

Analysis of the Internal Subdimensions in Health Care Organizations during the COVID-19 Pandemic



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1. Background

1.1 Introduction

Evaluating the health care sector is quite challenging and complex. Unsatisfactory performance can result from long waiting times, inefficiency, dissatisfactory patients, and health care workers' (HCWs') burnout. The Balanced Scorecard (BSC) was introduced in 1992 [1] to perform performance evaluation (PE) of organizations in different domains, including health care. The initial design of the BSC consisted of four perspectives: financial, internal, customer, and learning and growth. The BSC was considered different from the other managerial tools, as it offers a holistic strategic approach. Our previous systematic review has proven BSC effectiveness in improving financial performance and patient satisfaction. All the previous systematic reviews lack a systematic methodological categorization of perspectives, dimensions, and KPIs to solve the nonuniformity challenge at the previous BSC implementations. Moreover, there is a lack of studies which evaluates BSC perspectives during the COVID-19 pandemic.

1.2 Aim

This research intended to perform a systematic review to identify all the internal subdimensions used in balanced scorecard (BSC) implementations and then to assess the impact of the pandemic on the internal subdimensions of health care organizations (HCOs).

2. Methods

This research consists of two steps.

First step: we performed a systematic review:

2.1 Data sources and search strategy

- In adherence with the 27-point of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist [2]. See (Figure1).
- Based on Population, Intervention, Comparison, and Outcome (PICO) tool [3].
- Both Medical Subject Headings (MeSH) terms and keywords.
- PubMed, Embase, and Cochrane.
- Grey literature, pre-prints, and unpublished studies were searched on Google Scholar and Google's search engine web-sites (to avoid publication bias).
- From inception until October 2020.
- Reference lists of any potentially eligible studies.
- Duplicates removal using the EndNote X9.2 program.

2.2 Study selection

- Titles and abstracts screening.
- Full texts careful examination.
- Selection of eligible studies: first and second authors independently, and third author arbitration in disagreements.
- January and March 2021.

