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A Proposed Framework of Implementing Balanced Scorecard in Enhancing Total Value Chain and Overall Strategic Performance: A Case Study Applied in Public Hospitals as Non-Profit and Government Organizations (NPGOs)

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ABSTRACT

Title: A Proposed Framework of Implementing Balanced Scorecard in Enhancing Total Value Chain and Overall Strategic Performance: A Case Study Applied in Public Hospitals as Non-Profit and Government Organizations (NPGOs)

Background: Major advances in the Healthcare Sector have resulted in a rapid and continuous changing rate that is necessary for enhancing strategic performance to offer patients higher value from what they require from Public Hospitals to provide better service. Existing information indicates that Hospitals can use Balanced Scorecard (BSC) to outperform those lacking a structured Strategic Performance Management (SPM) method. By working and directing Hospital Total Value Chain (HTVC), resources are distributed efficiently helping stay up to date with new and major developments and enhancing strategic performance. Joining the primary and support activities of HTVC with the four perspectives of the BSC enables the measurement of the correct functioning of the hospital— including financial as well as non-financial performances and its appraisal—that follows up to be done in the Healthcare Sector. Results of this paper propose a new framework by BSC that provides Key Performance Indicators (KPIs) to help measure, evaluate, and get feedback of HTVC and eventually enhance Strategic Performance of the hospital.

Purpose: The research aims to propose a Framework of Implementing Balanced Scorecard in Enhancing Total Value Chain and Overall Strategic Performance.

Design/Methodology/ Approach/Method/Tool: The research adopted Problem Solving Approach. Based on that, the Constructive Approach was used to develop the proposed framework to serve the research purpose. A Case Study was applied as a research method

using Analytical Hierarchy Process (AHP) tool on Tanta University Educational Hospital to clarify the applicability of the proposed framework. The research data was based on interviews, observations, and questionnaires to gather all necessary data.

Findings: The applicability of Value Chain differs as Value Chains differ from one organization to another, leading to customization of Value Chain models, especially in Hospitals and Healthcare Sector, making the use of Balanced Scorecard provide necessary and suitable indicators to help enhance Total Value Chain (TVC) and accordingly enhance Overall Strategic Performance.

Originality: This research provides a fertile ground for paying more attention to NPGOs and looks forward to enhancing their value-creation process provided for patients, as to enhance their TVC as to enhance their Overall Strategic Performance, using BSC as a vital tool for measurement and evaluation of performance, depending on AHP as a decision making process to rank necessary KPIs of their relative importance (weight).

KeyWords : Balanced Scorecard (BSC); Hospital Value Chain (HVC); Healthcare Value Chain (HCVC); Hospital Total Value Chain (HTVC); Strategic Performance Management (SPM); Analytical Hierarchy Process (AHP).

1.Introduction

Value is the feature of performance for the service desired by patients as it's a necessary requirement in the Healthcare Sector. A hospital in a Healthcare Sector carries out a series of activities in a Hospital Value Chain (HVC) to provide services to all patients. HVC looks at how the prevailing value-adding activities connect. Moreover, the organization's contributions to the sector in the form of a useful service run a spectrum of activities (Porter, 2011)

Even though BSC metrics were created upon strategic goals within four perspectives, it doesn't show environmental circumstances. Overall, performance evaluation mainly manages the outcome and one of its core goals is to lessen and eradicate general variations in services provided (Kopecka, 2015).
Different organizations around the world undoubtedly started using strategic evaluation tools including the BSC once they realized it can help improve their performance and support create value, specify objectives, and help measure and evaluate overall strategic performance (Quesado,*et al.,* 2018).
Therefore, BSC became a vital instrument to assist in measuring hospitals' performance, thereby allowing it to improve its operations and give greater value to patients.
Starting with HVC reflected in value-creating activities the hospital carries out internally to provide service for patients, then moving outside the hospital to HCVC reflected in value-creating activities other hospitals carry out within the same sector, and finally to HTVC reflected in value-creating activities with patients. Through connecting each view of the four perspectives with the relevant activities in TVC, the following figure demonstrates how the interaction between BSC and TVC could be achieved via inter-relationships.

2. Research Framework

2.1 Research Problem

Public Hospitals, which are Non-profit and Government Organizations (NPGOs), are paying attention only to the measurement of financial metrics even with the fierce competition of this day; not integrating financial metrics with non-financial ones caused others to fall from enhancing their strategic performance. Consequently, hospitals must assess their non-financial and financial performance since this appraisal has enabled organizations to stay up to date with recent developments. Integrating financial and non-financial metrics raised the level of organizational performance.

Therefore, this study focuses on making allowance for a rich field of research where HTVC and BSC can work together to run the organization effectively and enable performance measurement and evaluation for enhancing strategic performance. The planning and management of hospital performance depends significantly on the BSC, which together with the HTVC adds worth to the organization and customer requirements.

2.2 Research Objectives

The main goal of this research is to integrate HTVC with the BSC for a comprehensive evaluation of an organization's strategic performance which can be done through the following:

- Link BSC's four perspectives with HTVC Activities.

- Measure performance of HTVC Activities using previous measures.

- Assess strategic performance through integration.

2.3 Research Significance

This research will help to:

1. Integrate the HTVC activities with the BSC for a comprehensive assessment and evaluation of an organization's overall strategic performance.

2. Improve the strategic performance of the organization.

3. Literature Review

3.1 Studies related to Balanced Scorecard:

- Kaplan & Norton (2001)

This study introduced the BSC to be used as a method and tool for converting and translating strategy into real life actions, making it possible to help measure overall organizational performance. BSC works through measuring both financial and non-financial perspectives of the performance of an organization, which works as a vital method and tool in developing organizational strategies. Strategies focus on maximizing and delivering value to

customers and satisfying them through a set of distinctive attributes in products, better prices, and high-quality services. It revolves around the customer side retaining current customers and acknowledging new customers. Therefore, maintaining a strong relationship with customers is vital. This part is considered the outcome for every profit-seeking organization. Based on customer needs, each organization can increase value through increasing revenues and its productivity. But the researcher noticed that while foundational, the original model's, introduced by this study, heavy emphasis on customer retention and financial outcomes has been criticized for being less adaptable to public or non-profit organizations such as hospitals, where social value and patient well-being may take precedence over profit metrics.

(El-Shishini, 2001)

This study aimed to identify the different aspects of BSC. These different aspects include integrating and merging both financial and non-financial performance measures; assigning those measures to the perspectives of BSC (BSC usage); calculating and examining the relative rank (weight) assigned to the four perspectives; forming questions on the purpose of applying and using BSC. Although this work provided conceptual clarity, it lacked empirical validation, particularly in healthcare contexts where weighting perspectives can be subjective and politically influenced.

(Nicolaides, 2006)

The study explained that in the service sector, there are different management responsibilities and duties for the daily running operations. The study adds that there is no conflict between both leadership and management, as they both go alongside each other. This analysis is considered constructive for the development of management because there have been many questions asked by managers as they need positive and constructive relationships with employees to help grow as a community in the workplace as this can't happen by itself. Connected to today's different approaches of refining business performance, performance measurement must be analyzed using a BSC context. Although insightful, the study did not operationalize these relationships into measurable BSC indicators, limiting its applicability for performance tracking.

(Poureisa,*et al.,* 2013)

This study added that for an organization to be successful it needs to evaluate its performance as it does not only depend on the financial part but also performs them with the other perspectives. The work reaffirmed existing BSC principles but contributed little in terms of sector-specific adaptation, leaving a gap in practical application to hospital environments.

(Wang & Chang, 2013)

This study aimed to show that a BSC functions to scale performance and focuses on end results in terms of them being comprehensive and safely assessed but the term "safe" was underexplored, and the study lacked clarity on how safety integrates into specific metrics, especially for healthcare institutions.

(Cunha Callado & Jack,2015)

This study aimed to explain the Learning and Growth Perspective which includes different information systems to be developed, developing employee motivation strategies, management efficiency plans, employee training programs, achieving customer satisfaction, risk assessment and management, and technological development. The perspective was treated in isolation, without considering how improvements in learning and growth cascade into measurable patient outcomes or cost efficiency.

(Sahiti,*et al*., 2016)

This study aimed to show that the vision of the organization ensures the focus to be on the infrastructure that needs to be developed for long-term and continuous improvement through enhancing organizational work to meet the requested demands. The study's long-term orientation is valuable, but it overlooked short-term performance trade-offs, which are critical in dynamic healthcare settings.

(Balfaqih,*et al*,. 2016)

This study explained the Learning and Growth perspective as managers need to focus on important internal processes, which help them meet their customers' demands. Internal business processes need to be identified and selected based on various business processes with a strong effect on customer satisfaction. Using BSC as a useful strategic tool in business processes helps with the performance measurement in the organization, focusing on adding value for customers and enhancing the effectiveness of activities. The study's approach assumes process improvements directly translate to satisfaction, which may not hold in complex service sectors like healthcare without patient-centric outcome measures.

