approach helped ensure that the findings were more valid, reliable, and comprehensive. While the qualitative section aims to gain deeper insights from key stakeholders, the quantitative approach examines trends and opinions using objective data ([Ahmed, Pereira, & Jane, 2024](#)).

7.1. Research Paradigm

The study was grounded in a pragmatic paradigm that emphasizes practical, problem-solving applications and encourages methodological diversity. Pragmatism allows for the simultaneous examination of real-life meanings (qualitative) and measurable data (quantitative), which enhances the study's practical approach and its emphasis on useful suggestions ([Elgeddawy & Abouraia, 2024](#)).

7.2. Population and Sampling Approach

This study employed a unique sampling process for each research method. Thirty respondents with comprehensive expertise in the operations of science centers, specifically regarding Sci-Bono programmes, operations, and funding sources, were intentionally sampled qualitatively. The study used a quantitative approach with a random sampling method, based on a survey of fifty individuals selected by external stakeholders. The target groups included Sci-Bono's management and staff, the Gauteng Department of Education (GDE), local businesses, and students utilizing Sci-Bono's services ([Ahmed et al., 2024](#)).

7.3. Data Collection and Analysis

The study employed thematic analysis to investigate the qualitative framework by categorizing interview responses into themes, such as institutional impediments and potential community involvement. Themes were organized and presented using NVivo qualitative analysis software. The study used survey data for the quantitative construct, employing both descriptive and inferential statistics. Descriptive statistics enhanced our understanding of the characteristics and perspectives of the participants. The research examined the relationships among stakeholders and their perspectives on various fundraising methods and strategies through inferential statistics. The data analysis program SPSS accomplished this (Ahmed et al., 2024; Jnanathapaswi, 2021).

7.4. Ethical Considerations

The study adhered to ethical standards of informed consent, confidentiality of participant identities, and neutrality towards individuals. The authors obtained parental consent for the students, given that the majority are still minors. Parents were assured of the students' anonymity and that the study would neither cause harm nor prejudice nor lead to discrimination and isolation of participating students but rather augment their understanding of the issues encountered by scientific centers (Siegle, 2023). Sci-Bono collaborated with education district officials to provide consent forms to parents. The Sci-Bono Ethics Committee authorized the project to proceed as intended.

7.5. Research Validity and Reliability

The study employed three separate methodologies to ensure the validity and reliability of the research through data obtained from surveys and interviews. By pilot testing the questionnaire and interview guide, the data collection methods were enhanced and modified, thereby increasing their accuracy and consistency. Additionally, member checks were employed in qualitative interviews to verify the accuracy of participants' responses. This approach helps mitigate bias and ensures precise documentation of their perspectives (Khanal & Chhetri, 2024). The examination of these factors improved the reliability and trustworthiness of the research findings; therefore, it was prioritized for implementation by the authors.

8. DISCUSSION OF POTENTIAL INITIATIVES TO WIDEN THE REVENUE BASE

This section examines potential initiatives Sci-Bono could use to increase school income while working to improve its financial status. Sci-Bono explores innovative and effective methods to make its finances more stable, recognizing the importance of not relying too heavily on a single source of income. The next section presents a strategy for Sci-Bono and similar organizations to continue their current activities, expand their reach, and increase their impact on scientific education. This includes community-driven projects, strategic partnerships, and new educational initiatives. The section discusses options and develops a strategy for the Sci-Bono Discovery Centre (Berkowitz, 2025).

8.1. Investment in Eco-Gardens

Sci-Bono may significantly enhance its educational initiatives and increase its income by investing in an eco-garden. This initiative will attract many visitors who pay for entrance, tours, and seminars. The eco-garden aligns with Sci-Bono's objectives by providing practical insights into sustainable farming and ecological systems, which educational programs can leverage profitably. Strategic alliances and sponsorships with companies that share environmental concerns also become possible through this initiative (Ramaano, 2024). Focusing on sustainable practices, the eco-garden helps Sci-Bono appear as a leader in environmental education. This could enable the

company to obtain funds from both public and private sponsors. This expenditure indicates Sci-Bono's dedication to environmental awareness and scientific education and enhances its financial basis. Such an investment will enable the institution to lead a more sustainable and significant future (Ntsobi, Nyamkure, & Mwale, 2025). Figure 1 showcases a prototype eco-garden that Sci-Bono could implement as a multi-purpose facility. This space could host practical social studies lessons for high schools, birthday parties, weddings, and other outdoor activities, all offered for a fee.



Figure 1. Eco-Garden in Singapore.

Source: Science Centre Singapore, <https://www.science.edu.sg/whats-on/exhibitions/ecogarden>

8.2. Investment in Planetarium

Investing in a state-of-the-art planetarium at Sci-Bono promises to enhance educational experiences while creating sustainable funding streams. Planetariums offer interactive, hands-on exhibits that stimulate students and community members alike. This captivating hub for astronomy education can attract diverse audiences through live shows, interactive presentations, and immersive experiences. By introducing ticketed events, memberships, and exclusive shows, the planetarium can significantly contribute to Sci-Bono's revenue, ensuring financial stability while providing a unique combination of entertainment and learning for school groups, families, enthusiasts, and tourists (Everding & Keller, 2020).

Beyond ticket sales, a planetarium at Sci-Bono can generate income in other ways. It helps you develop programs, events, and sponsorships with companies, astronomical groups, and educational institutions. Modern technology in the planetarium qualifies it as a suitable venue for product launches and corporate events (Plummer, Schmoll, & Ghent, 2015). It can solicit funds for STEM education that aligns with Sci-Bono's goals. Furthermore, the option of online courses and virtual events enables Sci-Bono to reach more individuals worldwide, thereby promoting long-term sustainability in the digital era.

8.3. Investment in Telescopes

Investing in advanced telescopes at Sci-Bono is a prudent strategy to augment cash resources while concurrently improving educational opportunities (Everding & Keller, 2020). This money supports Sci-Bono's objective of promoting scientific research by attracting a broad spectrum of individuals through immersive cosmic exploration. Ticket sales, memberships, special events, and partnerships with research facilities and colleges can generate revenue for Sci-Bono. Additional income can come from astronomy-themed parties, telescope rentals, and educational events.

