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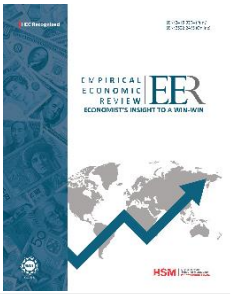

Title:	**Impression Management Theory as a Panacea for Public Budgeting Process**
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Impression Management Theory as a Panacea for Public Budgeting Process

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Abstract

The research question addressed in this study is: How can directed graph visualization enhance the understanding, communication, and evaluation of resource allocation in public budgeting? This study employs the impression management theory, i.e., data visualization tools, in order to better understand the public budgeting preparation process for the stakeholders. The study uses an effective graphical technique, i.e., the *DiGraph*, for effectively allocating the public resources, where the edges have a direction of flow, representing the one-way relationship among the nodes, i.e., objectives, activities (and sub-activities, if any), resources (and sub-resources, if any), and costs of resources in amount (in monetary unit, like US$) (and cost of sub resources, if any), thereby revealing what elements of the budget structure are most sensitive to funding changes. Based on the amount (US$), it is easily understandable for the stakeholder, that the directed sub-graphs show which sub-resource cost (US$) and resource cost (US$) can be reduced, which sub-resource cannot be financed, resource cannot be financed, sub-activities may need to be discontinued, and activities need to be discontinued, and lastly, which objective is entirely/partially not attainable because of the substantial cuts of funds from the federal or other funding agencies, like state or provincial. The key indicative result of this study showed that the objective (*O3, improve the health literacy*) became only partially feasible when costs of resources had been cut off (*i.e. by more than 40%*), demonstrating that the data visualization tool's ability to project the practical consequences of funding constraints from funding agencies. This study also emerged as an analytical and graphical technique that enables the stakeholders to predict the budgetary outcomes, prioritize key components, and support more viable and evidence-based public budgeting.

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***Keywords*:** Public Budgeting, Impression Management Theory, Graph Theory, Budgeting Process, DiGraph

Introduction

The history of budgeting dates back to ancient civilizations, with evidence of budgeting practices found in the records of Pharaohs, Greek city-states, and Roman empires (Webber & Wildavsky, 1986). However, modern budgeting began to take shape in the late 19th century, with the "Cameralist" approach in Germany, which emphasized the importance of budgeting in public administration (Premchand, 1989). In the early 20th century, the modern "Executive Budget" system was introduced in the United States, giving the President greater control over budgeting (Christensen, 2012). The 1920s saw the rise of "Scientific Budgeting," which aimed to apply scientific principles to budgeting, the methods were performance, planning-programming, and zero-based budgeting (Timney, 1995).

Based on these foundational developments, subsequent decades go through the refinement of budgeting tools and techniques becoming more systematic, program-oriented, and analytically driven approaches (Novick, 1967). In the post-World War II period, the introduction of "Program Budgeting" focused on allocating resources to specific programs and activities (Moser, 1975). The 1960s and 1970s emerged as "Planning-Programming-Budgeting," which integrated budgeting with strategic planning (Kantik, 1993). However, "Zero-Based Budgeting" requires justification for every budget item (Ibrahim, 2019). In recent years, there has been a shift towards more flexible and adaptive budgeting approaches, such as "Rolling Budgeting" and "Activity-Based Budgeting" (Serol, 2021). Throughout its history, budgeting has evolved in response to changing economic, political, and social contexts, reflecting the ongoing quest for more effective and efficient resource allocation (Becker et al., 2016).

However, regardless of these improvements in budgeting techniques, their practical application remains to face substantial constraints (Cardoş, 2014). Although more sophisticated methods of public budgeting have been developed, many challenges remain, like, a) uncertainty in the revenue: unpredictable revenue streams make it difficult to accurately forecast the public budget (Rodgers & Joyce, 1996); b) decision making complexity: public budgeting involves complex decisions, multiple stakeholders, and conflicting priorities (Morgan, 2017); c) generally political: public

budgeting is inherently political, leading to potential biases and inefficiencies (Schick, 2003); d) inefficient allocation of resources: public budget resources may not be allocated optimally due to inadequate data or analysis (Asante & Zwi, 2009); e) transparency lackness: public budget processes can be opaque, hindering accountability and public participation (Harrison & Sayogo, 2014); f) fiscal discipline: governments may struggle to maintain fiscal discipline, leading to budget deficits and debt (Eslava, 2011); g) inadequate performance measurement: insufficient performance metrics make it difficult to evaluate public budget effectiveness (Spekle & Verbeeten, 2014) and many more.

Given these persistent challenges, there is a still need to develop new analytical tools or to incorporate the existing ones that not only represent financial information more transparently but also support clearer interpretation and decision-making (Tomar & Periyasamy, 2023). Therefore, the impression management theory motivated us to use graphs in public financial literature because the human perceptions are affected by the graphical attributes (Beattie & Jones, 2008), explains pictorial choices can subtly increase the financial outcomes, that's why this study considered that *DiGraph*s as a tool that can help the official of governments in communicating financial information. This study used the modern mathematical graph theory approach. It developed directed graphs and sub-graphs to address the above-stated difficulties and help the stakeholders visualize complex relationships to reduce the political bias (Fischer et al, 2020), identify critical vertices and edges of resource allocation to analyze the proper resource allocation (Henriksson, n.d.), address the uncertainty in the revenue (Tillman et al., 2015), graphically communicate complex information (Albers, 2015), address the fiscal discipline (Obeng & Aazam, 2025), identify potential risks due to fund cuts (Ribeiro et al., 2019), improve the transparency (Faisal et al., 2024), adequate performance measurement (Lee & McGreevey, 2002), and support decision-making (Zacks & Franconeri, 2020). By applying *DiGraphs* tool within the NetworkX framework, the study provides a visual and analytical tool to map complex relationships between objectives, activities (sub-activities), resources (sub-resources), and costs of resources (sub-costs of resources), enabling stakeholders to make prudent decisions under budget limitations and constraints. This approach not only improves fiscal discipline and accountability but also supports strategic resource prioritization (Snyder et al., 2021), particularly in scenarios involving significant funding cuts

(Ribeiro et al., 2019). Ultimately, this study tries to contribute to the practical advancement of public budgeting process by bridging the gap between technical tools and program objectives, by fostering effective collaboration and community engagement.

There remains a need for practical solutions in public budgeting and addresses the research question that is: *How can directed graph visualization enhance the understanding, communication, and evaluation of resource allocation in public budgeting?* This study adopts a graph-based approach, i.e., *DiGraph*, that not only enhances the data visualization, but also has the clear interpretation, and vibrant decision-making in public budgeting process. The study also assumes that stakeholders, including political and administrative decision-makers, possess the capacity to utilize, examine understand and interpret these graphical representations to make informed budgetary decisions under varying funding scenarios. It further assumes that the hypothetical data (i.e., computational based research) is used to reflect and understand the real-world public sector budgeting dynamics, allowing for general insights in detail. Lastly, it also assumes stable external conditions, such as consistent government policies and funding patterns, to ensure the reliability of the proposed budgeting model, which this study is going to address. Section 2 describes the literature review; Section 3 clarifies the budgeting process; Section 4 explicates the scenario based on hypothetical data; Section 5 illuminates the directed graph (DiGrpaph) methodology as a tool, i.e., how to use in public budgeting process; Section 6 make clear propositions based on scenarios; last, the conclusion is justified in section 7.

Literature Review

In the early twentieth century, a surge in government expenditure, resource scarcity, and corruption sparked a significant debate among public policymakers on developing a public budget (Tanzi & Schuknecht, 2000). This historical context, crucial for understanding the evolution of public budgeting methods, is rich in information and provides a comprehensive understanding of the subject (Jilani, 2025). The emergence of technical tools was noted, but they lacked theoretical evidence (Pilegge, 1997). Early twentieth-century researchers argued that government department operations were akin to non-public sector organizations, focusing on improving technical methods (Gulick & Urwick, 1937). However, the primary focus was on administrative rationality rather than theoretical

development (Padgett, 1980). The researchers concentrated on the question, "How should budgeting be done?" and neglected the questions, "What is budgeting?" and "Why should budgeting be done?" (Gibran & Sekwat, 2009).

Different reforms started in the 1900s, developed and improved according to the criticism received by researchers or technocrats for the budgeting process (Berland & Chiapello, 2009). The development of the Budgeting and Accounting Act of 1921 only focused on the significant control of the development of the line-item budgeting and budgeting decision process that led to the development of a top-down method of public budgeting (Gibran & Sekwat, 2009). The major criticism generated by this method is that it does not address the purpose or function of the budgeting expenditure (Hyde, 2002). Further, this method is not linked with the program objectives and does not help choose alternative resource allocation (Pilegge, 1997).

Due to the continuous shortcomings of the top-down method of public budgeting, the Hoover Commission of 1949 proposed a new method named performance-based budgeting (Ho, 2018). This technique assisted line managers and focused on citizens' roles in identifying government activities that lead to operational efficiency (Pilegge, 1997). However, criticism emerged that this method still lacked the 2W's questions, which refer to 'What is budgeting?' and 'Why should budgeting be done?', and the behavioral aspects of developing the public budget (Gibran & Sekwat, 2009).

The above criticism led to the replacement of performance-based budgeting with program-based budgeting (Stratan & Manole, 2017). The rationale behind program-based budgeting is to link with the government's goals and objectives to enhance decision-making (Pilegge, 1997). Verploegh et al. (2022) criticized program-based budgeting as complex in adoption and challenging to implement in diverse government organizations requiring long-term commitment (World Bank, 2021). Program-based budgeting was further improved and replaced with zero-based budgeting to enhance the involvement and ability of more than one decision-maker to recommend the different spending levels for each program (Hwang, 2020). Allen and Clifton (2023) criticized zero-based budgeting developed by Otten (1978) regarding clarity, which requires a different level of detail to create and makes it difficult for policymakers to achieve the objective.

All the reforms focused on developing the appropriate budgeting practices based on societal changes, underscoring the importance of being aware of the broader context (Guzmán, 2024). Budgeting practices are more highlighted in literature than budgeting theories (Kenno et al., 2018). Much criticism is reported about budgeting theories (Batt, 2025). Past studies detailed the criticism:

Table 1
Critique on Budgeting Theories

Author(s)	The criticism
Koven (1999)	The development of public budgeting based on a top-down approach, which is rooted in political culture
Snider (2000)	The hindrance of administration for the development of budgeting theory, i.e., narrow rationalist approach
Pulkkinen et al. (2024)	The organizational hierarchy and structure are the hindrance of the development of budgeting theory
Doherty et al. (2024)	The behavior of participants of the budgeting process and the political culture leads to incremental model, becoming the limitation.
Perez et al. (2024)	The median voter model of public budgeting assumed the interaction of voters, politicians and outcome of budget, failed to address the diversity and heterogeneity in the preferences
Schmidt (2024)	The allocation of political decision-makers allocates the limited resources to maximize the utility, i.e., the public choice model, but ignored the cognitive biases and institutional laws

The above table has summarized the key critiques of existing public budgeting theories, based on structural, behavioral, and institutional limitations addressed by different researchers. Concurrently, all these criticisms demonstrated that the existing traditional models, i.e., top-down, incremental, or based on median voter and public choice frameworks, cannot explain the complex relationship, diversity, and cognitive biases of real-world budgeting processes. Therefore, there is still need for new budgeting tools and approaches that can better capture the interactions among stakeholders, organizational structures, and resource allocation decisions (Kohzad, 2024).

To address these limitations and improve stakeholder understanding, tools like directed graphs can be applied within the framework of impression management to enhance transparency, communication, and decision-making in public budgeting (Gagné et al., 2022; Sari & Muslim, 2023; Olaoye & Oluyori, 2024). Impression management theory (IMT), a theory introduced by Goffman (1959), is a complex and multifaceted phenomenon with significant implications for individuals and organizations. Merkl-Davies and Brennan (2007) argued that management uses IMT to communicate with stakeholders and manage their perceptions. They also suggested that firms engage in IMT by emphasizing good news and using performance attributions. This theory provides a valuable lens for understanding the dynamics of public budgeting (Gomes et al., 2023) and affects the transparency and accountability of the budgeting process (Natision et al., 2022). According to Arndt and Bigelow (2000), the management and officials of public sector organizations used this theory to utilize and secure the resources, adequately justify the expenditures, and, ultimately, maintain the public's trust. Like other tools, directed graphs in public finance are considered impression management (Beattie & Jones, 2008).

By integrating the IM with *Di-graph*, cognitive biases will reduce, which prevent people from understanding the theoretical and practical aspects of public budgeting (Overmans, 2024). Based on the above-cited criticism, there is a gap in public budgeting theoretical evidence and technical tools. Despite having prevailing techniques, there is still room for developing the budgeting technique, i.e. visualization tool, which is more advanced and easier to understand for stakeholders to address the persistent challenges such as political bias, revenue uncertainty, and inefficient resource allocation. This study will try to fill the gap by using the directed graphs to develop the relationship between objectives, activities, resources, and its related costs and link the program objectives with the choices of alternative resource allocation. This study will use a graphical technique based on the questions to be addressed to use public resources effectively for the public good and support political and administrative decision-makers to improve transparency and strengthen fiscal discipline.

Budgeting Process

Developing an organizational budget requires addressing a series of key questions through collective discussion and analysis. Management

Accounting for Non-Governmental Organizations Mango (2009) stated the six different questions that are part of the budgeting process. These questions are further explained and modified as per the required context for further understanding related to the public budgeting process:

What are the Objectives of the Organization?

This question defines one or multiple objectives of the organisation that should be aligned with the nature of the business, as stated in the memorandum of association or notes to the accounts of the financial reports, like reducing the incidence of chronic diseases such as diabetes and hypertension by 20% within one year, and many others mentioned in the next section.

What Activities/Sub-activities will be Involved in Achieving These Objectives?