(Arzamastseva & Khayrullina, 2017)

This study introduced BSC to be a concept of Strategic Management for an organization, relating that to its operations and overall strategic performance. The work remained largely conceptual, offering limited guidance on operationalizing BSC in multi-departmental organizations like hospitals.

(Iranzadeh,*et al*., 2017)

This study defined BSC as a system for performance evaluation, consisting of the strategies employed in the perspectives. BSC also helps the organization transfer their strategies through a set of operational objectives, where financial perspective should be the focus of the administration through managing customers, internal processes, and innovation. Overemphasis on financial outcomes could conflict with healthcare's quality-of-care priorities.

(Chimtengo,*et al*., 2017)

This study focused on how managers can be provided with an overall assessment through the BSC perspectives. The study did not address how assessment results are translated into concrete process changes.

(El-Helbawy & El-Nashar, 2022)

BSC was used to conduct what so called "Strategic Responsibility Accounting" appeared because we need to translate the Firm's strategy into performance measures. The Features of BSC (BSC) include the following: (1) BSC is a management accounting report that includes critical success factors (CSFs) in four perspectives (2) BSC can be used to translate Strategy into performance measures (3) BSC integrate financial measures and non-financial measures through four perspectives, which are used to create competitive advantage. While innovative, the approach may be challenging to implement in public hospitals where departmental autonomy is limited.

3.2 Studies related to Value Chain:

3.2.1 Studies related to Hospital Value Chain and Hospital Total Value Chain

(Pitta & Laric, 2004)

This study introduced the VC framework of hospitals and continued with that even though they are services, healthcare services differ from other types of services in several ways but are still considered the most important type of service, due to the level of customization provided, the degree of customer participation, and the uncertainty underlying the basic process.
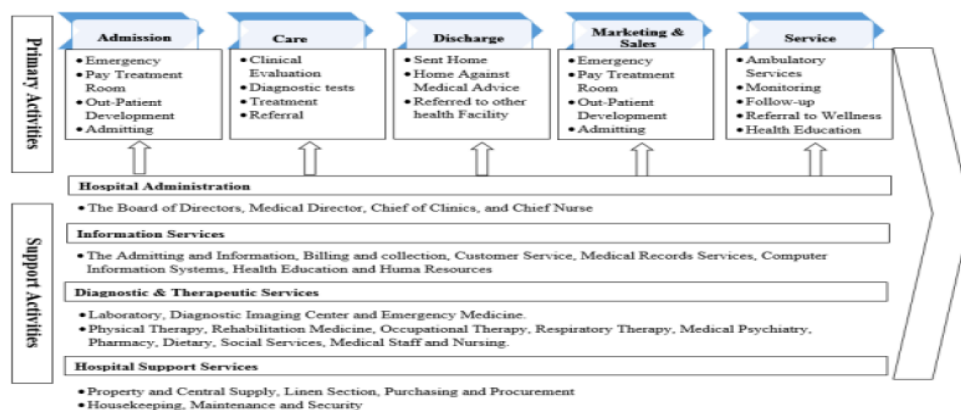
Figure 1: Value Chain Framework of Hospital
Source: Pitta et Laric (2004)

The framework is conceptually useful but remains largely descriptive. It does not test whether mapping activities improves outcomes or costs.

(Kaplan & Porter, 2011)

This study stated that as the opposite to the manufacturing sector, few VCs have been developed in the service industry, and healthcare in particular. Treatment of a patient regarding providing healthcare services demands enough necessary resources to operate, including people as doctors and employees, modern equipment, suitable space, and necessary supplies, all of which have different capabilities and costs. Strong diagnosis of the problem through this research, but it stops short of specifying how to measure "value" across episodes of care or allocate costs in multi-department, which is an issue acute in teaching hospitals.

(Weissinger, 2014)

This study helped with introducing a model for HVC that indicates the different types of activities involved in a service provided by the hospital. Primary hospital activities are assumed to be around the stages of treatment that patients go through known as 'patient flow'. Primary activities include admission, diagnosis, treatment, and discharge processes, and post- treatment care. As a result, a modified version of the VC is required, particularly in the case of healthcare services, which are distinct from other types of services as they are more complex in nature and require the presence of skilled professionals since they are technical and specialized services that deal with human lives.
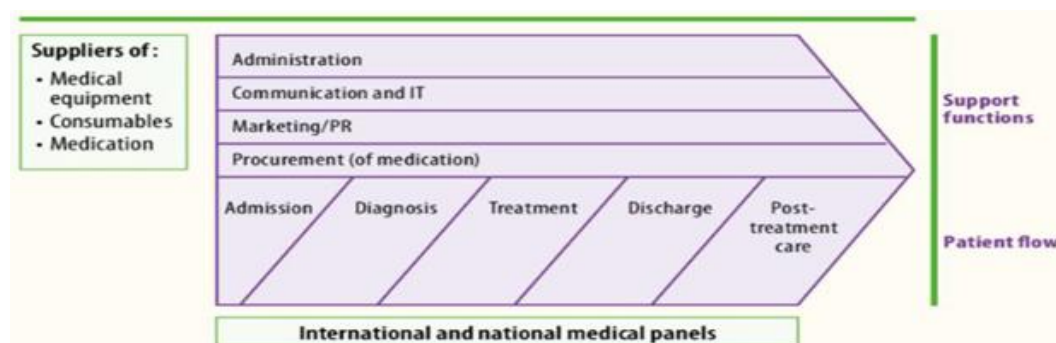

Figure 2: Hospital Value Chain
Source: Weissinger (2014)

Although the improvements, the model assumes linearity and does not specify linkages to clinical outcomes or patient-reported outcomes.

(Porter,*et al*., 2021)

This study stated that resources are used in processes starting with a patient's first contact with the organization, going through treatments, then administrative processes until the whole process of patient's care and treatment is completed, as all these activities are necessary to create value for patients with specific medical needs and represent the VC in the healthcare context. Conceptual breadth is a strength, but the study still lacks empirical tests in hospitals.

(Badri & Annabi ,2023)

This study added that Primary activities differ from the generic VC model, as these activities represent the patient's path from the minute he arrives and remain unchanged in healthcare services where Supporting activities of Porter's generic VC have been agreed to remain unchanged in healthcare services. This research lacked that support functions (HR, IT, procurement) in hospitals often must be reconfigured. Treating them as "unchanged" may underestimate their role in value creation.

3.2.2 Studies related to Healthcare Value Chain

(The Institute of Medicine IOM, 2009)

For a better understanding of what value means in healthcare services, figured that there wasn't an agreement about a single and agreed-upon definition of value. The institute concluded that value is a relative concept and changes from one perspective to another, which can be defined by each stakeholder in the healthcare field based on his or her point of view. This can be helpful in a general form, but this cannot be applied in Healthcare.

(Michael Porter, 2010)

This study proposed that the overall goal of healthcare should be to increase value for patients (as a strategic goal for enhancing strategic performance), where value is perceived as health outcomes (quality of care) which is achieved per dollar spent (cost of care).

(Marzorati & Pravettoni ,2017)

This study stated that Health outcomes are divided into two groups, first they are an improvement of the medical status, second, they are changes in how the patient perceive illness, as the overall cost of treatment process over the course of the healthcare process are known as "costs" components. Yet, the research still doesn't prescribe measures or data capture methods.

(Seixas,*et al.,* 2019)

This study stated that M. Porter's definition mainly concentrated on maximizing health gains and value provided for patients in return for costs. The research agreed with Porter, but still normative and doesn't describe how to focus on quality.

(Franklin,*et al*., 2019)

This study stated that Value is regarded as a changing term, with no agreed-upon definition because of the wide range of frameworks and contexts in which it emerges.

3.3 Value Chain and Balanced Scorecard:

- Martin (2005)

This study aimed to explain that VC is used to select the required performance of the appropriate in providing services to its customers (patients). Adding to that it is also used to make sure that the handling of resources alongside other processes improving how to utilize resources is performed well. Activities within each organization's chain are selected for providing services. Implementing organization's strategy is represented by the VC of each organization. It also mentioned that the VC of each organization differs with different elements of providing service or difference in patient base, and different geographical regions. Therefore, Performance Measurement is important for managing organizations by directing VC activities with a BSC. This research still lacks implementation as how to map VC activities to BSC perspectives.

- Kaplan (2010)

    This study added that: identifying KPIs, tracking performance, and evaluating overall performance across multiple financial and non-financial perspectives through using BSC in managing reports and monitoring performance and orders. are crucial steps for the success of any organization. Yet, this research didn't offer how to align between BSC and TVC.

- Lawson *et al.* (2015)

    This study focused on assessing strategic performance, which depends on necessary information to be used at determining at which level overall objectives to be achieved, making decisions alongside providing solutions for problems and weaknesses making a space for growth. Yet, the study still didn't offer integration between BSC and VC activities.