By positioning itself as a center for astronomical research, Sci-Bono can attract corporate sponsorships, donations, and funding for scientific education (Chirica & Puscas, 2018). This multifaceted approach improves the visitor experience and enables Sci-Bono to be financially stable. The purchase of a telescope serves as a stimulus for financial stability as well as educational influence. As illustrated in Figure 2, Southern Africa boasts impressive telescopes. To diversify its offerings, Sci-Bono needs to purchase its own facility.



Figure 2. Telescope Exhibition at Sci-Bono Discovery Centre

Source: Sci-Bono discovery Center.

8.4. Introduction of ECD Centers

In his SONA 2025 address, President Cyril Ramaphosa highlighted the government's commitment to expanding access to and improving the quality of Early Childhood Development (ECD). He stated that every child in South Africa should have the opportunity to learn, grow, and thrive by the time they are five years old (Innovation Edge, 2025; Republic of South Africa, 2025). The creation of early ECD centers at Sci-Bono could improve the learning environment for young students and provide the institution with new, long-term income sources. ECD facilities can offer the necessary support to parents and guardians who want their children to have a strong start in education (Efe & Umdu Topsakal, 2024). By emphasizing scientific education, Sci-Bono can benefit from the demand for funding. By providing organized Early Childhood Development programmes, Sci-Bono can attract young families and generate a steady income from tuition and enrollment fees (Aina & Bipath, 2022).

Consequently, because Sci-Bono has integrated ECD centers, it can also collaborate with nursery centers, municipal governments, and educational institutions. Sci-Bono teaches young children about STREAM in South Africa. Operating outside Pretoria's Constitutional Hills, Play Africa is a children's museum. It aims to inspire the next generation of South African scientists, programmers, engineers, mathematicians, and inventors (Matlala & Molokwane, 2024). Working with groups like Play Africa will enable you to obtain grants, subsidies, and government funds supporting initiatives in early childhood education. These collaborations enable Sci-Bono to be financially stable and strengthen its ties to the broader academic community. Early Childhood Development Centers, run by Sci-Bono, might provide young students with innovative, science-based courses, thereby transforming the institution in early childhood science education (O'Keeffe, Southwood, & Hayes, 2022). This unique approach might attract new students and generate income from their tuition. The centers can also serve as community hubs that host events and activities

involving local companies, parents, and caregivers. Corporate sponsorships result from this situation as well. An illustrative example of a South African ECD center is presented in Figure 3. This setup offers a viable model for Sci-Bono to adopt, enabling the incorporation of coding and computer courses for children.



Figure 3. ECD Centre in South Africa

Source: ECD Centre in South Africa.

8.5. Introduction of a Cultural and Heritage Division

Incorporating a cultural and historical dimension into Sci-Bono could enhance its sustainability and revenue generation over time. By integrating South Africa's diverse cultural heritage into its events, seminars, and thematic exhibitions, Sci-Bono could attract a broader audience. Collaborative financing ideas, potential sponsorships, and immersive experiences may emerge from partnerships with artists, historians, and cultural groups. Revenue can be generated from ticket sales, memberships, merchandise, and venue rentals. The division can also plan cultural events, parties, and festivals. This approach not only increases income but also establishes Sci-Bono as a cultural attraction, thereby appealing to a larger audience (Mutlu, 2019). Cultural celebration dances, exemplified in Figure 4, could be a featured attraction at the Sci-Bono Discovery Centre, serving as a valuable source of additional revenue.



Figure 4. African cultural dance

Source: Cultural Exhibits in Southern Africa.

Following educational guidelines and providing pupils with a range of learning opportunities allows schools to design instructional programs, including historical and cultural narratives. Money for these initiatives can come from school alliances, instructional seminars, and guided tours. These funds will assist Sci-Bono in fulfilling its primary objective of inspiring others to love learning and offering a consistent source of income. The division of culture and heritage could also search for ways to interact with companies aiming to encourage cultural diversity and community involvement. Sci-Bono can raise money through sponsorships, co-branded events, and company alliances. These alliances can also enable Sci-Bono to engage with companies that value social responsibility and cultural enrichment (Achille & Fiorillo, 2022).

8.6. Collaborating with Local Businesses

Collaborating with local enterprises enables Sci-Bono to diversify its funding sources and ensure its long-term viability. Collaborating with local enterprises can facilitate Sci-Bono's acquisition of various financial resources. Due to their sense of corporate social responsibility, businesses (both local and national) frequently seek to finance educational projects that foster community development. Through direct monetary contributions, in-kind donations, or sponsorship contracts, these partnerships can provide Sci-Bono with the necessary revenue to continue its operations (Air Liquide, 2021; Mueller-Hirth, 2015).

Working with local companies provides Sci-Bono with additional opportunities to remain in business compared to solely obtaining funding. Through partner ventures, co-branded events, and cooperative marketing efforts, Sci-Bono can generate revenue and offer companies innovative ways to showcase themselves. Sci-Bono could enhance its operations and educational programs by allowing local businesses to share their expertise, resources, and services. The business community will also enable the organization to host new fundraising events such as benefit dinners and charitable auctions (Bennett & Grabs, 2025). This approach guarantees financial stability and makes Sci-Bono a significant component of the local business ecosystem, thereby promoting community involvement and a sense of shared responsibility for developmental goals, including education within Gauteng Province and the nation at large.

8.7. Collaborating with Regional Bodies and International Organizations

Sci-Bono is focused on transforming the community and science education. Its objectives align with those of UNICEF and the United Nations in terms of sustainable development and education. By actively seeking partnerships with these organizations, Sci-Bono can secure resources, funding, grants, and sponsorships for its projects and exhibits. Such collaborations enable Sci-Bono to participate in global initiatives, conferences, and networks, thereby increasing the organization's international profile and attracting potential sponsors and donations (Barnabas, 2024). These alliances enable individuals to engage in capacity-building initiatives, exchange programs, and cooperative research projects. This makes Sci-Bono a hub for global learning and could attract more funding from companies, charities, and governments impressed by its worldwide influence (WPAB, 2025).