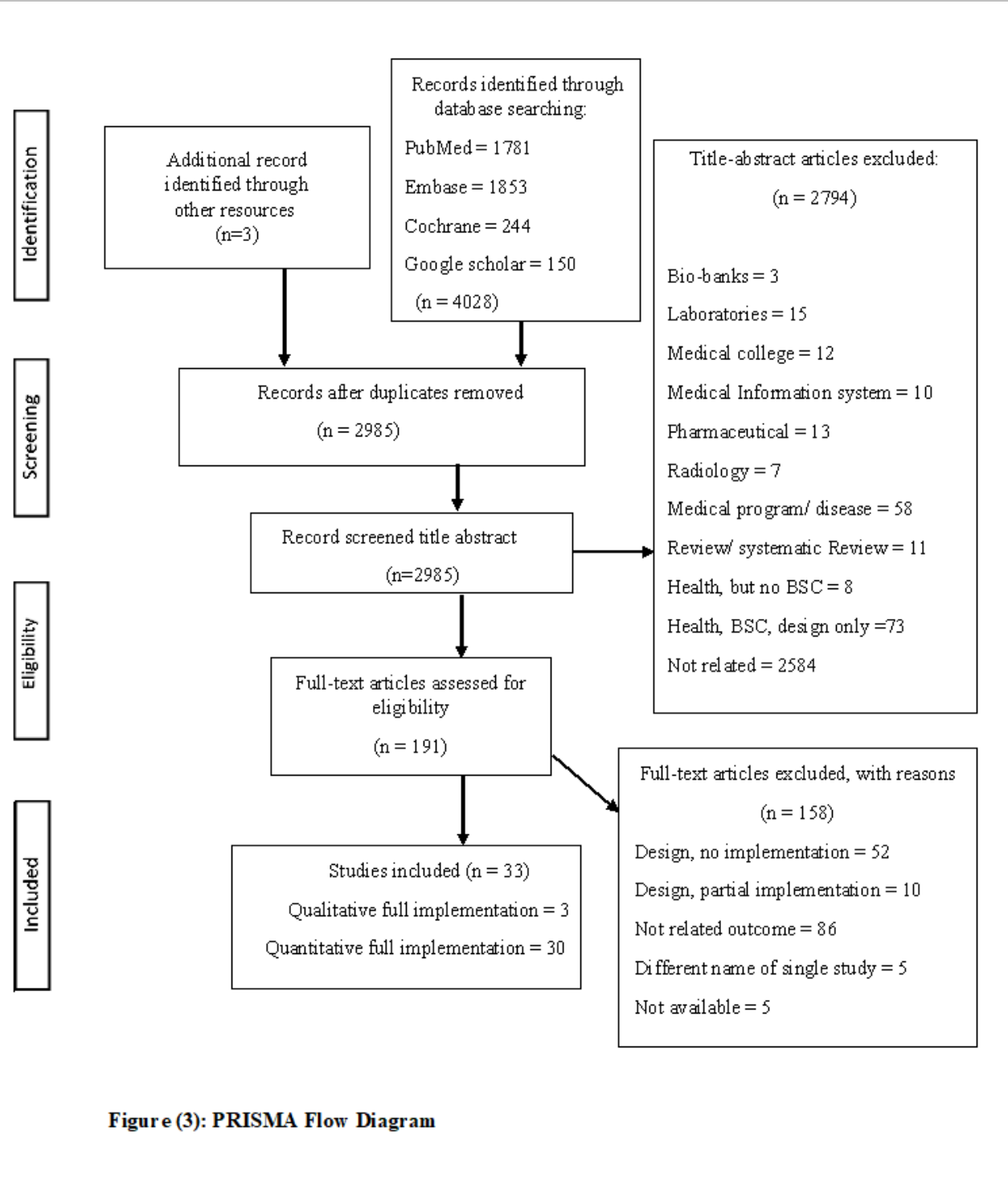
2.3 Data extraction and analysis

- Key Performance Indicators (KPIs) were extracted from the final resulted studies.
- Fore the unification purposes, KPIs were recategorized and grouped into new sub dimensions and major dimensions.

Second step:

- We searched for independent studies using the resulting internal subdimensions with the COVID-19 keyword in Google engine and Google Scholar.
- Until June 2021.

Figure 1. Prisma Flow Diagram



3. Results

3.1 Study selection

- Running the search strategy resulted in a total of 4031 studies.
- After removing the duplicates, a total of 2985 studies remained.
- After screening titles and abstracts 202 studies remained.
- Full texts examination resulted in 33 studies were finally included, at which 36 implementations were identified.

3.2 The KPIs in BSC implementations

- 797 KPIs were extracted. Each KPI was classified and grouped into 45 subdimensions. Next, these subdimensions were combined to form 13 major dimensions: financial, efficiency and effectiveness, availability and quality of supplies and services, managerial tasks, HCWs' scientific development error-free and safety, time, HCW-centeredness, patient-centeredness, technology, and information systems, community care and reputation, HCO building, and communication. Additionally, this review's findings reflect that the BSC design in health care must be modified to include external and administrative perspectives.
- 240 internal KPIs were extracted.

3.3 The internal dimensions during COVID-19 pandemic

Categorization and regrouping of these KPIs resulted in 4 major-dimensions under which 15 internal subdimensions were defined. The error-free and safety major-dimension comprised the mortality, errors, accidents and complications, infection control (IC) index, health waste (HW) management, and safety standards subdimensions. The efficiency and effectiveness major-dimension included the number of admissions and visits, efficiency and utilization, improvement ratios, and occupancy rate subdimensions. The availability and quality of supplies and services major-dimension composed of the medications, supplies and equipment, and products and services subdimensions. The time major-dimension contained the operation processing time, waiting time, and length of stay subdimensions. Almost all of these subdimensions were found to be negatively affected, except the safety standards, which improved during the pandemic due to better IC adherence. Although HW management has been extensively investigated, further investigation is needed. Additionally, the mortality, supplies and equipment, and products and services subdimensions were not sufficiently investigated in the performance evaluations of HCOs.