This question defines the activities the organization performs on a day-to-day basis that should be aligned with its objectives, such as health screening and monitoring, as well as many others mentioned in the next section. These activities are subdivided into sub-activities, like conducting monthly health screening events for diabetes, hypertension, and obesity.

What Resources/Sub-resources will be Needed to Perform These Activities?

This question defines the resources required to perform the various activities specified in the previous question. The resources may be human resources, material resources, facilities, or other resources. The different subcategories are described further, such as healthcare professionals (doctors, nurses, dietitians) for screenings and workshops, and many others are mentioned in the next section.

What will be the Costs of these Resources/Sub-resources?

This question describes the estimated costs of each resource required to perform day-to-day operations, such as personal, material, facility, or miscellaneous costs. Under each resource cost, further subcategories of resources have been defined, like salaries for healthcare professionals or salaries for the administrative staff, and many others mentioned in the next section.

Where will the Funds Come From?

This question explains the source of funding, which includes internal funding by the stockholders in the case of private firms, initial public offerings in the case of public firms, debts from financial institutions, or grants or funds in the case of non-governmental organizations (NGOs) or public sector organizations. However, for the government or public sector organizations, a significant portion of funds depends on grants from the government. The other fund's sources may be donations from non-profit organizations (NPOs) or sponsorships from the corporate sector, donations from local businesses, or fundraising events from the community. These funds are for specific projects.

Is the Result Realistic?

The last question is about the post-year review before the start of the new budgeting process for the next year. This process is based on the variance analysis, either favorable or unfavorable variance, and directed by management to further need for changes in objective, activity/sub-activity, resources/sub-resources, and cost of resources/sub-resources of the organization.

Scenario

The hypothetical scenario is developed based on the above-stated questions to draw the Directed Tree Graphs in the NetworkX:

Organization Name: ABC Community Health Improvement Initiative

Location: City, Country

Objectives of the Organization

The primary objective of the ABC Community Health Improvement Initiative is to enhance the overall health and well-being of the community by addressing key health issues and improving access to healthcare services. The specific objectives include:

Objective 1 (O1). Reduce the incidence of chronic diseases such as diabetes and hypertension by 20% within one year.

Objective 2 (O2). Increase access to preventive health services for underserved populations by establishing community health fairs and mobile clinics.

Objective 3 (O3). Improve health literacy among community members by conducting educational workshops and distributing informational materials.

Activities/Sub-activities Involved in Achieving Objectives

To achieve the objectives, the following activities will be undertaken:

Activity 1 (A1): Health Screening and Monitoring.

A1.1. Conduct monthly health screening events for diabetes, hypertension, and obesity.

A1.2. Establish mobile clinics to provide routine check-ups in remote areas.

Activity 2 (A2): Health Education and Awareness.

A2.1. Organize weekly workshops on nutrition, physical activity, and disease prevention.

A2.2. Distribute pamphlets and brochures on healthy lifestyle practices.

Activity 3 (A3): Collaboration and Partnerships.

A3.1. Partner with local healthcare providers to offer free consultations and treatments.

A3.2. Work with schools to implement health education programs for students.

Activity 4 (A4): Community Engagement.

A4.1. Form community health committees to gather feedback and promote participation.

A4.2. Launch social media campaigns to raise awareness about health issues.

Resources/sub-resources needed

To perform these activities, the following resources will be needed:

Resources 1 (R1): Human Resources.

R1.1. Healthcare professionals (doctors, nurses, dietitians) for screenings and workshops.

R1.2. Administrative staff for coordination and logistics.

R1.3. Volunteers for community outreach and event management.

Resources 2 (R2): Material Resources.

R2.1. Medical supplies (testing kits, vaccines, first-aid kits).

R2.2. Educational materials (brochures, posters, digital content).

R2.3. Equipment for mobile clinics (vans, medical devices).

Resources 3 (R3): Facilities.

R3.1. Venues for health fairs and workshops (community centers, schools).

R3.2. Office space for administrative activities.

Cost of Resources/Sub-resources

Below is a hypothetical estimated budget breakdown for the project, as shown in Table 2 (which is in US Dollars):

Cost 1 (C1): Personnel Costs ($210,000).

C1.1. Salaries for healthcare professionals (70% for chronic diseases & 30% for mobile clinics): $150,000

C1.2. Salaries for Administrative staff (50% for chronic diseases, 35% for mobile clinics, 15% for health literacy): $50,000

C1.3. Volunteer training and stipends (40% for weekly workshops, 30% for distribution of pamphlets, 30% for programs for schools): $10,000

Cost 2 (C2): Material Costs ($90,000).

C2.1. Medical supplies (70% for chronic diseases & 30% for mobile clinics): $40,000

C2.2. Educational materials (50% for healthy lifestyle practices, & 50% for programs for schools): $15,000

C2.3. Mobile clinic equipment: $35,000

Cost 3 (C3): Facility Costs ($70,000).

C3.1. Office rentals: $40,000

C3.2. Venue expenses (50% for weekly workshops, & 50% for programs for schools): $20,000

C3.3. Office expenses: $10,000

Cost 4 (C4): Miscellaneous Costs ($25,000).

C4.1. Marketing and promotions (50% for healthy lifestyle practices, & 50% for programs for schools): $15,000

C4.2. Transportation and logistics (50% for chronic diseases and 50% for mobile clinics): $10,000

Table 2

Detail of Cost of Resources

Cost Code	Description	Amount ($)
C1.1	Salaries for healthcare professionals	150,000
C1.2	Salaries for Administrative Staff	50,000
C1.3	Volunteer training and stipends	10,000
C2.1	Medical supplies	40,000
C2.2	Educational materials	15,000
C2.3	Mobile clinic equipment	35,000
C3.1	Office rentals	40,000
C3.2	Venue rentals	20,000
C3.3	Office expenses	10,000
C4.1	Marketing and promotions	15,000
C4.2	Transportation and logistics	10,000
Total Estimated Budget		$ 395,000

Sources of Funding

The funds for this organization will come from multiple sources and are also hypothetical, are stated below Table 3:

Table 3

Detail of Sources of Funding

Funding Code	Description	Amount ($)
F1	Government Grants	190,000
F2	Non-Profit Organizations	100,000
F3	Corporate Sponsorships	50,000
F4	Community Fundraising Events	30,000
F5	Donations from Local Businesses	25,000
Total Amount of Funding		$ 395,000

Is the Result Realistic?

The success of the Community Health Improvement Initiative is realistic, provided the following conditions are met:

- Effective Collaboration: Strong partnerships with local healthcare providers and community organizations will be crucial for resource sharing and support.
- Community Engagement: Active participation and feedback from community members will help tailor the project activities to meet local needs effectively.
- Sufficient Funding: Securing the projected funding will be essential to cover all expenses and ensure the smooth execution of activities.
- Monitoring and Evaluation: Regular monitoring of progress and evaluation of outcomes will allow for timely adjustments and improvements in strategy.

Methodology: Directed Graphs in the NetworkX

The use of graphs in finance is considered as impression management (Beattie & Jones, 2008), explains pictorial choices can delicately increase the financial outcomes, that's why this study considered that *DiGraph* as a tool that can help the official of governments to communicate financial information. Directed graphs, also known as DiGraph, are a versatile and powerful tool in graph theory, where edges have direction, indicating a one-way relationship between nodes (West, 2001). A DiGraph *(G)* has a pair *(V, E)*, where $(V = \{v_1, v_2, \ldots \ldots v_n, \})$ is a set of vertices (or nodes) and $(E \subseteq V\ X\ V)$ is a set of ordered pairs of vertices called directed edges (or arcs) (Diestel, 2017). Each directed edge *(u, v)* indicates a connection from vertex *(u)* to vertex *(v)*. Its representation through adjacency matrices allows for efficient analysis and computation. An adjacency matrix is a square matrix where the entry at row *i* and column *j* represents the weight or presence of an edge from vertex *i* to vertex *j*. The entry is typically set to zero if there is no edge between the vertices (Cormen et al., 2009).

Consider a graph *(G)* with vertices *(V = {A, B, C, D, E, F, G, H})* and directed edges *(E = {(A, B), (B, C), (C, D), (D, E), (E, F), (F, G), (G, H)})*. Each edge $e \in E$ is represented as an ordered pair *(u, v)*, where *u* is the starting vertex (tail), and *v* is the ending vertex (head). The order of *(u, v)*

matters, distinguishing it from *(v, u)*, thereby encoding directionality (West, 2001). The adjacency matrix *(A)* for this graph is:

$$A = \begin{bmatrix} 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

In this matrix:

- *(A[1][2] = 1)* means *(edge from (A) to (B))*
- *(A[2][3] = 1)* means *(edge from (B) to (C))*
- *(A[3][4] = 1)* means *(edge from (C) to (D))*
- *(A[4][5] = 1)* means *(edge from (D) to (E))*
- *(A[5][6] = 1)* means *(edge from (E) to (F))*
- *(A[6][7] = 1)* means *(edge from (F) to (G))*
- *(A[7][8] = 1)* means *(edge from (G) to (H))*

Python 3.10 software is used to develop the DiGraph in NetworkX using the matrix mentioned in Appendix. This study is computational in nature, as it employs graph-based modeling to simulate relationships among objectives, activities, resources, and costs, enabling the identification of potential inefficiencies and improving the interpretability of budgetary structures.

Directed Graphs for Each Objective

The concept of directionality in DiGraphs introduces an asymmetry in the relationships between vertices, distinguishing them fundamentally from undirected graphs where edges are bidirectional by default. This feature is critical for modeling the public budgeting processes because it clearly defines the flow of each objective to its costs is US$, this directionality is crucial and shows the path is:

objective → activity → sub-activity → resource → sub-resource → cost of resource → cost of sub-resource → amount in USD.

The DiGraphs for three (3) objectives based on the matrix (in Appendix) using Python 3.10 are shown in Figure 1, Figure 2, and Figure 3. This directional flow allows stakeholders to trace each budget item from high-level objectives down to specific expenditures (in US$), ensuring that relationships among objectives, activities, and resources are transparent and easily interpretable. This structured-visual approach optimized the understanding, strengthened the analysis, assisted in decision-making for public budgeting and accountability in public financial management.

Figure 1

Directed Graph of Objective 1

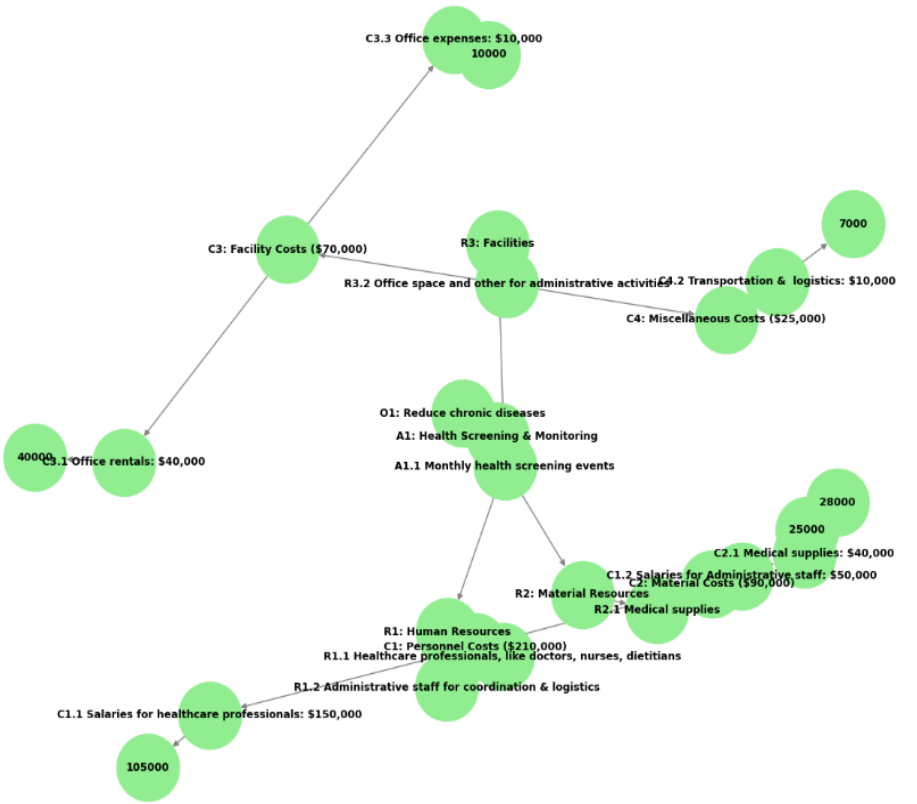


Figure 2

Directed Graph of Objective 2

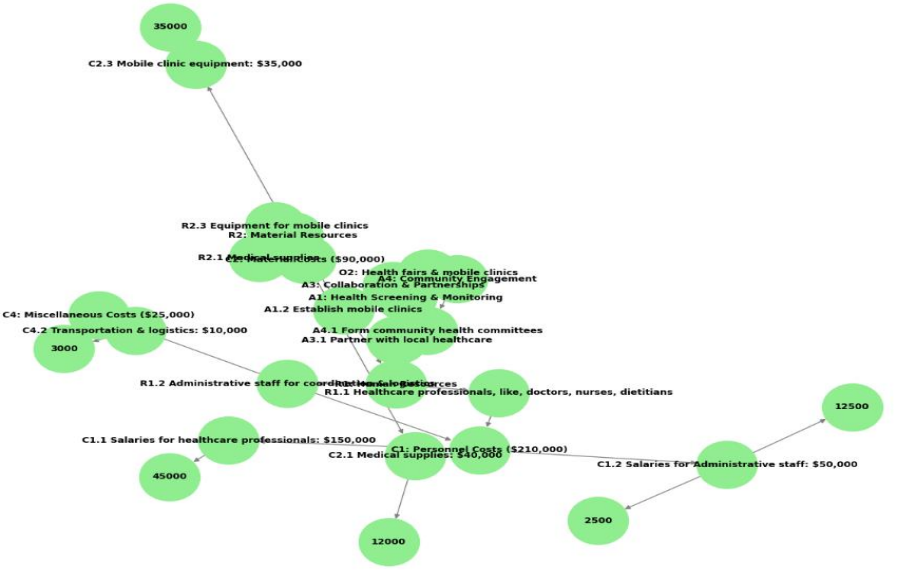
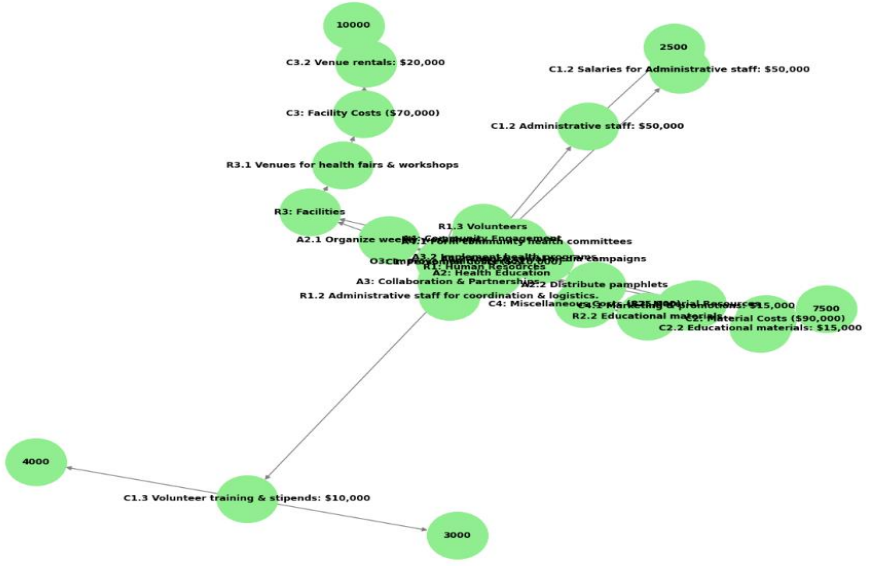