8.8. Targeting Corporate Social Responsibility (CSR) Programs

By carefully focusing on Corporate Social Responsibility (CSR) initiatives, the Sci-Bono Discovery Centre has a strong chance to guarantee its long-term survival and attract diverse funding sources. As part of their dedication to changing society and supporting the growth of local communities, many businesses nowadays participate in CSR projects. By aligning the center with Sci-Bono's educational goals (Cheruiyot-Koech & Reddy, 2022), companies that aim to enhance STEM (science, technology, engineering, and mathematics) programs could find a valuable partner

there. Through grants, sponsorships, and direct donations, this alignment enables Sci-Bono to secure funding from companies.

CSR initiatives provide Sci-Bono with numerous opportunities to engage companies, thereby enhancing its educational resources and financial stability. These alliances can include initiatives such as staff involvement, volunteer projects, and seminars that allow participants to exchange expertise. These programs give Sci-Bono's initiatives business acumen. Projects aligned with a company's charitable objectives such as educational courses or outreach events may receive funding and benefit society at large. With financial support and an improved brand image in the community, Sci-Bono can also offer business partners opportunities to market their products and gain exposure, fostering mutually beneficial relationships (For, 2025; Peloza & Falkenberg, 2009).

8.9. Public-Private Partnerships

Sci-Bono could find additional funds and ensure its openness through public-private partnerships (PPPs). Particularly in science education, Sci-Bono's goal of serving the public can benefit significantly from these government-business collaborations. Through joint ventures, PPPs can be structured to distribute earnings, thereby generating income-generating activities, including co-branded events and merchandise sales (Liu et al., 2024). Along with financial stability, PPPs can provide Sci-Bono with additional awareness, community involvement, and opportunities for personal development. Still, they require careful planning and negotiation. By aligning its objectives with those of government and corporate partners, Sci-Bono can establish long-lasting relationships that safeguard its financial future and enhance its influence on scientific education (Ramolobe & Khandanisa, 2024).

9. DISCUSSION ENVISAGED IMPACT OF SUGGESTED INITIATIVES

Sci-Bono's goal is to determine how these funding tactics might affect its programs, events, and community engagement efforts after exploring other ways to secure funding. The following sections will examine all possible implications, both positive and negative, that each financing source could have, ranging from making programs more scalable to enhancing their financial stability. As we analyze the complex relationship between funding techniques and Sci-Bono's mission to foster a love of learning and scientific discovery, we invite you to join us (Bangani, 2024).

9.1. Impact on Visitors

Different ways of generating revenue can attract more visitors to Sci-Bono, which could serve as a model for other science institutes in the Southern Hemisphere. Investing in initiatives such as eco-gardens, planetariums, and telescopes provides families, students, and visitors with unique experiences that draw them in. Early Childhood Development centers and cultural heritage divisions reach a broader audience. Collaborating with governments, international organizations, and businesses through CSR programs enhances visibility and encourages community involvement (Mbopha, Marais, Kleynhans, & Esler, 2021). Sci-Bono's global reach is enhanced by a strong online presence, and donor recognition programs encourage community involvement. These initiatives transform Sci-Bono into a vibrant, multi-faceted destination that attracts a diverse range of learners and enthusiasts, significantly increasing foot traffic and establishing it as a dynamic educational hub (Ntsobi et al., 2025). Figure 5 presents a simulated exercise demonstrating the projected impact of proposed offerings on visitor attendance at the Sci-Bono science center. Sci-Bono should prioritize the introduction of early childhood development (ECD), investment in eco-gardens, the establishment of a planetarium, and an advanced online presence. These leading factors are crucial for attracting visitors, especially given the center's limited financial resources.