- Chimtengo *et al.* (2017)

    This study aimed to ensure that time of processes, quality of products and services, financial efficiency and dependency, human resources management, and customer satisfaction are considered as the key performance dimensions. Although, the study does not specify cause–effect relationships (e.g., how HR training → shorter diagnostic time → fewer complications → lower cost per episode), limiting its utility for strategy maps.

- Mjongwana & Kamala (2018)

    This study aimed to add that both financial and non-financial perspectives and performances of any organization can be determined through merging the two techniques, helping in selecting appropriate measurement tools and enhancing organizational performance. This study lacked empirical validation in hospital and healthcare sectors.

3.4 Research Gap

   The reviewed literature demonstrates that both the Balanced Scorecard (BSC) and the Value Chain (VC) have been widely studied as independent strategic management tools for measuring and enhancing organizational performance. Numerous studies (e.g., Kaplan & Norton, 2001; El-Shishini, 2001; Wang & Chang, 2013) have explored the theoretical and practical applications of the BSC, highlighting its ability to integrate financial and non-financial performance measures. Similarly, research on Value Chain (e.g., Porter, 1985; Kaplan & Porter, 2011; Weissinger, 2014) has emphasized its role in identifying, structuring, and optimizing activities that create value, with healthcare-specific models adapted for hospitals and healthcare services.

   However, despite the acknowledged importance of both frameworks, the literature reveals limited integration between the BSC and VC approaches. Existing studies addressing their relationship (e.g., Martin, 2005; Mjongwana & Kamala, 2018) focus primarily on using BSC to monitor VC activities or to improve resource utilization, but few propose a comprehensive

framework that systematically links VC activities—particularly Primary Activities—to BSC perspectives in a way that directly targets Strategic Performance enhancement.

Furthermore, most prior work is sector-specific—focusing either on manufacturing or service industries—but rarely applies an integrated approach that addresses both contexts. Within healthcare, while hospital-specific VC adaptations exist, the combination of BSC and VC in a unified model to measure and improve the Total Value Chain (TVC) has received little empirical attention, especially when incorporating external environment factors and inter-organizational relationships into performance evaluation.

This gap indicates the need for research that not only bridges the theoretical divide between BSC and VC but also proposes an integrated framework applicable to both manufacturing and service organizations, with empirical application in healthcare as a service sector. This would provide a more holistic, strategic approach to performance measurement and value creation.

3.5 Comment on Previous Studies

As to the first group of studies that are related to BSC, these studies focused only on concepts and perspectives of BSC, but didn't focus on how BSC, as a strategic performance measurement tool, is important for improving VC Activities to deliver higher value to customers,

As to the second group of studies that are related to VC, these studies aimed only at defining VC Activities without relating them to Strategic Performance by focusing on different types of VCs, as it is crucial for any organization to assess its strategic performance to create more value for customers through VC.

As to the third group of studies that are related to VC and BSC, these studies lightly suggested using BSC as a measure for VC Activities but not explaining how to in detail.

In an era defined by globalization, technological advancement, and dynamic market demands, firms are increasingly compelled to adopt integrated strategic management systems that only monitor performance but also align operations with long-term value creation. One such prominent system is BSC, which has evolved from a mere performance measurement tool into a comprehensive strategic management tool used by managerial accounting, because of its multidimensional frame – consisting of financial, customer, internal processes, and learning and growth perspectives – makes it an ideal tool for firms striving to optimize their TVC. Evolving TVC involves identifying inefficiencies, fostering innovation, improving coordination, and aligning each activity with the strategic objectives of the firm. However, in practice, many organizations struggle to implement VC improvements systematically and in a way that ensures sustainability, whether including a competitive advantage in profitable organizations or enhancing value in nonprofitable organizations.

Therefore, the objective of this research is to illustrate the case study conducted by the researcher to apply the proposed framework on The Tanta University Educational Hospital (TUEH). The healthcare sector in Egypt faces significant challenges as the sector focuses on increasing the value created for its patients for an affordable cost for both parties as a

nonprofitable organization, as the healthcare sector is always seeking enhancing them. Keeping a track of so many different activities and services that are provided by the hospital is implied by focusing on the primary activities of VCA, as supporting activities are for enhancing the primary activities.

In conclusion, and after carefully reviewing previous literature, a proposed framework of implementing BSC for enhancing TVC is a contemporary fertile ground for research applying on Public Hospitals and Healthcare Sector as a part of Non- Profit and Government Organizations (NPGOs).

Applying the new model noting that as a non-profitable hospital this will change some Primary Activities, where the Supporting Activities stay the same. Primary Activities will be as follows

1. Receiving and Diagnosis: Instead of Inbound Logistics, which includes all the processes of having enough beds, receiving patients (admissions), diagnosis, having required and necessary medications, and hospitalizing process.
2. Care and Treatment: Instead of Operations, which includes all the processes of treating patients and taking care of their medical condition.
3. Discharge: Instead of Outbound Logistics, in which the patient is fully recovered and ready to be sent home after getting the necessary treatment.
4. Community Outreach and Awareness: Instead of Marketing and Sales, a non-profitable hospital seeks to reach the public about the capabilities of the hospital, spreading awareness of the readiness to receive all kinds of patients with fully equipped and highly functioning facilities.
5. Post-Treatment Service: Instead of Service, the patient gets all the follow-up procedures after treatment and keeps track of their feedback.

Where the Supporting Activities are: (Same as Generic VC)

1. Firm Infrastructure: represented in the foundational structure of Hospital's operations, including buildings, facilities management, information technology and administrative support.
2. Human Resources Management (HRM): insures the hospital has a skilled and competent workforce through training and performance management.
3. Technology Development: focuses on research and developing new medical technologies, improving existing processes.
4. Procurement: involves acquiring medical supplies and all necessary resources for the hospital.
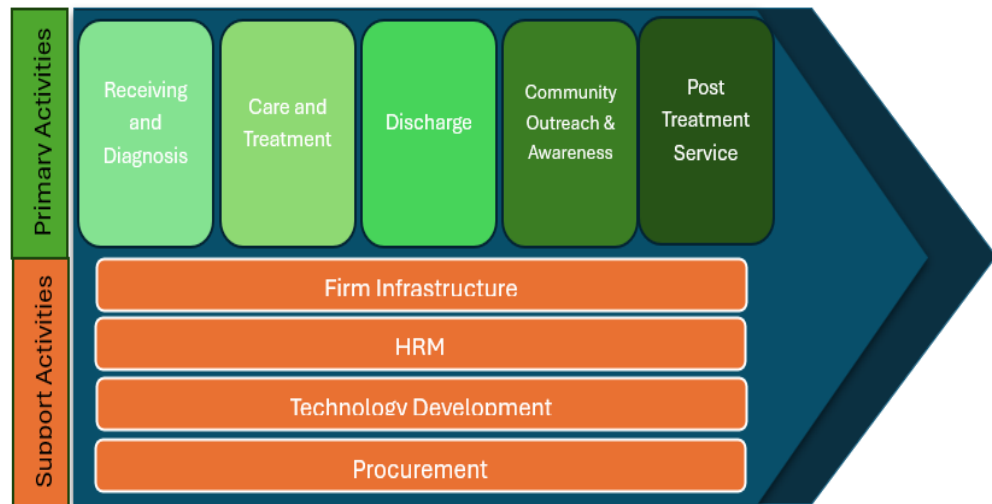
Figure 3: Proposed Hospital Value Chain Model

Referring to Figure 3, the researcher proposed the new model of HVC, which will be used to be integrated with BSC focusing on Primary Activities. The researcher proposes a framework for the integration between BSC and Primary Activities for Hospitals applied. KPI's are listed as criteria selected based on their relative importance for BSC on affecting TCV activities which are: cost reduction, profitability, market share, customer satisfaction, customer retention, efficiency, quality, cycle time, employee training, and technology adoption explained as follows

1. Cost Reduction
   It is a KPI to help hospitals enhance their VCs through reducing costs as much as possible.
2. Profitability:
   It is a KPI that measures how the hospital is doing financially and their financing abilities to obtain resources.
3. Market Share:
   It is a KPI that measures the segment size of patients which the hospital has, also represented by their base.
4. Customer Satisfaction
   It is a KPI that indicates how satisfied patients are with the quality of the service provided.
5. Customer Retention
   It is a KPI that indicates how well hospitals can retain their patient base.
6. Efficiency
   It is a KPI that indicates how well resources are used and optimized in providing the service to patients.
7. Quality
   It is a KPI that indicates how well the quality of a service provided for patients is.
8. Cycle Time
   It is a KPI that measures how long it takes to perform a process of providing the service for patients.
9. Employee Training

It is a KPI that indicates how well training helps professionals, employees, and administrative individuals to make their best efforts at fully doing their jobs providing the required services for patients.

