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MANAGEMENT ACCOUNTING PRACTICES IN THE COVID ERA: EVIDENCE FROM HEALTHCARE SERVICES IN QATAR

BY

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ABSTRACT

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Title: Management Accounting Practices in the COVID era: Evidence from Healthcare Services in Qatar

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This study explores the role of management accounting practices (MAPs) and critical success factors (CSFs) in confronting COVID-19 crisis in the healthcare services in Qatar during the period of March 2020 – May 2021. The study draws on actor-network theory (ANT) and the notion of strategizing as a theoretical lens. The study utilizes a qualitative approach by triangulating semi-structured interviews and analysis of published documents, such as COVID-19 Qatar national action response plan and observations. Consequently, the thesis focuses on three main business processes (BPs) in healthcare services. Furthermore, it explores the interplay between BPs, MAPs and CSFs during COVID-19 crisis.

The results indicate the mobilization of MAPs enabled addressing the imposed challenges of COVID-19 crisis in the studied BPs. Thus, MAPs enabled the provision of useful information, which empowered decision-makers to take strategic actions to confront COVID-19 crisis. There were five CSFs revealed in the context of healthcare services in Qatar. These were good leadership, government support and the collaborative partnership with governmental and non-governmental entities, staff resilience & commitment, digitization and technology, and hospital emergency preparedness. The findings provide useful insights to practitioners and policymakers on the effective role of MAPs in addressing BPs issues. Moreover, it concludes that the success of tackling a crisis is a result of collective efforts from multiple actors who

articulate and align interests and goals toward the response of the crisis.

DEDICATION

This thesis is dedicated to my family for their endless support and love.

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CHAPTER 1: INTRODUCTION

1.1 Background

COVID-19 has created considerable disruption in the world, thus exposing new risks and uncertainties in several aspects of life, including health and safety, business continuity, the economy, and public policies (Leoni et al., 2021; Velayutham et al., 2021). Inevitably, the healthcare sector is at the frontline of the fight against COVID-19 (Demirag et al., 2020; Velayutham et al., 2021), which is a crisis unlike anything the sector encountered in the past. Scholars have argued that disasters and an uncertain business environment intensify the need for information in order to ensure the sustainable success of decision-making and to mitigate the uncertainty level (Endenich, 2014; Hopwood, 2009). The existing literature underlines the value of management accounting practices (MAPs) in the provision of useful information (Bruns and McKinnon, 1993; Langfield-Smith et al., 2008). MAPs support managers in their decision-making, planning, and in ensuring the efficient and effective direction of an organization's resources, thus enabling the creation of value (Endenich, 2014; Hopwood, 2009; Kober and Thambar, 2021; Leoni et al., 2021; Passetti et al., 2021; Pavlatos and Kostakis, 2015; Velayutham et al., 2021). Additionally, MAPs enable business processes (BPs) to address challenges (Ammar, 2017). BPs are defined as a set of logically related activities that an organization undertakes in order to perform tasks and to deliver and achieve business value, e.g. fulfillment processes, procurement processes, production processes, finance and accounting processes, and human resources (HR) processes (Ammar, 2017; Davenport and Short, 1990; Davenport et al., 2004).

MAPs play a pivotal role in the context of crisis management. The useful information gained through MAPs can provide for sustainable success in relation to decision-making during a financial crisis (Endenich, 2014; Hopwood, 2009; Pavlatos and Kostakis, 2015) and the

COVID-19 crisis (Kober and Thambar, 2021; Leoni et al., 2021; Passetti et al., 2021; Velayutham et al., 2021). Furthermore, success in confronting a crisis is improved through the accomplishment of critical success factors (CSFs) (Amirhiseini and Pilevari, 2021; Campiranon and Scott, 2014; Gedam et al., 2021). According to Osei-Kyei & Chan, (2017), CSFs are those factors that are necessary in order for an organization or project to achieve its goals and mission. This thesis aims to explore the extent of MAPs' and BPs' interplay, as well as that of the CSFs, in the success achieved when tackling the COVID-19 crisis in Qatar's healthcare sector during the two waves that occurred between March 2020 and May 2021. In so doing, the study applies actor–network theory (ANT) and the notion of strategizing as a theoretical lens. ANT provides a useful means through which to explore the dynamic processes of human and non-human actors' interactions in producing outcomes (Justesen and Mouritsen, 2011). The notion of strategizing refers to an ongoing practice of strategy that is influenced by the practice turn (Schatzki et al., 2001), i.e. instead of being something that is drafted by a company, it is something that is performed regularly by people on a daily basis (Löwstedt, 2015). Thus, the increased complexity and uncertainty of the environment requires organizations to strategize their activities, i.e. to exhibit greater adaptability and alignment with the business environment (Brown and Rocha, 2020; McMullen and Shepherd, 2006). Accordingly, the study applies ANT and the notion of strategizing as a theoretical lens through which to study this phenomenon in order to obtain insights in relation to how MAPs have strategized decision-making, along with other actors, in order to respond to the COVID-19 crisis in healthcare services in Qatar.

1.2 Motivation

This thesis is motivated by several factors. Firstly, the global COVID-19 pandemic has caused challenges worldwide, that relate to the healthcare sector, which is at the frontline of the fight

against COVID-19 (Demirag et al., 2020; Velayutham et al., 2021). Additionally, the context of the public healthcare industry in Qatar has witnessed a significant increase in expenditure over the last 10 years, with a growth of 65% (World Bank, 2020). Consequently, Qatar has raised the public healthcare system's capacity by establishing 22 new healthcare facilities with a total of 44 healthcare centers all over the country (Al Khal et al., 2020). This significant investment in the healthcare industry has had a positive impact on the quality of healthcare services. During the COVID-19 crisis, Qatar ensured the provision of healthcare services to its citizens and residents free of charge (Al Khal et al., 2020). The public healthcare industry in Qatar, therefore represents an attractive avenue to explore in order to demonstrate how the frontline sector responded to the disruptive implications of the COVID-19 pandemic while ensuring that its services were free of charge.

Secondly, the significance of MAPs, with regard to the provision of information, is well documented in prior literature (Bromwich and Wang, 1991; Kaplan, 1983; Khan, 2018; Langfield-Smith et al., 2008; Muluye, 2018; Lucas, 1997; Sulaiman et al., 2004; Wolf et al., 2020). Past studies also show how MAPs enable the addressing of issues related to an organizations' BPs (Ammar, 2017; Armistead and Machin, 1997; Vom Brocke and Sinnl, 2011). Furthermore, in the context of crises, MAPs played an effective role in addressing the Global Financial Crisis, as well as the recession in developing countries (Erokhin et al., 2019; Krasnici and Fors, 2020; Groh, 2014; Pavlatos and Kostakis, 2015). However, there is scarcity of studies that discuss MAPs' role during non-financial crises, especially in relation to large-scale global crises, such as COVID-19 (Gomez-Conde et al., 2020; Kober and Thambar, 2021; Leoni et al., 2021; Velayutham et al., 2021). Moreover, scholars believe that the COVID-19 pandemic has highlighted an urgent need for new contributions that address the relevance of accounting information in responding to the global pandemic (Leoni et al., 2021). Additionally, it can be deduced that the public health centers, such as hospitals and clinics, are at the frontline

of the fight against the COVID-19 pandemic (Demirag et al., 2020; Velayutham et al., 2021). However, there is limited body of literature that examines the role of MAPs in the management of COVID-19 pandemic in the public healthcare sectors (Huber et al., 2021), particularly while exploring in depth how MAPs enable addressing the obstacles of healthcare BPs. Therefore, this study seeks to address the literature gap by exploring the extent of MAPs' role in addressing the challenges that have been encountered in the most impacted BPs during the COVID-19 pandemic in healthcare services in Qatar. It will also extend the body of literature relating to how MAPs can be used to confront crises and, therefore, to provide organizations with insights into the relevant tools needed to anticipate and manage unexpected incidents.

Thirdly, scholars have argued that the accomplishment of CSFs is necessary in order for an organization or project to achieve its goals and mission (Dhir et al., 2021; Hong and Kim, 2002; Nah and Delgado, 2006; Rockert, 1979; Thneibat and Al-Shattarat, 2021; Zhang et al., 2021). Overall, CSFs have been well documented in the literature, as is evident in relationship with organizational change, the adoption of new technology, and the implementation of new projects (Dhir et al., 2021; Hong and Kim, 2002; Nah and Delgado, 2006; Thneibat and Al-Shattarat, 2021; Zhang et al., 2021). Furthermore, the extent of CSFs has had significant implications for the recovery from financial crises (Campiranon and Scott, 2014), as well as in managing the humanitarian supply chain during the COVID-19 pandemic (Amirhiseini and Pilevari, 2021). In this context, CSFs enabled confronting the COVID-19 crisis in the Indian healthcare sector (Gedam et al., 2021). Accordingly, the current study is motivated to explore the success of the COVID-19 response in the healthcare services in Qatar, from a wider viewpoint, taking into consideration the role of MAPs in addressing BPs' obstacles and the accomplishment of CSFs, as well as to illustrate how the establishment of CSFs, along with the utilization of MAPs, has empowered healthcare practitioners to carry out their life-saving tasks successfully.

1.3 Research Objectives and Questions

The purpose of this thesis is to extend the body of literature by exploring the role of MAPs in decision-making, and by addressing BPs' challenges in the Qatari healthcare service during the two waves of the COVID-19 crisis. Moreover, the study seeks to highlight the significance of CSFs' establishment in confronting the COVID-19 crisis in healthcare services in Qatar during these two waves. Accordingly, this thesis addresses the following questions:

Question 1: What are the MAPs that healthcare decision-makers in Qatar used to create a strategic response in the confrontation of the COVID-19 crisis during the two waves in the healthcare services in Qatar?

Question 2: How were MAPs used to address the challenges encountered in the BPs in Qatari healthcare services during the two waves of the COVID-19 crisis?

Question 3: What are the CSFs that have enabled the tackling of COVID-19 crisis in the healthcare services in Qatar during the two waves?

Question 4: How has the establishment of CSFs assisted in confronting the COVID-19 crisis in Qatari healthcare services during these two waves?

1.4 Research Methodology

This study uses a qualitative approach to explore how MAPs and the establishment of CSFs have enabled confronting the COVID-19 crisis in healthcare services in Qatar during the two waves. Prior to the data collection, ethical approval was obtained (see Appendix B) both from the Medical Research Center (MRC) of the main public healthcare provider in Qatar [Hamad Medical Corporation (HMC)] and the Institutional Review Board (IRB) of Qatar University. The study collected primary as well as secondary data through conducting semi-structured interviews both with clinical and non-clinical employees at HMC, which was triangulated with the analysis of the published documents and observations. The researcher developed the

interview guide, after a close examination of prior literature and focus-group discussion with two academics that have experience related to the research topic. The interview guide comprised of two main rounds, the first round included demographic questions such as background, specialty, or experience. While the second round of interview questions was more detailed, as it addressed the research question (see appendix A). The sample comprised HMC employees, including those holding clinical and non-clinical positions. The sample incorporated 15 employees, divided into two groups. The first group were assigned for the pilot study, with one person from the clinical and one from the non-clinical staff. The second group included the remaining 13 clinical and non-clinical employees. The study focused on the highly impacted BPs in healthcare services in Qatar during the COVID-19 crisis, namely clinical processes, supply chain processes, and HR processes. The study utilized NVivo software to run the thematic analysis of the study data in order to search, identify, and explore the relevant codes and themes that emerged.

1.5 Research Results

The results reveal MAPs that were mobilized in the addressing of BP issues in Qatari healthcare services during the two waves of COVID-19. MAPs were centered to planning practices and decision support practices and performance system. The findings suggests that this was made possible by the provisioning of useful information, which in turn empowered decision-makers to take strategic decisions that led to confronting the COVID-19 crisis.

Furthermore, the study highlights the role of CSFs with respect to the management of the COVID-19 crisis. The findings revealed five CSFs in the context of healthcare services in Qatar. These are good leadership and government support, collaborative partnerships between governmental and non-governmental entities, staff resilience and commitment, digitization and technology, and hospital emergency preparedness. Accordingly, the dynamic interaction

between MAPs and CSFs, while ensuring the alignment of goals and interests, enabled the creation of strategic outcomes. As a result, the Qatari healthcare services was successful in responding to the COVID-19 crisis during the two waves.

1.6 Research Contribution

This study contributes to the body of literature in several ways. First, it highlights the remarkable role of MAPs in addressing encountered challenges in the healthcare services during COVID-19 pandemic in Qatar. Therefore, it fills an existing empirical gap relating to how MAPs can be used to confront global pandemics, such as COVID-19 in the frontline sector.

Second, to the best knowledge of the researcher, this is the first research effort that explores the confrontation of the COVID-19 pandemic in the healthcare sector from a wider viewpoint, taking into consideration the role of MAPs in addressing BPs' obstacles and the accomplishment of CSFs. And therefore, illustrating how the establishment of CSFs, along with the utilization of MAPs, has empowered healthcare practitioners to create a strategic response for the COVID-19 crisis in Qatar's healthcare sector during the two waves. Accordingly, the study's findings provide useful insights for practitioners and policymakers regarding the relevant tools, resources, and capacities that can be used to anticipate and cope with crises successfully.

Third, the study contributes to ANT and strategizing literature by extending the body of crisis management literature. The thesis provides evidence that enables us to understand how different actors interact, while articulating their aligned goals and interests in order to create strategic actions in response to the COVID-19 crisis in healthcare services in Qatar.

1.7 Content of the Thesis

The thesis chapters are structured as follows.

Chapter 1 provides an overview of the thesis, together with a brief background, along with the motivation of the study. This is followed by the research objectives and questions, the study methodology, and an overview of the study's results. Finally, the chapter highlights the thesis's contribution.

Chapter 2 presents the literature review relating to topics undertaken by the study. Specifically, it examines research related to management accounting and its relation to BPs . Furthermore, the chapter explores CSFs and MAPs in the crisis management literature.

Chapter 3 provides the study's theoretical framework with respect to ANT and the notion of strategizing. Particularly, in relation to the accounting and crisis management literature.

Chapter 4 demonstrates the methodology that is used in this thesis. It highlights the procedures that were undertaken in order to collect the data. It also shows the various methods used to analyze the data.

Chapter 5 presents the study's results. It offers the results of the pilot study, and descriptive figures. Along with the key findings and analysis of the interviews with respect to MAPs' interplay with BPs and the establishment of CSFs.

Chapter 6 discusses the findings of the study. Additionally, it reflects on the previous research and theoretical framework used in the thesis.

Chapter 7 presents the study's conclusions. It provides a summary of the study's findings and their implications. It also discusses the limitations of the study, thus paving the way for future research.

CHAPTER 2: LITERATURE REVIEW

This chapter provides a review for the empirical literature relating to MAPs, BPs, and CSFs. The initial focus is on management accounting and its practices with a comparison between traditional and strategic MAPs. In addition, this chapter provides a review of the literature about MAPs within the healthcare sector, and also introducing BPs and CSFs. Furthermore, the literature analysis explores crisis management, as documented in prior accounting and business studies.

2.1 Development of Management Accounting

The definition of management accounting has developed over time and has thus incorporated new aspects and concerns (IFAC, 1998; Waweru, 2010). As illustrated in Figure 1, the first phase of this definition was developed before the 1950s and was mainly concerned with cost determination and financial control (Fayol, 1949; Urwick, 1928). However, in the second phase, which commenced in the 1950s, included information relating to management planning control through the use of various technologies, such as decision analysis techniques (Simon et al., 1954; Burns and Stalker, 1961). The third phase occurred around the 1980s, and it was concerned with production efficiency by reducing waste and errors and the better utilization of organizational resources (Antle and Demski, 1988; Berry et al., 1985). The fourth phase was introduced in the 1990s, when the focus moved towards creating value from the perspective of stakeholders. Furthermore, it emphasized organizational innovation through various technologies and the maximization of value drivers (Chenhall and Langfield-Smith, 1999; Spicer, 1992).

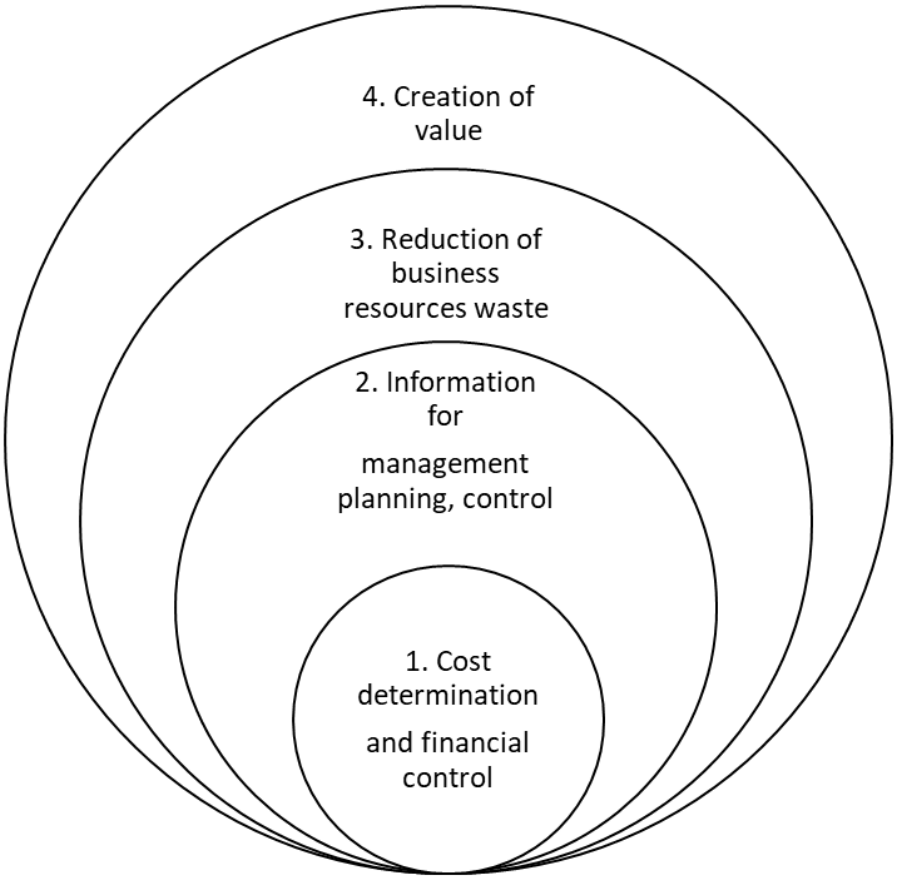


Figure 1 The Evolution of Management Accounting

The Institute of Management Accounting (IMA) (2008) defined management accounting as a profession that incorporates "*Partnering in management decision making, devising plans and performance management systems, and providing expertise in financial reporting and control to assist management in the formulation and implementation of an organization's strategy*" (IMA, 2008, p.1). According to Bruns & McKinnon (1993) and Langfield-Smith et al. (2008), management accounting focuses on techniques and processes that are concerned with the provision of information that is used to support managers in their decision-making and planning, ensuring the efficient and effective direction of organizations' resources and in enhancing their value for shareholders.