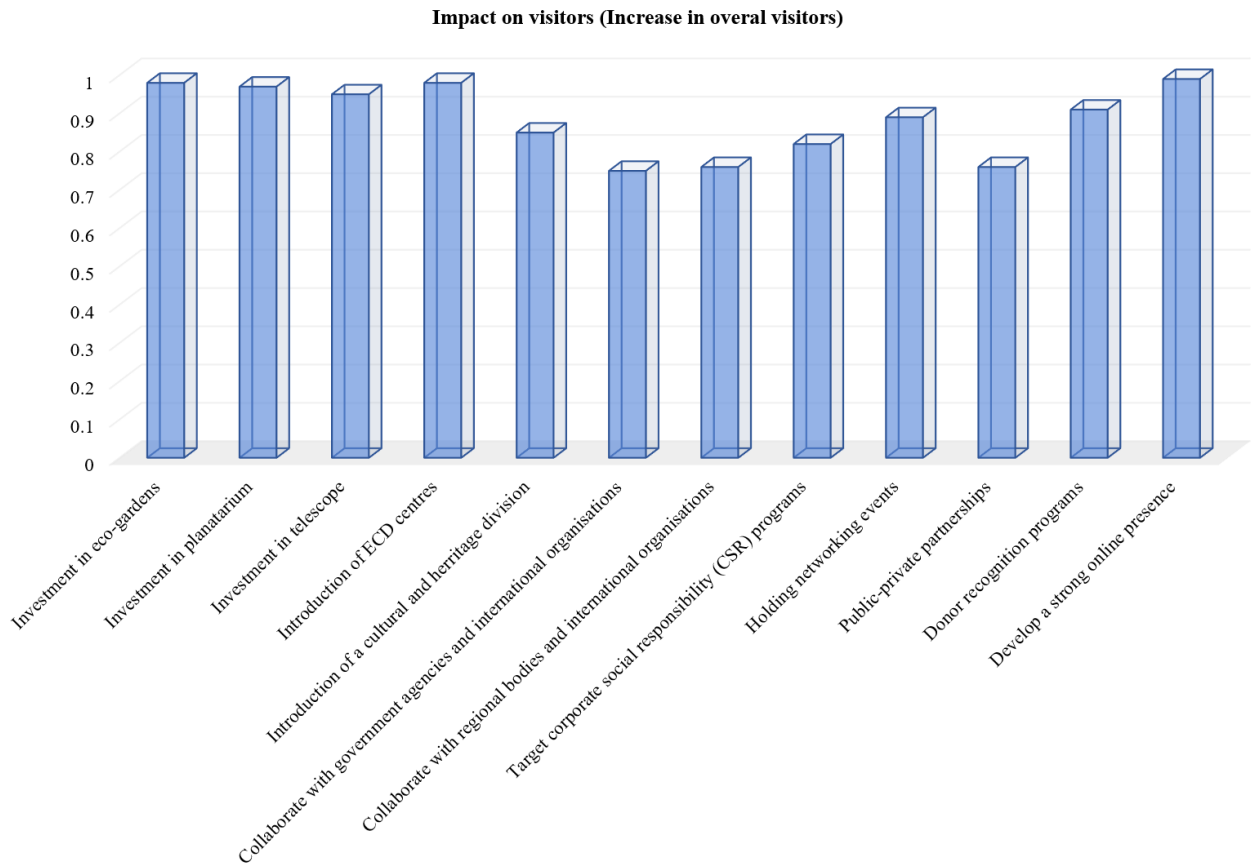


Figure 5. Increase in visitors.

9.2. Impact on Funding

The proposed methods for Sci-Bono to generate revenue encompass a comprehensive strategy to enhance income and financial assistance. Essential strategies include investing in attractions such as eco-gardens, planetariums, and telescopes to generate revenue through ticket sales and events; collaborating with governmental bodies and international organizations to secure grants and subsidies; establishing early childhood development centers to access specific funding sources; forming a cultural and heritage division to garner support from relevant organizations; engaging in public-private partnerships and corporate social responsibility initiatives for collaborative funding efforts; developing donor recognition programs to foster enduring relationships; and cultivating a robust online presence for digital fundraising endeavors (For, 2024). The objective of these activities is to enhance Sci-Bono's financial stability by identifying new revenue streams and expanding its support network. Figure 6 illustrates various funding opportunities that Sci-Bono should pursue to diversify its income streams.

Funding

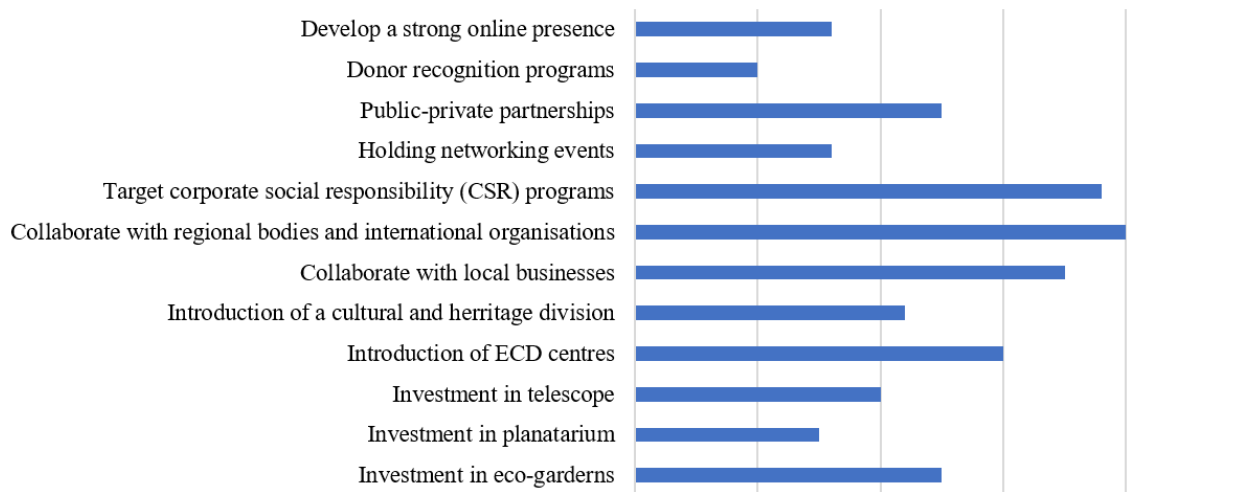


Figure 6. Funding attraction prospects from different initiatives.

9.3. Impact on Sustainability

The proposed funding plans for Sci-Bono are comprehensive strategies aimed at increasing income and financial support. Key approaches include developing attractions such as eco-gardens, planetariums, and telescopes to generate revenue from ticket sales and events; collaborating with governments and international organizations to secure grants and subsidies; establishing early childhood development centers to attract targeted funding; creating a cultural and heritage division to garner support from related organizations; participating in public-private partnerships and corporate social responsibility programs to enhance funding opportunities; initiating donor recognition programs to foster long-term relationships; and strengthening online presence for digital fundraising efforts (Department of Science & Innovation, 2022; Ntsobi et al., 2025). These different tactics all aim to make Sci-Bono's finances more stable by utilizing various sources of financing and expanding its network of supporters. Figure 7 illustrates various funding strategies and the dimensions they would enhance, including financial sustainability, community engagement, environmental sustainability, and STEM education sustainability in South Africa.