10. Technology Adoption

It is a KPI that indicates how well hospitals can adapt, train, and use technology in their daily tasks and processes providing healthcare services to patients.

Table 1: Integrating Balanced Scorecard Four Perspectives with Primary Activities of Hospital Value Chain, Healthcare Value Chain, and Hospital Total Value Chain through KPIs

Financial Perspective	Receiving and Diagnosis	Cost Reduction Profitability Market Share Customer Satisfaction Customer Retention Efficiency Quality Cycle Time Employee Training Technology Adoption
	Care and Treatment	
	Discharge	
	Community Outreach and Awareness	
	Post-Treatment Service	
Customer Perspective	Receiving and Diagnosis	
	Care and Treatment	
	Discharge	
	Community Outreach and Awareness	
	Post-Treatment Service	
Internal Processes Perspective	Receiving and Diagnosis	
	Care and Treatment	
	Discharge	
	Community Outreach and Awareness	
	Post-Treatment Service	
Learning and Growth Perspective	Receiving and Diagnosis	
	Care and Treatment	
	Discharge	
	Community Outreach and Awareness	
	Post-Treatment Service	

Referring to Figure 4, the researcher used BSC to provide KPIs for evaluating HVC Activities, moving up to evaluate the HVC, HCVC, and HTVC, as to reach the overall goal of enhancing the strategic performance of the hospital and enhance the value provided for patients
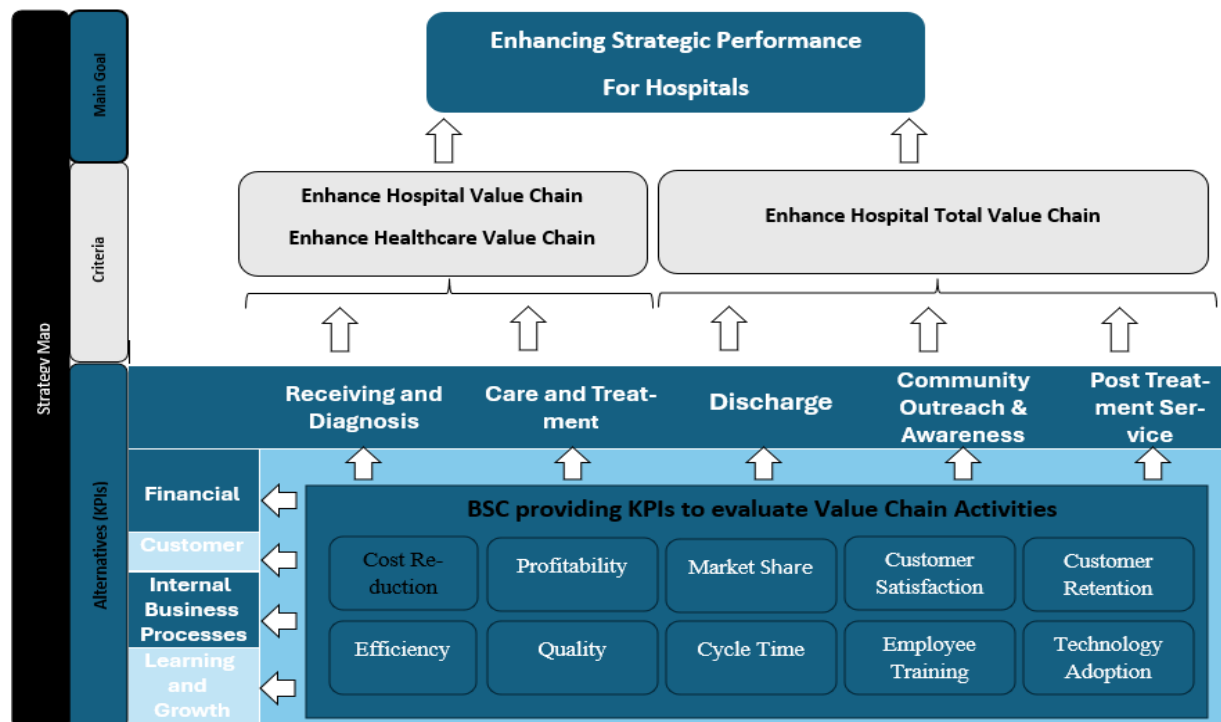
Figure 4: A proposed framework for implementing BSC to enhance HVC, HCVC, HTVC to enhance Strategic Performance

4. Research Variables

The purpose of this paper is to implement BSC to enhance TVC, whereas using BSC as a tool to provide suitable KPIs that can measure TVC activities and give feedback about what to improve as to enhance strategic performance.

4.1 Independent Variable

BSC provides a suitable set of KPIs that work as indicators to measure and evaluate TVC activities and decide which indicators have the most effect on TVC through a ranking of which to focus on of these indicators and help enhance strategic performance.

4.2 Dependent Variable

This paper proposes TVC as a dependent variable that can be decided through KPIs provided by BSC to enhance strategic performance as an overall goal.

5. Research Methodology

5.1 The Research Population and Sample, and Unit of Analysis

The researcher applied the proposed framework for implementing BSC for enhancing TVC and enhancing Strategic Performance as an overall goal at Tanta University Educational Hospital. The research random sample included 6 employees of the accounting department at TUEH Administration based on their availability. In this study, a purposive sample of six employees was selected from Tanta University Educational Hospital. The relatively small sample size is consistent with the nature of the case study method, which prioritizes depth of

understanding over statistical generalization. Participants were chosen based on their direct involvement in strategic planning, performance measurement, and value chain activities, ensuring that they could provide informed and experience-based insights into the implementation of the Balanced Scorecard and its influence on the hospital's total value chain. Given the sensitivity of internal hospital operations and the specialized knowledge required to address the research questions, access was limited to a select group of key informants. The small sample size also allowed the researcher to conduct comprehensive, in-depth interviews and observations, dedicating sufficient time to each participant to enhance the richness and reliability of the data. Moreover, capturing multiple perspectives without unnecessarily expanding the scope of the study. Practical constraints, such as the limited availability of senior staff and resource considerations, further reinforced the appropriateness of adopting a small, focused sample for this research.

5.1.1 Unit of Analysis, Overview

Tanta University Educational Hospital is a large-based hospital representing a major healthcare provider, based in the Nile Delta region of Egypt. TUEH consists of multiple, specialized, and high value equipped hospitals and clinics. These hospitals offer a wide range of medical services, consisting of surgery, emergency care, and internal medicine, which are known for their major contributions to medical education and research.

TUEH has a history tied to the establishment of the Faculty of Medicine at Tanta University. The faculty started initially as a part of Alexandria University (established in 1962), then became independent in 1972. The hospital infrastructure plays a vital role in the faculty's ability to train skilled doctors and provides a wide range of healthcare services, including the educational component.

- Hospital Role: TUEH serves as a key educational resource as well as providing hands-on training for medical students and interns.

- Infrastructure: The hospital has a large infrastructure with classrooms, laboratories, and museums, along with a significant number of beds.

- Developments: Tanta University has been actively expanding and modernizing its hospital facilities, formed by a new Nephrology and Urology Hospital and an Emergency Hospital.

- Community Focus: The university hospitals play a crucial role in providing healthcare services to the community in Tanta and the surrounding Delta region.

TUEHs represent a major healthcare provider in the Nile Delta region of Egypt, consisting of multiple specialized hospitals and clinics within its complex. These hospitals offer a wide range of medical services, including surgery, internal medicine, and emergency care, and are known for their contributions to medical education and research.

5.1.2 Vision

- To be a leading medical school in Egypt and the Middle East, renowned for its educational and research contributions.

- To play a significant role in improving healthcare at all levels.

5.1.3 Mission

- Education: Graduating competent physicians with the necessary knowledge and skills to address patient health problems effectively and ethically.

- Research: Conducting innovative research that meets community needs and advances medical services.

- Healthcare: Providing high-quality, continuous medical care to individuals within the community, adhering to quality standards.

- Medical Education Department: Developing the medical education system through interactive learning environments, advanced assessment methods, and continuous training for faculty.

5.1.4 Strategy

- Developing and enhancing the Medical Education System: Tanta hospital aims to improve medical education by creating interactive learning environments, conducting effective assessment methods, and providing faculty with continuous training.

- Conducting Research: Tanta hospital prioritizes research that addresses community needs contributing to the advancement of medical services.

- Enhancing Healthcare Quality: Tanta hospital is committed to providing high-quality, continuous medical care to patients, with lowest cost, focusing on patient safety and ethical practices.

- Community Engagement: The hospital strives to actively engage with the community by offering medical services, participating in community outreach programs, and promoting health awareness.

- Financial Sustainability: The hospital works to develop its own resources and contribute to the community's social responsibility.

Specific examples of the hospital's strategic objectives include

- Renewing the faculty's buildings and constructions.

- Developing the old hospital buildings and already establishing a new one.

- Developing the faculty's administrative and organizational structure.