Over time, the role of management accountants has evolved in parallel with the changes related to the definition of management accounting. Wolf et al. (2020) argued that the role of the management accountant has developed from being bean counters to becoming business partners. According to Granlund & Lukka (1997) and Sorensen (2009), management accounting functions have evolved from number-crunching, the collection of financial information, and budget preparations to more strategic purposes, such as performing risk analysis, forecasting, and guiding organizations' core strategic issues. Hence, it can be ascertained that the management accountant's role is becoming more strategically oriented, especially in times of crisis. It is important to note that management accounting has subscribed to certain practices, which are known as MAPs. The following section examines each of these practices in detail.

2.1.1 Management Accounting Practices (MAPs)

MAPs are defined as a mechanism that ensure the provision of useful information enabling the pursuit of organization goals (Alleyne and Weekes-Marshall, 2011). These practices are classified into four main groups: costing; budgeting; performance measurement systems; and decision support systems (Sulaiman et al., 2004). The provision of information is considered to be one of the core aspects of MAPs (Shields, 1998), which are essential in ensuring the survival of organizations. The useful information that results from MAPs enables organizations to adapt to the dynamic and contemporary business environment, thereby leading to better guidance for managerial decisions and actions, which subsequently enables the creation of value (Muluye, 2018). MAPs are divided into two main categories: traditional MAPs (T-MAPs); and contemporary or strategic MAPs (S-MAPs) (Sulaiman et al., 2004).

2.1.1.1 Traditional Management Accounting Practices (T-MAPs)

Conventional wisdom describes management accounting as a mechanism that provides information for management planning and control (Burns and Scapens, 2000). Scholars have

argued that the starting point for MAPs is the principles of financial accounting and bookkeeping. In effect, MAPs are concerned with collecting financial information, with a focus on cost determination. Moreover, business actions are performed on fixed long-established criteria or standards (Chenhall and Langfield-Smith, 1999; Sulaiman et al., 2004). Specifically, T-MAPs are comprised of traditional costing, budgets, decision support systems, and financial performance measurements (Kaplan, 1983; Bromwich and Wang, 1991; Lucas, 1997).

2.1.1.1.1 Costing.

Costing is one of the oldest management accounting techniques, which seeks to determine the cost information that relates to an organization's products, services, and other BPs (Ovunda, 2015). Traditionally, organizations rely on standard costing, which is a determination of a pre-defined average for costs. Standard costing is developed in order to compare it with the actual incurred costs (Fleischman and Tyson, 1998). The costing process involves collecting cost information and allocating it to cost objects (Eaton, 2005). There are two major techniques used in cost collection information, which are job costing and process costing. Drury (2012), after the collection of cost information, the costing information need to be allocated to enable pricing decisions of the cost objects.

Cost can be allocated using two main approaches: full absorption costing; and variable costing (Kefasi, 2019). The full absorption technique seeks to allocate variable and fixed manufacturing costs. Variable costing considers variable manufacturing costs as a product cost, while classifying costs that have not been incorporated as period costs (Drury, 2012). Furthermore, when it comes to the consideration of manufacturing overheads in relation to product costs, the indirect costs are assigned by aggregating the total overheads into one costing pool. The technique requires a cost driver rate to be assigned to the products by multiplying them by the number of units produced (Patiar, 2016). The cost driver is identified by assigning volume-driven measures, such as the number of units produced.

2.1.1.1.2 Planning.

Budgeting is one of the primary planning activities at any organization. It seeks to identify future allocation of an organization's resources or processes. This details how organizational resources will be utilized in order to achieve the desired outcomes within a certain time frame (Ekholm and Wallin, 2011). It has been argued that control cannot be achieved unless there is planning that relates to the future allocation of an organization's resources (Kefasi, 2019). Furthermore, budgets provide the means to allocate scarce resources efficiently, and they facilitate communication and coordination between the departments in an organization (Ekholm and Wallin, 2011).

Budgets can be used as a mechanism though which to evaluate managerial performance (Garrison and Noreen, 2003; Hansen and Mowen, 2002). Traditional budgets are prepared by projecting the allocation of resources and organizational processes into the future by using historical information, including previous budgets (Ekholm and Wallin, 2011). Moreover, budgets are an exercise that illustrates any increases or decreases in relation to the previous year (Clarke, 2001; Sulaiman et al., 2004). When it comes to the budgeting approach, there is a top-down and a bottom-up approach. The top-down approach is based on the creation of the budgets by the executives at the top of the hierarchy of an organization and these are then imposed upon the employees, who are responsible for implementing these budgets. However, the bottom-up approach is basically used when those participating in the budgeting process include both top executives and employees (Eaton, 2005; Kefasi, 2019). It is preferrable in MAPs as it allows information sharing and motivates employees to achieve their objectives (Parker et al., 2006).

2.1.1.1.3 Traditional Decision Support Systems.

MAPs are used to provide information with which to support decision-making (Burstein and Holsapple, 2008; Yeshmin and Hossan, 2011). Scarlett (2005) stated that decisions are

categorized into short-term decisions, which are related to the day-to-day operational activities, and long-term decisions, which are related to strategic functions or activities, such as capital and the closing down or continuation of a product line or a department. The maximization of profit is crucial for decision-making (Kefasi, 2019). Traditional decision support systems rely mainly on financial information (Sulaiman et al., 2004). These systems include cost-volume-profit (CVP) analysis, the analysis of payback period, and the accounting rate of return (ARR) (Kefasi, 2019).

CVP analysis, which is also known as break-even analysis, seeks to identify how changes in volume (the quantity of product) and the total costs (variable and fixed costs) impact the organization's profits (Guidry et al., 1998). Consequently, CVP analysis enables managers to identify the optimal level of production. Kefasi (2019) argued that CVP analysis is an effective decision support system, especially in relation to tactical and short-term decisions. However, despite its simplicity, it fails to take into consideration the changing and uncertain nature of business environments (Abdullahi et al., 2017). Long-term decisions may be aided by the payback period technique, which is a method that identifies the time that it will take for the organization to recover the outflow of the invested funds (Wong et al., 2007). Despite of the simplicity, it has been criticized because it does not account for needed time, which is a crucial component in estimating the value of money. It would therefore be useful to use the payback return method for short- to medium-term decisions, with a focus on profit maximization (Andor et al., 2015). Another simple method is accounting rate of return (ARR), which is commonly used in traditional decision support systems. This technique takes the arithmetical mean of the annual expected income of a project in order to obtain its expected return (Brief and Lawson, 1992). Similar to other methods, the ARR method fails to take into consideration the time factor, which has a direct implications on the value of money (Kefasi, 2019). In contrast, the net present value method takes into consideration the time factor, as the

calculation is based on discounted cash flows to arrive at the present value of the money (Ross, 1995).

2.1.1.1.4 Performance Measurement.

The performance measurement system is defined as a metric with which to evaluate a given action's performance in terms of its efficiency and effectiveness (Melnyk et al., 2014). Performance measures may incorporate both financial and non-financial measures, which focus on different variables (e.g. customers, internal BPs, employees, etc.) (Kefasi, 2019). Traditional performance measures are concerned mainly with financial measures, which are based on financial accounting measures that are often represented as ratios. Examples of financial measures include return on investment, risk ratios, liquidity ratios, and variance analysis, which describes the differences between the budgeted performance and the actual performance (Atkinson and Brown, 2001; Kefasi, 2019). Financial measures seek to identify performance in terms of profitability, risk, and efficiency (Atkinson and Brown, 2001; Sangster, 2016).

Despite the simplicity of these financial measures, they encountered some criticism. Such measures are prone to human error and could be easily manipulated. Moreover, financial measures do not provide sufficient information, as they do not illustrate the causes or drivers that are required in order to reach such a number (Kaplan and Norton, 1992). Furthermore, traditional measures reflect historical information. They are perceived as lag indicators that encourage managers to focus on short-term performance, thereby disrupting the achievement of long-term objectives (Anthony and Govindarajan, 2007; Kaplan and Norton, 1992).

2.1.1.2 Strategic Management Accounting Practices (S-MAPs)

S-MAPs are defined as the provision and analysis of management accounting information that focuses on business and other external information, such as their competitors, in order to develop and monitor a business strategy (Simmonds, 1981). The concept of S-MAPs has gained

prominence as a result of the mounting criticism directed towards T-MAPs. Scholars have argued that T-MAPs are short-term-oriented and focus on internal financial and historical information, with limited flexibility for making changes (Cadez and Guilding, 2008; Pavlatos and Paggios, 2009). Furthermore, T-MAPs result in limited information, which is inadequate in times of the scarcity of resources and a changing business environment. As a result, T-MAPs are no longer considered to be either sufficient or suitable for the contemporary business environment (Ahmad and Leftesi, 2014; Hussein, 2018; Johnson and Kaplan, 1987).

In contrast to T-MAPs, S-MAPs are based on a holistic approach that includes multiple perspectives. These perspectives focus on external factors, such as industry, competition, and employees. Moreover, they consider both financial and non-financial information, thus emphasizing the building of a forward-looking MAPs model in order to support decision-making and to allow the development and monitoring of an organization's mission, vision, and strategic objectives. S-MAPs are leading indicators that focus on the organization's operations and activities and are more likely to be controlled by lower-level management. S-MAPs are categorized into four main groups: costing; planning; the decision support system; and performance measurement (Cadez and Guilding, 2008; Guilding et al., 2000; Hussein, 2018; Sulaiman et al., 2004).

2.1.1.2.1 Costing.

In a contemporary business environment, costing is considered one of the major factors that impacts the organizations' strategic position due to its influence over pricing decisions. Increased complexity and competition in the business environment have contributed to increased pressure on organizations to accurately address and reduce their costs without compromising the quality of the organization's products or services (Apaka et al., 2012). Scholars identified a wide range of advanced costing techniques that focus on the cause-and-effect relationship between costs and the strategic position of an organization. Examples

include activity-based costing (ABC), target costing, and life cycle costing (Cadez and Guilding, 2008; Guilding et al., 2000; Hussein, 2018; Juras, 2014; Sulaiman et al., 2004).

The ABC costing technique emphasizes indirect costs relating to the allocation of costs to products or services. However, the challenge lies with indirect costs since they are difficult to trace back to the products. Traditionally, indirect costs have been assigned by aggregating the total overheads into one costing pool. The following steps would be to identify the cost driver rate, using volume-driven measures, such as the number of units produced, and then assign the rates to the products by multiplying this number by the number of units produced (Kefasi, 2019). However, this technique causes cost distortions and results in misleading decisions (Patiar, 2016). Accordingly, the ABC system corrects these issues by enhancing the accuracy of indirect cost allocation (Robin and Kaplan, 1991). It seeks to identify those activities that contribute towards the overheads, and then assigns each activity to a particular costing pool. Furthermore, a driver for each activity is identified and a driver rate is calculated, which will then be traced to the products by the amount that the drivers have consumed (Robin and Kaplan, 1991; Shields, 1995). The ABC system draws attention to the drivers and enablers of indirect costs, thus making it a better technique relative to others (Langfield-Smith et al., 2008). As a result, it allows for a better understanding of the indirect costs, which leads to better cost-management decisions.

The second technique is target costing, which refers to the process of determining a target for the cost of the product and ensuring that the product satisfies customers' needs. Hence, this technique focuses on maximizing customer value and organizational profit, which can then be reflected positively in the organization's strategic position (Guilding et al., 2000).

The third technique is life cycle costing, which is the process of identifying the costs of the product, or the project, during the life of the cost object. It considers all the stages that a cost object goes through, such as introduction, growth, maturity, descent, and abandonment

(Woodward, 1997). The life cycle costing technique seeks to optimize an asset's total costs by recognizing the amount of the expenditure that will be incurred by an asset. Furthermore, lifecycle costing plays an effective role in the time during which there is a trade-off in the decision, thus ensuring optimal selection (Cadez and Guilding, 2008; Kefasi, 2019; Shields and Young, 1991; Woodward, 1997).

2.1.1.2.2 Planning.

In the context of strategic management accounting, planning is an effective tool that allows the translation of organizational strategic goals into an operational plan (Langfield-Smith et al., 2008). Unlike traditional planning, which is primarily based on historical information, strategic planning focuses on assessing the organization's capabilities and business environment. Furthermore, it seeks to draw up a strategy that transforms the organization's strategic objectives into a plan through a process of priority setting and the allocation of organizational resources to achieve the organization's goals (Bonn and Christodoulou, 1996; Mintzberg, 1993). The common practices of planning in S-MAPs are activity-based budgeting (ABB), rolling forecasting, and capital budgeting.

The ABB technique relies on budgets being prepared using the ABC system. Additionally, the ABB technique focuses on determining activities that lead to the costs in an organization, and then analyzing the activities' information to create efficient budgets (Hansen, 2011; Pietrzak, 2013).

Rolling forecasts offers a forward-looking mechanism through which to create flexible, realistic budgets and to facilitate the dynamics of, and proactivity in, decision-making (Henttu-Aho, 2018). It is a continuous budgeting process that is typically based on rolling the updates to the budget, either monthly or quarterly. Rolling forecasts offer a realistic reflection of the budget situation by adding a new plan whenever the quarter or the month ends, thus making it

an incremental extension of the recently expired budget (Goretzki and Messner 2016; Henttu-Aho, 2018; Palermo, 2018).

Capital budgeting is one of the strategic accounting tools that focuses on assessing long-term projects. As a result, it facilitates decisions in relation to investment in items such as machines, plant, replacements, and research and development projects (Majchrzac and Nadolna, 2019; Robin and Hart, 2003).

2.1.1.2.3 Decision Support Techniques.

According to the IMA (2008), MAPs aid the decision-making process through information provision. Information is considered to be crucial in decision-making, since it mitigates uncertainty that might arise (Burstein and Holsapple, 2008; Yeshmin and Hossan, 2011). The decisions are categorized into short-term decisions, which relate to day-to-day operational activities, and long-term decisions, which refer to strategic functions or activities (e.g. capital and the closing down, or continuation of, a product line) (Scarlett, 2005). It is also considered that the maximization of utility is a key element of decision-making (Kefasi, 2019). In contrast to traditional support techniques, which focus on financial information that supports decision-making, strategic decision support practices focus on financial and non-financial information, such as customer satisfaction and employee loyalty (Obohn and Ajibolade, 2017). The common practices that support decision-making are customer profitability analysis (CPA), product profitability analysis (PPA), benchmarking, just in time (JIT), total quality management (TQM), activity-based management (ABM), value chain analysis (VCA), differential analysis, business process re-engineering (BPR), and the theory of constraint (TC).

CPA is conducted by determining the profitability contribution of each segment of customers, or of individual customers, by attributing the profits generated and the costs incurred by each segment/customer separately (Chen et al., 2013). Similarly, PPA determines the profitability contribution for each product line produced by the organization (Raaij et al.,

2003). CPA and PPA provide insights into the performance of their customers and products. They address which category is drawing more costs, rather than generating money for the organization, which helps organizations re-evaluate their business activities (Chen et al., 2013; Raaij et al., 2003).

Benchmarking compares an organization's activities, performance, or any business information, with other organizations' best practices (a leading organization in the industry and/or competitors). Benchmarking enables organizations to strive continuously for the improvement of their performance, which according to Prašnika et al. (2005) improves the quality of the decision-making process. Additionally, it provides useful insights as the comparison process with best practices enables the identification of any shortcomings (Cadez and Guilding, 2008; Prašnika et al., 2005).

JIT is used in many fields, especially in the manufacturing industry and consultation services (McGowan et al., 2008; Oğuz and Dinçer, 1991). The concept of JIT, as per Monden's (1983) definition, is to make the products in the necessary quantity, in a timely fashion, and without compromising quality. As for the concept of JIT, it is often used in manufacturing sectors due to increased fluctuation levels in customer demand and increased inventory costs. As a result, companies can seek to directly align raw material orders from their suppliers with the production schedules. JIT focuses on addressing two things simultaneously. The first is raising the operational efficiency while the second is maintaining the required quality (Oğuz and Dinçer, 1991). With respect to consultation services, McGowan et al. (2008) argued that information is considered to be a key element in decision-making, as clients require accurate advice that comes just in time to make decisions. According to McGowan et al. (2008), JIT information has proven its effectiveness in the primary care service delivery in Ontario. In so doing, it has had positive implications for raising the quality of decisions through the provision of accurate real-time information, thereby enhancing clients' satisfaction levels.

VCA is the process of analyzing activities that an organization undertakes in order to transform the inputs of a product or service into a value-added output. Value chain activities run all the way from procuring raw materials to after-sales services (Dekker, 2003; Taylor, 2005). Porter (1985) stated that traditional decision support systems hinder the relationship between internal activities' interlinkages with external opportunities. The analysis determines the established linkages between internal activities and external parties, such as suppliers and customers. Accordingly, it provides useful insights and enables the addressing of competitive advantage strategies (Dekker, 2003).

ABM is a discipline that involves using ABC, which relates to the management of activities in order to enhance customer value, maximize profits, and improve the performance of those activities (Cardos and Pete, 2011; Turney, 1992). Drawing on ABC information, ABM analysis focuses on how to improve and redirect organizations' activities and resources in order to maximize efficiencies and, moreover, to improve strategic and operational decisions (Armstrong, 2002).

Differential analysis is the analysis of costs and benefits that arises from the available alternative courses of action (Heisinger, 2010). Hence, costs or benefits that do not differ among those of the alternatives are considered to be irrelevant costs. Similarly, sunk costs, which are incurred in the past, are irrelevant to decision-making (Hoggett et al., 2015).

BPR is the practice of analyzing current BPs for the purpose of developing a new method or modifying a current process in order to improve efficiency and productivity levels. Additionally, BPR is concerned with reviewing the workflows to optimize processes and to cease non-value added activities (Khan, 2018; Langfield-Smith et al., 2008). Goksoy et al., (2012) added BPR is a strategic organizational initiative to re-evaluate and re-design organization BPs for the purpose of achieving a competitive edge.

TC is a strategy for exploring those factors that most hinder (constrains) the achievement of the organization's goals. Consequently, the organization's work on discovering these hindering factors reveals what is known as a "bottle neck." These factors hamper the organization in eliminating or mitigating their impact (Khan, 2018; Langfield-Smith et al., 2008). Additionally, in the global competitive environment, TC provides useful means for organizations to understand the weaknesses of their BPs, and therefore it enlightens managers with useful insights on solving the origin of the bottlenecks, and therefore addressing their organizational objectives (Şimşit et al., 2014).

TQM is defined as the process of ensuring customer satisfaction in order to deliver the perceived value to the customers (Hackman and Wageman, 1995). It is also a considered a continual process of eliminating errors (Yusuf et al., 2007). Additionally, TQM enable the better utilization and optimization of organizational resources and activities by addressing issues and concerns that arise in the organization's activities (Abeygunasekera et al., 2018)

2.1.1.2.4 Performance Measurement.

Prior studies have found that traditional performance measures, which focus on financial metrics, are possibly inadequate and misleading (Sulaiman et al., 2004). They are recognized as being lag indicators, which do not provide information about the causes underlying certain outcomes. Furthermore, these measures rely on historical information, neglecting those factors that arise in the current business environment (Anthony and Govindarajan, 2007; Kefasi, 2019; Sulaiman et al., 2004). As a result, sole reliance on traditional performance measures does not provide a comprehensive picture of the organization's performance. In this context, this process does not capture the efficiencies of labor and other non-financial measures. It is thus necessary to take into consideration both the financial and non-financial measures.