Figure 3

Directed Graph of Objective 3



Directed Sub-Graphs for the Objective 1

The directed sub-graphs based on objective 1 (*O1*) show the directionality of resources and cost in a below systematic manner and the stepwise flow path is:

objective → activity → sub-activity → resource → sub-resource → cost of resource → cost of sub-resource → amount in USD.

These directed sub-graphs are developed based on relationships *r1* to *r6* of the matrix that are presented in ppendix I and implemented by using the Python 3.10 software, as shown in Figure 4. By visualizing the directionality of resource allocation, this technique allows stakeholders to track that how objective 1 (*O1*) is linked to related activities (*A1*), linked to related sub-activities (*A1.1*), linked to related resources (*R1, R2 & R3*), linked to related sub resources (*R1.1, R1.2, R2.1 & R3.2*), linked to associated costs of each resource (*C1, C2, C3 & C4*) and linked to associated sub-resource costs (*C1.1, C1.2, C2.1, C3.1, C3.3 & C4.2*), providing a clear and actionable visualization of budgetary flows. This structured-visual approach optimized the understanding, strengthened the analysis and assisted in decision-making for public budgeting.

Directed Sub-Graphs for the Objective 2

The directed sub-graphs based on objective 2 (*O2*) show the directionality of resources and cost in a below systematic manner and the stepwise flow path is:

objective → activity → sub-activity → resource → sub-resource → cost of resource → cost of sub-resource → amount in USD.

These directed sub-graphs are developed based on relationships *r7* to *r13* of the matrix that are presented in Appendix and implemented by using the Python 3.10 software, as shown in Figure 5. By visualizing the directionality of resource allocation, this technique allows stakeholders to track that how objective 2 (*O2*) is linked to related activities (*A1, A3 & A4*), linked to related sub-activities (*A1.2, A3.1 & A4.1*), linked to related resources (*R1 & R2*), linked to related sub resources (*R1.1, R1.2, R2.1 & R2.3*), linked to associated costs of each resource (*C1, C2 & C4*) and linked to associated sub-resource costs (*C1.1, C1.2, C2.1, C2.3 & C4.2*), providing a clear and actionable visualization of budgetary flows. This structured-visual approach optimized the understanding, strengthened the analysis and

assisted in decision-making for public budgeting.

Directed Sub-Graphs for the Objective 3

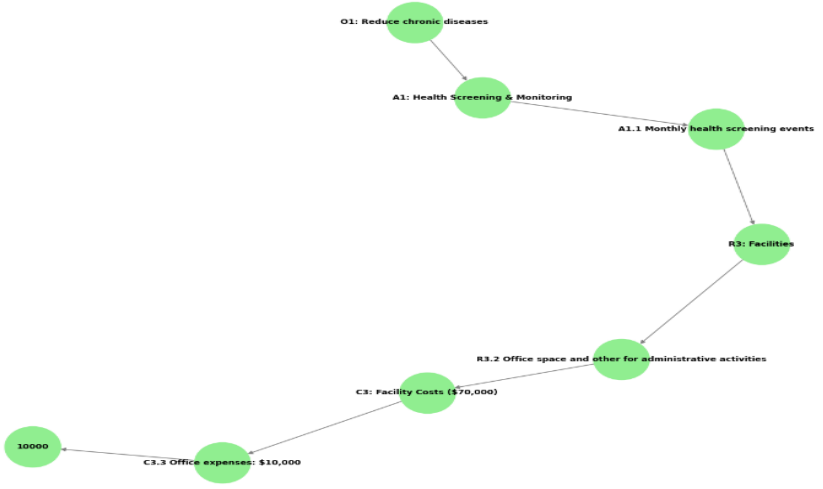
The directed sub-graphs based on objective 3 (*O3*) show the directionality of resources and cost in a below systematic manner and the stepwise flow path is:

objective → activity → sub-activity → resource → sub-resource → cost of resource → cost of sub-resource → amount in USD.

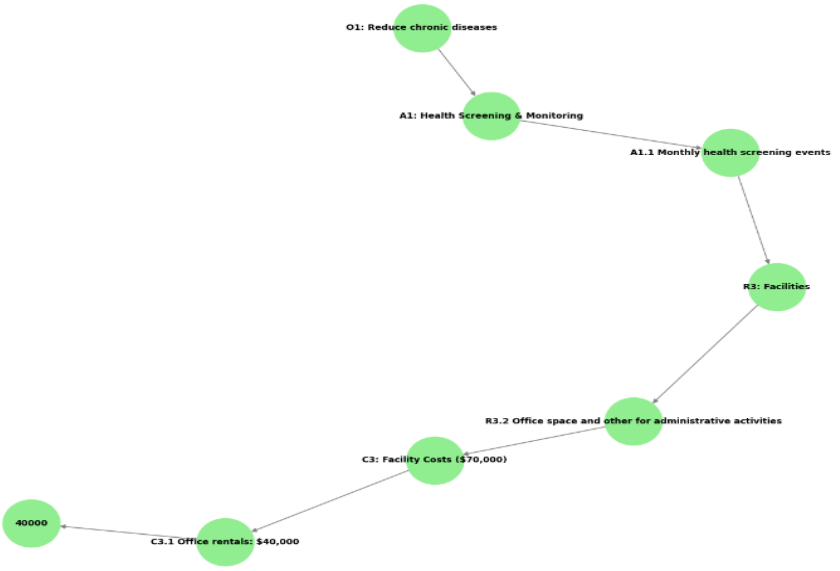
These directed sub-graphs are developed based on relationships *r14* to *r25* of the matrix that are presented in Appendix and implemented by using the Python 3.10 software, as shown in Figure 6. By visualizing the directionality of resource allocation, this technique allows stakeholders to track that how objective 3 (*O3*) is linked to related activities (*A2, A3 & A4*), linked to related sub-activities (*A2.1, A2.2, A3.2, A4.1 & A4.2*), linked to related resources (*R1, R2 & R3*), linked to related sub resources (*R1.2, R1.3, R2.2 & R3.1*), linked to associated costs of each resource (*C1, C2, C3 & C4*) and linked to associated sub-resource costs (*C1.2, C1.3, C2.2, C3.2 & C4.1*), providing a clear and actionable visualization of budgetary flows. This structured-visual approach optimized the understanding, strengthened the analysis and assisted in decision-making for public budgeting.

Figure 4

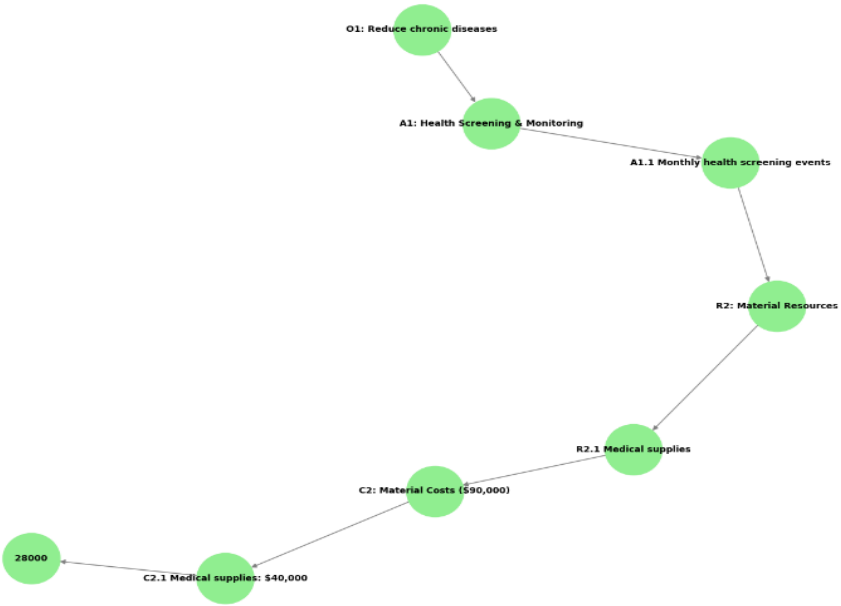
Directed Sub-Graphs of Each Row of Objective 1



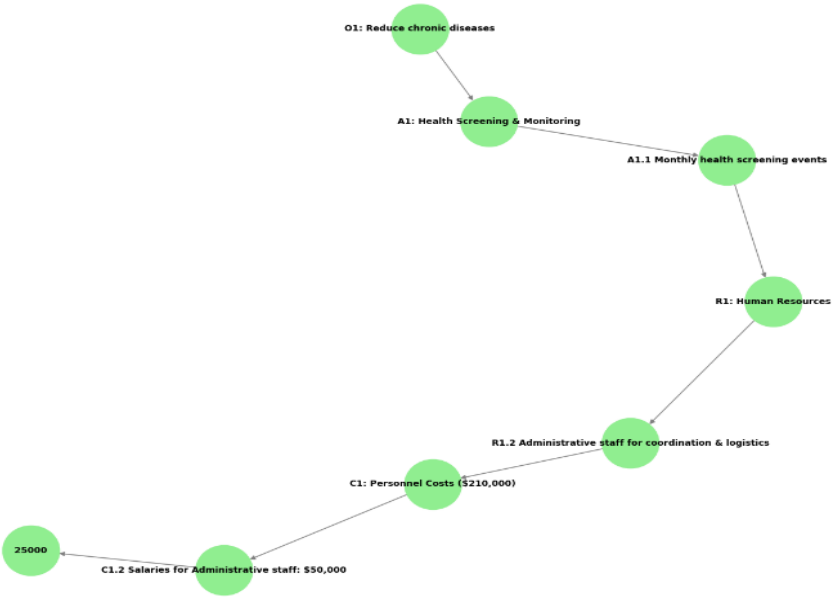
(r1)


O1: Reduce chronic diseases
A1: Health Screening & Monitoring
A1.1 Monthly health screening events
R3: Facilities
R3.2 Office space and other for administrative activities
C3: Facility Costs ($70,000)
40000
C3.1 Office rentals: $40,000

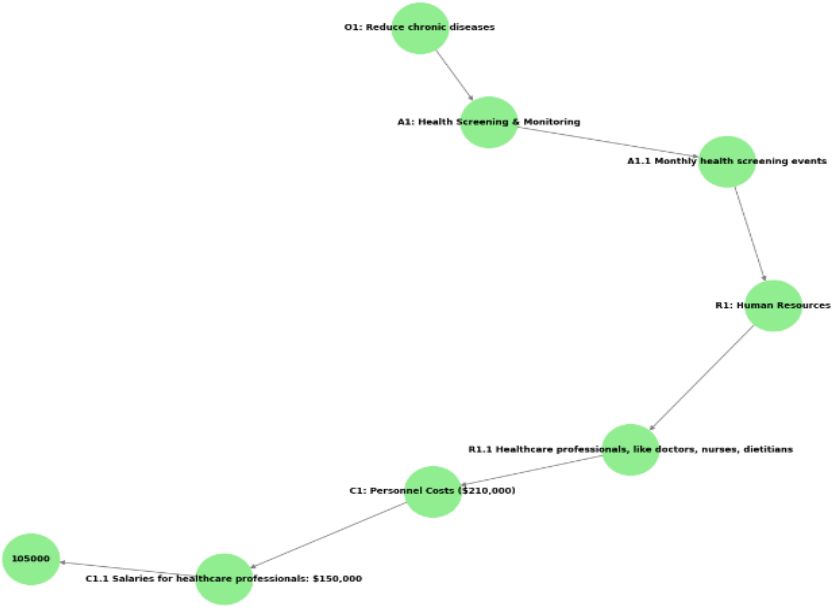
(r2)


O1: Reduce chronic diseases
A1: Health Screening & Monitoring
A1.1 Monthly health screening events
R2: Material Resources
R2.1 Medical supplies
C2: Material Costs ($90,000)
28000
C2.1 Medical supplies: $40,000