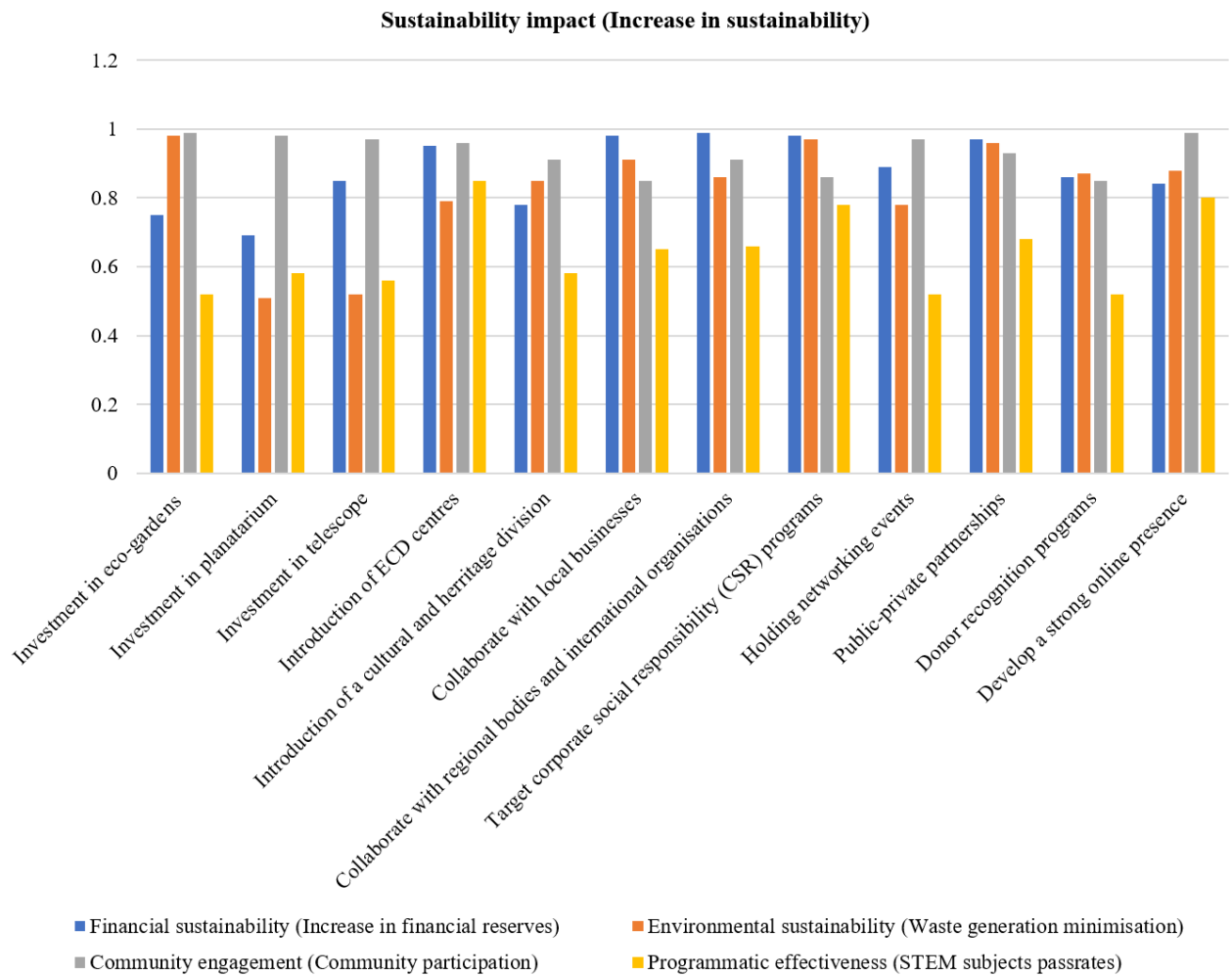


Figure 7. Sustainability.

Programs that recognize donations are very important for creating a community of people who care about Sci-Bono's success. Identifying what donors do helps create a culture of giving that keeps the organization financially stable. Building a strong online presence aligns with current communication methods, which will help Sci-Bono reach more people and encourage online interaction. Virtual workshops, educational content, and virtual events reach more individuals and make educational resources more accessible, thereby enhancing the effectiveness of programs (Kharouf, Biscaia, Garcia-Perez, & Hickman, 2020).

9.4. Potential Sources of Funding

This part discusses the strategic options available to Sci-Bono as it seeks assistance from groups interested in improving scientific literacy and community development. Sci-Bono can explore ways to strengthen its financial resources by identifying potential partners and sponsors who share its goals. This will help the center sustain its successful science education and public outreach programs. Table 2 shows possible sources of finance and partners that could help Sci-Bono grow and keep its operations going.

Table 2. Potential sources of funding.

Initiative	Suggested source of funding / collaboration / partnership
Investment in Eco-Gardens	Sasol, Anglo American, Bidvest, and Sanlam
	Department of Environmental Affairs, Department of Science and Technology, National Parks and Wildlife Service, and South African National Biodiversity Institute
	SADC, BRICS
	Global Environment Facility, United Nations Environment Programme (UNEP), Worldwide Fund for Nature (WWF), and Conservation International.
Investment in planetarium	MTN, Naspers, and Discovery
	South African National Space Agency, Department of Science and Technology, National Research Foundation, and Department of Basic Education.
	SADC, BRICS
	International Astronomical Union (IAU), United Nations Office for Outer Space Affairs (UNOOSA), European Southern Observatory (ESO), and National Aeronautics and Space Administration (NASA)
Investment in telescope	Optichem, Astro Optics, Scientific Equipment Suppliers (SES), and Vodacom.
	Department of Science and Technology, National Research Foundation, South African Astronomical Observatory (SAAO), and National Space Agency of South Africa (SANSA)
	SADC, BRICS
	International Astronomical Union (IAU), United Nations Office for Outer Space Affairs (UNOOSA), European Southern Observatory (ESO), National Aeronautics and Space Administration (NASA)
Introduction of ECD centers	LEGO South Africa, Vodacom Foundation, South African National Book Development Council (SANBDC), and Discovery Kids
	Department of Basic Education, Department of Social Development, Early Childhood Development Unit (ECDU), and South African National Health Department
	SADC, BRICS, ADB
	UNICEF, UNESCO, World Bank, and Early Childhood Development International (ECD International)
Introduction of a cultural and heritage division.	National Geographic South Africa, Impala Platinum Holdings Limited, Sappi Limited, and MTN SA
	National Heritage Council of South Africa (NHC), South African Tourism, South African Broadcasting Corporation (SABC), and Department of Arts and Culture
	SADC, BRICS, ADB, and AU
	UNESCO, International Council of Museums (ICOM), World Tourism Organization (UNWTO), and Google Arts & Culture
Collaborating with government agencies and international organizations	Department of Tourism, Department of Basic Education, National Arts Council of South Africa (NAC), and South African National Parks (SANParks)
	New Partnership for Africa's Development (NEPAD), African Development Bank (AfDB), African Union Commission (AUC), and SADC.
	United Nations Educational Scientific and Cultural Organization (UNESCO), World Bank, International Council of Museums (ICOM) and Google Arts & Culture
Target corporate social responsibility (CSR) programs	Anglo American, Aspen Pharmacare Holdings, Bidvest Group, Capitec Bank