One of the major techniques in performance evaluation within S-MAPs is the balanced scorecard (BSC), which is a strategic performance tool developed by Kaplan and Norton

(1992). It translates the organizational mission and vision into actions through a set of financial and non-financial measurements across a range of perspectives. BSC focuses on financial and non-financial aspects, including learning and development, internal BPs, customers, and financial dimensions. It also gives attention to individual as well as organizational objectives alike, which are developed from each perspective, along with measurements and targets. Furthermore, initiatives are also developed in order to address the objectives and perspectives (Kaplan & Norton, 1992; Langfield-Smith et al., 2008).

There are other measures that organizations may take into consideration, such as the Six Sigma methodology, which was developed by the Motorola Company in 1980 (Mehrjerdi, 2011). According to Klefsjoe et al. (2001), Six Sigma is a quality management methodology that helps organizations improve their BPs and minimize defects. The term refers to standard deviation, which is often used in statistics. The concept focuses on producing 99.9966% defect-free products (Aized, 2012), i.e., on average, 3.4 defects feature in every one million opportunities. In this regard, the Six Sigma model uses the DMAIC approach (define, measure, analyze, improve and control). This starts with defining the problem from the customer's perspective, then analyzes the processes' effectiveness and efficiency, before improving the processes that have been implemented, thus enabling control through identifying whether what has been implemented has achieved the objectives required and has solved the problems for customers (Klefsjoe et al., 2001).

Other factors are also considered, such as customer satisfaction surveys, suppliers' perceptions and feedback, and employees' absenteeism levels (Kefasi, 2019). Table 1 summarizes costing, planning, decision support, performance measurement.

Table 1 Management Accounting Practices

	Traditional management accounting practices	Strategic management accounting practices
Costing	Process costing; volume-driven measures for overhead allocation; variable costing	Activity-based costing (ABC); target costing; life cycle costing
Planning	Traditional budgets	Activity-based budgeting (ABB); rolling forecasting; capital budgeting
Performance measurement systems	Financial ratios (return on investment, risk ratios, liquidity ratios) as well as variance analysis	Balanced scorecard (BSC); customers satisfaction surveys; Six Sigma
Decision support systems	Cost-volume-profit (CVP) analysis; payback period; accounting rate of return (ARR)	Customer profitability analysis (CPA) or product profitability analysis (PPA); Benchmarking; just in time (JIT); total quality management (TQM); activity-based management (ABM); value chain analysis (VCA); differential analysis; business process re-engineering (BPR); theory of constrain (TC)

2.1.2 Management Accounting Practices (MAPs) in the Healthcare Sector

This section highlights findings from prior studies and discusses various arguments from the literature that focus on the healthcare sector. It specifically addresses the arguments concerning MAPs in healthcare (a non-profit sector), which is unlike other sectors.

Healthcare services have been operating in a dynamically changing environment because of various factors, such as reliance on technologies and changes related to legal and political and demographic developments (Bazzoli et al., 2004; Marlin et al., 2002). These

changes have contributed to an increased level of uncertainty and pressure on the healthcare sector in terms of ensuring the delivery of high-quality care (Ahmed et al., 2017; Krupička, 2020). As a result, it is critical for healthcare services to adopt an effective management accounting system. In this context, the useful information provided by MAPs enables transforming ambiguous and uncertain situations into plannable actions concerning the effective organization of materials and staff, thereby improving quality care (Huber et al., 2021). Furthermore, it will ultimately be reflected in the patients' overall experience and increase stakeholder value (Krupička, 2020).

MAPs enable the provision of quality of information for decision-makers, which enhances the effectiveness of healthcare services. For example, in Europe, the introduction of the Diagnosis Related Group (DRG) payment system created a set of unforeseen issues (Bazzoli et al., 2004). Patients that were treated under the DRG system were charged at fixed rates, which were not related to the costs of services provided. As a result, there was increased pressure on the effectiveness of the healthcare sector. Moreover, growing importance has been attached to MAPs, which can provide the relevant information to decision-makers (Eldenburg et al., 2017; Malmmose, 2019). Krbesupička (2020) explored MAPs in Czech public hospitals through a survey that was distributed to 60 hospital managers. The results indicate that MAPs are well established in Czech hospitals as budgeting and conventional practices, as well as for benchmarking. Furthermore, according to the findings of the study, these were the practices that were most used to support managers in relation to decision-making.

Lachmann et al. (2013) examined the importance of S-MAPs for hospitals that were subject to changing business environments. Through conducting a survey-based study in 116 hospitals in Germany, the study found that hospitals in this changing environment strategized their actions. Not only were these applied, but they were also regularly adjusted, updated, and communicated to the employees. Although discrepancies were found in the use of S-MAPs

among these hospitals in Germany, there was consensus on the importance of using advanced budgets, as well as benchmarking practices, among the hospitals examined. The introduction of the DRG payment system in Europe has led to increased pressure to obtain accurate cost and managerial information. This is particularly true regarding the overheads' allocation, as this technique suggests that patients will be charged at a fixed and predetermined rate, and not at the actual cost of the service provided. Hence, hospitals have started to use an advanced costing system, such as ABC, which may result in useful cost information and improve decision-making. Moreover, it may result in accurate performance outcomes (Silva and Cyganska, 2016; West and West, 1997).

Budgeting practices are highly critical in healthcare services. Barasa et al. (2017) examined budgeting and planning practices via case studies related to two public health hospitals in Kenya. The findings indicated that budgeting practices are one of the most effective tools that enable the setting of priorities in healthcare services. Moreover, they facilitate the effective and efficient allocation of the organization's resources. However, the authors claimed that budgeting practices lack an alignment between the needs of the organization and those of the employees. Furthermore, there was lack of clarity in the setting of priorities, as employee participation in the process was extremely limited. In one of the hospitals, the budgeting preparation was transparent to stakeholders and was communicated well to the employees. However, this was not evident in the second hospital.

Smith & Wheeler (2006) stated that capital budgeting is considered to be crucial in healthcare organizations, especially in public health hospitals. They further stated that these results are from several factors, such as demographic development, increased hospital activities, scarce resources, and increased need for financial and capital resources. Regarding performance measurement systems in healthcare, BSC and patient satisfaction surveys are among the most popular tools used to evaluate performance and assess the quality of healthcare

services (Adekanye et al., 2013; Atinga et al., 2011; Kumar et al., 2005; Thornton et al., 2017; Voelker et al., 2001). These tools provide an in-depth analysis of performance by assessing the causes of such outcomes, therefore capturing insights regarding external factors, including for example the drivers of patient satisfaction, as patients are considered to be one of the major stakeholders for which hospitals seek to maximize value.

Noufal (2018) proposed the use of a BSC for HMC, which is Qatar's main public healthcare provider. The BSC was intended to help HMC in transforming its strategic plan and to communicate efficiently with all employees. Moreover, this tool is expected to add value, as HMC is undertaking a significant number of expansion projects. BSCs enable the implementation of an organizational strategy, thus facilitating the monitoring of organizations' strategies and objectives (Noufal, 2018).

2.2 Business Processes (BPs) and Management Accounting

The second construct of the research topic focuses on BPs and business process management (BPM). It examines their relationship with management accounting in light of the empirical findings from prior literature. BPs are a set of logically related activities that an organization undertakes in order to perform tasks and deliver and achieve business values (Ammar, 2017). This comprises general activities that an organization performs in order to achieve its business outcomes, such as fulfilment, procurement, production, finance and accounting, and HR and customer service processes (Ammar, 2017; Davenport and Short, 1990, Davenport et al., 2004). Rebuge & Ferreira (2012) argued that BPs in healthcare are classified into clinical processes and administrative processes. Clinical processes have a direct relationship with patient care and safety. Furthermore, clinical processes rely on the diagnostic and therapeutic cycle, which requires having medical science expertise. Consequently, clinical processes require making observations, reasoning, decision-making, interpreting different information in relation to each

patient, and taking the resultant actions. The administrative, or non-clinical, processes support the clinical processes' activities and the organization's management. Furthermore, they address stakeholders' needs, such as accounting, HR, and logistics (Poulymenopoulou et al., 2003).

The Association of Business Process Management Professionals (ABPMP, 2019) defined BPM as "*a disciplined approach that is used to identify, design, execute, document, measure, monitor, and control both automated and non-automated business processes in order to achieve consistent, targeted results aligned with an organization's strategic goals*". BPM is a methodology that seeks to propose, analyze, re-design, and re-engineer innovative solutions relating to an organization's BPs in order to enhance the overall effectiveness and efficiency of the organization (Pereira et al., 2019).

Franz & Kirchmer (2012) added that BPM is an advanced management tool that seeks to support value creation, thus leading to generic excellence. BPM has gained wide attention in the information technology literature (Van deraalst et al., 2016). Enterprise resource planning (ERP) is an example of BPM, which enables the integration of an organization's BPs into one central database. This allows for real-time reporting and the automation of transactions, which results in better decision-making (Ammar, 2017; Davenport et al., 2004). Therefore, the concept of BPM relates to better utilization and optimization of organizational resources and activities by addressing issues and concerns that arise in the BPs. This results in improved organizational performance, while supporting the creation of value and achieving the organization's strategic objectives.

In the context of BPM and MAPS, Ammar (2017) argued that MAPs exist to address the issues in BPs and to support the achievement of BPM. Additionally, MAPs, specifically BPR and TQM, facilitate the accomplishment of BPM (Abeygunasekera et al., 2018; Armistead and Machin, 1997; Vom Brocke and Sinnl, 2011). MAPs are relevant to decision-making, since they provide useful information that mitigates uncertainty levels. Additionally,

the provision of information by MAPs is considered useful in addressing those issues that arise in an organization's BPs. Based on the above discussion, it is considered important for the current study to first explore the BPs that have been significantly affected by COVID-19, and then to explore the role of MAPs in addressing the issues that have arisen as a result of the BPs. This reflects positively on decision-making, management, and control related to COVID-19 in the State of Qatar.

2.3 Critical Success Factors (CSFs)

CSFs were initially used in project management studies (Rockart, 1979). They have been widely applied in different contexts, such as organizational management, supply chain management, and operational management (Osei-Kyei and Chan, 2017; Power et al., 2001; Zhou et al. 2021). Rockart (1979) suggested that CSFs are factors, variables, or characteristics that must be established in order to have a significant impact on the success of an endeavor or entity. Additionally, Thierauf (1982) added that the non-existence of CSFs decreases the likelihood of the achievement of the desired outcome. As a result, the accomplishment of CSFs leads to the success and achievement of desired outcomes.

CSFs have been widely researched in organizational and information technology change, as well as in the project management literature (Dhir et al., 2021; Hong and Kim, 2002; Nah and Delgado, 2006; Thneibat and Al-Shattarat, 2021; Zhang et al., 2021). According to Nah & Delgado (2006), the CSFs for ERP implementation and the upgrading of ERP systems are the business plan and vision, change management (the ability to realize the importance of change and the ability to remain competitive in the business environment), communication, ERP team composition, skills and compensation, management support and championship, project management, and system analysis. Furthermore, Ram et al. (2014) suggested that one of the CSFs of ERP systems is their alignment of the organizational mission and vision and

strategic goals with the information system's scope and strategy. This leads to enhanced competitive advantage. Dhir et al. (2021) explored the CSFs for cross-border acquisitions and found that there are six CSFs: organizational learning capability; technology capability; knowledge management; technology relatedness; the acquirer's absorptive capacity; and national cultural differences.

In the context of crisis management, Campiranon & Scott (2014) studied the CSFs for global financial crisis recovery among Phuket hotels. By using the methodology of qualitative analysis and conducting in-depth interviews with decision-makers in the Phuket hotel industry, they found five CSFs: crisis management and recovery plan; crisis market segmentation, through exploring the new segments that resulted from the crisis; recovery promotion, such as marketing promotions with greater emphasis on affordability and quality; collaborative partnerships with different entities; and a personnel management plan that clearly sets out the payment and working conditions for staff during crises.

Periods of unrest and crises can have an important impact on an organization's CSFs. Amirhiseini & Pilevari (2021) analyzed the CSFs for managing the humanitarian supply chain during the COVID-19 crisis. The findings revealed the following CSFs: suppliers' resilience and technical production capability; response support capability; and agents' organizational environment and technology. Additionally, Gedam et al. (2021) explored the CSFs in the Indian healthcare industry. The study examined 15 CSFs, using the decision-making trial and evaluation laboratory (DEMATEL) method to prioritize the significance of the CSFs. The findings indicated that the availability of high-quality personal protective equipment (PPE) is an important CSF. Furthermore, they found that the presence of a sufficient number of testing laboratory centers is critical in ensuring success in confronting the COVID-19 crisis.

It can be deduced that the importance of CSFs has been well documented in the literature, as evidenced in the context of organizational change, the adoption of new

technology, and the implementation of new projects (Dhir et al., 2021; Hong and Kim, 2002; Nah and Delgado, 2006; Thneibat and Al-Shattarat, 2021; Zhang et al., 2021). Furthermore, the relevance of CSFs was examined during period of distress. Campiranon & Scott (2014) highlighted the role of CSFs during the global financial crisis, while Gedam et al. (2021), addressed how CSFs impacted mitigation of the COVID-19 crisis in India's healthcare sector. Additionally, Amirhiseini & Pilevari (2021), discussed CSFs role in the management of the humanitarian supply chain during the COVID-19 pandemic. Accordingly, the current study is motivated to explore the extent of CSFs in healthcare services in Qatar during the COVID-19 crisis.

2.4 Management Accounting Practices (MAPs) in Times of Crisis

Prior studies suggest that MAPs are critical during times of crisis (Hopwood, 2009; Endenich, 2014; Pavlatos and Kostakis, 2015). According to Endenich (2014), during times distress, the uncertainty level increases along with the information requirements that are requested by managers. As a result, the management accountant's role and the use of MAPs are critical in addressing these issues. Furthermore, Hopwood (2009) argued that economic crises increase the importance of MAPs as they ensure sustainable success by providing useful information and mitigating the uncertainty level.

MAPs have been shown to have an effective role in addressing the Greek economic crisis. Pavlatos & Kostakis (2015) studied the impact on the Greek economic crisis of MAPs in terms of their importance and usage before the 2008, as well as during 2013 the country crisis. The study conducted a survey on the selected sample twice; once in 2008 and then 2013. The sample incorporated 301 firms and considered various industries in Greece. Pavlatos & Kostakis (2015) identified 62 practices for management accounting, which were classified into five groups. Using factor analysis, the findings indicated that, during the crisis, there was an

increase in the use and importance of the following practices: ABC; planning; strategy; and strategic management accounting techniques. The study also found that the use of traditional accounting practices decreased during the crisis. The budgeting tools were shown to have had great importance both before and during the Greek economic crisis.

Erokhin et al. (2019) examined the degree of variation in the use of MAPs during the economic recession in Russia. The study focused on the period between 2000 and 2013 along with the period between 2014 and 2018. The study used a survey, which was distributed among small, medium, and large Russian organizations. There were 54 practices identified and subsequently divided into the following three pillars: operations; management; and strategy. The study found that, during the crisis, the use of proactive sustainability-oriented management accounting tools decreased; thus, the concern was to achieve immediate effects on sales, profits, and other performance indicators by adopting less-sophisticated short-term MAPs. Furthermore, in an attempt to achieve sustainable performance, organizations increased the use of MAPs, such as risk management variance analysis, rolling forecasts, payback period, break-even analysis, and ABM.

Endenich (2014) investigated the role of MAPs in Germany during a period of economic distress. The study used a qualitative methodology by conducting interviews with senior management accountants in nine German and Spanish companies. The findings indicated that the management accountants' role was significant in the decision-making process during the economic crisis. There was a close relationship between management accountants and decision-makers, which was driven by the need for relevant information. Furthermore, management accountants' communication skills are one of the key factors, as they are needed to help other departments understand MAPs.

In the context of a non-financial crisis, Leoni et al. (2021) found that the global effect of COVID-19 has had a significant impact on organizations. Gomez-Conde et al. (2020)

examined the extent of the role of management control systems (MCSs) in mitigating the negative implications of COVID-19 on investor and shareholder expectations. They used a survey-based study, as well as the archives of the Brazilian Stock Exchange. The results indicated that the use of a broad scope of MCSs mitigated COVID-19's negative impact on market value. This was explained via signaling theory, whereby managers signaled their organizations' response to the crisis via various disclosure methods. This resulted in increased investor confidence levels, thus mitigating the negative impact on the market value of the organization.

In an attempt to reveal the significance of MCSs, Passetti et al. (2021) explored the role of MCSs in supporting organizational response during the COVID-19 period. They undertook a case study of a large Italian food retail cooperative, conducting semi-structured interviews with the managers who were handling the response to COVID-19. The findings indicated that MCS practices were directed mainly at ensuring the financial stability of the organization. Furthermore, they found that MAPs such as customers' average costs, operating margin, scenario analysis, and rolling forecasts were mobilized as a response to the crisis. Additionally, the study argued that, due to high uncertainty, there was strong emphasis on cost management and reduction. As a result, analyses of the variable costs were performed regularly, due to their high level of controllability. These authors concluded by suggesting that MAPs facilitated internal coordination and helped to refine the operational practices.

MCSs have also played an effective role in mitigating the financial impact of COVID-19 on charities. Kober & Thambar (2021) explored the role of accounting practices in shaping the financial resilience of charities by using a triangulation method, which focused on document analysis, interviews, and observations of meetings. The results suggested that planning practices, such as budgeting, forecasting, as well as performance management practices, helped create financial resilience to tackle the COVID-19 crisis in charities.

Inevitably, management accounting information is greatly needed in aiding supply chains during the COVID-19 crisis (Leoni et al., 2021; Velayutham et al., 2021). Velayutham et al. (2021) focused on a respiratory system manufacturing firm in New Zealand and found that the lack of dissemination of accounting information worsened the disruptions in the supply chains. Additionally, they found that uncertainty increased due to the lack of raw material supplies and of the workers' attendance on site, as a result of lockdown policies. Consequently, the researchers provided four instances of the significance of accounting information in improving the performance of supply chains: the identification of uncertainties and risks; the effective allocation of organizational resources, using both long- and short-term planning; communication with stakeholders with respect to the financial implication of supply chain disruption; and the use of accounting information as a means for external financing.

Leoni et al. (2021) studied the emerging themes of accounting and accountability and management practices' studies during the COVID-19 pandemic. The research findings that emerged fall under three themes. The first theme highlights the role of accounting and calculative practices in supporting government responses to the pandemic. The second theme discusses the importance of accounting practices in decision-making at the organizational level and in the empowering of organizations to tackle the COVID-19 crisis's disruptions. The last theme addresses the relevant research in accounting and inequalities. The analysis of the findings provided a strong message and guidance for future crisis management, particularly with regards to how accounting information can facilitate and empower governments and organizations, as well as individuals, to navigate crises.

Huber et al. (2021) conducted a longitudinal ethnographic study to explore the role of accounting information in fighting the COVID-19 crisis in five German hospitals. The findings indicated that hospital actors articulated the accounting infrastructure around a set of indicators, such as swab tests, ventilators, and testing kits. Furthermore, intensive care unit (ICU) beds

were central to decision-making when confronting the COVID-19 crisis. Additionally, the study provided valuable evidence to practitioners and policymakers regarding the roles of scenario planning and real-time information in confronting the COVID-19 crisis. However, the study's scope was limited to the role of accounting information in raising the quality of decision-making in the supply chain management's processes. As a result, the study neglected the implications of the COVID-19 pandemic for other BPs in the studied hospitals, such as HR.