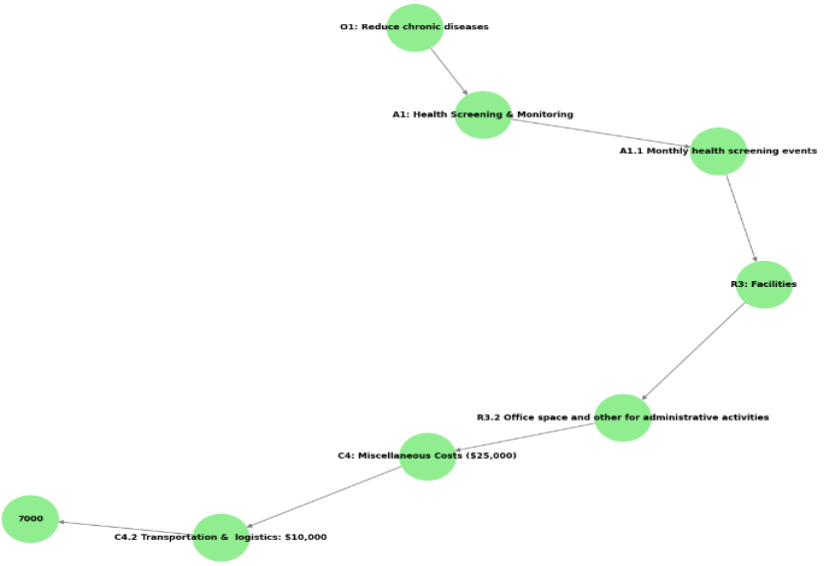
(r3)


O1: Reduce chronic diseases
A1: Health Screening & Monitoring
A1.1 Monthly health screening events
R1: Human Resources
R1.2 Administrative staff for coordination & logistics
C1: Personnel Costs ($210,000)
25000
C1.2 Salaries for Administrative staff: $50,000

(r4)

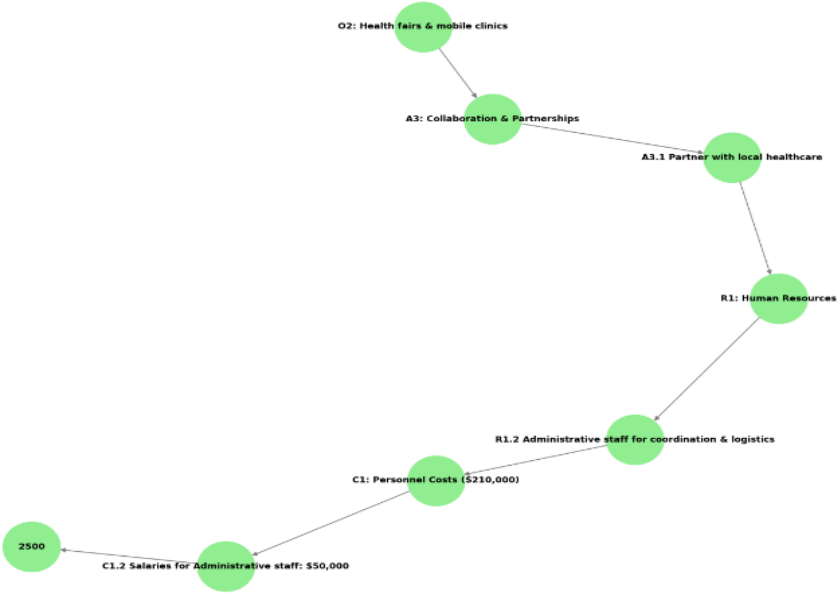

O1: Reduce chronic diseases
A1: Health Screening & Monitoring
A1.1 Monthly health screening events
R1: Human Resources
R1.1 Healthcare professionals, like doctors, nurses, dietitians
C1: Personnel Costs ($210,000)
105000
C1.1 Salaries for healthcare professionals: $150,000

(r5)

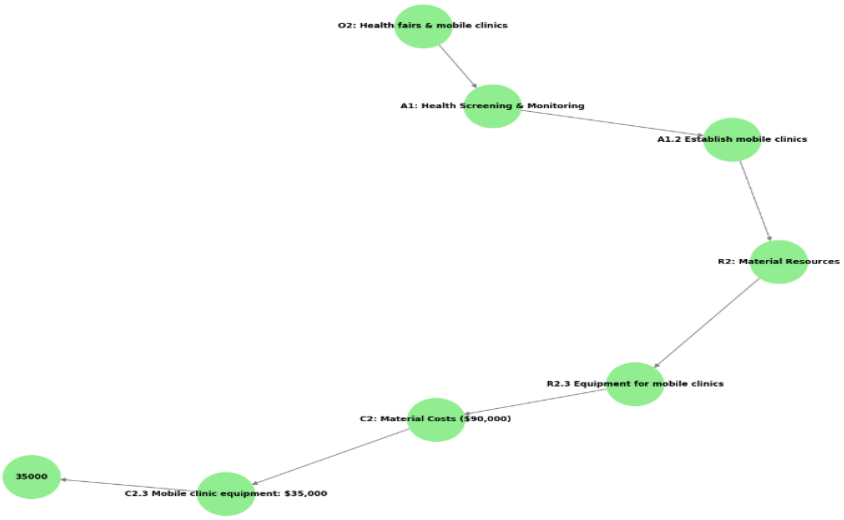


(r6)

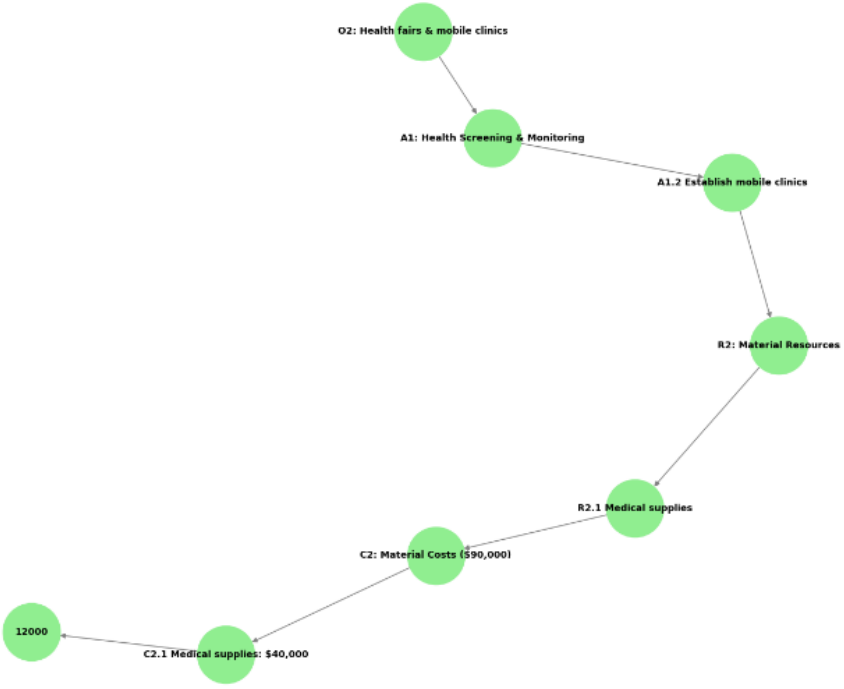
Figure 5
Directed Sub-Graphs of Each Row of Objective 2



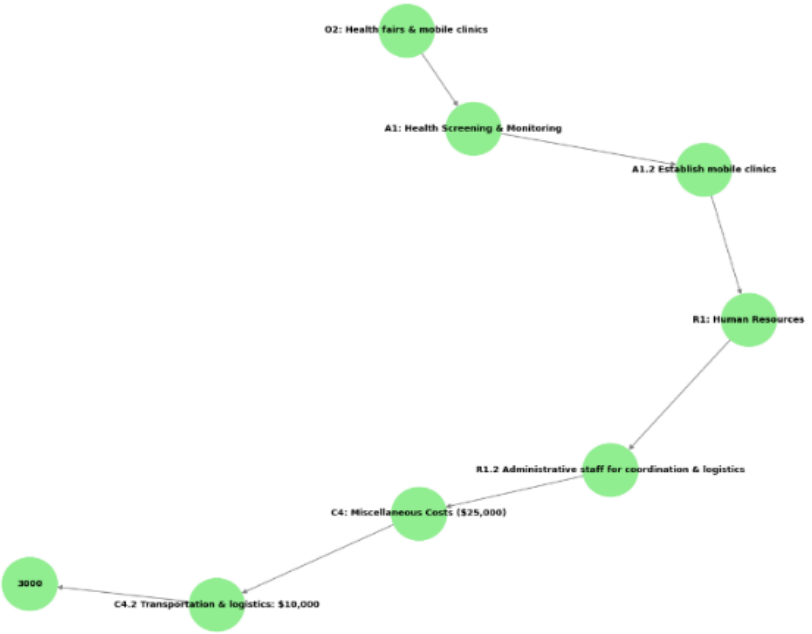
(r7)


O2: Health fairs & mobile clinics
A1: Health Screening & Monitoring
A1.2 Establish mobile clinics
R2: Material Resources
R2.3 Equipment for mobile clinics
C2: Material Costs ($90,000)
35000
C2.3 Mobile clinic equipment: $35,000

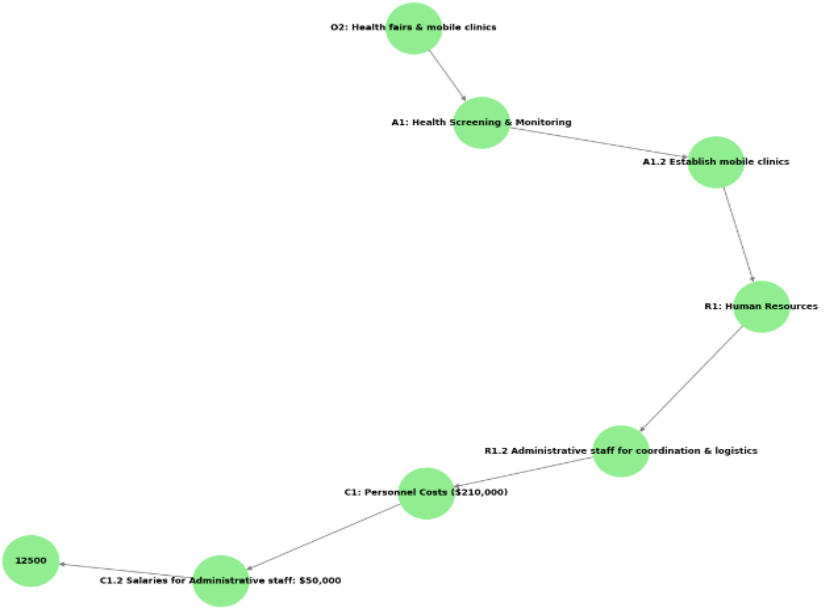
(r8)


O2: Health fairs & mobile clinics
A1: Health Screening & Monitoring
A1.2 Establish mobile clinics
R2: Material Resources
R2.1 Medical supplies
C2: Material Costs ($90,000)
12000
C2.1 Medical supplies: $40,000

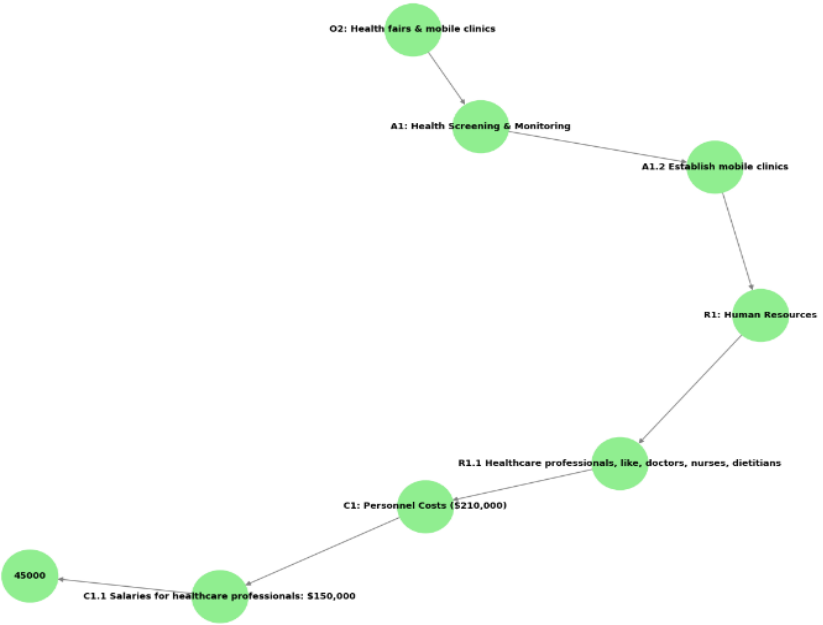
(r9)


O2: Health fairs & mobile clinics
A1: Health Screening & Monitoring
A1.2 Establish mobile clinics
R1: Human Resources
R1.2 Administrative staff for coordination & logistics
C4: Miscellaneous Costs ($25,000)
3000
C4.2 Transportation & logistics: $10,000

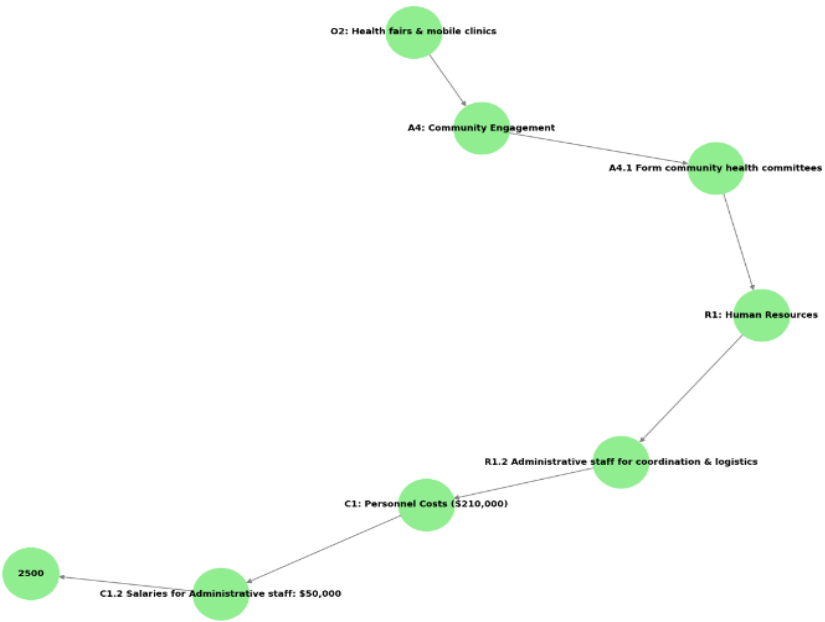
(r10)