- Improving teaching staff's abilities.

- Developing educational programs.

- Improving resources for education.

- Increasing the competitive abilities of students and graduates.

By focusing on these areas, TUEH aims to achieve its vision of being a leading medical institution and contributing to the well-being of the community.

5.1.5 Overall Goal

TUEH's overall objective is to provide high-quality healthcare, research opportunities, and advanced training. It aims to be a leading institution in specialized medical care. The hospital also focuses on community service, participating in initiatives like "Decent Life" and providing medical convoys to underserved areas.

5.2. The Reasons Behind the Unit of Analysis Selection

Several major developments in the health care industry prompted interest in the health care Value Chain. As for improving the healthcare sector for providing a better service for patients, TUEH is always looking forward to enhancing the service it provides. Provider organizations such as hospitals make many efforts toward the patient, providing a wide, specialized and comprehensive service. With a few notable exceptions, such efforts were spectacularly unsuccessful. Hospitals instead began to realize they need to create opportunities to improve their position.

- The strategic objective of TUEH is enhancing the patient`s value and deliver the highest quality service to patients.

- The hospital plays a significant role in the stability of the Egyptian Healthcare System. But recently, many leading foreign hospitals have been established in Egypt besides the other governmental hospitals, so for the governmental hospital to be able to provide a similar service with these leading hospitals and at the same time, reduce their costs, TUEH must improve its performance, efficiency, and present a high-quality service, taking all necessary actions to maximize value for its patients at lower costs.

- To be successful in enhancing value for patients, the hospital always needs to review spending, keeping count of resources, reducing costs, and dealing with deficiencies to enhance value.

- Within the framework of the VC in the healthcare system, conduction of the strategic management tools for maximizing value and reducing costs, the hospital adopts the BSC, as one of the strategic tools to manage and measure performance, opening new areas for the researcher to develop the framework.

5.3 Barriers for Tanta University Educational Hospital to create and maximize value for patients

TUEH goes against several barriers when creating value for its patients. Breaking down these limitations to resources limitations, challenges in patient flow, and potential burnout

among healthcare professionals. Solving these issues is crucial in enhancing the quality of healthcare and patient satisfaction.

1. Resource Limitations: Shortages of medical supplies as for the huge numbers of supplies used daily.

2. Patient Flow and Communication

- Barriers to patient flow: Shown in the large numbers of relatives coming in with patients slowing registration, consultation, and disposition.

- Communication gaps: Weak communication between patients and healthcare providers, added to literacy and lack of adequate knowledge among patients.

3. Healthcare Professional Well-being

- Occupational burnout: The pressure on healthcare professionals can negatively impact patient satisfaction, as it leads to decreased quality of service.

- Challenges in communication skills training: Weak communication skills training leads to negative beliefs about patient conditions.

5.4 Method of Analysis: Analytical Hierarchy Process (AHP)

To apply the proposed framework, the researcher adopted a quantitative approach to prioritize the selection of alternatives (KPIs) within each criterion under the overall goal to enhance TVC and Strategic Performance. AHP requires decisions makers to provide different judgements about the relative importance of alternatives (KPIs) withing each criterion. The outcome of AHP is to rank those alternatives based on the relative importance according to each criterion and the overall goal. Steps of AHP can be listed as

- Step One: Create Hierarchy of the problem represented in a graphical representation based on the overall goal, criteria, and alternatives.

- Step Two: Establishing priorities using AHP to give nominal value to each level of hierarchy and create a matrix of pairwise comparisons judgements.

- Step Three: Testing Consistency, as AHP provides a measure of the consistency for the pairwise comparisons by computing a consistency ratio (as accepted and considered reasonable if CR is equal or smaller than 0.1).

- Step Four: Using AHP to develop overall priority ranking to estimate the relative priorities of each alternative in terms of the overall goal and develop the overall priority ranking for the alternatives leading decisions makers to take the appropriate decision.

5.5 Data Collection Methods

The researcher implemented various data gathering techniques represented in observations, interviews and survey questionnaires. Questionnaires included a list of inquiries. Besides BSC as performance measurement tool, which provided performance measures (KPIs) and their

suitability to the hospital's strategic objectives of creating and maximizing value for the patients at the lowest possible cost for enhancing TVC and Strategic Performance as overall.

5.5.1 Observations

To gain an understanding of TUEH VC Activities based on daily activities and operations, the researcher conducted

Formal direct observations: by observing TUEH's activities (Yin, 2009).

Casual direct observations: when additional information is being gathered, including that from interviews (Yin, 2009).

Non-participant observations: Is a qualitative research technique that can be used to acquire preliminary data on certain elements of social work with no direct interaction of the observer (Given, 2008).

5.5.2 Interviews

The researcher relied on interviews as a method of collecting data. Selected participants asked questions about their perspective on the work environment. The researcher asked a series of predetermined questions over the phone. Interviews were conducted with 6 employees of the accounting department at TUEH Administration. Structured and Unstructured interviews were conducted.

5.5.3 Questionnaires

The researcher conducted Interviewer-administered questionnaire. The interviewer-administered questionnaire was conducted as the respondents answer an identical series of questions in a preset sequence in a form made by the researcher.

5.5.4 Data Analysis

After conducting interviews, observations, and questionnaires, the researcher obtained a good understanding of how to apply selected KPIs, HVC, Healthcare Value Chain, and HTVC, and their relations to Strategic Performance as an Overall goal.

5.6 Applying AHP on the proposed framework for integrating BSC AND VC on Hospitals

5.6.1 Step One: Developing the Hierarchy of the understudy problem (Decompose the decision-making problem into a hierarchy)

The researcher developed a graphical representation of the problem in terms of the overall goal, the criteria to be used, and the alternatives to be selected. From figure 5, the AHP model for the understudy problem consists of:

- Level One: represents the overall goal of the study, which is enhancing strategic performance of TUEH through criteria.
- Level Two: represents the criteria for selecting the best alternatives (KPIs), as the researcher used two criteria, HTVC (C1), and HVC and HCVC (C2).

- Level Three: represents decision alternatives, the researcher proposed 10 KPIs

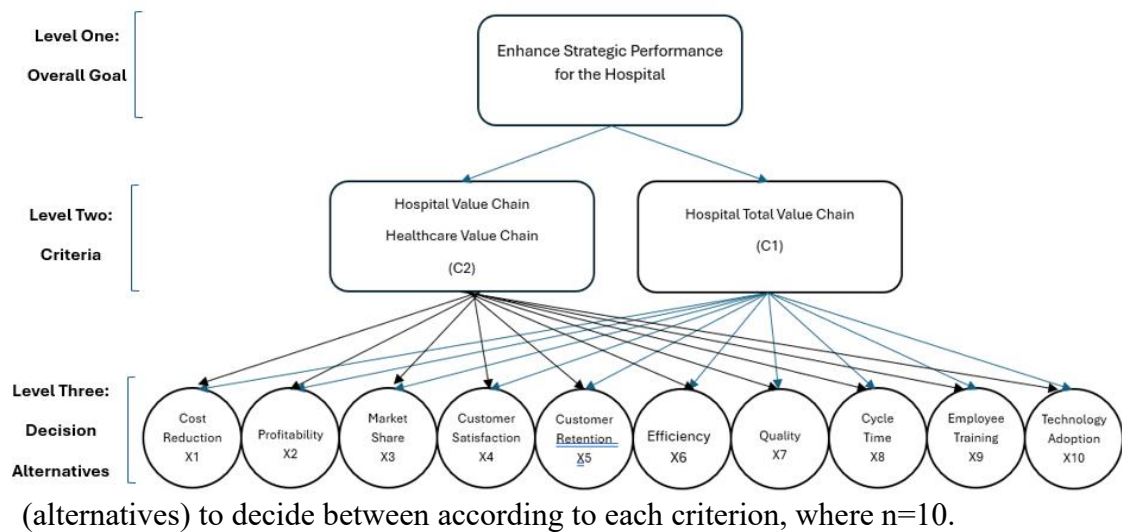(alternatives) to decide between according to each criterion, where n=10.

Figure 5: Sample Hierarchy Tree for Understudy Problem

Furthermore, the data collected from 6 participants first grouped before estimating the geometric mean for each alternative based on the equation: $\mu\ geometric = \sqrt[n]{X1 * X2 *, ..., * Xn}$

5.6.2 Step Two: Pairwise Comparisons and Establish Priorities Among the Elements in the Hierarchy

In this step, the researcher conducted three procedures to estimate the relative priorities (weights) of the alternatives regarding each criterion, then making the same procedures for each criterion regarding the overall goal. The importance and effect are decided by pairwise comparison matrices. The researcher used Saaty Scale (1990) where a number scale is needed and helps show how many more important elements are above other elements in relation to the criteria associated with them, SAATY (2016) also added that AHP helps capture both subjective and objective aspects of a decision.