According to the prior literature, MAPs have been shown to play an effective role during times of crisis, specifically in mitigating the uncertainty level through the provision of useful information and guiding decision-makers towards rational actions (Groh, 2014; Erokhin et al., 2019; Krasnici and Fors, 2020; Pavlatos and Kostakis, 2015). However, these studies have mainly examined MAPs by considering the perceptions of management accountants, without any consideration of the relationship of MAPs to other activities, such as the BPs of the organizations. Ammar (2017) argued that MAPs support BPs in an organization through the provision of useful information. Consequently, MAPs enable the addressing of BPs' obstacles. Further, to tackle a crisis successfully, along with useful information provision, the quality of the decision-making is improved by the accomplishment of the CSFs (Campiranon and Scott, 2014; Zhou et al., 2021).

A limited number of prior studies focus on MAPs during periods of non-financial crises thus the extant of management control systems (MCSs) has mitigated the negative implications of COVID-19 on investor and shareholder expectations (Gomez-Conde et al., 2020). This is particularly the case with the COVID-19 crisis, where Leoni et al. (2021) revealed three themes on the role of accounting information during this global pandemic of COVID-19; in supporting government responses to the pandemic and addressing organizational decision-making needs, the relevance of accounting information in addressing inequalities. Moreover, there has been no evidence in the literature to demonstrate the interplay between MAPs, BPs, and management

(or controlling and handling) during times of increased uncertainty, while taking into consideration the accomplishment of CSFs. In response to this literature gap, the current study is motivated to explore the extent of the interplay between MAPs, BPs, and CSFs in relation to success in tackling the COVID-19 crisis in Qatar's healthcare sector from March 2020 to May 2021 (see Figure 2).

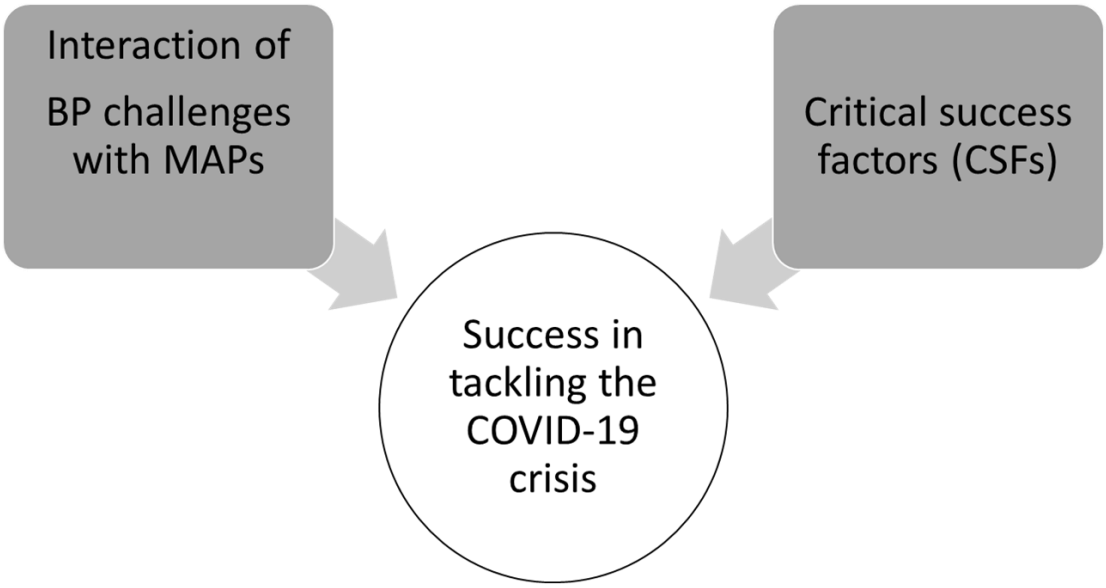


Figure 2 Study Framework

CHAPTER 3: THEORITICAL FRAMEWORK

The previous chapter provided a discussion of the literature related to MAPs, BPs, and. In addition, the chapter reviewed the relevant literature in relation to crisis management. The purpose of this chapter is to provide a theoretical perspective concerning the phenomenon that is the focus of this study. It primarily focuses on ANT and the notion of strategizing.

3.1 The Role of Theory in the Research

Theories play a substantial role in directing the focus of research (Moll, 2003). They guide researchers in analyzing and understanding the phenomenon under study, consequently providing a basis for prediction (Hoy and Miskel, 1987; Schensul et al., 1999). According to Benson & Vidich (1970), theories guide the researcher towards viewing the research phenomenon from a new perspective. The context of the results thus enables researchers to enrich the scope of theory (Moll, 2003). In qualitative research, theory provides a means for interpreting the complex social reality (Humphrey and Scapens, 1996). There was consensus among Flinders & Mills (1993) and Humphrey & Scapens (1996) regarding the role of theory in qualitative research. They support the notion that theory provides an interpretive and analytical framework, which enables researchers to understand the social setting of the research and make sense of the uncertain and complex research context (Flinders and Mills, 1993; Humphrey and Scapens, 1996).

There are two approaches that can form the theoretical framework. The first draws on preordained theories, while the second builds a new theory in the study that is based on the analysis of the results (Moll, 2003; Saunders et al., 2009). Scholars have argued that preordained theories offer a robust direction for study results, as they have already been tested on prior settings (Layder, 1988). Despite the benefits, however, Eisenhardt (1989) claimed that preordained theories may bias or limit the scope of a study's findings. This occurs when a

theoretical framework is forced in the explanation of the data and their results, and thus the value of the analysis can be diminished (Ahrens and Dent, 1998; Glaser and Strauss, 1967). Humphrey & Scapens (1996) added that preordained theories are built upon ideological assumptions, which may limit the ability to capture the complexity of the study's context.

The second approach to conducting research is known as grounded theory. This is where the researcher goes into the field without having a theoretical basis, and thus the aim is to build or develop a theory from the data that have been collected in a study (Strauss and Corbin, 1994). This approach builds theories that closely resemble the study data, through a constant process of the comparison and analysis of the results (Glaser and Strauss, 1967; Schensul et al., 1999). One of the advantages of the grounded theory approach is that the theories developed can capture the complexity and the unique conditions surrounding the data (Glaser and Strauss, 1967). Nevertheless, this approach suffers from several limitations. First, it is not realistic to enter the research field without a theoretical background (Hopper and Armstrong, 1991; Moll, 2003). Second, there is a greater likelihood of building incoherent frameworks that are not easily understood, and as a result, lack explanatory power. Third, the time required to build and test (and re-test) the developed theories lessens the appeal of adopting a grounded theory approach (Moll, 2003).

Applying the triangulation theory approach could help in overcoming the limitations of preordained theory. This is done by adopting multiple theories in order to view reality, rather than by restricting it to a single perspective or theory (Gioia, 1999). Moreover, the triangulation of theories enables researchers to draw the framework based on relevant ideological assumptions of each of the theories studied, and to extend and modify existing theories by using the evidence that has been obtained by the study (Humphrey and Scapens, 1996; Layder, 1988; Moll, 2003; Strauss and Corbin, 1994). Additionally, Humphrey & Scapens (1996) emphasized that this approach is important for case studies that are driven by problems with accounting

practices. There are several studies in accounting research that have used the triangulation of theories approach (Ansari and Euske, 1987; Elhossade et al., 2020; Hopper and Major, 2007). Ansari & Euske (1987) triangulated the framework between three theories: technical rational theory; socio-political theory; and institutional theory. Elhossade et al. (2020) studied the factors relating to the adoption of an environmental management accounting system (EMA) in Libyan companies. The study framework was triangulated between institutional theory and contingency theory. Similarly, Hopper & Major (2007) used a case study of a Portuguese telecommunications company to provide insights as to why companies adopt an ABC system. The study explored the factors behind ABC system adoption through the triangulated lens of institutional theory, ANT, and labor processes theory. Consequently, theory triangulation guides the researcher towards the direction of the study's contexts, while taking into consideration multiple ideological assumptions. The current study is motivated to explore the extent of MAPs and BPs in the management of the COVID-19 crisis via the triangulated lens of ANT and the notion of strategizing.

It can be deduced that institutional theory and contingency theory have provided a useful insight into the factors behind the emergence of the accounting system (Ansari and Euske, 1987; Elhossade et al., 2020; Hopper and Major, 2007). While Alcouffe et al. (2008) used ANT to examine accounting change with respect to the emergence of an ABC system and the Georges Perrin (GP) method in France. Additionally, Robson (1991) used ANT theory to study the accounting change in the case of the standard setting program in the UK. Furthermore, Pipan & Czarniawska (2010) explored the implementation of MAPs in the Italian Ministry of Finance, in the province of Perugia, from the ANT perspective. The findings of Alcouffe et al. (2008), Pipan & Czarniawska (2010), and Robson (1991) provided useful insights into the interaction of human and non-human actors in propagating MAPs. However, the importance of ANT lies in its ability to explore the diffusion of accounting or the change in accounting

practices as a dynamic process of interaction between human and non-human actors. This is unlike other theories that view the phenomenon as being dependent on environmental and external demands (Justesen and Mouritsen, 2011).

Regnér (2008) argued that the increased complexity and uncertainty of the environment requires organizations to strategize their activities. Under this notion, strategy is transformed from deliberately predefined plans into a strategy-as-practice that is performed on a daily basis in an organization's activities. Subsequently, the dynamic business environment enables the strategy to be performed simultaneously with accounting information on a daily basis, instead of viewing accounting practices as a means through which to implement strategy (Engström and Edrén, 2015).

The aim of the current study is to explore the interplay between MAPs and BPs in the management of the COVID-19 crisis. The factors behind the formation or status of the accounting system in the healthcare sector in Qatar are not within the scope of the study. As a result, this study is motivated to explore the research phenomenon by using ANT and the notion of strategizing. The aim is to provide a useful direction for the study's results in relation to how MAPs were mobilized, along with other actors, in responding to the COVID-19 crisis in Qatari healthcare services. The following section presents an overview of ANT and its relevance to accounting research and crisis management, which is followed by a section detailing the notion of strategizing.

3.2 Overview of Actor–Network Theory (ANT)

According to Justesen & Mouritsen (2011), ANT has been used in sociology, technology and science. Callon (1986), Law (1986), and Latour (1987) explained that ANT is a network of human and non-human actors that interact together to influence specific knowledge. ANT is based on a constructivist approach, where knowledge is naturally generated, instead of being

constructed (Justesen and Mouritsen, 2011; Latour, 2007). This approach is not the same as social constructivism. Hence, the social domain is neither privileged nor assumed in advance, and so the constructional approach is an on-going process, rather than being made up of bounded acts (Justesen and Mouritsen, 2011). To understand the construction process of such an outcome in a network of actors, translation is central to the explanation of the constructional process within the network (Steen, 2010).

Justesen & Mouritsen (2011) argued that the concept of translation in ANT is not easily grasped. Translation here refers to the "*displacement, drift, invention, mediation, the creation of a link that did not exist before*" (Latour, 1999, p.159). Steen (2010) extended this to suggest that translation refers to the process of how something, in conjunction with other objects, might stand for something else. For instance, a knife can be a weapon, but it can also be a tool with which to eat a meal, so the definition depends on the context and the relationship to other materials. Accordingly, translation describes the process of joining human and technical devices through articulating the aligned goals and interests so as to produce a result (Callon, 1995).

Law (1999) claimed that the symmetrical treatment of human and non-human actors in the embodied network of a study is central to ANT. Additionally, Law (2009) acknowledged the ANT approach to be descriptive, and thus the goal is to elaborate on how actors' relations produce change, or how they demotivate change, rather than explaining why something happened in a particular way (Hui, 2012; Law, 2009). As a consequence, ANT can be seen as a narrative knowledge approach, providing a link between the actors that produce the outcomes (Alcadipani and Hassard, 2010; Hui, 2012; Law, 2009).

3.2.1 Actor–Network Theory (ANT) in Accounting and Crisis Management Research

Several attempts have been made by scholars to extend the application of ANT beyond technology and sociology studies to wider disciplines such as business management and accounting (Alcouffe et al., 2008; Hui, 2012; Robson, 1991; Steen, 2010; Thapa et al., 2017).

Donzello (2014) argued that ANT was first introduced in accounting research by Miller (1991) and Robson (1991). Miller (1991) employed ANT to investigate the role of discounted cashflows in making investment decisions and the extent of diverse actors' roles, such as that of the government, in promoting this technique. According to Miller (1991), the practice of accounting should be seen as a heterogenous process of the network of actors, in which technology and other material actors make it possible to translate human actors' "programmatic ideas" into practice. Robson (1991) provided a useful contribution regarding how the application of ANT explains the genesis of accounting standard setting in the UK. The analysis provided insightful evidence on the ANT approach in explaining accounting change via the broad translation process. Furthermore, Robson (1992) provided evidence on how the use of numbers in accounting practice enables the achievement of distance control through impacting remote actors. Robson (1992) indicated how accounting inscriptions may exert a great potential for power and action remotely.

Ezzamel (1994) explored the extent of the budgeting influence on the process of organizational change via a case study of a UK university. The study applied Foucault's framework of power/knowledge and ANT. The analysis revealed that the study case failed to demonstrate that budgeting was a rigorous regime. Additionally, the study findings provided useful insights into how case actors (policymakers) problematized the issues, thus establishing themselves as the focal point of resistance. Alcouffe et al. (2008) studied the diffusion of two accounting practices: the ABC system; and the GP method. The study emphasized that

attention should be placed on the dynamics of the network of actors in producing the outcome, such as spokespersons and allies, rather than limiting the scope to the concept of the success or failure of change.

In the context of crisis management, Thapa et al. (2017) studied the crisis response to the Nepal earthquake in 2015. The study provided useful results regarding how the involvement of different actors (human and non-human) plays a pivotal role in managing a crisis. Although actors may seem to be separate, a common goal can unify them. Additionally, the study provided practical implications concerning how digital tools can be mobilized to address human actor's needs through the provision of real-time information, and hence may provide an effective disaster management response. Rahmayanti et al. (2021) relied on ANT and provided evidence of the failure of a non-governmental entity in the response to the Jakarta flood disaster in January 2020. These researchers argued that, despite the collaboration of governmental entities in providing food aid, the studied organization failed to implement its disaster management plan effectively, mainly due to the misalignment of interests, e.g. unsupportive regulation and the absence of committed and collaborative actors. It can be inferred that the essence of a successful crisis response is the alignment of actors' goals and interests.

3.3 The Notion of Strategizing

Scholars have argued that research on organizational strategy can be traced back to the 1960s, and particularly to Alfred Chandler, who has been recognized as the founder of strategy management research (Furrer et al., 2008; Herrmann, 2005; Löwstedt, 2015). According to Chandler (1962), strategy is viewed as a deliberate analytical work that is performed by top management to provide a plan that underpins the direction and management of a firm. This definition of strategy has gained attention by providing a framework for managing business (Adner and Helfat, 2003; Chandler, 1962; Porter, 1985). As a result, strategy can be viewed as

a deliberate plan that is set up by top management and then executed by members of the organization.

However, this notion of strategy has been challenged by scholars in relation to the ability of pre-defined models to account for the uncertain environment (Mintzberg and McHugh, 1985; Pettigrew, 1985; Whittington, 2003). Scholars thus became concerned with how a strategy can be performed, with an emphasis on the strategy process. Weick (1979) suggested that scholars should place limited focus on nouns while being generous with verbs. According to Weick (1979), verbs are distinguished from nouns in that verbs can view organizations as a process, rather than an objects or states. Consequently, this helped establish the process of decision-making and strategic change as core aspects of strategic and management research (Löwstedt, 2015). As a result, taking into consideration the contemporary and uncertain business environment, scholars have contrasted the deliberate view of strategy with a process-wise strategy, using a verb form of strategy that is "strategizing" or "strategy as practice" (Regnér, 2008; Whittington, 2003).

Strategizing refers to an ongoing practice of strategy, which is influenced by the process turn (Schatzki et al., 2001). Instead of being drafted by a company (which existed before), it is something that is performed by people on a daily basis (Löwstedt, 2015). Regnér (2008) stated that strategizing refers to the strategy process that is collectively performed in day-to-day strategic actions. As a consequence, strategizing is viewed as a continuous activity, i.e. one that an organization's members perform, not something that existed before. Moreover, it focuses on the interaction of organizational members, at different levels, with business activities (Engström and Edrén, 2015; Regnér, 2008; Whittington, 2003).

In the context of accounting research, Engström & Edrén (2015) stated that when the focus is shifted from viewing strategy as a deliberate abstract plan to the notion of strategizing, this will influence accounting. The accounting view will thus be shifted from being a means

with which to implement strategy to being a means with which to take a part in the formulation process of strategy (Ahrens and Chapman, 2007). This is because strategizing is viewed as those activities that are performed daily in the form of strategic actions, rather than having a deliberate and abstract plan that is drafted and then enacted by organizational members. Consequently, strategizing has emphasized the role of accounting in the process of creating strategy. Instead of utilizing accounting practices as a means by which to implement strategy, accounting is developed and utilized simultaneously in the strategy creation process, or "strategizing" (Ahrens and Chapman, 2007; Engström and Edrén, 2015). In addition, accounting practices should not be seen as a tool through which to audit and monitor strategy, but rather to achieve strategy (Chenhall, 2003; Chua, 2007; Mouritsen and Kreiner, 2003).

There are several studies that explored the role of accounting practices in the strategizing process. For instance, Jorgensen & Messner (2010) studied the role of accounting information in strategizing in relation to new product development projects. The analysis provided useful evidence in the context of new product development projects, particularly regarding the role of accounting numbers in strategizing the decisions. In addition, Engström & Edrén (2015) explored the role of accounting information in the strategizing processes of two decisions: acquisitions; and mergers. Engström & Edrén (2015) have argued that accounting is an active participant in the strategizing process, since accounting information enables the organization to leverage knowledge about the existing business of the acquiree, thus enabling the organization to have a long-term-oriented strategy for the new business. Ahrens & Chapman (2007) demonstrated their arguments in relation to management accounting information in the strategizing process. They focused on a case study of a UK-based restaurant chain, which attempted to develop strategies through which to explore its customers' preferences and thus enhance their satisfaction. Consequently, restaurant actors mobilized management accounting information in the process of designing the restaurants' menu. The

design of the menu was the responsibility of a marketing planning team, which produced several commercial propositions that would satisfy the restaurants' strategic objectives. In doing so, MAPs, including forecasting and deferential analysis, were mobilized to select the optimal menu to satisfy the restaurants' diverse strategic, functional, and financial objectives.

Regnér (2008) argued that the increased complexity and uncertainty of the environment requires organizations to strategize their activities. Additionally, during crisis and shock events, uncertainty levels escalate rapidly (Brown and Rocha, 2020; McMullen and Shepherd, 2006; Packard et al., 2017). In this context, Ahrens & Ferry (2021) demonstrated the role of accounting and accountability practices in the response of the UK government to COVID-19, particularly the first wave in March 2020. The study used Foucault's (2007) notion of governments as the apparatuses of security and addressed the concepts of space, uncertainty, normalization, and the object–subject approach. This was used as a framework for the study in order to provide further explanations for the reasons behind the UK government's decisions. Accordingly, accounting practices have had positive effects in the responses to the COVID-19 crisis. For example, flexible budgets (rolling forecasts) enabled the government to strategize their decision-making in the response to the crisis.