O2: Health fairs & mobile clinics
A1: Health Screening & Monitoring
A1.2 Establish mobile clinics
R1: Human Resources
R1.2 Administrative staff for coordination & logistics
C1: Personnel Costs ($210,000)
12500
C1.2 Salaries for Administrative staff: $50,000

(r11)


O2: Health fairs & mobile clinics
A1: Health Screening & Monitoring
A1.2 Establish mobile clinics
R1: Human Resources
R1.1 Healthcare professionals, like, doctors, nurses, dietitians
C1: Personnel Costs ($210,000)
45000
C1.1 Salaries for healthcare professionals: $150,000

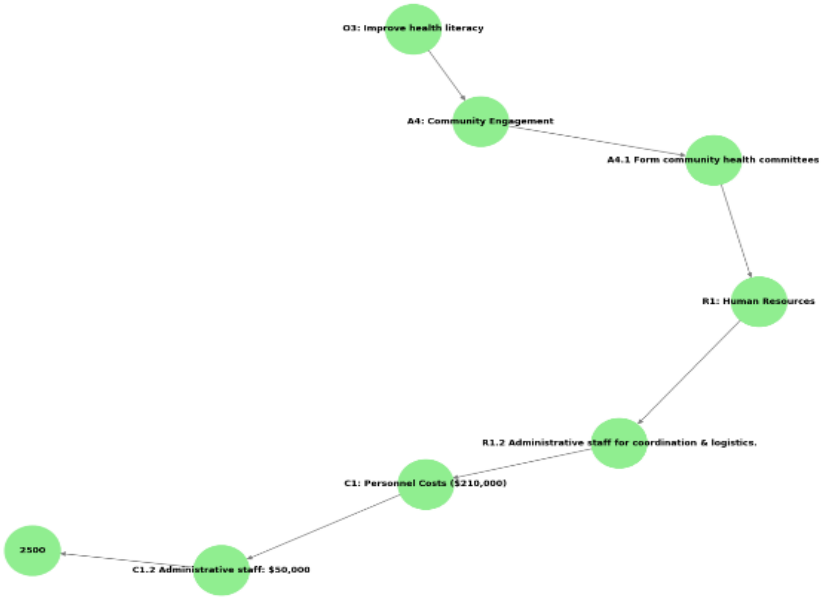
(r12)


O2: Health fairs & mobile clinics
A4: Community Engagement
A4.1 Form community health committees
R1: Human Resources
R1.2 Administrative staff for coordination & logistics
C1: Personnel Costs ($210,000)
2500
C1.2 Salaries for Administrative staff: $50,000

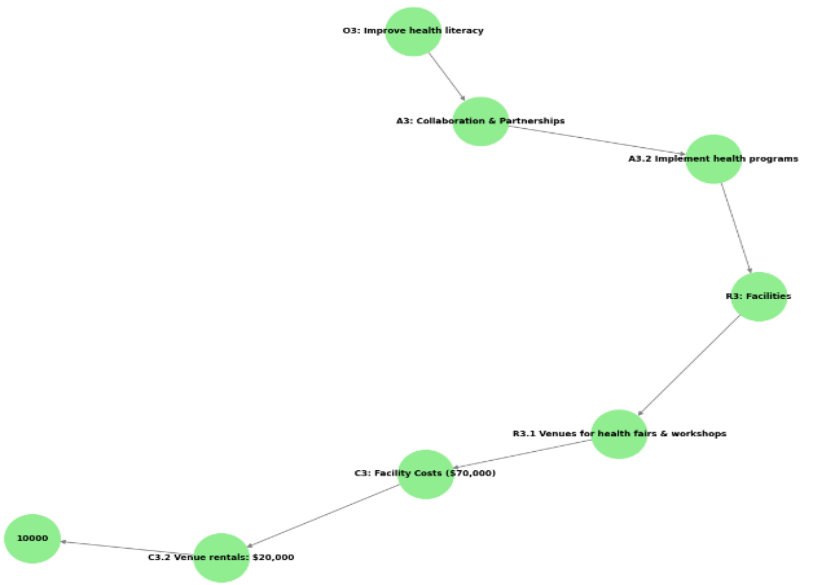
(r13)

Figure 6

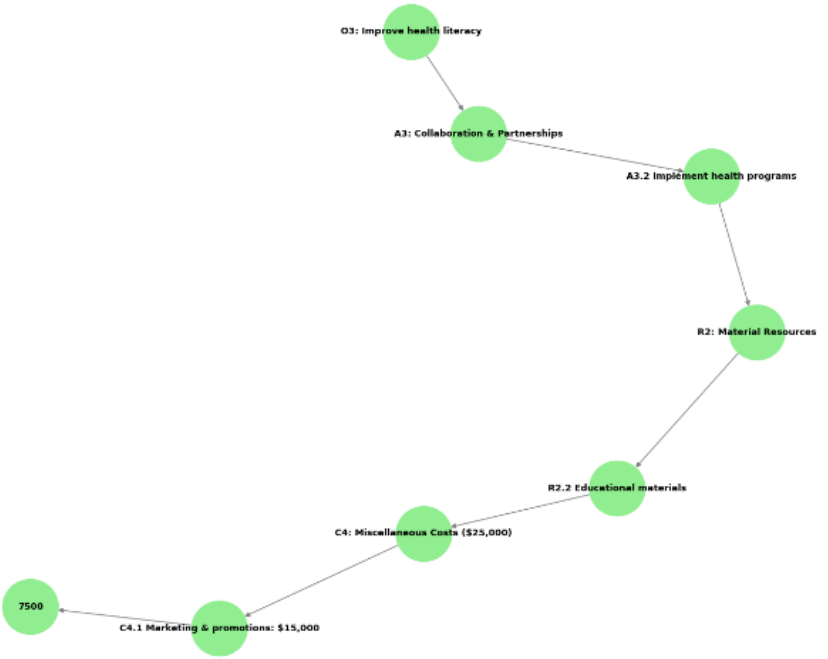
Directed Sub-Graphs of Each Row of Objective 3



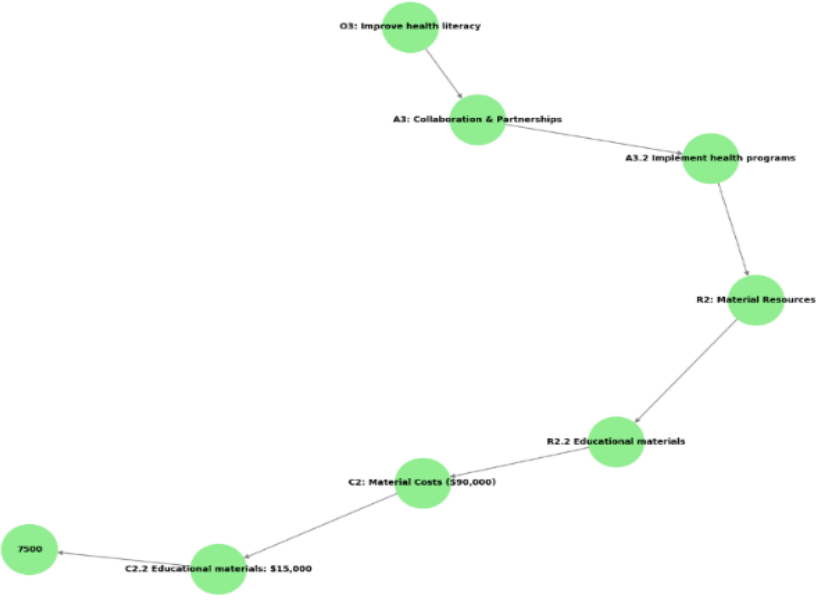
(r14)



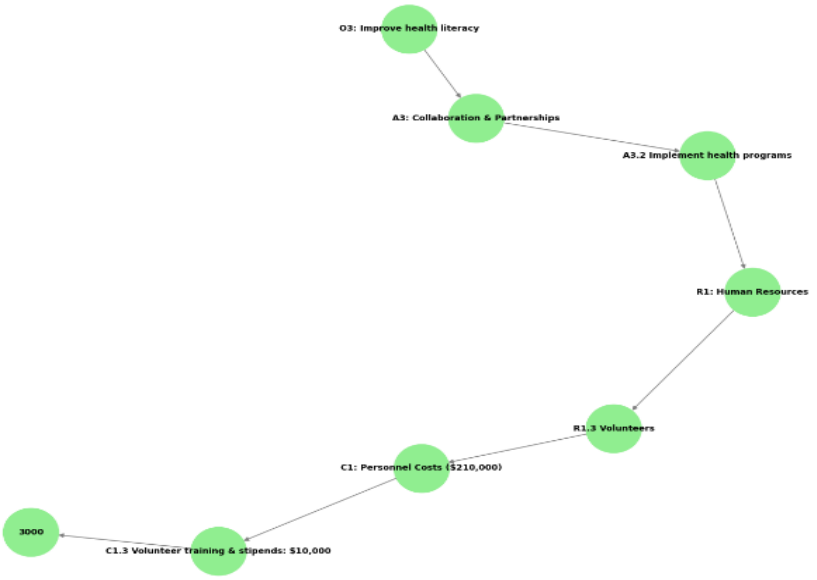
(r15)


O3: Improve health literacy
A3: Collaboration & Partnerships
A3.2 Implement health programs
R2: Material Resources
R2.2 Educational materials
C4: Miscellaneous Costs ($25,000)
7500
C4.1 Marketing & promotions: $15,000

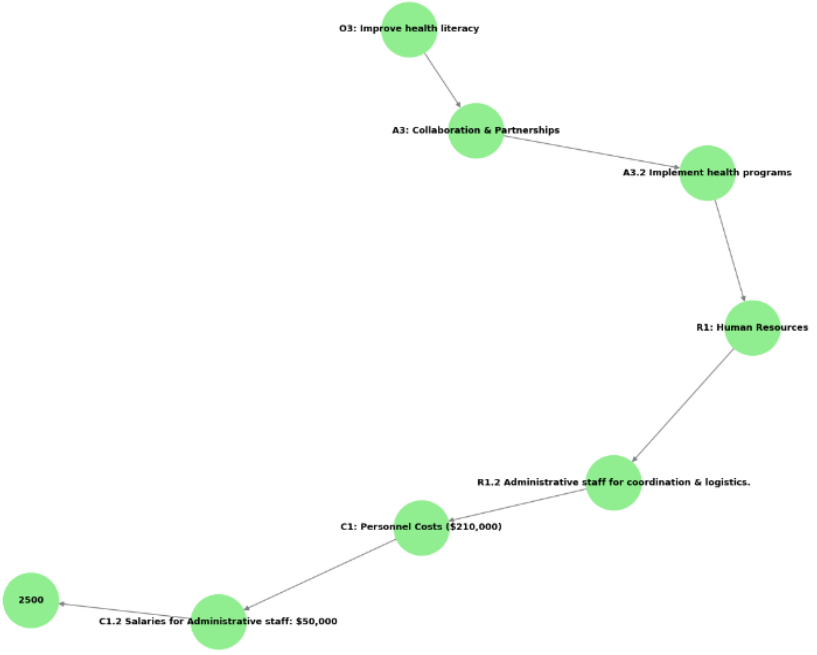
(r16)


O3: Improve health literacy
A3: Collaboration & Partnerships
A3.2 Implement health programs
R2: Material Resources
R2.2 Educational materials
C2: Material Costs ($90,000)
7500
C2.2 Educational materials: $15,000

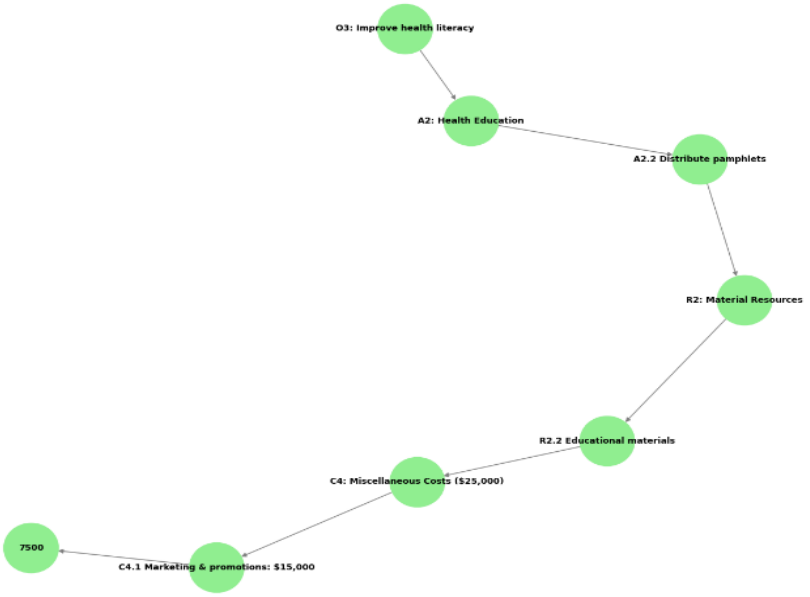
(r19)


O3: Improve health literacy
A3: Collaboration & Partnerships
A3.2 Implement health programs
R1: Human Resources
R1.3 Volunteers
C1: Personnel Costs ($210,000)
3000
C1.3 Volunteer training & stipends: $10,000