Figure 2. BSC 45 subdimensions

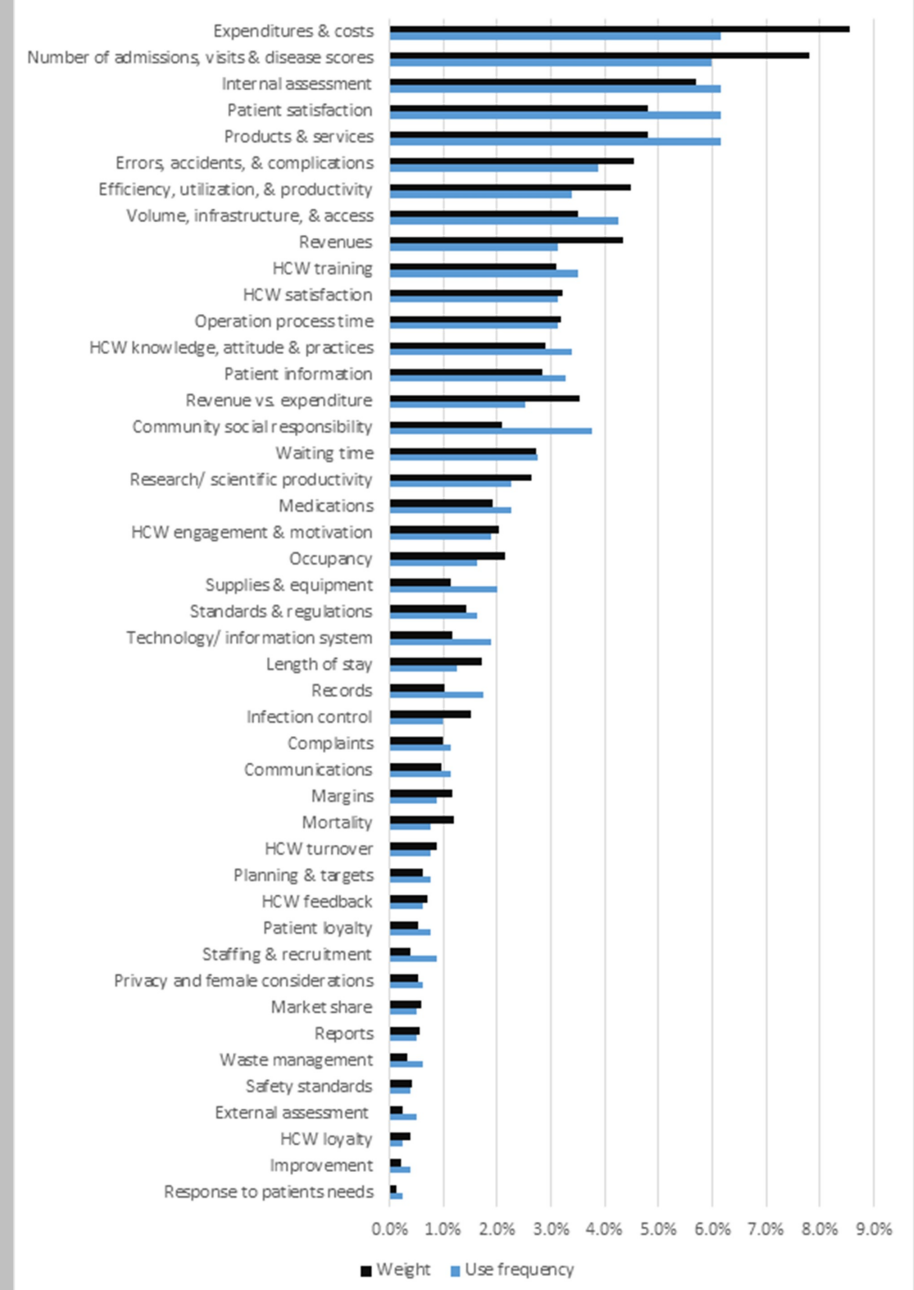


Figure 3. BSC 13 major dimensions