Table 2: Fundamental Scale of Absolute Numbers
Source: Saaty (1990)

Intensity of Importance	Explanation
1	Both elements are equally important
3	One element is slightly more important than the other
5	One element is more important than the other
7	One element is clearly more important than other elements
9	One element is absolutely important than other elements
2,4,6,8	The values between the two values of consideration are close together
if A/B = 9 then B/A = 1/9	element has one of the numbers above when compared to element j has the opposite when compared to element i

5.6.2.1 Pairwise Comparison Matrices between Alternatives in terms of each criterion

Using the geometric means of each alternative and their reciprocals, a pairwise comparisons matrices between alternatives in terms of each criterion was established. Table 3 shows the pairwise comparisons matrix between alternatives (KPIs) in terms of Criterion 1 (HTVC).

Table 3: The Pairwise Comparison Matrix between KPIs (X1,X2,…,X10) in terms of TVC (C1)

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
X1	1	3.771946	4.752354	0.285759	2.139826	2.853639	0.257091	0.466545	1.698381	1.513085749
X2	0.265115	1	1.513086	0.155337	0.890899	0.360295	0.258659	0.400471	0.356779	0.523679604
X3	0.210422	0.660901	1	0.259436	0.283175	0.227705	0.185713	0.262877	0.296586	0.200352609
X4	3.499455	6.437605	3.854509	1	5.414605	2.993795	1.122462	3.771946	4.784797	4.233865726
X5	0.467328	1.122462	3.531379	0.184686	1	0.332907	0.289548	0.332907	0.343754	0.337671413
X6	0.35043	2.775505	4.391643	0.334024	3.003842	1	0.306567	3.237741	1.259921	2.289428485
X7	3.889672	3.866101	5.38465	0.890899	3.453655	3.261928	1	4.39429	4.035654	3.525468767
X8	2.143414	2.497062	3.804063	0.265115	3.003842	0.308857	0.227568	1	0.317854	1.122462048
X9	0.588796	2.802857	3.371698	0.208995	2.90906	0.793701	0.247791	3.146101	1	1.69838133
X10	0.660901	1.909565	4.9912	0.236191	2.961459	0.43679	0.28365	0.890899	0.588796	1
Sum	13.07553	26.844	36.59458	3.820442	25.06036	12.56962	4.17905	17.90378	14.68252	16.44439573

Table 4 shows the pairwise comparisons matrix between alternatives (KPIs) in terms of Criterion 2 (HVC & HCVC).

Table 4: The Pairwise Comparison Matrix between KPIs (X1,X2,…,X10) in terms of HVC&HCVC (C2)

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
X1	1	4.107147	5.119318	4.063205	5.252546	2.039649	3.237741	5.414605	5.451569	6.265205162
X2	0.243478	1	1.122462	0.356779	1.122462	0.242253	0.288575	0.629961	0.629961	1.906368586
X3	0.195339	0.890899	1	0.377358	0.659795	0.336188	0.193038	0.659795	0.400471	0.336187839
X4	0.246111	2.802857	2.650003	1	2.401874	0.360034	0.238662	0.528457	1.698381	2.039648903
X5	0.190384	0.890899	1.515622	0.416342	1	0.247705	0.272837	0.347141	0.659795	0.238662212
X6	0.49028	4.127908	2.974528	2.777519	4.037055	1	2.569797	3.360421	3.771946	3.659051653
X7	0.308857	3.465304	5.180321	4.190022	3.665186	0.389136	1	2.749459	4.39429	3.914867641
X8	0.184686	1.587401	1.515622	1.892302	2.880671	0.297582	0.363708	1	0.449513	1.817120593
X9	0.183433	1.587401	2.497062	0.588796	1.515622	0.265115	0.227568	2.224629	1	1.817120593
X10	0.159612	0.524558	2.974528	0.49028	4.190022	0.273295	0.255436	0.550321	0.550321	1
Sum	3.20218	20.98437	26.54947	16.1526	26.72523	5.450957	8.647363	17.46479	19.00625	22.99423318

5.6.2.2 Normalized Pairwise Comparison Matrices (Synthesization)

The following three step procedure provides a good approximation of the synthesization result (Anderson et al, 2019)

1. Summing of the values in each column j of the pairwise comparison matrix.
2. Normalized Pairwise Comparison Matrix by dividing each element of the pairwise comparison matrix by the sum of each column j to yield its normalized score. The sum of each column is 1.

$$x_{ij} = \frac{c_{ij}}{\sum_{j=1}^{n} c_{ij}}$$

Where

c_{ij} : Value of in column j of the pairwise comparison matrix.

x_{ij} : Normalized scores for each element in the Normalized Pairwise Comparison Matrix

5.6.2.3 Estimating Priorities (Averaging Raw Values)

Computing the relative priorities (weights) of each alternative (KPI) in terms of each criterion through averaging the elements in each row i of the normalized pairwise comparison matrix to determine the priority of each alternative (corresponding rating) based on the following equation:

$$Relative\ Priorities = \frac{\sum_{j=1}^{n} X_{ij}}{n}$$

As shown in table 5, the Normalized Pairwise Comparison Matrix for HTVC (C1) is as follows:

Table 5: Normalized Pairwise Comparison Matrix between KPIs (X1,X2,…,X10) in terms of (C1)

						Normalized						
	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	Priorities	Eigen value
X1	0.076479	0.140514	0.129865	0.074797	0.085387	0.227027	0.061519	0.026058	0.115674	0.092012244	0.102933	1.345906
X2	0.020276	0.037252	0.041347	0.040659	0.03555	0.028664	0.061894	0.022368	0.0243	0.031845476	0.034416	0.923852
X3	0.016093	0.02462	0.027326	0.067907	0.0113	0.018116	0.044439	0.014683	0.0202	0.012183641	0.025687	0.939996
X4	0.267634	0.239815	0.10533	0.26175	0.216063	0.238177	0.268593	0.210679	0.325884	0.25746557	0.239139	0.913617
X5	0.035741	0.041814	0.0965	0.048341	0.039904	0.026485	0.069286	0.018594	0.023412	0.020534133	0.042061	1.054068
X6	0.0268	0.103394	0.120008	0.087431	0.119864	0.079557	0.073358	0.180841	0.085811	0.139222415	0.101629	1.277434
X7	0.297477	0.144021	0.147143	0.233193	0.137813	0.259509	0.239289	0.245439	0.274861	0.214387249	0.219313	0.916521
X8	0.163926	0.093021	0.103952	0.069394	0.119864	0.024572	0.054454	0.055854	0.021648	0.068258029	0.077494	1.387441
X9	0.04503	0.104413	0.092137	0.054704	0.116082	0.063144	0.059294	0.175723	0.068108	0.103280252	0.088192	1.294874
X10	0.050545	0.071136	0.136392	0.061823	0.118173	0.03475	0.067874	0.04976	0.040102	0.060810991	0.069137	1.136909
sum	1	1	1	1	1	1	1	1	1	1	1	11.19062

And as shown in table 6, the Normalized Pairwise Comparison Matrix for HVC and HCVC (C2).

Table 6: Normalized Pairwise Comparison Matrix between KPIs (X1,X2,…,X10) in terms of (C2)

						Normalized						
	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	Priorities	Eigen value
X1	0.312287	0.195724	0.192822	0.251551	0.196539	0.374182	0.374419	0.31003	0.28683	0.272468541	0.276685	0.885996
X2	0.076035	0.047655	0.042278	0.022088	0.042	0.044442	0.033371	0.03607	0.033145	0.082906378	0.045999	0.965263
X3	0.061002	0.042455	0.037666	0.023362	0.024688	0.061675	0.022323	0.037779	0.02107	0.014620528	0.034664	0.920313
X4	0.076857	0.133569	0.099814	0.06191	0.089873	0.06605	0.027599	0.030258	0.089359	0.088702628	0.076399	1.234045
X5	0.059454	0.042455	0.057087	0.025776	0.037418	0.045443	0.031552	0.019877	0.034715	0.01037922	0.036415	0.973211
X6	0.153108	0.196713	0.112037	0.171955	0.151058	0.183454	0.297177	0.192411	0.198458	0.159129101	0.18155	0.989622
X7	0.096452	0.165137	0.19512	0.259402	0.137143	0.071389	0.115642	0.157429	0.231202	0.170254325	0.159917	1.382861
X8	0.057675	0.075647	0.057087	0.117151	0.107788	0.054593	0.04206	0.057258	0.023651	0.079025057	0.067193	1.17352
X9	0.057284	0.075647	0.094053	0.036452	0.056711	0.048636	0.026316	0.127378	0.052614	0.079025057	0.065412	1.243232
X10	0.049845	0.024998	0.112037	0.030353	0.156782	0.050137	0.029539	0.03151	0.028955	0.043489165	0.055764	1.282261
sum	1	1	1	1	1	1	1	1	1	1	1	11.05032

5.6.2.4 Pairwise Comparison Matrices between Criteria in terms of Overall Goal

Similarly, the researcher computed the pairwise comparison matrix to each criterion (C1,C2) in terms of the overall goal (Enhance Strategic Performance of the Hospital).