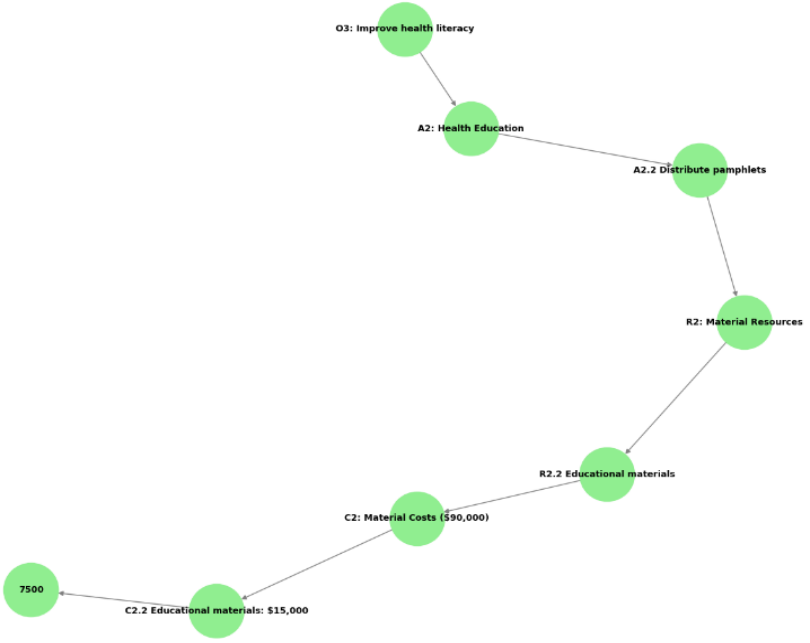
(r17)


O3: Improve health literacy
A3: Collaboration & Partnerships
A3.2 Implement health programs
R1: Human Resources
R1.2 Administrative staff for coordination & logistics.
C1: Personnel Costs ($210,000)
2500
C1.2 Salaries for Administrative staff: $50,000

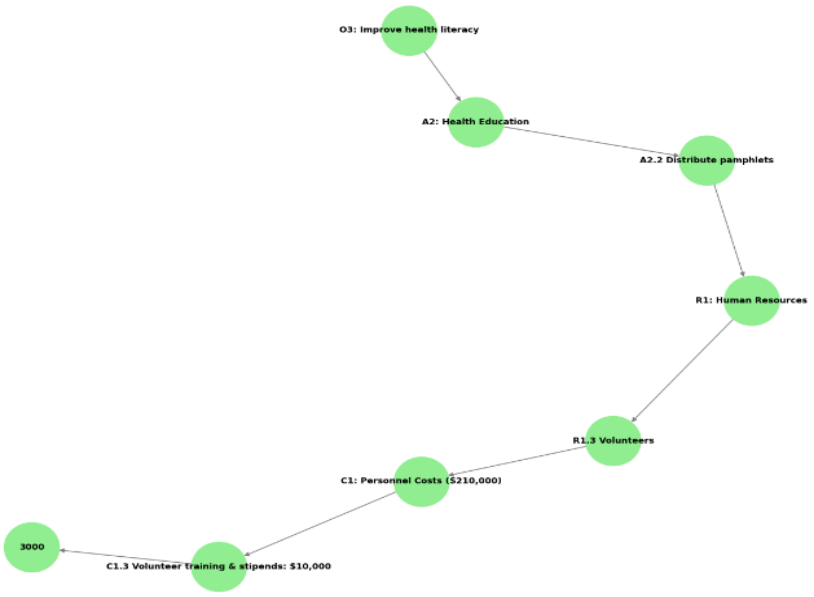
(r18)


O3: Improve health literacy
A2: Health Education
A2.2 Distribute pamphlets
R2: Material Resources
R2.2 Educational materials
C4: Miscellaneous Costs ($25,000)
7500
C4.1 Marketing & promotions: $15,000

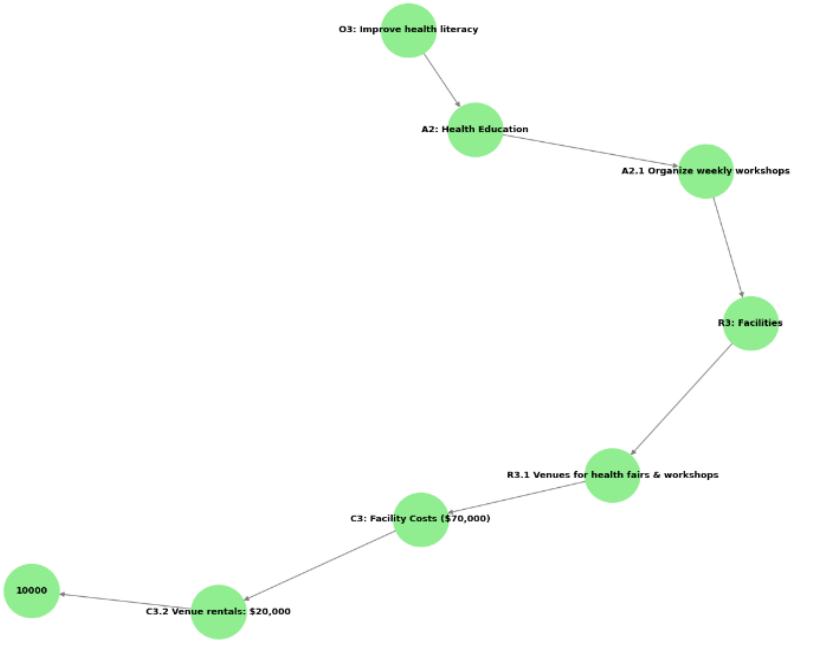
(r20)


O3: Improve health literacy
A2: Health Education
A2.2 Distribute pamphlets
R2: Material Resources
R2.2 Educational materials
C2: Material Costs ($90,000)
7500
C2.2 Educational materials: $15,000

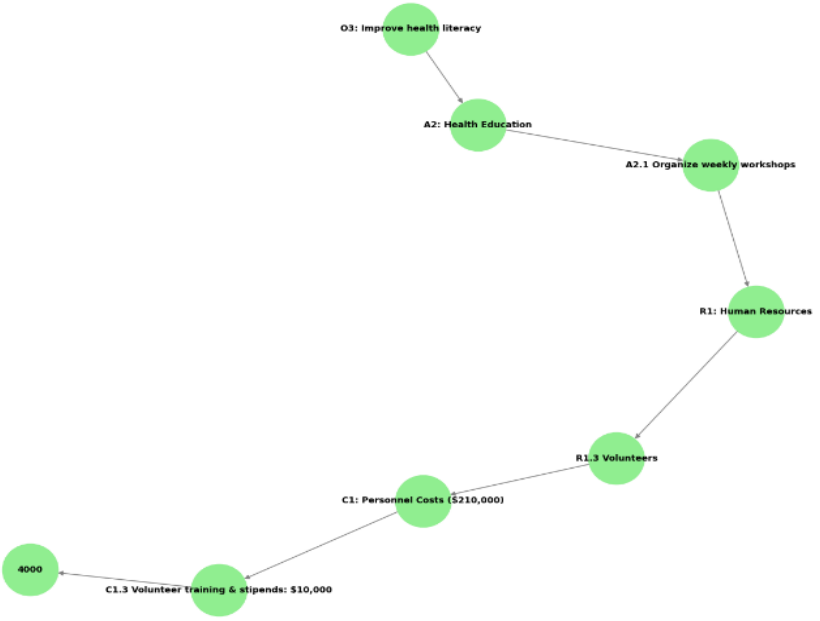
(r21)


O3: Improve health literacy
A2: Health Education
A2.2 Distribute pamphlets
R1: Human Resources
R1.3 Volunteers
C1: Personnel Costs ($210,000)
3000
C1.3 Volunteer training & stipends: $10,000

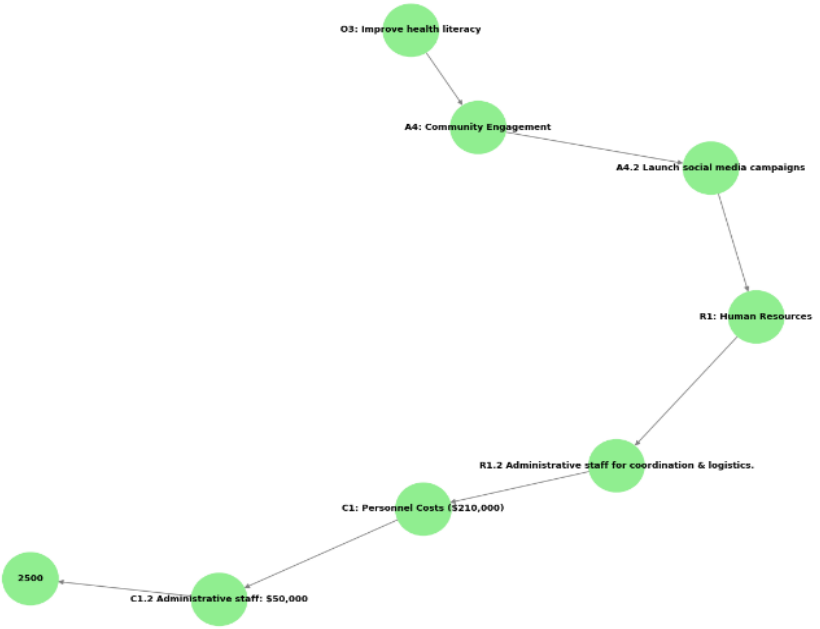
(r22)


O3: Improve health literacy
A2: Health Education
A2.1 Organize weekly workshops
R3: Facilities
R3.1 Venues for health fairs & workshops
C3: Facility Costs ($70,000)
10000
C3.2 Venue rentals: $20,000

(r23)


O3: Improve health literacy
A2: Health Education
A2.1 Organize weekly workshops
R1: Human Resources
R1.3 Volunteers
C1: Personnel Costs ($210,000)
4000
C1.3 Volunteer training & stipends: $10,000

(r24)


O3: Improve health literacy
A4: Community Engagement
A4.2 Launch social media campaigns
R1: Human Resources
R1.2 Administrative staff for coordination & logistics.
C1: Personnel Costs ($210,000)
2500
C1.2 Administrative staff: $50,000

(r25)

Directed Sub-Graphs Based on Personal Costs

The directed sub-graphs based on personal costs (*C1*) show the flow and directionality of budgetary allocations along with the path is:

objective → activity → sub-activity → resource → sub-resource → cost of resource → cost of sub-resource → amount in USD.

The personal costs (*C1*) are further divided further into three (3) sub-categories, i.e., salaries for healthcare professionals *(C1.1)*, salaries of administrative staff (*C1.2*), and volunteer training and stipends (*C1.3*). The directed sub-graphs not only follow the stated path but also defined the personal sub-costs associated with which relevant objective, as shown in Figure 7, providing a clear structured-visual approach that how the relevant resources are allocated, for understanding, strengthened the analysis and assisted in decision-making for public budgeting.

Directed Sub-Graphs Based on Material Costs

The directed sub-graphs based on material costs (*C2*) show the flow and directionality of budgetary allocations along with the path is:

objective → activity → sub-activity → resource → sub-resource → cost of resource → cost of sub-resource → amount in USD.

The material costs (*C2*) are divided further into three (3) sub-categories, i.e., medical supplies *(C2.1)*, educational materials (*C2.2*), and mobile clinic equipment (*C2.3*). The directed sub-graphs not only follow the stated path but also defined the material sub-costs associated with which relevant objective, as shown in Figure 8, providing a clear structured-visual approach that how the relevant resources are allocated, for understanding, strengthened the analysis and assisted in decision-making for public budgeting.

Directed Sub-Graphs Based on Facilities Costs

The directed sub-graphs based on facilities costs (*C3*) show the flow and directionality of budgetary allocations along with the path is:

objective → activity → sub-activity → resource → sub-resource → cost of resource → cost of sub-resource → amount in USD.

The facilities costs (*C3*) are divided further into three (3) sub-categories, i.e., office rentals *(C3.1)*, venue expenses (*C3.2*), and office expenses

(*C3.3*). The directed sub-graphs not only follow the stated path but also defined the facilities sub-costs associated with which relevant objective, as shown in Figure 9, providing a clear structured-visual approach that how the relevant resources are allocated, for understanding, strengthened the analysis and assisted in decision-making for public budgeting.

Directed Sub-Graphs Based on Miscellaneous Costs

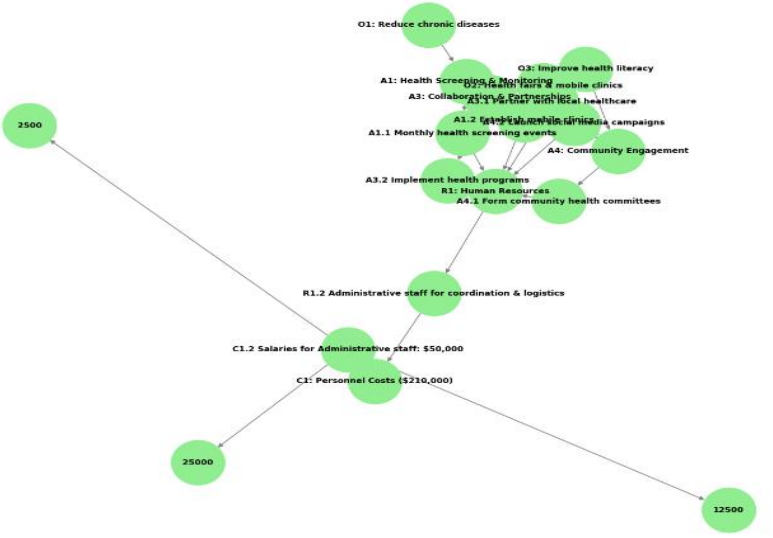
The directed sub-graphs based on miscellaneous costs (*C4*) show the flow and directionality of budgetary allocations along with the path is:

objective → activity → sub-activity → resource → sub-resource → cost of resource → cost of sub-resource → amount in USD.