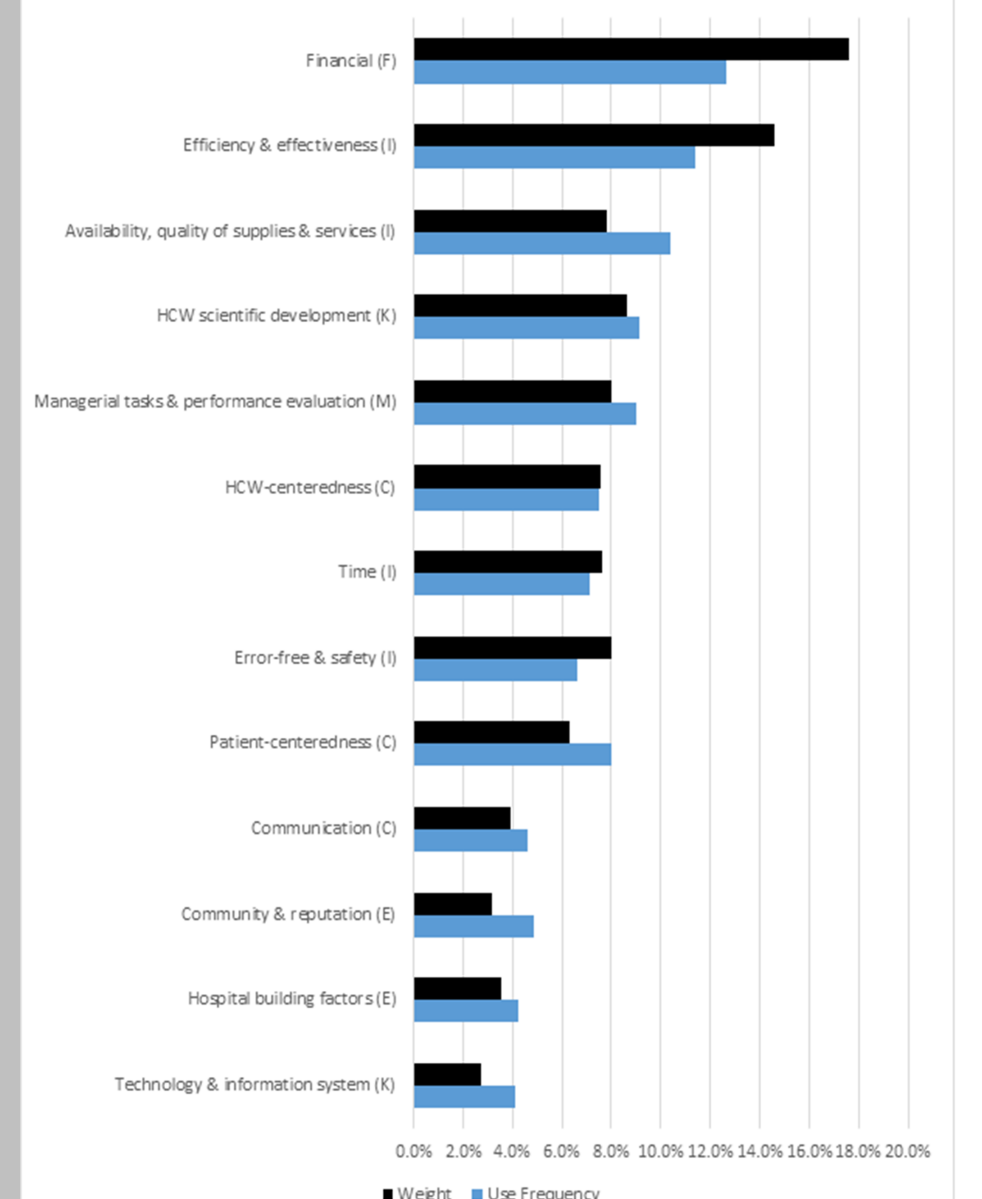
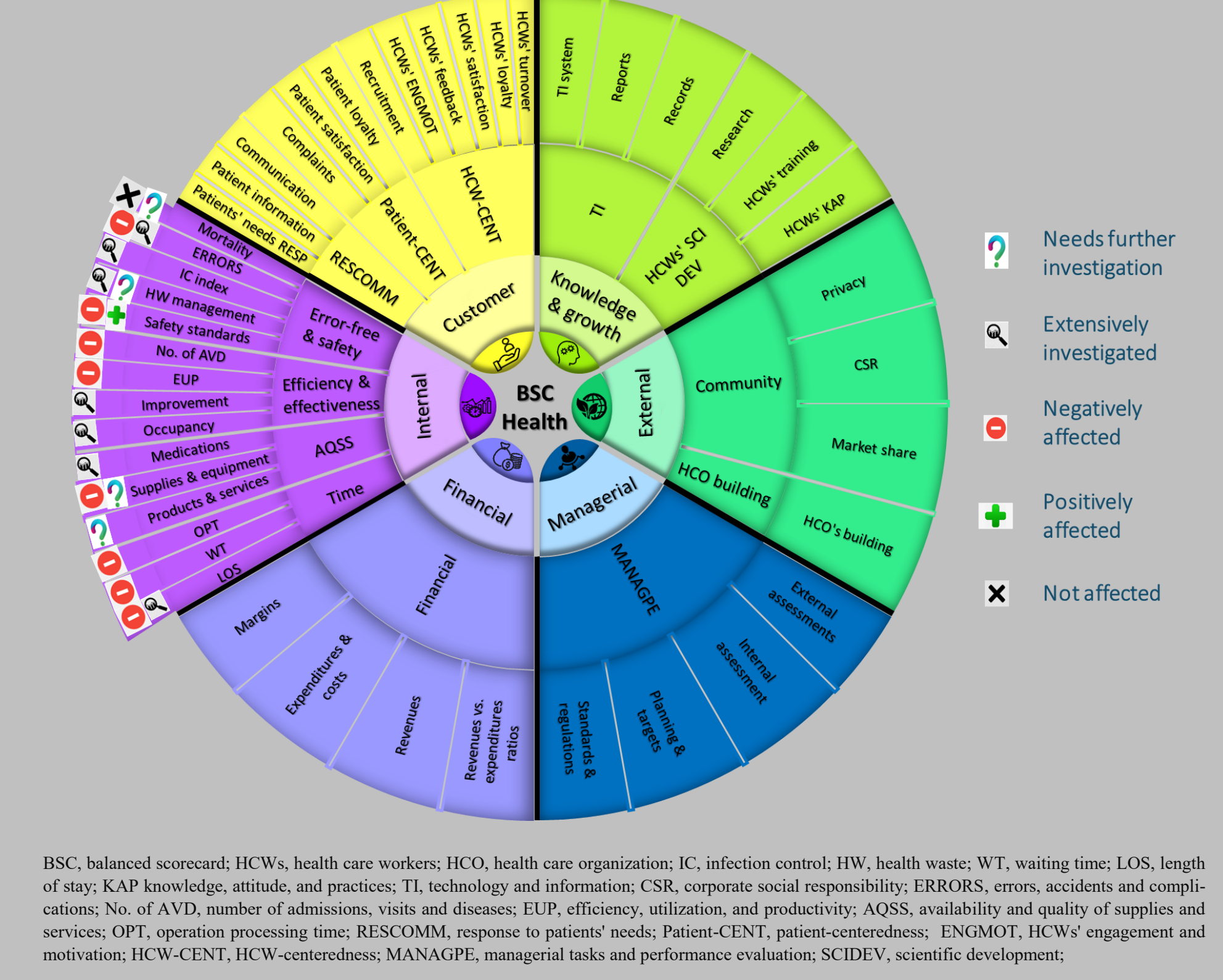