The application of ANT has also resulted in valuable contributions to the accounting and crisis management literature. The ANT lens has enabled the illustration process in relation to how a dynamic network of human and non-human actors can motivate or demotivate organizations in relation to change (Alcouffe et al., 2008; Ezzamel, 1994; Miller, 1991; Robson, 1991, 1992). In addition, ANT has enabled the demonstration of the crisis response process (Rahmayanti et al., 2021; Thapa et al., 2017). As a result, ANT provides a useful means with which to explore the dynamic processes of human and non-human actors' interactions in producing the outcome, rather than exploring the outcome as dependent on external environmental demands (Justesen and Mouritsen, 2011). Additionally, Regnér (2008) argued

that the increased complexity and uncertainty of the environment requires organizations to strategize their activities. Further, taking into consideration the contemporary and uncertain business environment, scholars have contrasted the deliberate view of strategy with a wise strategy, which is known as “strategizing” (Regnér, 2008; Whittington, 2003). This is considered to be essential in ensuring the survival and prosperity of organizations (Muluye, 2018). As a result, scholars have provided useful contributions on the mobilization of accounting practices in strategizing decision-making during several events, for instance new product development, acquisitions and mergers, and the COVID-19 crisis response (Ahrens and Ferry, 2021; Engström and Edrén, 2015; Jorgensen and Messner, 2010). In this context, the present study applies ANT and the notion of strategizing as an interpretative approach in order to provide a useful direction for the results in demonstrating the ways in which MAPs have strategized decision-making, along with other actors, to respond to the COVID-19 crisis in healthcare services in Qatar.

CHAPTER 4: RESEARCH METHODOLOGY

This section presents the study's methodology and its research design. It highlights the procedures and methods that were undertaken in order to collect and analyze the data. The overall approach to the research process, as well as the rationale for the research methodology, are explained in this chapter. The study utilizes a qualitative approach by using semi-structured interviews with 13 participants from HMC. Furthermore, the chapter discusses and describes the development of the research strategy, the data collection process and instruments, the sampling techniques, and the data analysis. Lastly, this section presents the pilot study.

4.1 Research Design

The research design incorporates the processes and practices used to transform the hypotheses into research outcomes (Mertens, 2014). Acknowledging the purpose of the research and the research questions is critical in the determination of the study's methodology. According to Blumberg et al. (2005), research study design is the flow of a structured investigation that is used to address the research question. This qualitative research therefore consists of six steps: the research objectives and questions; the literature review; the data collection; the data analysis; the discussion of the findings; the conceptual framework; and the conclusions (with practical recommendations and a discussion of the research's limitations, together with suggestions for future research). Saunders et al. (2009) described the research design as being in the form of an onion, where the skin of the onion refers to the research philosophy, while the inner parts refer to the approach to the research. They further explained that the next layer is the research strategy, followed by the time horizon, and finally the data collection tools (see Figure 3).

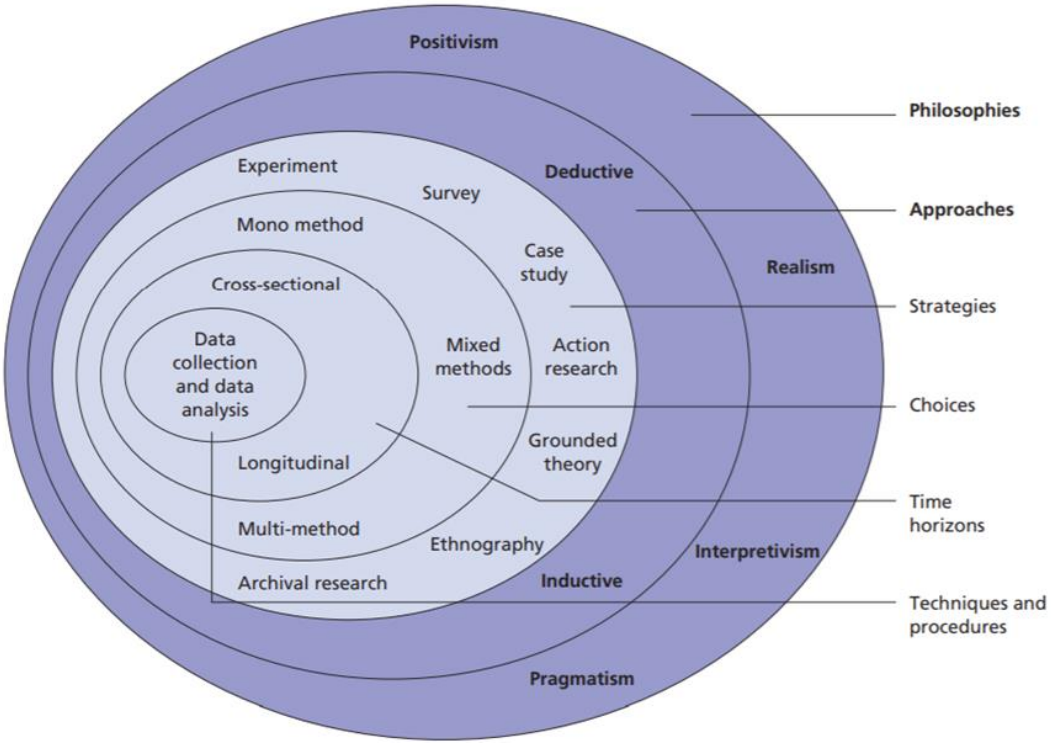


Figure 3 Saunders et al.'s (2009) Research Design in the Form of an Onion

There are two main philosophies in management research, namely positivism and interpretivism (Saunders et al., 2009). The positivist philosophy has an objective ontological and epistemological view, which indicates that the researcher believes that social reality exists both externally and independently from the social actors (Saunders et al., 2009). Furthermore, it has an objective assumption about knowledge, which indicates that the study phenomenon interacts independently from the social reality, in the form of the relationships and causalities in which the researcher exists. Additionally, it is concerned with collecting facts in order to discover relationships and causalities so as to build generic abstract laws through which to predict and control the social universe (Saunders et al., 2009). Arghode (2012) asserted that positivist philosophy is usually realized via quantitative research, which adopts the deductive approach. The assumption is that the study phenomenon exists independently from the social actors and reality (Arghode, 2012; Saunders et al., 2009). Moreover, it acts in the form of

relationships, or cause and effect, and therefore the study is motivated to build a universal conclusion about the study phenomenon. Often, the starting point is a theory that requires narrowing down into hypotheses. Subsequently, the hypotheses are tested, following the collection of the data, in order to draw out the study's findings.

The interpretivist research philosophy believes that social reality and people are not independent from the study phenomenon (Saunders et al., 2009). Additionally, it is socially constructed, rather than objectively perceived and determined (Riley, 1996). The study phenomenon is created from perception and interpretation, as well as the consequent actions of the social actors, in a continual process, and the study phenomenon may have multiple interpretations rather than having one single truth (Riley, 1996, Saunders et al., 2009). In addition, researchers seek to gain an in-depth understanding of the motivations and emotions behind the actions of the social actors, as well as to understand the complex and diverse view of the phenomenon in its own unique context, rather than generalizing it to the entire population (Black, 2006; Creswell, 2007; Saunders et al., 2009). Goldkuhl (2012) explained that interpretivist philosophy is usually undertaken in qualitative research, and it adopts an inductive approach, in which data are collected in the first stage, and then analyzed, as the basis for developing a theory or conceptual framework. Common research studies in qualitative research are those carried out in archives, ethnography, case studies, and in-depth interviews (Coghlan and Brannick, 2014).

Creswell & Poth (2016) suggested that a research study can be descriptive, exploratory, or explanatory. Descriptive studies seek to systematically describe populations, phenomena, and situations by answering the "what," "where," and "how" questions. Robson & McCartan (2015) suggested that exploratory research studies seek to determine the research phenomenon, to explore new insights, and to address this research phenomenon from a new perspective. This methodology is widely used in qualitative research as it includes an understanding of the

reasons, interpretations, and motivations behind the study phenomenon. Explanatory studies seek to establish causalities among different variables (Saunders et al., 2009). This methodology is commonly used in studies that adopt the deductive approach.

It has been established in prior chapters that this study aims to explore and describe the interplay between MAPs, BPs, and CSFs in the management of the COVID-19 crisis in Qatar's healthcare services. As a result, a qualitative exploratory and descriptive methodology using a single case is adopted in this research. The study is motivated by the scarcity in research-backed data related to MAPs, BPs, and CSFs during crises. Furthermore, the study identified the need to understand the diverse interpretations of clinical and non-clinical employees with respect to how MAPs, BPs, and CSFs played a role in mitigating the crisis resulting from COVID-19. The study uses an inductive approach to provide insight as to how MAPs, along with the establishment of CSFs, were mobilized in order to address BP issues, and then to show how this was reflected in the management of the crisis.

4.2 The empirical setting

This section provides an overview of the setting in which the study took place.

4.2.1 Background of the Study Case

The public healthcare sector in Qatar is controlled by the government. The framework of the public healthcare system is based on having a main public healthcare provider for the Qatari community, which is represented by HMC (Alsanousi, 2017). PHCC comprises regional healthcare centers, which offer primary care for the public and are distributed throughout the country; these are known as Primary Healthcare Cooperation Centers (PHCC). The aim of PHCC is to facilitate accessibility for the community and incorporate family medicine, dental

and oral health, wellness, and urgent care (https://www.phcc.gov.qa/AboutUs/Welcome-To-PHCC).

HMC was initiated under an Emiri decree in 1979 as a non-profit public healthcare provider. HMC manages 16 healthcare facilities around the country, seven community hospitals, and nine specialist hospitals. These facilities cater for heart problems, rehabilitation, communicable disease, ambulatory care, mental care, and women's wellness (https://www.hamad.qa/EN/Pages/default.aspx). HMC also operates the ambulance services throughout the State of Qatar and runs research and educational facilities. HMC has more than 25,000 clinical and non-clinical employees.

4.2.1.1 HMC's Vision

HMC states that its vision is as follows:

> "*We aim to deliver the safest, most effective and most compassionate care to each and every one of our patients*" (HMC, 2018).

4.2.1.2 HMC's Core Goals

HMC focuses on clinical, research, and education dimensions. HMC has developed different types of strategic objectives based on these functions (HMC, 2018):

- *Clinical strategic objective:* to deliver the best and safest integrated, patient-centric, and multi-disciplinary clinical care system in the region.
- *Research strategic objective:* HMC shall be recognized as a leading health research organization in the region.
- *Education and development strategic objective:* HMC's workforce shall be fully equipped with the right number of people, mobilized with the right skills and motivation, to deliver world-class healthcare and research.

4.2.2 COVID-19 and Healthcare Services in Qatar

In December 2019, a new type of coronavirus was reported in Wuhan City, Hubei Province in China. The pathogen was identified as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2), more commonly known as COVID-19. The highly contagious nature of COVID-19 has caused significant disruption around the world. In addition, in March 2020, the World Health Organization (WHO, 2020) declared a health emergency, marking the virus as a global epidemic. Subsequently, countries across the globe implemented lockdowns and restriction policies in order to control the virus and save lives. During February 2022, it was reported that COVID-19 had infected more than 420 million people and caused the deaths of around six million people around the world (https://covid19.who.int/). In January 2021, COVID-19 vaccination campaigns were started globally. Although the crisis has had social, economic, and physiological consequences, the vaccination campaigns have enabled the global community to rise again by gradually relaxing the disruptive implications that were enforced by COVID-19 (Leoni et al., 2021).

In March 2020, COVID-19 was declared a healthcare emergency in the State of Qatar. The Ministry of Public Health (MoPH) worked in collaboration with HMC and PHCC to tackle the crisis. PHCC centers were dedicated to primary care services, along with swabbing tests, and later, vaccinations. HMC's facilities were dedicated mainly to COVID-19-related healthcare services, the provision of COVID-19 treatment, and the admission of COVID-19 patients to healthcare or isolation facilities. Moreover, the quarantine services for suspected positive cases were put under HMC's responsibility. In addition, in early 2021, the government of Qatar decided to centralize the COVID-19 budget of the public healthcare sector to be under the management of HMC. Hence, HMC's role was critical with respect to the provision of healthcare services for COVID-19 patients.

In response to the crisis, HMC activated a crisis committee for COVID-19, which was named the System Wide Incident Command Committee (SWICC), to facilitate communication and collaboration among the healthcare facilities. The SWICC incorporated representative personnel from different disciplines, such as clinical personnel with expertise in communicable disease, supply chain experts, representatives from HR, information technology experts, and finance representatives. Additionally, HMC dedicated seven facilities to providing care for COVID-19 patients. These were Al Wakra Hospital, Hazem Mubaireek General Hospital, The Communicable Disease Center, The Cuban Hospital, The Ras Laffan Hospital, The Mesaieed Hospital, and The Surgical Specialty Center. Further actions were taken to establish field hospitals and increase the bed capacities in designated COVID-19 facilities by 60–70% (*The Peninsula*, 2021).

4.3 Data Collection

The study collected primary as well as secondary data through conducting semi-structured interviews both with clinical and non-clinical employees, which was triangulated with the analysis of the published documents and archival research that is relevant to the study phenomenon. This includes documents that have been published or broadcasted on traditional, as well as social media. Additionally, the data could also come from conferences provided by Qatar's Supreme Committee for Crisis Management in relation to COVID-19. The current study used semi-structured interviews to encourage two-way communication between the interviewer and the interviewees, with a focus on addressing the research objectives (see Appendix A). Semi-structured interviews typically fall between structured and unstructured interviews, in which the researcher uses an interview guide that includes specific themes or areas. During the discussion, there may be other questions that are raised by either the interviewer or the interviewee. Effectively, the researcher's aim is to create a two-way flexible

conversation while ensuring coverage of specific topics or themes (Saunders et al., 2009). Initially, pilot interviews were conducted in March 2021 to obtain a preliminary understanding of the interview process. However, since the date of the pilot interviews was prior to the second COVID-19 wave, the opinions provided did not reflect the full scale of the crisis. The actual interviews used for the study were conducted with participants during the period between April 2021 and June 2021, which considered the perceptions of participants regarding the two COVID-19 waves that were witnessed in Qatar.

4.3.1 The Interview

The semi-structured interviews were conducted face-to-face, or virtually, with clinical and non-clinical employees. Firstly, invitation letters were sent via email to the participants. They included a description of the purpose and scope of the research, as well as the ethical approvals. Furthermore, the invitation email included a clause to indicate the convenient time to the participant to conduct the interview, in addition to the desired mean to the participants to conduct the interview, either face-to-face or via Microsoft teams. Secondly, the researcher has allocated three days to obtain interviewees response. Thereafter, interviews were conducted with the participants who indicated their acceptance to the participation in the study at their convenient time and mean to conduct the interview. In the interview session, the researcher started by explaining the research objectives and scope and highlighted participants rights, for instance participation is fully voluntary, and any provided information will be treated with the highest of confidentially, and interviewees have the right to withdraw at any stage. Afterward, before the start of the interview, participants were asked to confirm their consent to the recording of the interview session. Eventually, the researcher recorded the interview session after obtaining the confirmation of participants consents to the recording. Thereafter, the researcher transcribed the recordings into words manually, through in depth listening of the

recordings in Microsoft word. Lastly, the transcriptions of the interviews were uploaded in Nvivo software for the purpose of data analysis.

Reference to the construction of the interview guide, the researcher used the funneling technique as described by Waldron (1986). According to this technique, the interview questions flow from general to specific. The first part of the interview guide was made up of the introductory section, which included demographic questions related to the interviewee's years of experience and current position. Moreover, the introductory part incorporated questions related to the department in which the interviewee was working. They were developed by considering the previous literature's suggestions and findings. Britten (1995) argued that good questions in qualitative interviews usually start with those that the interviewee can answer easily, and then progress to more difficult or sensitive topics. This can be achieved by first addressing demographic questions such as background, specialty, or experience. The second round of interview questions was more detailed, as it addressed the research question. First, the questions identified challenges and issues that were encountered in the interviewee's workplace in relation to their BPs. Second, they aimed to recognize the MAPs undertaken by the interviewee's department and organization in order to address the COVID-19 crisis. Furthermore, they aimed to identify the CSFs that have contributed towards the control of the COVID-19 crisis.

A close examination of prior literature indicates that there is little evidence to suggests that the three constructs (BPs, MAPs, and crisis management) have been examined collectively, either qualitatively or quantitatively (Erokhin et al., 2019; Groh, 2014; Krasnici and Fors, 2020; Pavlatos and Kostakis, 2015). The current study developed additional questions based on a focus-group discussion with two academics that have experience related to the research topic. Finally, the study validated the interview guide by piloting it with two employees from the clinical and non-clinical areas at HMC.

4.3.2 Sampling

The sample comprised HMC employees, including those holding clinical and non-clinical positions. The sample comprised 15 employees, divided into two groups. The first group were assigned for the pilot study, with one person from the clinical and one from the non-clinical staff. The second group included the remaining 13 clinical and non-clinical employees. According to prior research, there should be a minimum sample size of at least 12 interviews in order to reach data saturation (Braun and Clarke, 2013; Fugard and Potts, 2015; Guest et al., 2006). The interviews were conducted using a qualitative sampling technique known as the snowball technique. This is where random participants are drawn from a finite population, and then they are asked to give suggestions to the researcher to find other potential participants (Goodman, 1961). Based on these suggestions, the researcher approached potential participants relevant to the study, who in turn suggested others (Braun and Clarke, 2013; Fugard and Potts, 2015; Guest et al., 2006).

Naderifar et al. (2017) supported the use of the snowball sampling technique when the selection of the subjects from the population becomes unknown. The current study uses this sampling technique because the case at hand is heterogeneous in terms of the number of activities and departments in the organization. There are more than 25,000 employees at HMC, and thus it is difficult to choose the study subjects from this wide population. As for the inclusion criteria, they encompassed employees who work in HMC under the relevant BPs and who were impacted significantly by the crisis, as was confirmed in the pilot study. In addition to being in a senior position (manager or director), participants should have a minimum of 5 years' experience. The demographic profile of the interviewees is presented in Table 2.

Table 2 Interviewees' Profile

Si no.	Job title	BP	Facility name	Years of experience at HMC	Date	Duration in minutes
1	HR Specialist	HR	Corporate	12	13/03/2021	63
2	Director of Nursing	Clinical	Hazem Mubaireek General Hospital	9	09/03/2021	26
3	Risk and Quality Improvement Manager	Clinical	Communicable Disease Center	17	20/04/2021	44
4	Director of Supply Chain Management	Supply chain	Corporate	12	25/05/2021	77
5	HR Director	HR	Corporate	13	31/05/2021	25
6	Director of Clinical Services	Clinical	Communicable Disease Center	9	01/06/2021	58
7	Chief of Tertiary Group	Corporate	Corporate	40	02/05/2021	58
8	Medical Director	Clinical	Hazem Mubaireek General Hospital	20	25/04/2021	54

9	Director of Pharmacy	Clinical	Communicable Disease Center	15	03/05/2021	41
10	Director of Business Development	HR	Corporate	10	06/06/2021	81
11	Director of Workforce Planning	HR	Corporate	15	10/06/2021	110
12	Director of Chief Office	Corporate	Corporate	27	07/06/2021	33
13	Inventory Control Specialist	Supply chain	Corporate	14	25/05/2021	77
14	Supply Chain Operative	Supply chain	Corporate	8	25/05/2021	77
15	HR Specialist	HR	Corporate	10	15/04/2021	34

The 15 interviewees had an average experience of 16 years at HMC, with the maximum experience being 40 years and the minimum beings eight years. With respect to the BP classification, five of the 15 interviewees were from HR services, five were from clinical services, two came from the corporate level, and three from supply chain management. On average, the interviews lasted for 54 minutes. Additionally, all the interviewees were at a supervisory level, which indicates a proximity with the decision-making process.