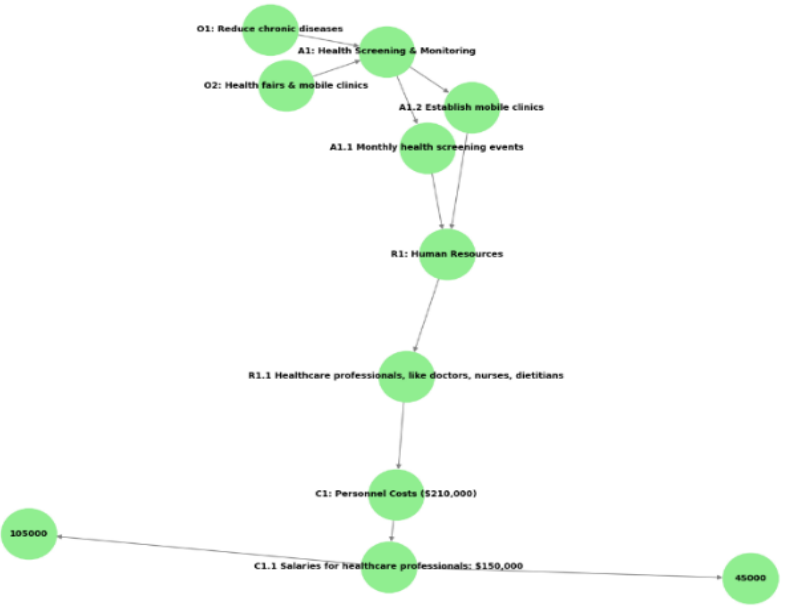
The miscellaneous costs (*C4*) are divided further into two (2) sub-categories, i.e., marketing and promotions *(C4.1)* and transportation and logistics (*C4.2*). The directed sub-graphs not only follow the stated path but also defined the miscellaneous sub-costs associated with which relevant objective, as shown in Figure 10, providing a clear structured-visual approach that how the relevant resources are allocated, for understanding, strengthened the analysis and assisted in decision-making for public budgeting.

Figure 7

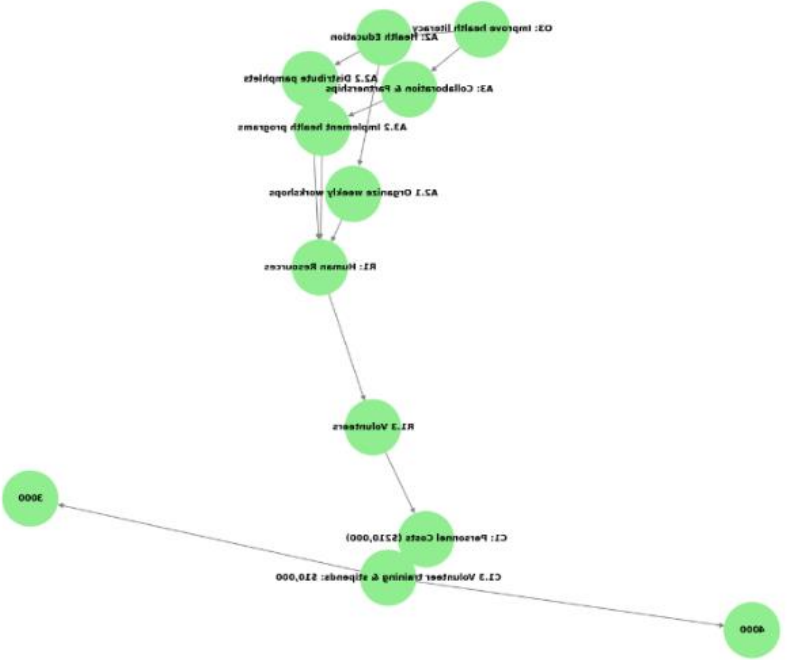
Directed Sub-Graphs based on Personal Costs



(C1.1)


O1: Reduce chronic diseases
A1: Health Screening & Monitoring
O2: Health fairs & mobile clinics
A1.2 Establish mobile clinics
A1.1 Monthly health screening events
R1: Human Resources
R1.1 Healthcare professionals, like doctors, nurses, dietitians
C1: Personnel Costs ($210,000)
105000
C1.1 Salaries for healthcare professionals: $150,000
45000

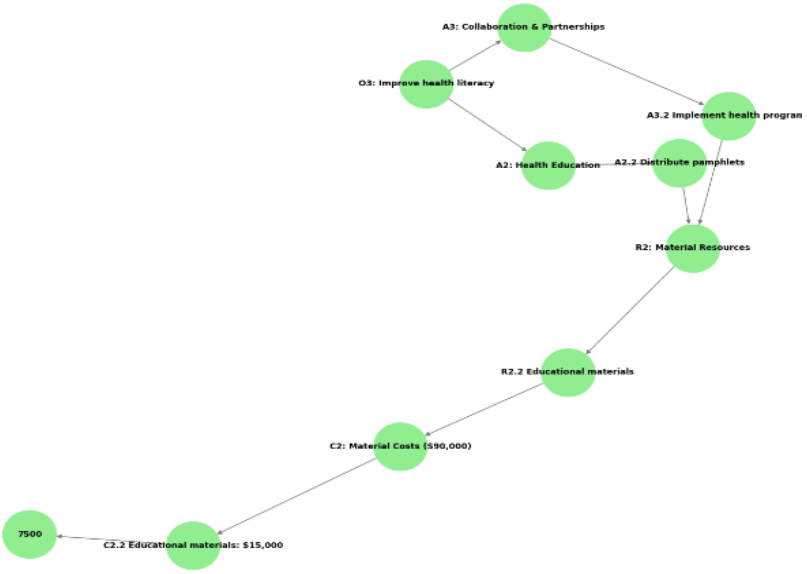
(C1.2)



(C1.3)

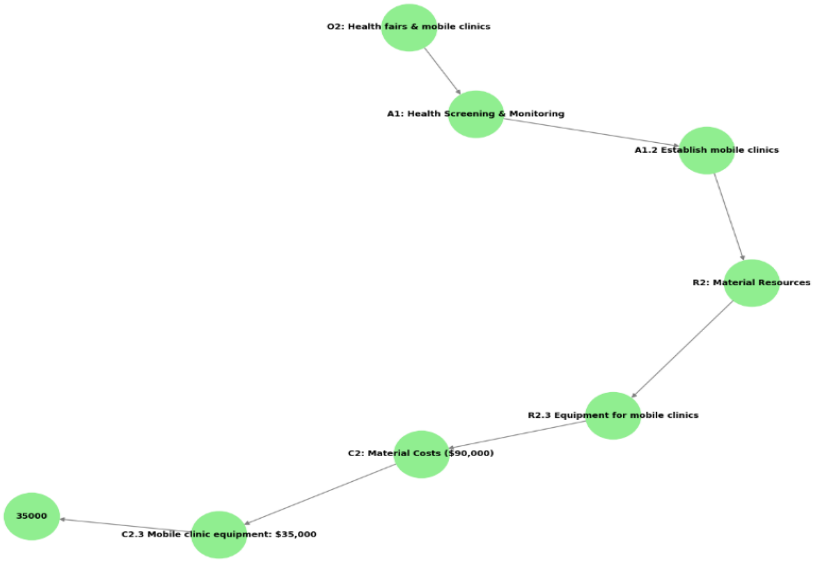
Figure 8

Directed Sub-Graphs based on Material Costs



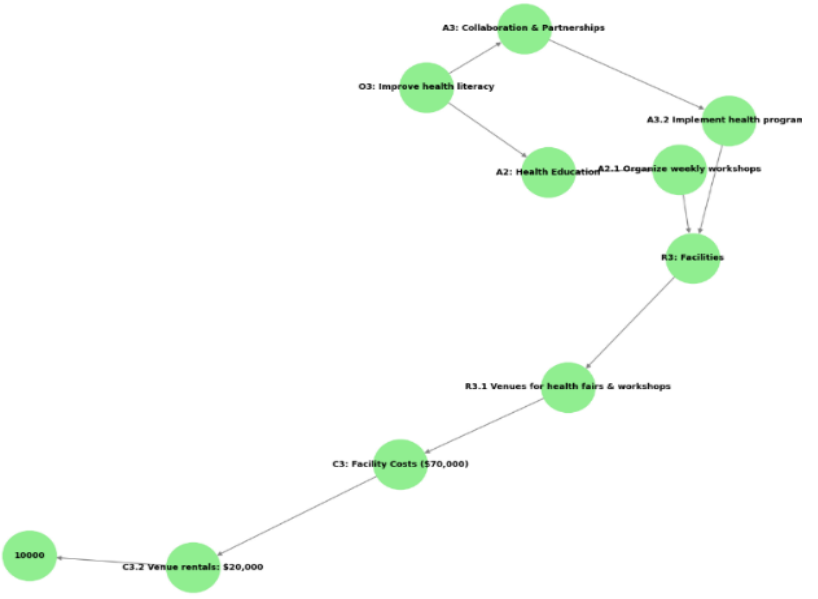
(C2.1)

(C2.2)

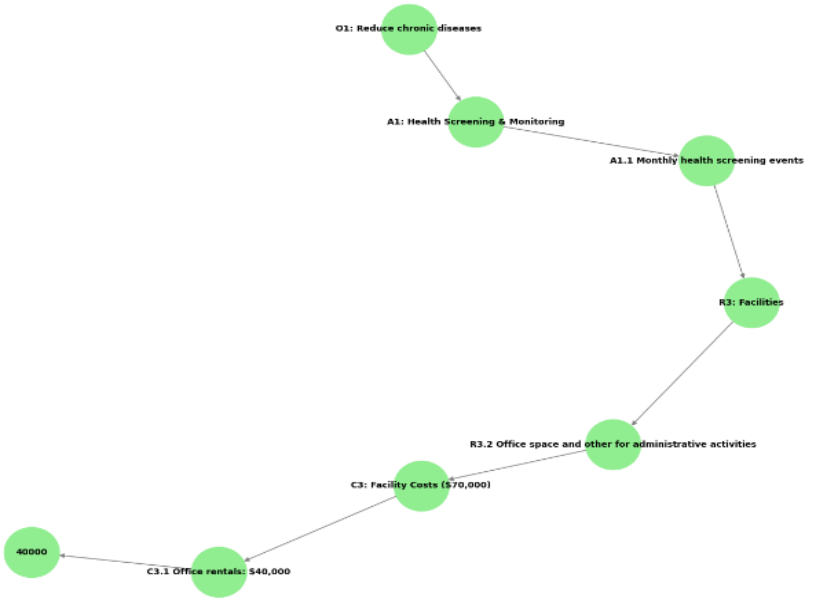


(C2.3)

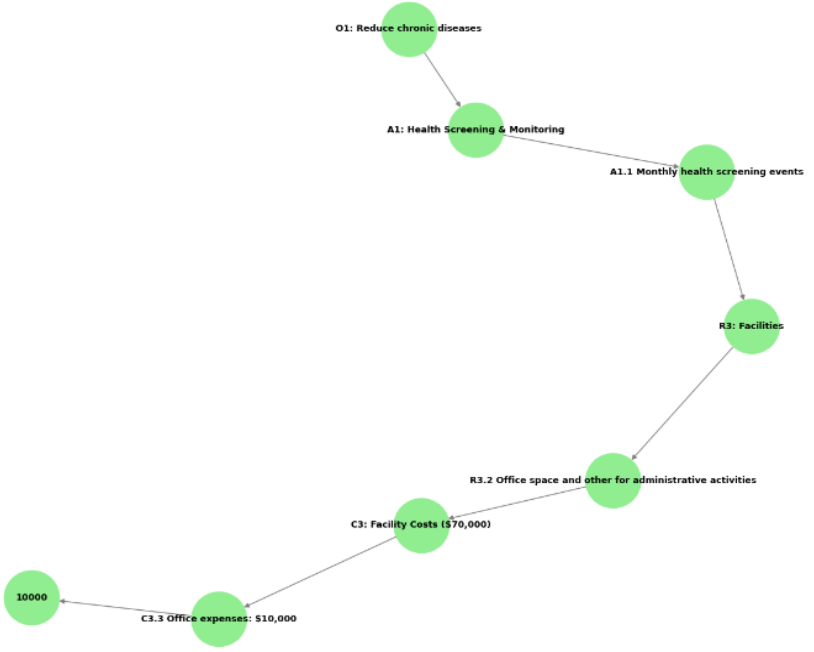
Figure 9
Directed Sub-Graphs based on Facilities Costs



(C3.1)


O1: Reduce chronic diseases
A1: Health Screening & Monitoring
A1.1 Monthly health screening events
R3: Facilities
R3.2 Office space and other for administrative activities
C3: Facility Costs ($70,000)
40000
C3.1 Office rentals: $40,000

(C3.2)


O1: Reduce chronic diseases
A1: Health Screening & Monitoring
A1.1 Monthly health screening events
R3: Facilities
R3.2 Office space and other for administrative activities
C3: Facility Costs ($70,000)
10000
C3.3 Office expenses: $10,000

(C3.3)

Proposition based on the Scenarios

Many public sector organizations' funds are based on government grants (Alford & O'Flynn, 2012). The maximum chances to cut the funds for such public sector organizations in the federal government in the name of the austerity drive are unprecedented decisions that lead to job losses and a substantial decrease in the service level (Bracci et al., 2015). Based on this logic, there is a maximum chance that the public sector organization will have to forgo its objective/s or activity/es because of limited resources.