	Coca-Cola Beverages South Africa, Discovery Limited, FirstRand Group, Gold Fields
	MTN Group, Naspers, National Bank of South Africa (NBS), Nedbank
	Pick n Pay Stores, Sasol, Standard Bank Group, Woolworths Holdings Limited
Holding networking events	Science and Technology Expo, Corporate Social Responsibility (CSR) Forum, STEM Education Summit
	Women in Science and Technology Symposium, Innovation Showcase, Science Night for Kids
	Teacher's Workshop on STEM Education, Public Lecture Series on Science and Technology, Science Cafés-Bono Fundraiser
Public-private partnerships	Partner with local schools to develop and implement STEM education programs, partner with universities to conduct research and develop science-based exhibits, partner with science and technology companies to provide internships and mentorship opportunities, and partner with tourism agencies to promote Sci-Bono as a destination for tourists.
	Partner with media outlets to produce science-based content for public consumption. Partner with non-profit organizations to develop community outreach programs. Partner with foundations and philanthropic organizations to secure funding for new initiatives. Partner with corporate sponsors to support specific programs or initiatives.
	Partner with government agencies to implement science education initiatives. Partner with international organizations to promote science education and collaboration. Partner with museums and cultural institutions to develop joint exhibitions and programs. Partner with technology companies to create interactive and immersive experiences.
Donor recognition programs	Name recognition on signage and exhibits, dedications of specific exhibits or programs, invitations to exclusive events and openings, recognition in publications and marketing materials.
	Membership programs with special benefits, naming opportunities for facilities and spaces, volunteer opportunities and leadership roles, recognition on the Sci-Bono website and social media.
	Personalized thank-you notes and gifts, donor appreciation events and ceremonies, case studies and testimonials, and donor impact reports.
	Donor newsletters and updates, donor recognition wall or gallery, awards and honors for outstanding contributions, donor legacy programs.
Develop a strong online presence	X (Tweeter)
	Facebook
	Instagram
	Tik-Tok, YouTube

10. PRESENTATION OF EMPIRICAL FINDINGS

Science centers in South Africa have facilitated and supported students in fostering their interest, enrolling, attending, and engaging with natural sciences. The science centers in South Africa demonstrated an enhancement in students' academic performance and scientific comprehension, as well as a transformation in their perceptions of science (Efe & Umdu Topsakal, 2024; Snyman & Kasirye, 2021). The following numbers are from our recent study. There is a strong and positive correlation between the number of visitors and the 74% and 71% pass rates in math and science. Most of the people who visit the center do not have a bachelor's degree, which is beneficial because it encourages young people to become interested. There is a strong and negative correlation between the total number of visits and the percentage of people with bachelor's degrees (50%).

Table 3. Correlation between total visitors and math and science pass rates.

Variable	1	2	3	4	5	6	7
1	1.00						
2	0.74*	1.00					
3	0.71*	0.90*	1.00				
4	0.16	0.22*	0.11	1.00			
5	0.11	0.19*	0.11	0.25*	1.00		
6	(-0.50) *	(-0.52) *	(-0.37) *	-0.12	0.36*	1.00	
7	(-0.08)	0.16	0.29*	-0.03	0.11	0.20*	1.00

Note: *Signifies the level of significance at 10% or less, this is state on notes under the table.

Notes to [Table 3](#): 1- Total number of visitors, 2- Mathematics pass rates, 3- Science pass rates, 4- Under-18-year-old visitors, 5- Gender (Male), 6- Education (bachelor's degree or higher), and 7- Race (African). The asterisk (*) indicates that the association is significant at 10% or less. As shown in [Table 2](#), investment in science education will lead to an increase in income per capita (economic development). For instance, a 1% increase in science education will result in an 18% (0.18 units) increase in income per capita.

Table 4. Pooled ordinary least squares analysis: determinants of economic development.

Dependent variable: Income per capita				
Variable	Coefficient	Standard errors	P-value	Remark
Science education	0.18	0.07	0.009	Significant determinant
Science communication	-5.90	1.76	0.001	Significant determinant
Science engagement	-0.08	0.075	0.282	Insignificant determinant
_cons	4.94	1.36	0.000	

As shown by [Table 4](#), investment in science communication and engagement will lead to an increase in human development (HDI). For instance, a 1-unit increase in science communication will result in a 27.57-unit increase in human development. A one-unit increase in science engagement will result in a 0.21-unit increase in human development in sample countries.

Table 5. Pooled ordinary least squares analysis: determinants of human development.

Dependent variable: HDI				
Variable	Coefficient	Standard errors	P-value	Remark
Science education	-0.05	0.06	0.38	Insignificant determinant
Science communication	27.57	2.88	0.000	Significant determinant
Science engagement	0.21	0.083	0.011	Significant determinant
_cons	72.12	3.12	0.000	

As shown in [Table 5](#), investment in science engagement and communication will result in a positive and significant increase in adult literacy rates. Adult literacy rates encompass increases in financial knowledge and appreciation of internet banking and other facilities. An increase in science communication and engagement by 1 unit will result in an increase of 5.05 and 0.11 units in adult literacy rates in sample countries, respectively. The current results indicate that science communication plays a more significant role in generating awareness and changing attitudes towards STREAM subjects and concepts among adults, while also improving the knowledge base of South Africans.