4.7 Pilot Study

Since study is considered qualitative, it is recommended that the interview guide be tested and piloted to ensure that it is appropriate for the purpose of the study (Gustafsson et al., 2013).

The researcher piloted the interview guide with two employees from HMC's clinical and non-clinical fields to ensure that the interview guide was appropriate and to identify the most impacted BPs in the healthcare service during the COVID-19 crisis. With respect to the selection of participants in the pilot study, Turner III (2010) stated that pilot interview participants should be as similar as possible to the study's actual participants. Additionally, the role of the pilot interview participants is considered to be critical to the pilot study's findings as it will direct the researcher in determining the limitations and flaws of the interview guide (Abdul Majid et al., 2017). Thereafter, this will allow the researcher to modify and revise the interview guide prior to the data collection of the study (Creswell et al., 2007; Turner III, 2010).

The first pilot interviewee was from the clinical field and was also a member of the COVID-19 crisis committee (SWICC), hence indicating close contact with the decision-making process. With respect to the non-clinical pilot interviewee, the person selected was a senior HR Specialist, who is close to decision-making regarding the COVID-19 crisis.

4.4 Trustworthiness of the Research

Reliability and validity measures should be implemented to assess the quality and worth of the research endeavor (Krefting, 1991). The approach used to assess qualitative research differs from that of quantitative research (Saunders et al., 2009). Agar (1986) argued that the reliability and validity terms are relevant when assessing the quality of the quantitative research, but do not fit with qualitative research. The quantitative approach assumes that the study phenomenon is objective and independent from social reality and actors, while the opposite is true in qualitative research (Saunders et al., 2009). In addition, quantitative research is concerned with testing hypotheses in order to build a generalizable conclusion about the study phenomenon.

However, qualitative research is concerned with exploring insights, social actors' experiences, and understanding the complex and diverse views relating to the phenomenon in

its own unique context (Black, 2006; Cope, 2014; Creswell, 2007; Saunders et al., 2009). For instance, external validity, which is one of the criteria of good quantitative research, represents the generalizability of results to the entire population. However, such a notion is not relevant to qualitative research (Payton, 1979). Consequently, Lincoln & Guba (1985) developed a trustworthiness evaluation criterion with which to assess the quality of qualitative research. It involves establishing credibility, transferability, dependability, and confirmability. The current research ensures the research's trustworthiness by following Lincoln & Guba's (1985) evaluative criteria, as described below:

1. *Credibility*: Concerns the truth of the findings. The researcher sought to ensure the credibility of the results, using triangulation of data analysis, as these will be based on analyzing interview results with archive materials and published documents in social media and the news (conferences of Supreme Committee for Crisis Management regarding COVID-19). Moreover, there will be observations.
2. *Transferability*: Relates to the applicability of the findings in other contexts. The researcher ensured the transferability of results through using the methodology known as "thick description" and by describing not only the behavior and experiences, but also their context. The purpose is to make sure that the behavior and experiences become meaningful to the readers.
3. *Confirmability:* Refers to the degree of neutrality, or the extent to which the findings of a study are shaped by the respondents and not by the researcher's bias, motivation, or interest:
    - The researcher ensured confirmability and transparency by describing the research steps taken from the start of the research project to the development and reporting

of the research's findings. Records of the research path were kept throughout the study.

- The researcher ensured confirmability by re-coding the interview transcripts, excluding the pilot interviews.
- The researcher allowed an independent researcher, with experience in management accounting research, to re-code a selection of two interview scripts. The results indicated a high correlation between the re-coded transcripts and the original ones.

4. *Reflexivity*: Refers to a critical self-reflection in which the researcher assesses himself/herself in terms of preferences, or bias, in relation to the research respondents and the extent to which their relationship with the research affects their answers. Hence, the researcher must acknowledge the importance of being aware and reflexive in the processes of collecting, analyzing, and interpreting data. The researcher ensured reflexivity by:
    - Creating reflexive notes, describing the setting and aspects of the interview that were noted during the interview itself and while transcribing the audio and then analyzing the transcript.
    - Analyzing the data objectively and independently from the researcher's beliefs and personal judgments. The data set was triangulated with the other published secondary data, e.g. published documents in the social media and news (conferences of the Supreme Committee for Crisis Management regarding COVID-19), in addition to HMC's BP policies and guidelines. The interviewees expressed their feelings and thoughts independently and without any pressure through interference or through the tones of the questions.

5. *Dependability*: Related to the ability to maintain the consistency of a finding in similar conditions. This was achieved by ensuring data triangulation, as well as providing thick description of the data collected to facilitate the analysis. Additionally, it required ensuring the consistency of the interview guide among the study's participants.

4.5 Data Analysis

The study collected qualitative data, which is non-numeric in nature. However, the data were analyzed using NVivo (qualitative analytical software), which allows the analysis of unstructured data such as interviews, archives, and social media content. NVivo provides useful analytical tools, such as cluster analysis, word frequencies, and coding matrixes to enable the identification of themes and patterns. Moreover, the researcher analyzed the results and maintained a professional code of conduct (objectivity and reliability).

The data were analyzed using a thematic analysis approach, as prescribed by Peng & Gala (2014). Thematic analysis is a common technique that is used for analyzing qualitative data. It refers to the process of searching, identifying, and exploring codes and themes that emerge as being "important to the description of the phenomenon" through "careful reading and re-reading of the data" (Rice and Ezzy, 1999). With reference to prior literature, the thematic analysis conducted in this study consisted of five stages (Braun and Clarke, 2006; Peng and Gala, 2014). These stages are listed and defined in Table 3.

Table 3 The Five Stages of Thematic Analysis

Task	Description
1. Get familiar with the data collected	Reading and re-read the data set.
2. Code data	Develop a coding scheme by coding the textual data in a systematic manner across the entire data set using Nvivo software.

3. Connect the codes with themes	Integrate codes into themes and sub-categories. Combine all data relevant to each theme and sub-category.
4. Review themes and develop ontology check	Verify whether the themes and sub-categories work in relation to the coded quotes and the entire data set. Generate an ontology of the analysis.
5. Finalize	Report findings.

4.6 Ethical Considerations

The study abided by all the required research ethics protocols. Ethical approval was obtained from HMC's MRC (see Appendix B) and Qatar University's IRB prior to data collection. These ethical clearances assured and safeguarded the confidentiality and anonymity of all participants in the study. Moreover, participants were fully aware that their participation in the study was voluntary. Furthermore, at no point in time were the participants subjected to any physical and psychological harm as a result of their participation. As part of the ethical compliances, the participants were made aware of the purpose of the study. They were also briefed on the professional methods that were utilized to collect and analyze the data. Finally, written consent was obtained from all participants prior to commencing the interview process.

Invitation letters were sent via email to the participants. They included a description of the purpose and scope of the research, as well as the ethical approvals. The interview process was contingent upon the agreement and the consent of the participants. In addition, three ethical certificates were obtained prior to data collection from the Collaborative Institutional Training Initiative (CITI) (see Appendix D): the HMC Good Clinical Practice Certificate; the Health Information Privacy and Security Certificate; and the HMC Social & Behavioural Researchers' Certificate. The research was also in full conformance with the Helsinki Declaration's

principles, the Good Clinical Practice guidelines, the laws and regulations of the MoPH in Qatar, and the ethical code of conduct required by Qatar University.

CHAPTER 5: STUDY RESULTS

As illustrated in Chapter 4, the study uses a qualitative methodology to address the research questions. The study collected primary, as well as secondary, data through conducting semi-structured interviews both with clinical and non-clinical employees at HMC. This was triangulated with the analysis of the published documents, such as the Conferences of the Supreme Committee for COVID-19 Crisis Management, and observations. Accordingly, this chapter provides the results of the study. Firstly, the chapter provides the results of the pilot study. Secondly, it offers descriptive figures showing the key findings and interview analysis.

The study uses various themes in the analysis, as shown in Figure 4. The level one theme is the indictors for successfully tackling the COVID-19 crisis [addressed in part two of the interviews: Questions 2.3, 2.31 (see Appendix A)]. The BPs (clinical services, HR, supply chain) were set as a level two theme, from which subsequent themes for challenges and MAPs were created (with sub-categories of the BP themes considered as level three themes). Additionally, CSFs were created as level two themes, and thus the explored factors were a sub-category (level three theme) of the CSFs theme.

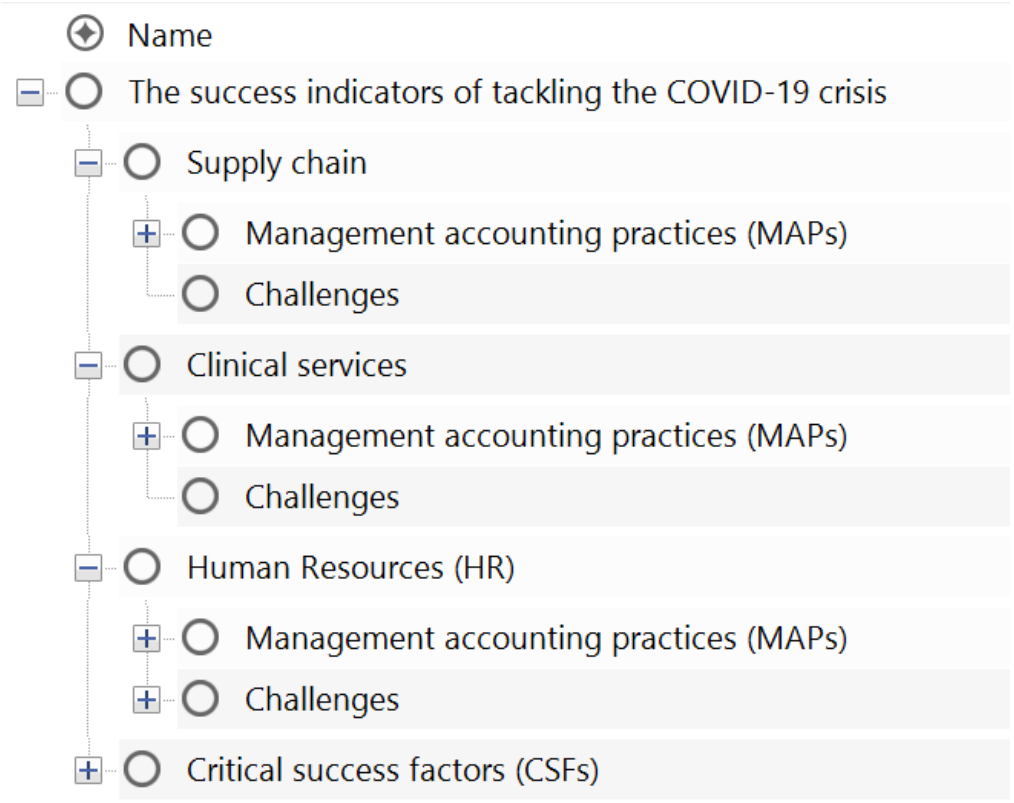


Figure 4 Key themes

This chapter covers four main topics. Firstly, it provides the results of the pilot study. Secondly, the chapter provides an analysis of the descriptive information and statistics. Thirdly, it analyzes how the interaction between BP challenges and MAPs has impacted the decision-making process. Fourth, the study explains the various CSFs explored in the analysis. Finally, the chapter provides information about the success indicators in tackling the COVID-19 crisis.

5.1 Pilot study findings

The pilot interview analysis indicated that the COVID-19 crisis has had a significant impact on clinical services, recruitment in human resources and supply chain management at the HMC. As argued below by the interviewee:

"The supply of PPEs (the Personal Protective Equipment) and supply chain issues with

the whole package for PPEs as well as the staffing shortage were the major challenges encountered during the COVID-19 crisis." (Interviewee 14)

Furthermore, another interviewee elaborated that the challenge in the HR recruitment services was amplified due to the restrictions and protocols that were implemented to combat the virus:

"The main challenge we have encountered in recruitment services, is the rapid increased demand for clinical staff recruitment, while countries around the world are under lockdowns and imposing travel restrictions and completely shutting their borders." (Interviewee 15)

It can be deduced that the delivery of a healthcare service is dependent on two main factors, which are manpower, such as nurses and doctors, and the availability of medical equipment and consumables, e.g., medicines. These two factors allow the clinical staff to diagnose and treat the patients. HR-services therefore represent the source of the staff that is needed for the delivery of healthcare services. Moreover, supply chain services are the providers of the clinical activities' raw materials and inputs, for instance, medical equipment and consumables, such as medicines. Hence, HR-services and supply chain services have direct implications for the delivery of healthcare services and the lives of the patients. As a result, the study will focus on the most impacted BPs to address the research objectives, and these are: clinical processes, supply chain processes and HR processes.

With respect to MAPs role in addressing BPs issues, both interviewees agreed on the significance of MAPs in addressing BPs issues and in raising the quality of the decisions, especially, planning, and forward-looking practices, for instance, scenario analysis.

As, explained by the interviewee:

"*To address the issues of COVID-19, we put scenarios, so our response was to put several scenarios based on the plateau, or the numbers of cases and numbers of admissions to the hospital, with a focus on the worst scenarios. So, we did scenarios*

like a cascading plan, where, if we have this kind of number of admissions, numbers of cases, we will open a certain number of beds. So, we can align the plan for opening beds. And when we are talking about opening beds, we are talking about staff, equipment and all these things." (Interviewee 14)

In terms of the role of CSFs, the analysis of the pilot interviews confirmed the importance of CSFs in tackling the COVID-19 crisis, particularly: government support, leadership and digitization. For instance, the interviewee argued:

"Despite having useful approaches to drafting a COVID-19 crisis management plan, but having good leadership and government support, as well as good IT infrastructure, are crucial to ensuring the successful implementation of decisions." (Interviewee 15)

Regarding leadership, as illustrated below, interviewees argued that good leadership is a key factor in tackling the COVID-19 crisis. Despite not having a clear guide with which to manage the COVID-19 crisis, the leaders were highly qualified to visualize the context and to take strategic decisions in line with the interest of the community and the vision of HMC.

"I would say good leadership is a key factor, starting with the corporate level to the facility and department level. Even though COVID-19 imposed a great level of uncertainty, so there was no clear guide [with which] to tackle such a unique crisis, especially in the first wave. However, the leaders were able to continue applying the vision of HMC and to take strategic actions in line with the society's interest." (Interviewee 15)

Nevertheless, government support was vital in granting the healthcare services full support in their obtaining approvals and, furthermore, with facilitating collaboration with the private sector, and also with procuring medical equipment and consumables; thus maintaining the availability of medical and manpower resources.

"The unlimited support provided by the government; it was exceptional. They were

there for us all the time, in approving our demands and making sure that we had the needed resources. For instance, in terms of manpower, they facilitated the collaboration between us and the private healthcare sector. In a sense, we were able to borrow their medical staff, especially during the first wave. Moreover, they granted us full support in procuring the medical equipment." (Interviewee 14)

With respect to digitization and technology, interviewees argued that the IT infrastructure was vital to the COVID-19 response. It thus enables them to ensure the continuity of healthcare services, such as virtual consultations with patients. Additionally, it provided an effective means of sharing live information, as it delivers useful insights for decision-making.

"Another thing, technology is a great help, as we were able to have live dashboards from our phones as well, which was very helpful in informing us about the current status and whether an action needed to be taken regarding opening new beds, for example." (Interviewee 14)

The analysis of the pilot study confirmed the roles of the MAPs and BPs interplay, along with that of the CSFs, in tackling the COVID-19 Crisis. As demonstrated, planning practices, such as scenario planning, enhanced the preparedness for managing the crisis. Additionally, the preliminary analysis of the study is in line with ANT and the strategizing notion, thus, the results indicate the involvement of different actors, both human and non-human, that played a pivotal role in managing the COVID-19 crisis, such as, government, technology, corporate leaders. Additionally, similar to (Thapa et al., 2017), the analysis of the pilot study provided a useful practical implication, about how digital tools can be mobilized to address the human actor's needs; via the provision of real time information, and hence to provide an effective crisis management response. With respect to strategizing, the pilot results provided valuable insights into the practical application of strategizing in the decision making by corporate leaders in HMC, in conformance with the views of (Engström et al., 2015; Regner, 2008).

Nevertheless, the pilot study enabled the study to modify and adjust the interview guide and to address its shortcomings. This was done by restructuring the interview guide, in terms of classifying the second round of questions into the main categories of MAPs (see Appendix A). Part 2.3 of the interview guide focuses on the performance system, while part 2.7 focuses on decision-making. As for parts 2.8 and 2.9 focus on costing planning, respectively. Furthermore, additional questions regarding the decision-making process were added (2.7.1, 2.7.2, 2.7.3)

5.2 Descriptive Statistics

5.2.1 Management Accounting Practices (MAPs) in Relation to the Business Processes (BPs)

The MAPs found in the studied BPs (clinical services, HR and the supply chain) are shown in Figure 5. The results indicate that clinical services have the highest number of MAPs, with a total of 12 practices. As for supply chain and HR, they have similar number MAPs each, with 7 and 8 practices, respectively. According to the results, decision support practices are the most impactful practices with respect to the decision-making process at HMC. However, there is no evidence regarding the significance of costing practices in the decision-making process during the COVID-19 crisis. This indicates that HMC was concerned with the provision of the highest quality of healthcare services in order to tackle the COVID-19 crisis. HMC aimed to achieve the desired treatment outcomes to save lives, irrespective of financial costs. Moreover, this indicates that HMC has strong financial resources, supported by Qatar's powerful economic position.

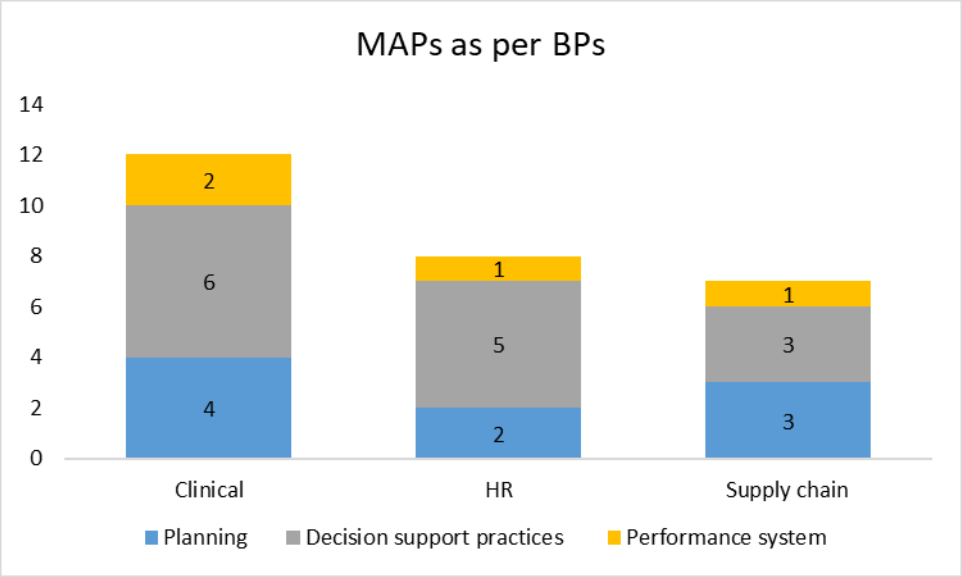


Figure 5 Management Accounting Practices (MAPs) in Relation to the Business Processes (BPs)

5.2.2 Critical Success Factors (CSFs) in Tackling the COVID-19 Crisis

The CSFs related to HMC tackling the COVID-19 crisis are shown in Figure 6. The analysis reveals the factors deemed critical in enabling HMC to tackle the COVID-19 crisis successfully. The frequency refers to the number of occurrences related to a specific factor mentioned in the interviews. Starting with the most influential factors, 13 out of 13 interviewees agreed on the significance of leadership style, as well as 12 out of 13 participants agreed on government support and collaborative partnership with governmental and non-governmental entities. Another influential factor was the importance of staff resilience. This factor refers to the commitment of staff in performing various duties and taking on added responsibilities. Followed by digitization and technology, which refers to the use of technology in tackling the COVID-19 crisis, and hospital emergency preparedness and planning with equal frequency of six employees out of 13.