Table 7 shows the pairwise comparison matrix between criteria in terms of the overall goal as follows:

Table 7: Pairwise Comparison Matrix between criteria in terms of Overall Goal

	C1	C2
C1	1	2.7494593
C2	0.3637079	1
Sum	1.3637079	3.7494593

5.6.2.5 Normalized Pairwise Comparison Matrices (Synthesization)

The researcher applied the three steps used above, providing a good approximation of the synthesization result. The Normalized Pairwise Comparison matrix between the criteria in terms of the overall goal is shown in table 8

Table 8: Normalized Pairwise Comparison Matrix between criteria in terms of Overall Goal

	C1	C2	Priorities	Eigen Value
			Normalized	
C1	0.7332949	0.7332949	0.7332949	1
C2	0.2667051	0.2667051	0.2667051	1
Sum	1	1	1	2

5.6.3 Step Three: Consistency Analysis (Confirming Reliability)

To check the consistency of judgements, it involves calculating the consistency ratio then checking its value to ensure that the original preference ratings plus weights of each alternative, in terms of criteria, were consistent. The researcher conducted four procedures to arrive at the CR, and it will be repeated to make sure that the original preference ratings and weights of each criterion in terms of the overall goal were consistent.

5.6.3.1 Consistency Analysis for the Pairwise Comparison Matrices between alternatives in terms of each criterion

1. Calculating Eigen Value (λ) for each alternative: multiplying the relative priorities of each alternative in terms of criteria by the Alternative`s column total in the pairwise comparison matrix. And sum the values in the Eigen Values` column to get the total of all eigen values ($\lambda\, max$).

2. Consistency Index (CI): Reflects the consistency of each judgement through the following equation

$$CI = \frac{\lambda\max - n}{n - 1}$$

Where

λmax: Maximum Eigen value (Total Eigen Values` column)

n: Total number of alternatives (KPIs) used in the study

3. Random Consistency Index (RI): CI of a randomly generated pairwise comparison matrix, where RI value depends on the n (number of items being compared) given in table 9 as follows

Table 9: Random Consistency Indices for AHP
Source: Hayrapetyan (2019).

Matrix Size	3	4	5	6	7	8	9	10
RI	0.52	0.89	1.13	1.25	1.35	1.43	1.47	1.5
Matrix Size	11	12	13	14	15	16	17	18
RI	1.53	1.54	1.56	1.57	1.59	1.6	1.61	1.61
Matrix Size	19	20	21	22	23	24	25	26
RI	1.62	1.63	1.63	1.64	1.65	1.65	1.66	1.66
Matrix Size	27	28	29	30	31	32	33	34
RI	1.66	1.67	1.67	1.67	1.67	1.68	1.68	1.68
Matrix Size	35	36	37	38	39	40	41	42
RI	1.68	1.69	1.69	1.69	1.69	1.69	1.70	1.70
Matrix Size	43	44	45	46	47	48	49	50
RI	1.70	1.70	1.70	1.70	1.70	1.70	1.71	1.71

4. Consistency Ratio (CR) $= A = \frac{CI}{RI}$, where CR is accepted if ≤ 0.1

Table 10: CR of Alternatives Pairwise Comparison Matrix in terms of each criterion

Consistency Analysis Elements	Alternatives of Pairwise Comparison Matrices in terms of Hospital TVC	Alternatives of Pairwise Comparison Matrices in terms of Hospital VC and Healthcare VC
CI	0.132290768	0.116702641
RI	1.5	1.5
CR	0.088193846	0.077801761

5.6.3.2 Consistency Analysis for the Pairwise Comparison Matrices between criteria in terms of overall goal

The researcher applied the same steps conducted above to calculate CR. Table 11 shows the CI, RI and CR of both Criteria [C1, C2] pairwise comparisons Matrices used in the study in terms of the Overall Goal as follows:

Table 11: CR of Criteria Pairwise Comparison Matrix in terms of Overall Goal

CI	0
RI (Matrix 2)	0.89
CR	0

5.6.4 Step Four: Develop an overall priority ranking

The researcher estimated the relative priorities of each alternative in terms of the overall goal by multiplying the relative priorities of each alternative (Weights) in terms of the Criteria by the relative priorities of each criterion (Weights) in terms of the Overall Goal. Results were summed in each row to determine the final overall priority weights for each KPI and develop the overall priority ranking for the KPIs as shown in table 12 below

Table 12: Overall Relative Priority Ranking (Weights) of Alternatives (KPIs) [X1, X2, …, Xi] in Terms of the Overall Goal

	TVC	FVC-IVC		C1	C2	Sum
X1	0.102933153	0.27668531	X1	0.075480354	0.073793	0.149273744
X2	0.034415582	0.045999126	X2	0.02523677	0.012268	0.037504973
X3	0.025686746	0.034664073	X3	0.018835959	0.009245	0.028081045
X4	0.239138951	0.076399156	X4	0.175359367	0.020376	0.195735414
X5	0.042061156	0.036415442	X5	0.030843231	0.009712	0.040555415
X6	0.101628689	0.18155011	X6	0.074523797	0.04842	0.122944142
X7	0.219313305	0.159917092	X7	0.160821323	0.042651	0.203472031
X8	0.077494323	0.067193494	X8	0.05682619	0.017921	0.074747039
X9	0.088191555	0.065411751	X9	0.064670415	0.017446	0.082116064
X10	0.069136539	0.055764448	X10	0.05069747	0.014873	0.065570134
Sum	1	1	Sum	0.733294876	0.2667051	1
				1		

5.5 Results and Conclusion

AHP analysis was conducted meticulously to make sure there's consistency in decision matrices and eigen values, further reinforcing the robustness of our findings. As a result, application of AHP for analyzing the TUEH, we can conclude that:

- First: Results of the pairwise comparison matrices between KPIs in terms of the criteria show that
- According to the responses in table 5, the Normalized Pairwise Comparison Matrix between the alternatives (KPIs) in terms of HTVC criterion, AHP determines that X4 (Patients' Satisfaction of medical services provided) with a priority weight of 0.239138951 is the best KPI in terms of HTVC criterion. Table 13 ranks KPIs regarding the criterion

Table 13: Ranking of KPIs Terms of Hospital Total Value Chain Criterion

Rank	KPI	Priority Weight
1	X4 (Patient Satisfaction of medical service provided)	0.239138951
2	X7 (Quality of medical service provided for the patient)	0.219313305
3	X1 (Cost Reduction of medical services)	0.102933153
4	X6 (Efficiency of medical processes)	0.101628689
5	X9 (Professionals Training)	0.088191555
6	X8 (Cycle Time of service provided)	0.077494323
7	X10 (Technology Adoption of Medical Equipment)	0.069136539
8	X5 (Patient Retention)	0.042061156
9	X2 (Profitability)	0.034415582
10	X3 (Market Share)	0.025686746

- According to the responses in table 6, the Normalized Pairwise Comparison Matrix between the alternatives (KPIs) in terms of HVC and HCVC criterion, AHP determines that X1 (Cost Reduction of the medical service provided) with a priority weight of 0.27668531 is the best KPI in terms of HVC and HCVC criterion as follows in table 14

Table 14: Ranking of KPIs in Terms of Hospital Value Chain and Healthcare Value Chain Criterion

Rank	KPI	Priority Weight
1	X1 (Cost Reduction of medical services)	0.27668531
2	X6 (Efficiency of medical processes)	0.18155011
3	X7 (Quality of medical service provided for the patient)	0.159917092
4	X4 (Patient Satisfaction of medical service provided)	0.076399156

5	X8 (Cycle Time of service provided)	0.067193494
6	X9 (Professionals Training)	0.065411751
7	X10 (Technology Adoption of Medical Equipment)	0.055764448
8	X2 (Profitability)	0.045999126
9	X5 (Patient Retention)	0.036415442
10	X3 (Market Share)	0.034664073

- Second: Results of the pairwise comparison matrices between criteria in terms of the Overall Goal show that

- According to the responses in table 8, the Normalized Pairwise Comparison Matrix between the Criteria in terms of Overall goal, AHP determines that C1 (HTVC) with a priority weight of 0.733294876 is the better criteria as in terms of Enhancing Strategic Performance of the Hospital, and C2 (HVC and HCVC) comes second place.

As it appears to be differences in rankings between alternatives in each criterion, table (1.14) shows the AHP overall priority ranking and weights for TUEH selected KPIs from the most suitable and preferred KPIs that could lead to the most effect of enhancing strategic performance, and to the least suitable and less preferred KPIs as follows

Table 15: The AHP overall priority rankings and weights of TUEH selected KPIs.