Table 6. Pooled ordinary least squares analysis: determinants of adult literacy rate.

Dependent variable: Adult literacy (Above years)				
Variable	Coefficient	Standard errors	P-value	Remark
Science education	-0.01	0.029	0.634	Insignificant determinant
Science communication	5.05	1.54	0.01	Significant determinant
Science engagement	0.11	0.050	0.02	Significant determinant
_cons	26.08	10.84	0.016	

Table 6 presents the relationship between access to finance and investment in science education, communication, and engagement in sample countries. In particular, the results show that a 1-unit increase in science engagement will result in a 0.1-unit increase in access to finance. Science centers that invest more in science engagement with communities, schools, and partners will attract additional funding; therefore, science centers should always engage with stakeholders to generate increased access to funding.

Table 7. Pooled ordinary least squares analysis: Determinants of access to finance.

Dependent variable: Access to finance				
Variable	Coefficient	Standard errors	P-value	Remark
Science education	-0.011	0.009	0.22	Insignificant determinant
Science communication	0.43	0.48	0.37	Insignificant determinant
Science engagement	0.10	0.014	0.00	Significant determinant
_cons	9.57	7.81	0.220	

Table 8 outlines organizational and financial stability risks and opportunities, further detailing the various strategies Sci-Bono can implement to mitigate these risks.

Table 8. Sustainability table for Sci-Bono Discovery Center.

Key focus area	Nature of risks	Mitigation
Organizational Stability	1) Sci-Bono's dependence on GDE funding is the single most serious risk to long-term sustainability and the organization's independence. Changes in political or executive management could result in the withdrawal of GDE funding and support (Sci-Bono Discovery Centre, 2020).	<ul style="list-style-type: none"> • Sci-Bono must increase its marketing and fundraising efforts in the broader donor market to decrease its GDE as much as possible.
	2) Revenue loss because of reduced government spending and fewer sponsorship funding.	<ul style="list-style-type: none"> • Establishment of new funding partnerships and donor funding to sustain current and new programmes. • Development of comprehensive marketing strategy and plan to attract new sponsorships. • Development of a tracking and monitoring system to ensure accountability to funders.
Financial stability	3) Long-term financial sustainability is the greatest risk at Sci-Bono.	Budgeting, fundraising, affecting investments, and reporting.
	4) Failure to meet increased revenue targets is required to sustain the organization outside GDE funding.	Revenue diversification strategy.

11. SIMULATION OF FINANCIAL PROSPECTS AT SCI-BONO

Figure 8 shows that investment in rocket launches will attract more visitors to Sci-Bono, followed by investment in telescopes and the introduction of an Early Childhood Development center. The introduction of a planetarium and green energy or ocean economy initiatives will result in attracting more visitors to the science center.

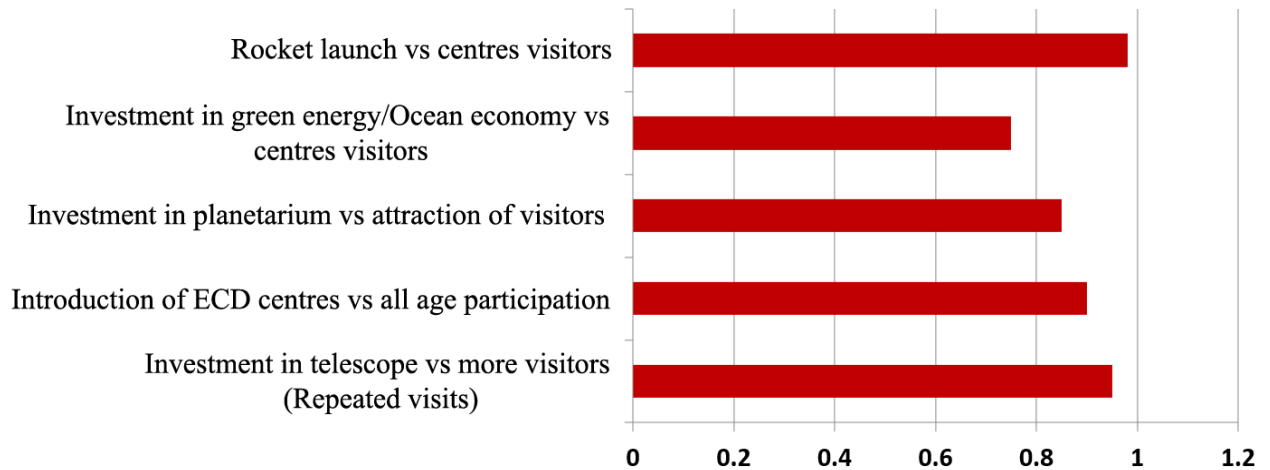


Figure 8. Sci-Bono propensity of more visitors with investment in more technologies.

Figure 9 shows that the introduction of the ECD, Culture, and Heritage unit at the Sci-Bono Science Centre will attract more funding from interested partners. Investment in smart sectors such as heritage, culture, and the ocean economy will align Sci-Bono more closely with national goals and, consequently, attract more funding from both the public and private sectors.