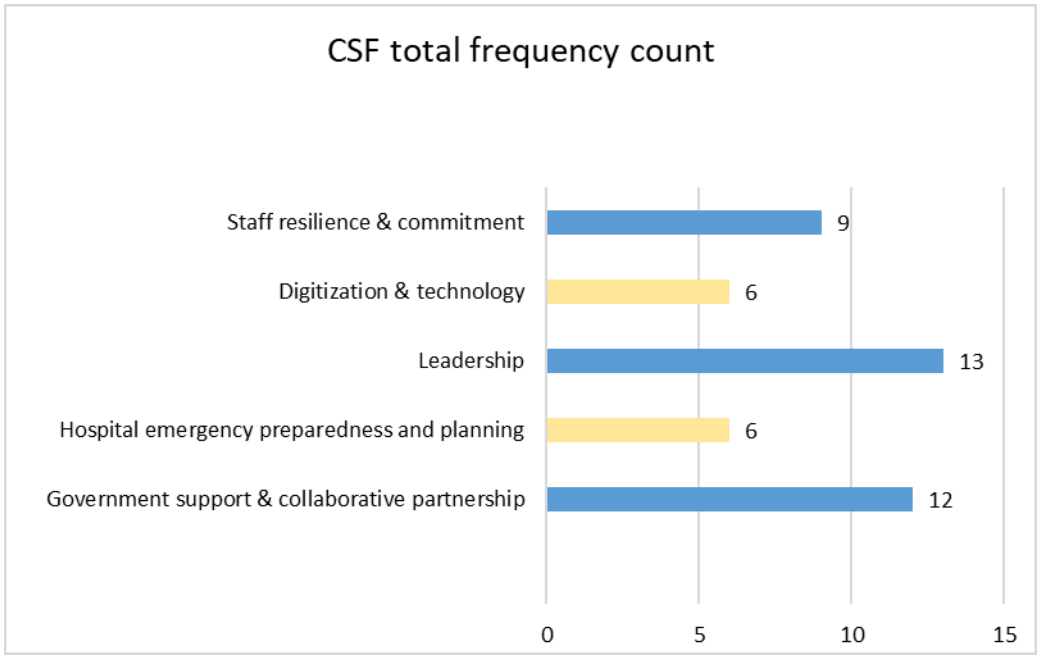


Figure 6 Total Frequency of Critical Success Factors (CSFs)

5.2.3 Interviewees' Perceptions of the Performance of Hamad Medical Corporation (HMC)

Figure 7 demonstrates the interviewees' perception of HMC's performance in tackling the COVID-19 crisis. Word cloud frequency analysis was used to visualize the answers of participants to the following question: "*May I know your opinion about the performance of HMC during the COVID-19 crisis?*" Greater frequency is represented by a larger font and greater density. The analysis indicates that the overall perception regarding HMC's performance in tackling the COVID-19 crisis was positive. The word cloud shows that the majority of the most frequent words were positive in nature. Words such as excellent, care, and good, occurred quite frequently. Furthermore, interviewees supported their argument with several words/reasons, such as vaccination, government, ministry, Qatar, and support. Finally, the analysis revealed that there were no indications of negative perceptions. Hence, the initial analysis confirms HMC's success in dealing with the COVID-19 crisis.

Figure 7 Interviewees' Perceptions of the Performance of (HMC)

5.3. Results

5.3.1 Implications for the Decision-Making Processes of the Interplay between Business Processes (BPs) and Managerial Accounting Practices (MAPs)

The implications of the interplay between BPs and MAPs on the decision-making process is displayed in Figure 8. There are three BPs in this study, classified as clinical services, supply chain, or HR. These BPs and MAPs also faced several challenges. As shown in Figure 8, costing practices were not evident in the examined MAPs. This suggests that the crisis eliminated the relevance of costing information in the decision-making process. As revealed, this was due to the great scarcity of medical equipment and medication, and therefore increased demand for medical equipment, consumables, and medications. This was addressed by some of the interviewees in different contexts, as exemplified by the following statements:

"*To be honest, we were not emphasizing costing.*" (Interviewee 1)

"*The safety of patients, clinical output, and the reputation of the health services are prioritized before cost. In addition, the scarcity of medications globally, and the increased demand, has forced us to ignore the costs and to focus on getting the inputs needed to deliver the highest quality care for our community. Then, if we have more than one supplier, we do consider that a lower price will support efficiency.*" (Interviewee 2)

"*... so cost was not an issue to us; yes, we had support from higher authorities. The cost was the last thing to think about. Availability was crucial, because there are things that are lifesaving, like ventilators; without having [them] people will die, so you need to get them*." (Interviewee 4)

In the following sub-sections, the study presents the individual interactions of BP challenges with MAPs. The results are presented for the clinical services BPs, followed by those for the supply chain and HR.

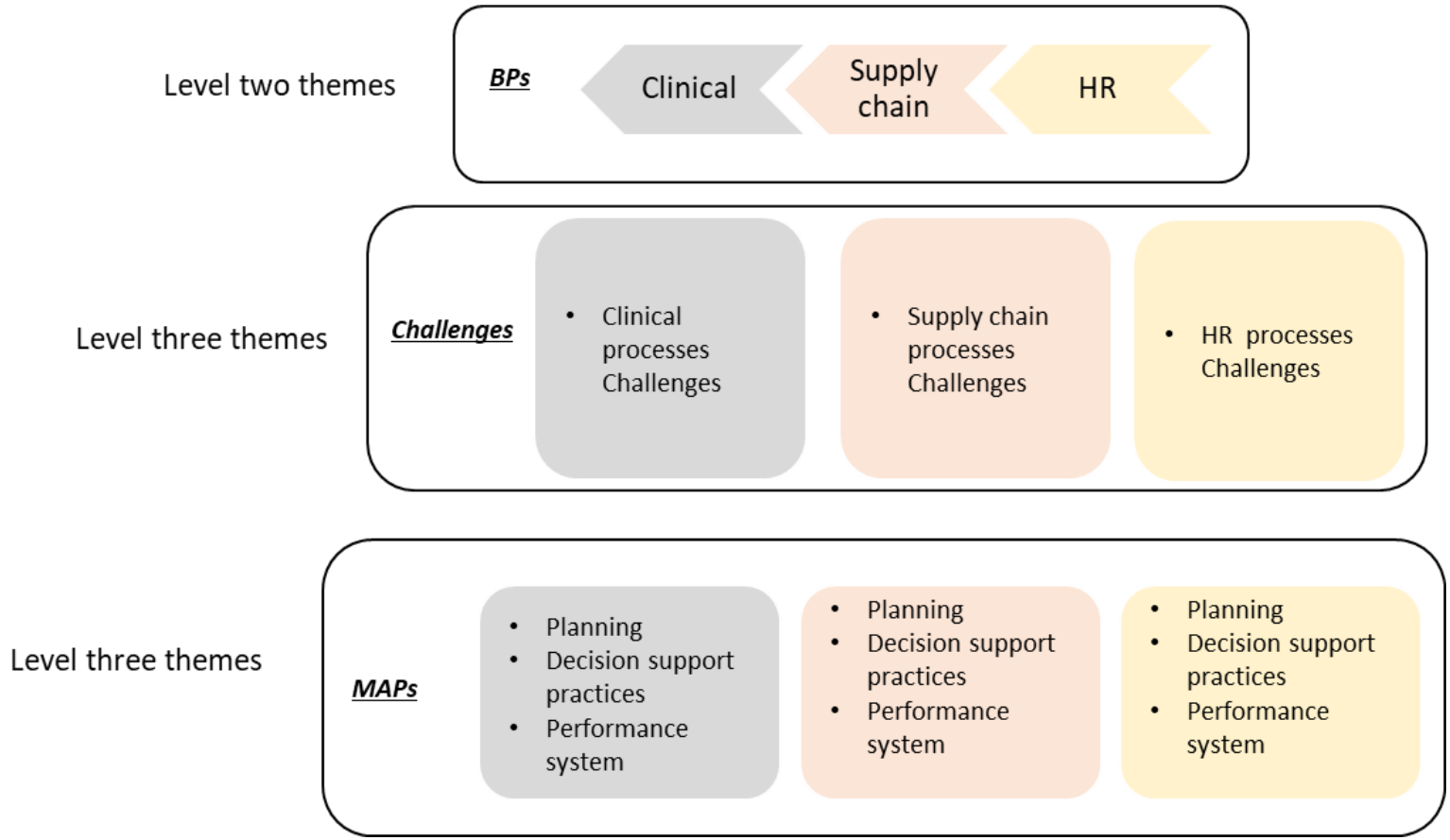
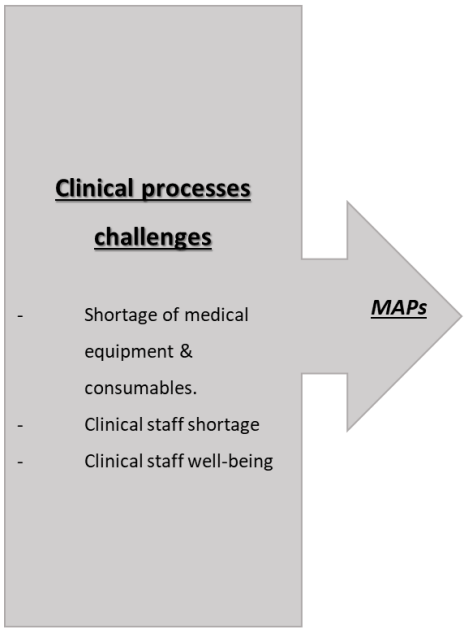


Figure 8 Interplay between Business Processes (BPs) and Management Accounting Practices (MAPs)

5.3.1.1 Interplay between Clinical Processes and Management Accounting Practices (MAPs)

The interplay of the challenges related to clinical processes and MAPs is shown in Figure 9. These processes are related to those healthcare activities performed to address patients' healthcare issues (Rebuge and Ferreira, 2012). Due to the nature of the COVID-19 crisis, healthcare activities were deeply impacted (Joseph and Forman, 2020). The clinical processes encountered several challenges, which are summarized in Figure 9.



Planning	Decision support practices	Performance system
Rolling forecasts	Differential analysis	Patient satisfaction surveys
Budgets	Benchmarking	Key performance indicators (KPIs)
Predication models	Total quality management (TQM)	
Scenario analysis	JIT	
	Process re-engineering	
	Theory of constraint (TC)	

Figure 9 Interplay Between Clinical Processes and Management Accounting Practices (MAPs)

All clinical interviewees agreed that of the main challenge was the shortage of medical equipment and consumables. According to Gedam et al. (2021), COVID-19 has resulted in the scarcity of medical equipment and consumables at an international level. This has been further exacerbated by the lack of local manufacturers of medical equipment and consumables. Four of the interviewees provided information that supports this assertion as described below:

"*Equipment was really a problem in the health center. We really had shortages in medical equipment and supplies and this was an international crisis.*" (Interviewee 1)

"*… then we had a huge problem with the medication supply, and we are still actually suffering. First of all, we are not a country that is producing any medication.*" (Interviewee 2)

The interviewees argued that there was a rapid increase in the demand for clinical manpower, which required significant attention. This included the shortage of medical personnel such as nurses, physicians, and many other healthcare professionals and technicians. According to one interviewee:

"*Staff shortage was one of biggest challenges.*" (Interviewee 1)

Another, more experienced, interviewee said:

"*Shortage of staff! Let's say you have 300 people to do whatever you have on hand, and its only in the HMC area, but suddenly, things get doubled because of the pandemic. You cannot recruit ICU people in one night, because everyone needs those people. So how [are] you going to do it? This was really not easy.*" (Interviewee 4)

Finally, the interviewees stated that maintaining the physical health of the clinical staff was a significant challenge during the COVID-19 crisis. Staff well-being refers to the extent that clinical staff are physically, mentally, and psychologically healthy in order to carry out their duties (Gorgenyi-Hegyes et al., 2021). The physical health of the clinical staff also included the probability of being infected with COVID-19, which was high, especially during the first wave. The negative implications extended beyond the clinical staff's health and productivity to include the risk of transmitting the disease to the community throughout their

families or friends. The following are opinions provided by some of the interviewees:

> "*Moreover, it's important to ensure that your staff are safe so they can deliver the required healthcare services. For example, there were some positive cases in my department. 14 days were being wasted on needed staff, and if you could multiply this by 10 staff, imagine how much cost is being wasted and how much time is lost.*" (Interviewee 1)

> "*In addition, one of the challenges we faced was how we could safeguard and protect our clinical staff from COVID-19 infection. Yes, I expected at the beginning that it would be a big challenge. But thank God, as Qatar was one of the least infected countries for medical staff, nearly 90% of the employees were not infected before the vaccination became available. We made sure that they were included among the first people in the vaccination campaign.*" (Interviewee 3)

A number of MAPs were utilized to overcome the aforementioned challenges and to facilitate the decision-making process, thereby mitigating the uncertainty level. As shown in Figure 9, the MAPs explored fell mainly into three categories of management accounting: planning; decision support practices; and the performance system.

5.3.1.1.1 Planning. Four practices were mobilized in the decision-making process, with associated BP issues: rolling forecasts; budgets; prediction models; and scenario analysis.

Regarding rolling forecasts, which are a budgeting practice that offers continuous planning (Henttu-Aho, 2018), the following is an interviewee's opinion concerning this practice:

> "*For example, we do estimation of how many cases we will have for the next month, and based on this information, we prepare our budgets and resources allocation, in*

terms of staff, beds, etc." (Interviewee 1)

Regarding budgets, most interviewees agreed on the importance of budgets in all circumstances, thus indicating that this practice is an effective organizational resource. Some interviewees stressed that budgets ensure the organization's alignment with the complex business environment, as expressed in the following:

"*Budgets are essential in such a crisis, because, through planning, you can direct your resources effectively.*" (Interviewee 1)

"*At HMC, we do consider the budget, in general, in everything.*" (Interviewee 2)

This practice can also be viewed as a prediction model, which is a form of forecasting technique that allows the prediction of future outcomes using statistical models (Omidi et al., 2019; Sivarajah et al., 2017). The analysis of the current study revealed the importance of forecasting as it allows for greater levels of preparedness and enhances the adaptability of an organization in such uncertain times. As a result, it enables the effective delivery of quality healthcare services in an organized and timely fashion. The following were the opinions of some of the interviewees in this context:

"*In regard to medication shortages, we just did one thing to address the medication shortage effectively; we are doing the same thing nowadays. We have to estimate, actually, so we do estimations for the patient disease conditions, such as using mild, moderate, and severe health conditions. Then, we give the estimation to the Drug Supply Department, and they help us in purchasing. This is the same for PPE needs, I mean, in HMC. Estimations were good practices that really helped in balancing purchasing.*" (Interviewee 2)

> "*The predictive model data supported the CDC [Communicable Disease Center] in planning their case management and surgery capacity. Many factors were considered, including socio-economic determinants such as gender, age, socioeconomic factors, and other demographic risk factors. The established risk factors for severe COVID-19 helped in preparing the right level of treatment.*" (Interviewee 5)

Planning was also manifested through scenario analysis, which facilitated adaptability and preparedness. The results of the pilot study confirmed the significance of scenario models. Additionally, according to the COVID-19 Qatar National Action Response Plan (2020), healthcare services developed several scenarios for dealing with the spread of COVID-19 based on the compliance level with control measures, as illustrated by the following quote:

> "*The expected number of cases in Qatar utilizing different control scenarios: Based on data that is currently available, and assuming that the implementation of timely and effective control measures to base core planning on an age specific incidence rate of 8.94 per 10,000 population. Based on this scenario, Qatar is expected to see a total of 2,436 patients affected by COVID-19. Of these patients, 2,106 are expected to experience moderate or mild symptoms, 283 are expected to be severe and 92 are expected to be in a critical condition, requiring intensive care treatment.*" (COVID-19 Qatar National Action Response Plan, 2020)

5.3.1.1.2 Decision support practices. As shown in Figure 9, decision support practices registered the highest number of MAPs in the clinical processes. The study identified six practices: differential analysis; benchmarking; TQM; JIT; process re-engineering; and TC.

One of the main practices is differential analysis, which is concerned with analyzing the relevant costs and benefits arising from alternative courses of action relative to a particular decision (Heisinger, 2010). Interestingly, differential analysis has had significant implications for decision-making in clinical processes. Subsequently, the exercise of differential analysis provided useful insights for decision-makers in the clinical processes for healthcare services in Qatar.