In this scenario, if the government cuts the financial budget for any significant/ insignificant reason, how does the public sector organization survive by prioritizing the organization's objectives based on the cut of the fund? The DiGraphs will help track down the vertices and edges that lead to achieving the objective of the public sector organization. The three (3) different hypothetical scenarios are developed to understand the application of DiGraphs in the case of public sector budgeting, as shown in Table 4:

Table 4

Scenarios for DiGraphs

Scenarios	Range of Amount, Cut from funds
S1	Less than $50,000 or less than 12.5%
S2	greater than $50,000 to $100,000 or greater than 12.5% to 25%
S3	greater than 180,000 or greater than 45%

DiGraphs on Scenarios 1

In scenario 1 (*S1*), if the government cuts the financial budget by less than $50,000 or less than 12.5%, i.e., no fund support from corporate sponsorships (*F3 = $50,000*), the public sector organization will survive by prioritizing its objectives based on the cut in the fund's amount of *$50,000*. The directed sub-graphs *r19-r25*, show the directionality and the path is: *O3 → A3 → A3.2 → R1/R2/R3 → R1.2/R1.3/R2.2/R3.1 → C1/C2/C3 → C1.2/C1.3/C2.2/C3.2/C4.1 → $2,500/$3,000/$7,500/$10,000/$7,500 (Total $30,500)* and *O3 → A4 → A4.1/ A4.2 → R1 → R1.2 → C1 → C1.2 → $2,500/$2,500 (Total $5,000).* Based on the amount (*total $35,500*), the directed sub-graphs show which sub-resource cost and resource cost can be reduced, which sub-resource, resource, sub-activities, and activities can be dropped, and lastly, which objective is fully/partially not achievable, i.e.,

partially objective 3.

DiGraphs on Scenarios 2

In scenario 2 (*S2*), if the government cuts the financial budget by greater than $50,000 to $100,000 or greater than 12.5% to 25%, i.e., no fund support from corporate sponsorships (*F3 = $50,000*), and the community funding events (*F4 = $30,000*), the public sector organization will survive by prioritizing its objectives based on the cut in the fund's amount of *$80,000*. The directed sub-graphs *r14-r25*, show the directionality and the path is: *O3 → A2 → A2.1/A2.2 → R1/R2/R3 → R1.3/R2.2/ R3.1 → C1/C2/C3/C4 → C1.3/C2.2/C3.2/C4.1 → $4,000/$3,000/$7,500/$10,000/$7,500 (Total $32,000); O3 → A3 → A3.2 → R1/R2/R3 → R1.2/R1.3/R2.2/R3.1 → C1/C2/C3 → C1.2/C1.3/C2.2/C3.2/C4.1 → $2,500/$3,000/$7,500/$10,000/$7,500 (Total $30,500);* and *O3 → A4 → A4.1/ A4.2 → R1 → R1.2 → C1 → C1.2 → $2,500/$2,500 (Total $5,000).* Based on the amount (*total $67,500*), the directed sub-graphs show which sub-resource cost and resource cost can be reduced, which sub-resource, resource, sub-activities, and activities can be dropped, and lastly, which objective is fully/partially not achievable, i.e., partially objective 3.

DiGraphs on Scenarios 3

In scenario 3 (S3), if the government cuts the financial budget by greater than $180,000 or greater than 45%, i.e., no fund support from non-profit organizations (*F2 = $100,000*), corporate sponsorships (*F3 = $50,000*), and the community funding events (*F4 = $30,000*), the public sector organization will survive by prioritizing its objectives based on the cut in the fund's amount of *$180,000*. The directed sub-graphs *r7-r25*, show the directionality and the path is: *O2 → A1 → A1.2 → R1/R2 → R1.1/R1.2/R2.1/R2.3 → C1/C2/C4 → C1.1/C1.2/C2.1/C2.3/C4.2 → $45,000/$12,500/$12,000/$35,000/$3,000 (Total $107,500); O2 → A3/A4 → A3.1/A4.1 → R1 → R1.2 → C1 → C1.2 → $2,500/$2,500 (Total 5,000); O3 → A2 → A2.1/A2.2 → R1/R2/R3 → R1.3/R2.2/ R3.1 → C1/C2/C3/C4 → C1.3/C2.2/C3.2/C4.1 → $4,000/$3,000/$7,500/$10,000/$7,500 (Total $32,000); O3 → A3 → A3.2 → R1/R2/R3 → R1.2/R1.3/R2.2/R3.1 → C1/C2/C3 → C1.2/C1.3/C2.2/C3.2/C4.1 → $2,500/$3,000/$7,500/$10,000/$7,500 (Total $30,500);* and *O3 → A4 → A4.1/ A4.2 → R1 → R1.2 → C1 → C1.2 → $2,500/$2,500 (Total $5,000).*

Based on the amount (*total $180,000*), the directed sub-graphs show which sub-resource cost and resource cost can be reduced, which sub-resource, resource, sub-activities, and activities can be dropped, and lastly, which objective is fully/partially not achievable. Objective 2 (O2) and Objective 3 (O3) are not achievable because of the significant cuts of funds from the government or funding agencies.

Conclusion

There is a notable gap in theoretical evidence supporting the use of technical tools in public budgeting to facilitate real-world decision-making within the existing budget literature. The findings show that cognitive biases often prevent the political and administrative decision-makers from fully understanding both the theoretical and practical aspects of public budgeting to interpret complex budgeting information, resulting in suboptimal decisions. Unlike decision theory or public choice theory—which primarily focus on rational optimization and voter–politician interactions—impression management theory (IMT), directly addresses how information is presented and perceived. The current study demonstrated the budgeting process by using IMT, which enhanced the utility of the budgeting process to visualize complex relationships, identify critical vertices and edges, analyze the proper resource allocation, graphically communicate complex information, identify potential risks due to fund cuts, and support decision-making. This study tried to link the program objectives with the choices of alternative resource allocation for public sector organizations, based on the amount, the directed sub-graphs show which sub-resource cost and resource cost can be reduced, which sub-resource, resource, sub-activities, and activities need to be discontinued, and lastly, which objective is entirely/partially not achievable because of the significant cuts of funds from the government or funding agencies. A key indicative result shows that objective (*i.e., O2 & O3*) becomes only partially achievable when costs are reduced (*i.e. by more than 40%*), demonstrating the tool's ability to forecast the practical consequences of funding constraints.

The public budgeting heavily depends on how complex financial information is communicated to stakeholders. IMT, therefore provides a more appropriate and theoretically grounded lens for understanding how visualization shapes interpretation and decision-making. The DiGraph, the structured-visual technique, will help the political and administrative decision-makers while sanctioning and implementing the public budget,

developed by the treasurer or finance directors of the public sector organizations, enabling more transparency, helping the stakeholders visualize complex relationships and support decision-making. This technique will also help with effective collaboration, community engagement, securing sufficient funding, strengthening the fiscal discipline and monitoring and evaluation for public budgeting processes.

Author Contribution

Muhammad Irfan Javaid: conceptualization, investigation, methodology, resources, supervision, writing – original draft preparation, writing – review & editing. **Muhammad Imran Farooq:** data curation, formal analysis, software, writing – review & editing. **Muhammad Raza Iqbal:** validation, visualization, writing – review & editing.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

Data supporting the findings of this study will be made available by the corresponding author upon request.

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Appendix

Matrix for Directed Graphs

Row #	Objectives	Activities	Sub Activities	Resources	Sub Resources	Resources Cost	Sub Resources Cost	Cost in USD
r1	O1: Reduce chronic diseases	A1: Health Screening & Monitoring	A1.1 Monthly health screening events	R1: Human Resources	R1.1 Healthcare professionals, like doctors, nurses, dietitians	C1: Personnel Costs ($210,000)	C1.1 Salaries for healthcare professionals: $150,000	$ 105,000
r2	O1: Reduce chronic diseases	A1: Health Screening & Monitoring	A1.1 Monthly health screening events	R1: Human Resources	R1.2 Administrative staff for coordination & logistics	C1: Personnel Costs ($210,000)	C1.2 Salaries for Administrative staff: $50,000	$ 25,000
r3	O1: Reduce chronic diseases	A1: Health Screening & Monitoring	A1.1 Monthly health screening events	R2: Material Resources	R2.1 Medical supplies	C2: Material Costs ($90,000)	C2.1 Medical supplies: $40,000	$ 28,000
r4	O1: Reduce chronic diseases	A1: Health Screening & Monitoring	A1.1 Monthly health screening events	R3: Facilities	R3.2 Office space and other for administrative activities	C3: Facility Costs ($70,000)	C3.1 Office rentals: $40,000	$ 40,000
r5	O1: Reduce chronic diseases	A1: Health Screening & Monitoring	A1.1 Monthly health screening events	R3: Facilities	R3.2 Office space and other for administrative activities	C3: Facility Costs ($70,000)	C3.3 Office expenses: $10,000	$ 10,000
r6	O1: Reduce chronic diseases	A1: Health Screening & Monitoring	A1.1 Monthly health screening events	R3: Facilities	R3.2 Office space and other for administrative activities	C4: Miscellaneous Costs ($25,000)	C4.2 Transportation & logistics: $10,000	$ 7,000
r7	O2: Health fairs & mobile clinics	A1: Health Screening & Monitoring	A1.2 Establish mobile clinics	R1: Human Resources	R1.1 Healthcare professionals, like, doctors, nurses, dietitians	C1: Personnel Costs ($210,000)	C1.1 Salaries for healthcare professionals: $150,000	$ 45,000
r8	O2: Health fairs & mobile clinics	A1: Health Screening & Monitoring	A1.2 Establish mobile clinics	R1: Human Resources	R1.2 Administrative staff for coordination &	C1: Personnel Costs ($210,000)	C1.2 Salaries for Administrative staff: $50,000	$ 12,500

Row #	Objectives	Activities	Sub Activities	Resources	Sub Resources	Resources Cost	Sub Resources Cost	Cost in USD
					logistics			
r9	O2: Health fairs & mobile clinics	A1: Health Screening & Monitoring	A1.2 Establish mobile clinics	R1: Human Resources	R1.2 Administrative staff for coordination & logistics	C4: Miscellaneous Costs ($25,000)	C4.2 Transportation & logistics: $10,000	$ 3,000
r10	O2: Health fairs & mobile clinics	A1: Health Screening & Monitoring	A1.2 Establish mobile clinics	R2: Material Resources	R2.1 Medical supplies	C2: Material Costs ($90,000)	C2.1 Medical supplies: $40,000	$ 12,000
r11	O2: Health fairs & mobile clinics	A1: Health Screening & Monitoring	A1.2 Establish mobile clinics	R2: Material Resources	R2.3 Equipment for mobile clinics	C2: Material Costs ($90,000)	C2.3 Mobile clinic equipment: $35,000	$ 35,000
r12	O2: Health fairs & mobile clinics	A3: Collaboration & Partnerships	A3.1 Partner with local healthcare	R1: Human Resources	R1.2 Administrative staff for coordination & logistics	C1: Personnel Costs ($210,000)	C1.2 Salaries for Administrative staff: $50,000	$ 2,500
r13	O2: Health fairs & mobile clinics	A4: Community Engagement	A4.1 Form community health committees	R1: Human Resources	R1.2 Administrative staff for coordination & logistics	C1: Personnel Costs ($210,000)	C1.2 Salaries for Administrative staff: $50,000	$ 2,500
r14	O3: Improve health literacy	A2: Health Education	A2.1 Organize weekly workshops	R1: Human Resources	R1.3 Volunteers	C1: Personnel Costs ($210,000)	C1.3 Volunteer training & stipends: $10,000	$ 4,000
r15	O3: Improve health literacy	A2: Health Education	A2.1 Organize weekly workshops	R3: Facilities	R3.1 Venues for health fairs & workshops	C3: Facility Costs ($70,000)	C3.2 Venue rentals: $20,000	$ 10,000
r16	O3: Improve health literacy	A2: Health Education	A2.2 Distribute pamphlets	R1: Human Resources	R1.3 Volunteers	C1: Personnel Costs ($210,000)	C1.3 Volunteer training & stipends: $10,000	$ 3,000
r17	O3: Improve health literacy	A2: Health Education	A2.2 Distribute pamphlets	R2: Material Resources	R2.2 Educational materials	C2: Material Costs ($90,000)	C2.2 Educational materials: $15,000	$ 7,500

Row #	Objectives	Activities	Sub Activities	Resources	Sub Resources	Resources Cost	Sub Resources Cost	Cost in USD
r18	O3: Improve health literacy	A2: Health Education	A2.2 Distribute pamphlets	R2: Material Resources	R2.2 Educational materials	C4: Miscellaneous Costs ($25,000)	C4.1 Marketing & promotions: $15,000	$ 7,500
r19	O3: Improve health literacy	A3: Collaboration & Partnerships	A3.2 Implement health programs	R1: Human Resources	R1.2 Administrative staff for coordination & logistics.	C1: Personnel Costs ($210,000)	C1.2 Salaries for Administrative staff: $50,000	$ 2,500
r20	O3: Improve health literacy	A3: Collaboration & Partnerships	A3.2 Implement health programs	R1: Human Resources	R1.3 Volunteers	C1: Personnel Costs ($210,000)	C1.3 Volunteer training & stipends: $10,000	$ 3,000
r21	O3: Improve health literacy	A3: Collaboration & Partnerships	A3.2 Implement health programs	R2: Material Resources	R2.2 Educational materials	C2: Material Costs ($90,000)	C2.2 Educational materials: $15,000	$ 7,500
r22	O3: Improve health literacy	A3: Collaboration & Partnerships	A3.2 Implement health programs	R2: Material Resources	R2.2 Educational materials	C4: Miscellaneous Costs ($25,000)	C4.1 Marketing & promotions: $15,000	$ 7,500
r23	O3: Improve health literacy	A3: Collaboration & Partnerships	A3.2 Implement health programs	R3: Facilities	R3.1 Venues for health fairs & workshops	C3: Facility Costs ($70,000)	C3.2 Venue rentals: $20,000	$ 10,000
r24	O3: Improve health literacy	A4: Community Engagement	A4.1 Form community health committees	R1: Human Resources	R1.2 Administrative staff for coordination & logistics.	C1: Personnel Costs ($210,000)	C1.2 Administrative staff: $50,000	$ 2,500
r25	O3: Improve health literacy	A4: Community Engagement	A4.2 Launch social media campaigns	R1: Human Resources	R1.2 Administrative staff for coordination & logistics.	C1: Personnel Costs ($210,000)	C1.2 Administrative staff: $50,000	$ 2,500