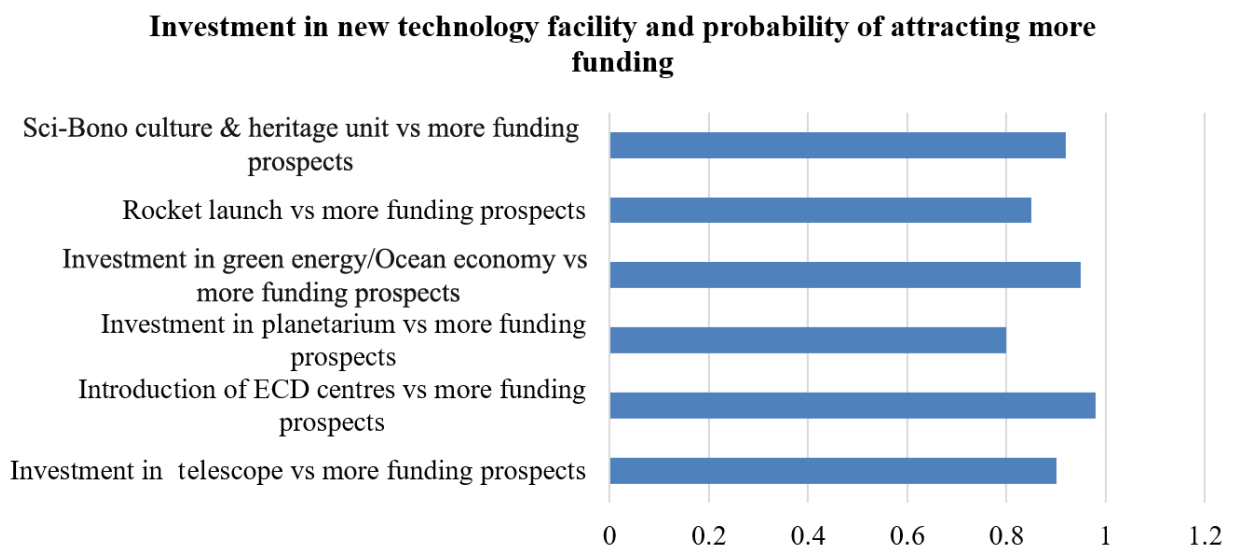


Figure 9. Sci-Bono's funding prospects with investment in more technology offerings.

In Figure 10, the study presents simulated results of additional benefits that can arise from better aligning Sci-Bono with public and private sector initiatives such as the Johannesburg Stock Exchange (JSE), global funders, and BRICS development goals. Sci-Bono will benefit from aligning its offerings with BRICS counterparts, which will help attract more funding from the BRICS Development Bank. To diversify its funding sources and ensure sustainability,

the science center should aim to provide more offerings that attract corporate social responsibility funds from the private sector in South Africa.

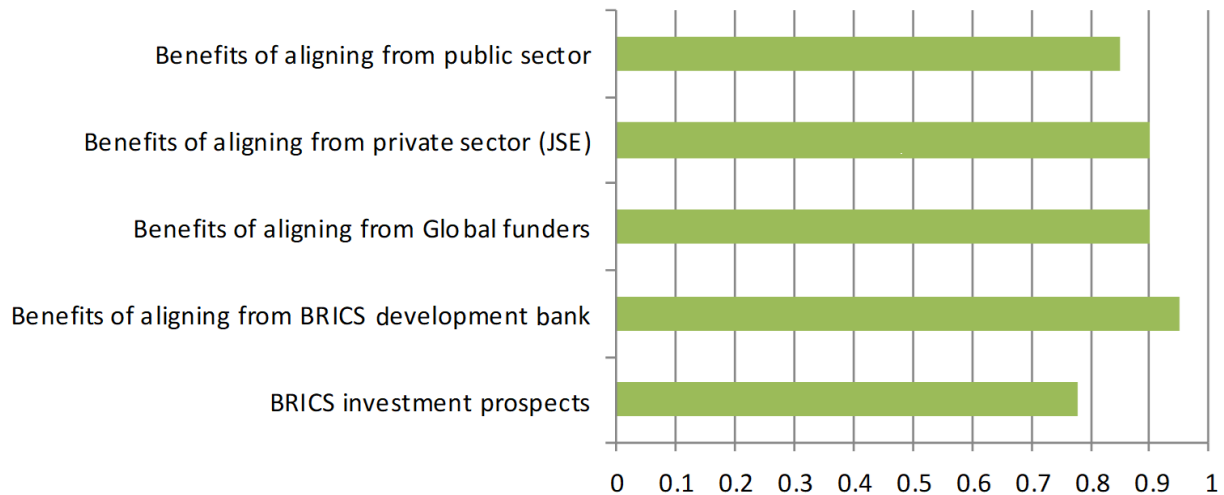


Figure 10. Potential benefits of alignment with local, regional and BRICS partners.

12. CONCLUSION

One way to ensure the Sci-Bono Discovery Centre remains open for a long time is to diversify its sources of income by investing in eco-gardens, planetariums, telescopes, and expanding into cultural and heritage industries. These initiatives not only promote Sci-Bono's main goal of advancing STREAM (science, technology, research, reading, arts, and mathematics) education, but they also make it more appealing to a broader range of people, such as visitors, environmentalists, and advocates of cultural heritage. The center can increase revenue by boosting its gate takings through ticket sales, conducting educational programs, and encouraging ecotourism in specific regions. Collaborating with local enterprises and global organizations may also enhance their financial gains. Corporate Social Responsibility (CSR) initiatives serve as a significant source of funding, as corporations continuously seek projects that align with their objectives and address societal needs. Sci-Bono can secure funding to preserve and promote South Africa's rich cultural legacy by establishing cultural and heritage divisions. This arrangement may facilitate the centre's acquisition of government funds from agencies dedicated to arts, culture, and tourism, thereby strengthening its operational budget. By integrating science with cultural heritage and environmental sustainability, Sci-Bono transforms into a versatile organization capable of garnering support from both local and international entities. All these measures highlight the pressing need for Sci-Bono to implement science education-aligned programs to diversify its operations and activities, thereby generating multiple income streams while ensuring adherence to its fundamental goals.

13. RECOMMENDATION

The study recommends that Sci-Bono Discovery Centre should use innovative methods for revenue enhancement and diversification, such as eco-gardens, planetariums, and cultural heritage divisions. In doing so, Sci-Bono should emphasize working with local businesses and international organizations to mobilize funding through CSR activities focused on STEAM education and sustainability. Sci-Bono should also explore other ways for the government to provide funding to protect South Africa's cultural heritage, thereby increasing the Centre's options and reducing reliance on a single source of funding. This study extends beyond Sci-Bono and is relevant to other science centers, museums, and educational tourism destinations, as it offers a solid foundation for sustainability and development.

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