Figure 4. Summary of BSC dimensions and the pandemic impact on internal dimensions



BSC, balanced scorecard; HCWs, health care workers; HCO, health care organization; IC, infection control; HW, health waste; WT, waiting time; LOS, length of stay; KAP, knowledge, attitude, and practices; TL, technology and information; CSR, corporate social responsibility; ERRORS, errors, accidents and complications; No. of AVD, number of admissions, visits and diseases; EUP, efficiency, utilization, and productivity; AQSS, availability and quality of supplies and services; OPT, operation processing time; RESCOMM, response to patients' needs; Patient-CENT, patient-centeredness; ENGMO, HCWs' engagement and motivation; HCW-CENT, HCW-centeredness; MANAGEPE, managerial tasks and performance evaluation; SCIDEV, scientific development.

4. Conclusion

-This study resolves the problem of KPI categorization nonuniformity. It also offers both theoretical and practical implications for researchers and health care executives in determining which aspects to utilize in the future deployments of BSCs, specifically, and in PEs, in general. Moreover, dimension uniformity will improve the data sharing and comparability among studies and HCOs. Utilizing the resulting dimensions as a road map in practical PEs will lead to a comprehensive enhancement of HCOs' performance worldwide.

-Most internal subdimensions were negatively affected during the pandemic. Future research on how to improve the performance of the internal subdimensions during the pandemic is still required and encouraged.

5. Acknowledgment

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