Rank	KPI	Priority Weight
1	X7 (Quality of medical service provided for the patient)	0.203472031
2	X4 (Patient Satisfaction of medical service provided)	0.195735414
3	X1 (Cost Reduction of medical services)	0.149273744
4	X6 (Efficiency of medical processes)	0.122944142
5	X9 (Professionals Training)	0.082116064
6	X8 (Cycle Time of service provided)	0.074747039
7	X10 (Technology Adoption of Medical Equipment)	0.065570134
8	X5 (Patient Retention)	0.040555415
9	X2 (Profitability)	0.037504973
10	X3 (Market Share)	0.028081045

6. Conclusion

From the theoretical study and the applied case study, the researcher can summarize the conclusion of this study in the following points

- As indicated in the previous chapters, due to the continuous pressures on organizations for sustainability and enhancing their performance, organizations should pay more attention to enhance their Strategic Performance.

- Value Chains differ from one organization to another, which makes the activities differ too as in its effect on the TVC and the value it creates and adds to the process, making the process of identifying each Value Chain Activities and customizing Value Chains depending on each organization is more important. The research included two different types of Value Chains (Manufacturing VC and Service VC).

- Using BSC as a strategic tool helps with the measurements and evaluations processes for the different and various types of activities in VC, whether it's Manufacturing VC or Service VC), as it helps provide a set of KPIs that make it easier to track performance and provide necessary solutions to help identify opportunities for improvement and what areas to be enhanced.

- After reviewing the previous research areas, the researcher found that most studies related to BSC and VC didn't focus proposing a framework to integrate both sides and relate them to Strategic Performance. So, the researcher attempts to show the interrelationships between BSC and VC Activities (Primary) to Enhance VC (focusing on TVC) to enhance Strategic Performance through building a framework.

- The proposed framework sheds light on both manufacturing and service organizations based on Primary Activities of their VCs.

- This research considers the external environment, as it focuses on relationships beyond the firm boundaries, using quantitative values of the effects of the Key Performance Indicators on the Total Value Chain.

7. Recommendations

Based on the findings presented in the conclusions, several practical recommendations can be derived to bridge the gap between theoretical concepts and practical application in enhancing Strategic Performance through the integration of the Balanced Scorecard (BSC) and Value Chain (VC) frameworks:

1. **Strengthening Strategic Performance in Public Sector Organizations**
   As the conclusion highlighted, continuous pressures on organizations to sustain and enhance performance require a structured and measurable approach to Strategic Performance. Public sector organizations often face resource constraints and complex bureaucratic structures. Therefore, adopting the BSC framework can systematically measure and evaluate activities across their unique Value Chains, ensuring that performance feedback is accurate, timely, and actionable. This aligns directly with the identified need for organizations to pay greater attention to their Strategic Performance considering environmental pressures.

2. **Enhancing KPI Selection in Non-Profit Organizations**
   The study emphasized that Value Chains vary significantly between organizations, and that the effectiveness of performance evaluation depends on the relevance of the Key Performance Indicators used. Non-profit organizations often operate within Service Value Chains and must ensure that their chosen KPIs are closely aligned with their mission-driven goals. By carefully selecting and customizing KPIs within the BSC framework, these organizations can better measure their contributions to the Total Value Chain and identify opportunities for service quality and stakeholder satisfaction improvements.

3. **Integrating Multiple Strategic Management Tools for Comprehensive Evaluation**

   The conclusion pointed out that existing research rarely integrates BSC and VC frameworks to enhance Strategic Performance. The proposed framework in this study demonstrates how such integration can be achieved for both manufacturing and service organizations. Building on this, organizations should consider combining BSC with other strategic management tools—such as SWOT analysis, Benchmarking, or the Analytical Hierarchy Process (AHP)—to provide a multi-dimensional view of performance and to strengthen decision-making processes. This broader integration will reinforce the link between performance metrics and value creation across the Total Value Chain.

4. **Focusing on the External Environment and Inter-Organizational Relationships**

   As indicated in the conclusions, the study extends beyond internal performance to include the external environment's influence on the Total Value Chain. Therefore, organizations should not limit performance evaluation to internal metrics but also track KPIs related to suppliers, partners, and customer satisfaction across the entire value network. This will enable them to identify bottlenecks or opportunities in inter-organizational linkages, leading to more sustainable and competitive performance outcomes.

By implementing these recommendations in line with the study's conclusions, organizations—whether public, private, or non-profit—can achieve a more holistic and sustainable enhancement of their Strategic Performance, supported by robust measurement systems and aligned with their specific Value Chain structures.

8. Future Research Suggestions

- Using Balanced Scorecard in enhancing Global Value Chains (GVCs)
- Integrating Global Value Chain (GVC) and Blockchain.

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المستخلص

خلفية عن البحث: أدت التطورات الكبيرة بقطاع الرعاية الصحية إلى معدل تغير مستمر وسريع، وهو أمر ضروري لتعزيز الأداء الاستراتيجي لتقديم قيمة أكبر للمرضى مما يحتاجونه من مستشفيات القطاع العام لتقديم خدمة أفضل. تشير المعلومات المتاحة إلى أن المستشفيات يمكن ان تستخدم نظام القياس المتوازن للأداء (BSC) للتفوق على تلك المستشفيات التي لا تستخدمه وتفتقر إلى أسلوب إدارة الأداء الاستراتيجي (SPM). من خلال العمل وتوجيه سلسلة القيمة الإجمالية للمستشفى (HTVC)، يتم عملية توزيع الموارد بكفاءة، مما يساهم في مواكبة التطورات الجديدة والرئيسية، وتعزيز وتحسين الأداء الاستراتيجي. يتيح دمج الأنشطة الأساسية والداعمة لسلسلة القيمة الإجمالية للمستشفى مع الأربعة مناظير لنظام القياس المتوازن للأداء للمستشفى – يشمل ذلك الأداء المالي وغير المالي وتقييمه – والذي يلزم متابعته في قطاع الرعاية الصحية.

هدف البحث: يهدف البحث إلى اقتراح وتصميم إطار عمل لتطبيق نظام القياس المتوازن للأداء في تعزيز وتحسين سلسلة القيمة الكلية والأداء الاستراتيجي الشامل.

تصميم/منهجية البحث: استخدم البحث منهج حل المشكلات. وبناءً عليه، تم استخدام المنهج البنّاء لتطوير الإطار المقترح لخدمة هدف البحث. تم تطبيق دراسة حالة كمنهج بحثي مستخدما أداة عملية التسلسل الهرمي التحليلي

(AHP) بالتطبيق على مستشفى طنطا التعليمي الجامعي وذلك لتوضيح مدى قابلية تطبيق الإطار المقترح. تم تجميع بيانات البحث من المقابلات الشخصية والمشاهدات والاستبيانات لجمع جميع البيانات اللازمة.

نتائج البحث: توصل البحث الي اختلاف قابلية تطبيق سلسلة القيمة باختلاف سلاسل القيمة من منظمة إلى أخرى، مما يؤدي إلى تخصيص تصميم نماذج سلسلة القيمة علي حسب الاستخدام، وخاصة في المستشفيات وقطاع الرعاية الصحية، جاعلا استخدام نظام القياس المتوازن للأداء يوفر مؤشرات قياس ضرورية وملائمة للمساعدة في تعزيز وتحسين سلسلة القيمة الكلية (TVC) وبالتالي تسهيل تعزيز الأداء الاستراتيجي الشامل. تقترح نتائج هذه الورقة تصميم إطار عمل جديدًا لنظام القياس المتوازن للأداء يساعد علي توفير وترشيح مؤشرات أداء رئيسية (KPIs) للمساعدة في قياس وتقييم والحصول على ملاحظات حول سلسلة القيمة الإجمالية للمستشفى، وفي نهاية المطاف، تعزيز الأداء الاستراتيجي للمستشفى.

الأصالة/القيمة: يوفر هذا البحث أرضية خصبة للعمل علي زيادة الاهتمام للمؤسسات غير الهادفة للربح والمؤسسات الحكومية ويتطلع إلى تعزيز وتحسين عملية خلق القيمة المقدمة للمرضى، لتعزيز سلسلة القيمة الاجمالية لدي تلك المؤسسات وتعزيز أدائهم الاستراتيجي الشامل، وذلك باستخدام نظام القياس المتوازن للأداء كأداة حيوية لقياس وتقييم الأداء، والاعتماد على خطة الرعاية الصحية الأولية كعملية صنع القرار لتصنيف مؤشرات الأداء الرئيسية الضرورية بناء على أهميتها النسبية (الوزن).

الكلمات المفتاحية: نظام القياس المتوازن للأداء (BSC)؛ سلسلة قيمة المستشفى (HVC)؛ سلسلة قيمة الرعاية الصحية (HCVC)؛ سلسلة القيمة الإجمالية للمستشفى (HTVC)؛ إدارة الأداء الاستراتيجي (SPM)؛ عملية التسلسل الهرمي التحليلي (AHP).