One of the decision-makers highlighted the role of differential analysis with regards to continue providing elective surgery or to postpone such operations until further notice:

> "*We analyzed our non-COVID-19 healthcare activities. We have non-emergency or elective surgeries, so we were in the situation that we either [had to] continue or postpone those elective surgeries until further notice. Again, because COVID-19 is an emergency, and you have a limited number of staff, COVID-19 should be prioritized first. As a result, we postponed the non-emergency surgeries in order to utilize our resources efficiently given the COVID-19 crisis. However, at the same time, we were keen that there should be no postponements or delays for cancer and dialysis patients.*" (Interviewee 3)

Moreover, differential analysis was evident in decisions regarding whether to purchase a particular medication, as argued by one of the directors:

> "*When it comes to the decision of whether to buy or not a particular medication, the scientific and clinical team, in the CDC, discusses the treatment all the time, and everything that actually comes along the way. We read about it, and then see all the literature, and then we analyze the impact, the benefits and so on. Then we suggest either to go for this medication or not.*" (Interviewee 2)

Benchmarking is the practice of comparing an organization's activities, performance, or any business information, with other organizations' "best practices" (leading organizations in the industry, and/or competitors) (Prašnika et al., 2005). As revealed in the analysis, healthcare services in Qatar used benchmarking tools, such as the standards and guidelines of the WHO or China's effective control protocols. As a result, benchmarking enabled the healthcare services in Qatar to strive continuously towards the improvement of their performance. Benchmarking thus provided useful insights, enabling them to cope effectively with the crisis, while also taking into consideration the unique context of each entity or country. Benchmarking was referred to by the interviewees as follows:

> "*Of course, all standard and treatment protocols were taken into consideration, like treatment plans and stages. We were looking at best practices in other countries, like new technologies, to learn more, so that we could cope well with the crisis.*" (Interviewee 1)

> "*We also observed what is happening in the world, and so we analyzed and compared our performance with others, like the global benchmark of the WHO.*" (Interviewee 3)

Benchmarking is also mentioned in the COVID-19 Qatar National Action Response Plan (2020):

> "*It is reasonable to base our core planning model on data currently available, and assuming that the implementation of timely and effective control measures are similar to those taken in Hubei, China.*"

In the context of the benefits of benchmarking, one of the directors highlighted the importance of considering the context of the firm or country during the comparison process:

"*It's helpful that we listen to scientific policy or guidelines. We listen because scientific knowledge and information, for example from the CDC, help us to understand what they say, and what they implement heavily. However, each country has its own context and means, for example Qatar. How many nationalities? 80–90 of them might not be the same in other countries, so these things need to be analyzed and adjusted accordingly.*" (Interviewee 4)

Healthcare services strived to achieve TQM by ensuring that there was a surplus in the availability of resources, e.g. manpower, medications, and logistics. TQM is defined as the process of ensuring customer satisfaction in order to deliver the perceived value to the customers (Hackman and Wageman, 1995). It is also a considered a continual process of eliminating errors (Yusuf et al., 2007). TQM was achieved in healthcare services in Qatar, via the provision of free healthcare services for COVID-19 patients for everyone. Furthermore, these services were provided in a timely and proactive and manner, as was evident in the response provided by the interviewees:

"*Thank God that our country provides free treatment for everyone, whether Qatari or non-Qatari. So, we provide treatment for everyone, because there are people who are not able to pay these costs, which might have a negative implication on people's lives.*" (Interviewee 3)

"*The government is bringing all the people back to the country, and a lot of them have a chronic illness, such as diabetics or high blood pressure. These people will need particular medication, because they will be quarantined for 14 days; how would they order their medication? What happens is that the onsite doctors check the visitors' health records in the system and know exactly what illness they have and what*

medications they're having, and they will order them, so when they arrive their medication is there already." (Interviewee 7)

"*When we were bringing the citizens back to the country, with the help of medical attachés and the Qatari Embassy in each of these countries abroad, we knew that we would be having patients who required instant or regular treatments, like dialysis and cancer treatments, or others with special needs. Thus, in the period of 14 days quarantine, for example, some must have dialysis three times per week, which means six times during their quarantine. As a result, we dedicated three hotels only for medical patients, which were typically like hospitals, so, in those main hotels, we had more physicians and nurses, and we set up the dialysis machines, so we took the machines from hospitals and put them into those hotels.*" (Interviewee 7)

Additionally, interviewees highlighted the importance of maintaining a surplus in the availability of resources to ensure quality in the delivery of healthcare services:

"*I mean, we do not wait for the beds to be fully taken, and thereafter we install new beds, of course not, because this will affect people's lives. So, what we do is, for example, if 80% of the beds are occupied, we create new beds, and if the medical staff is working at its limit, we add assistant medical staff.*" (Interviewee 3)

With respect to JIT, its effectiveness has been proven in ensuring the provision of consultation services (McGowan et al., 2008). Accordingly, it has had positive implications for decision-making, especially for healthcare services in Qatar. This was evident through the effective monitoring and surveillance of various activities. Interviewees commented by stating the following:

"*We have dashboards that reflect up-to-date information; for example, the number of patients administered, the number of ICUs, the number of discharged patients, and so on. These dashboards provide us with useful insights in relation to decision-making, like whether we need to open a new isolation site, or increase bed capacity.*" (Interviewee 1)

"*We are watching all our work first. We monitor the patients' entry, their numbers, the number of those entering isolation, the number of those entering care. In addition, we monitor the numbers of injuries at the State level; this requires people to have their eyes open to the situation.*" (Interviewee 4)

With regards to process re-engineering, the interviewees appreciated the role of technology in facilitating the clinical process re-engineering, as well as the innovative practices that are evident globally. Since COVID-19 imposed restrictions on people gathering, the decision-makers mobilized technology accordingly in order to digitize the clinical processes, and to ensure minimal social gathering and maximum efficiency levels, e.g. offering virtual consultations, and online ordering and the delivery of medication. Interviewees commented by stating the following:

"*We transformed patients' appointments into virtual appointments to enhance the efficiency levels and eliminate social gathering. In addition, when it comes to medication, we worked with Qatar Post to deliver medication to patients' houses. As a result, there was no need to come to our facilities for this purpose.*" (Interviewee 1)

"*The good thing with virtual appointments is that the appointment timing was very much shortened. So, in the past, a doctor saw about 10 patients in his shift, but now, with the virtual model, they see 15 to 20 patients in their shifts, so it's more efficient.*"

(Interviewee 2).

"*Due to quarantine, we adopted the virtual model. So now we have set up a virtual clinic, so all physicians are sitting there with phones and everything. So, logically speaking, now, these people who are coming from abroad are healthy people, because they have a negative PCR test from their home country, and they might be expecting that that's why we will quarantine them for 7 days in a hotel. So, if they fall sick, then what we do is that, first, they will call the virtual clinic center, so they will have the same virtual session on the phone, and we get them medication. If they are really sick, the physician will take them to the hospital, but, otherwise, there is no need for full time physicians [to be] on the site. We started the transition a month ago. We have almost 70 hotels at the moment that are adopting the virtual model.*" (Interviewee 3)

Finally, TC deals with the identification of bottlenecks for improving performance by eliminating these bottlenecks (Spector, 2011). TC proved to be significant for clinical decisions in Qatar's healthcare services. It enabled healthcare decision-makers to take proactive actions in order to mitigate COVID-19's negative impact. The decision-makers in the clinical processes started to identify the activities leading to social gatherings in order to impose restrictions and control measures, and therefore minimize COVID-19 exposure. For instance, the dispensing of medication and clinical appointments were among the activities that resulted in direct interaction with people. To overcome this, healthcare decision-makers adopted the virtual model for conducting clinical appointments. Moreover, medication was dispensed virtually with the help of Qatar Post. Interviewees commented by stating the following:

"*The nature of the disease is contagious. Therefore, it's important to minimize [the numbers of] people gathering at hospitals. So, we started to identify the healthcare*

activities that result in gathering, or in direct interaction, at our facilities, such as medication supply or other clinical appointments. So we worked on dispensing medications virtually, with the help of Qatar Post, and without allowing patient gathering in hospitals, and we transformed the majority of our appointments into virtual consultations." (Interviewee 3)

"*Things need to be analyzed; some nationalities are severe in transmitting the virus; for example, laborers in the industrial sector maintain a close interaction with each other as their accommodations are shared, so it's difficult to trace and control their movements. So, that was the reason that they closed the industrial sector, because you cannot take them anywhere, so lock them down and watch them, and if anybody needs hospitalization, send them to the hospital.*" (Interviewee 4)

Further, as illustrated in COVID-19 Qatar National Action Response Plan (2020):

"*Qatar has to consider the impact of the high expatriate population, including the craft and manual workers (CMW), and the risk of infection in this population group. This group is at high risk of transmission, given the density of their current accommodation and their social interactions.*"

5.3.1.1.3 Performance system. There are two practices that can be connected to the performance system: patient satisfaction surveys; and KPIs.

Patient satisfaction surveys represent a strategic non-financial performance system that seeks to measure performance via analyzing customer feedback. In the context of healthcare services in Qatar, patients are the core stakeholders, and services are primarily created and delivered to satisfy their needs. An interview stated the following with respect to the satisfaction surveys:

"*We have patient satisfaction surveys, and almost all of the responses are 100%, indicating the excellent service provided. We also get reports from 'We Hear You' that are perfect in terms of results, not just for the CDC, but for all HMC facilities.*" (Interviewee 1)

The second practice is the implantation of KPIs, which are measurable indicators of an organization's effectiveness in achieving business goals. Decision-makers involved in the clinical process relied on certain KPIs that measured the extent of goal achievement. In the context of COVID-19, KPIs were mainly centered around health outcomes and staff efficiency. This included, for instance, the mortality rate, which refers to the percentage of deaths in the population of COVID-19-positive cases (the death-to-case ratio) (CDC, 2021). It also included the comorbidity rate, which refers to the occurrence of more than one illness or disease in one person at the same time after exposure to COVID-19, or the complication rate after hospitalization, e.g. the infection rate (CDC, 2021). Interviewees stated the following regarding health outcomes and KPIs:

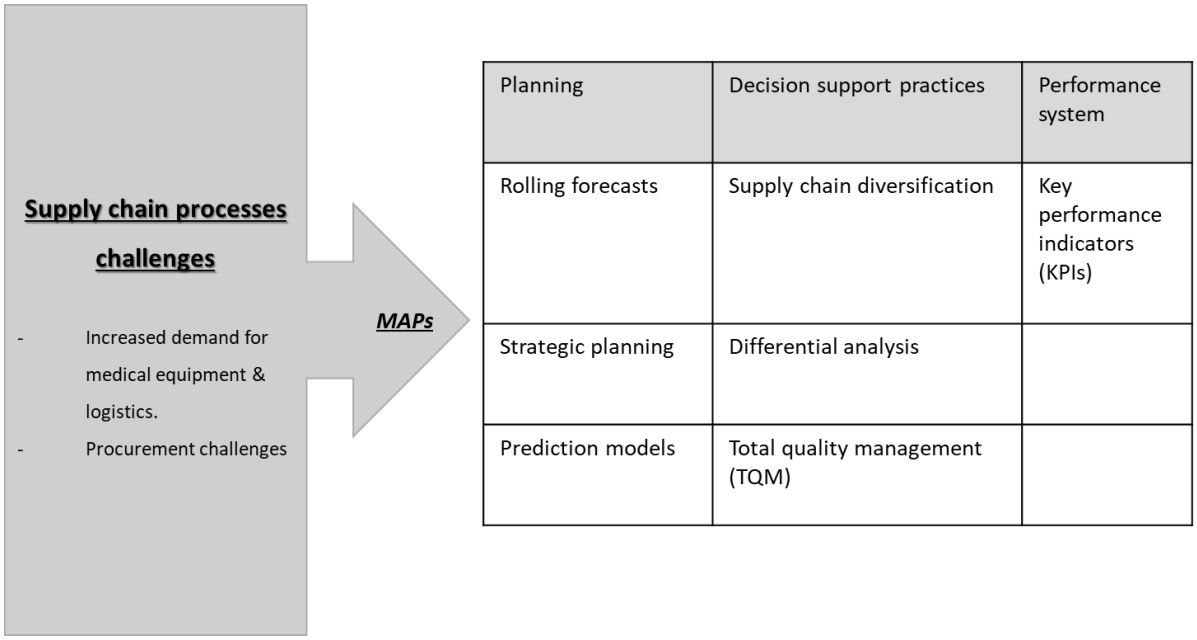
"*Health outcomes also, like mortality and comorbidity rates [are considered], [for example, whether they] are the lowest in Qatar for COVID-19 or not.*" (Interviewee 1)

"*There are standard measures of success in hospitals, which include patient waiting times, length of stay, readmission rates, and treatment outcomes.*" (Interviewee 5)

5.3.1.2 Interplay between Supply Chain Processes and Management Accounting Practices (MAPs)

The supply chain is a process that involves a network of organizations and suppliers that produce a product for a customer (Stevens, 1989). The supply chain is concerned with all of the activities that must be undertaken in order to deliver products or services to customers

(Stevens, 1989). As demonstrated in Figure 10, the supply chain processes of healthcare services in Qatar encountered several challenges. MAPs were utilized to address these challenges and to facilitate the decision-making process. The MAPs fell into three main categories: planning; decision support practices; and the performance system.



Planning	Decision support practices	Performance system
Rolling forecasts	Supply chain diversification	Key performance indicators (KPIs)
Strategic planning	Differential analysis	
Prediction models	Total quality management (TQM)	

Figure 10 Interplay between Supply Chain Processes and Management Accounting Practices (MAPs)

After the outbreak of COVID-19, there was increased demand for medical equipment and logistics, such as ventilators, PPE, medication, and beds. The interviewees suggested that the shutdown of means of transportation, combined with the need for a prompt response, exacerbated the problem. Due to the rare and sudden occurrence of the crisis, the entire world went into lockdown. In addition, the crisis required a proactive and prompt response, as the transmission rate was high and the number of positive COVID-19 cases was increasing significantly. Consequently, patients were being admitted to hospitals and isolation facilities. An immediate response was thus crucial. The interviewees reflected on the sudden occurrence of COVID-19 and provided the following statements:

"*I mean, purchasing medical equipment takes 8–9 months, but you needed them within days, not months, and by the end of March 2020, almost all of the countries in the world were in lockdown, even airlines. Everything was shut: transportation was cut off everywhere, so we had to work and bring the things that were needed within one week or two weeks, or at most in one month. That was a challenge.*" (Interviewee 6)

"*Purchasing urgent items like medical consumables, PPE, local contracts for catering, etc., it's not an easy thing at all. If you think about it, hotels used for quarantine were rented through other agencies, but these hotels still needed to clean the rooms, bring food for guests, wash the guests' clothes, and provide housekeeping, security, all these things … we had to support them, not for one hotel, but for more than 100 hotels, not for 100 people, but for thousands of quarantined people. It was a huge expansion all of a sudden, and we had to do it within two weeks or a month. We did purchase things, such as over 3,000 beds within three weeks. We purchased, delivered, and installed them. This has never happened before, and I have been in this system for 40 years. It usually takes two years to do what we did within one month, and that saved us.*" (Interviewee 4)

Additionally, the COVID-19 period witnessed procurement challenges in the international market. Interviewees argued that, after the easing of transportation restrictions in countries around the world, there was a scarcity of resources. This imposed additional challenges on the supply chain's activities as overseas suppliers were not allowing the procurement of medical equipment and consumables, such as 3M masks and ventilators. As the crisis stretched on, there was an ever-increasing demand for medical consumables, which added to the existing challenges. Interviewees provided the following statements with respect

to these challenges:

> "*In the beginning, we faced a challenge with overseas suppliers, as they were not allowing ventilators, not allowing 3M masks to get out of the country. We found a little bit in other Western countries, but it was a challenge, because they needed it first for their countries, so it was difficult.*" (Interviewee 6)

> "*The consumption of medical masks annually is around 700,000 to 800,000. However, during COVID-19, the consumption of medical masks reached to 2.5 million in 10 days only …. just imagine, and this increased the procurement challenge.*" (Interviewee 4)

To overcome the challenges and to facilitate the decision-making process, several MAPs were utilized to provide useful information and to mitigate the uncertainty level. As shown in Figure 10, MAPs were placed under three categories: planning; decision support practices; and the performance system.

5.3.1.2.1 Planning. The results of the current study revealed three practices for planning in the supply chain process: rolling forecasts; strategic planning; and prediction models.

Regarding rolling forecasts, an important component in planning is the preparation of budgets, which detail how organizational resources should be utilized to achieve the desired outcomes within a certain time frame (Kefasi, 2019). Supply chain processes appreciate the importance of flexible forms of budgets, for instance rolling forecasts, in order to ensure effective alignment with the contemporary business environment. However, the importance of budgets is not limited to crises or uncertain times; budgets are crucial under all circumstances. An interviewee provided input regarding the budgeting process in the following statement:

> "*So, we always, at the beginning of the year, receive the annual budget for procurements. So, basically, we evaluate what has been requested in budgets with what*

we have in our inventory, taking into consideration that surplus levels must be maintained. Further, whenever there are changes or updates in the procurement budgets, it must be reported to us instantly." (Interviewee 6)

Regarding strategic planning, prior to the pandemic, Qatar was subject to a blockade by neighboring countries in 2017. Saudi Arabia, United Arab Emirates, Bahrain and Egypt announced cut of all diplomatic relations with Qatar and banned their airspace and sea routes for Qatari planes and ships, along with Saudi Arabia blocking Qatar's only land crossing. Two of HMC decision makers stated that the blockade had a positive effect with respect to raising awareness about strategic planning. More specifically, it provided an incentive for the country to expand its inventory safety stock. Prior to the blockade, HMC had safety stocks that were expected to last for eight months. However, after the blockade, the safety stock capacity was expanded to be sufficient for two years. Furthermore, the top officials in the State of Qatar were emphasizing the expansion of the capacity of the healthcare inventory in the long term. In this regard, the interviewees provided the following statements:

"*Planning is very important. We should keep things for a longer period of time.*" (Interviewee 4)

"*During the blockade, we had to think strategically to have our medical consumables on hand for a longer period. So we used to maintain a surplus in our inventory for eight months but, because of the blockade, we increased it to two years, and we planned to have a strategic stock. So those are things that we learned from the blockade, and it really helped us in the time of the coronavirus.*" (Interviewee 4)

"*Her Excellency Dr. Hanan [Minister of Healthcare in Qatar] emphasized the matter of raising the inventory capacity greatly. All the time, she advised us to buy, even if*

things were not needed, as she was aware that … you see, it's not just about the coronavirus, soon we will have the FIFA World Cup, and you never know what else might happen in the future." (Interviewee 6)

The results analysis also revealed the importance of forecasting and prediction models. The interviewees argued that forecasting allows greater levels of preparedness in ensuring the availability and adequacy of healthcare services. This enables the achievement of goals with the desired quality levels. Furthermore, prediction models have been shown to have great importance in the national action response plan of the State of Qatar (COVID-19 Qatar National Action Response Plan, 2020). An interviewee provided the following statement:

"*We have some people who make predictions; for example, an epidemiologist will tell you the way it's going from two weeks from today, so, for example, I believe you need up to 2,000 beds immediately. Then they work on placing 2,000 beds in HMC facilities, so this is the process.*" (Interviewee 4)

One of the directors expressed the importance of prediction models, as evident in the following statement:

"*Of course, they [prediction models] helped. They were studied and allowed us to be more prepared in confronting the crisis. What you see now, they already informed us about maybe two months back.*" (Interviewee 4)

Additionally, the matter is further amplified in COVID-19 Qatar National Action Response Plan (2020) report as follows:

"*To estimate volumes for pandemic stock, and to assess the capacity of the market to meet increased demand for medical and non-medical PPE supplies, and to coordinate*

internationally."

5.3.1.2.2 Decision support practices. The study revealed three practices relating to decision support practices in the supply chain process, as shown in Figure 10: supply chain diversification; differential analysis; and TQM.

The first practice is the diversification of suppliers. Interviewees argued that one of the great lessons learned from the blockade was that sources should be diversified in order to effectively provide innovative opportunities. Due to the increased global scarcity of medical resources during COVID-19, many countries were conservative in releasing their supplies. Due to HMC's international network of suppliers, it was able to capitalize on these opportunities. This diversification of suppliers is depicted in Qatar National Action Response Plan (2020) as follows:

> "*Qatar response strategic objective: Collaborating with international partners to accelerate priority research and innovation to support a global process to fast track and scale-up research, development, and the equitable availability of candidates, therapeutics, vaccines, and diagnostics.*"

> "*Assess the capacity of the market to meet increased demand for medical and other essential supplies and coordinate internationally.*"

Furthermore, the following statement was made by one of the interviewees:

> "*Before the blockade, we used to deal with a selected number of suppliers. However, after the blockade, we adopted the strategy of diversifying our suppliers, and this strategy has benefited us a lot during COVID-19. For instance, we used to purchase ventilators and masks, the 3M masks, from the US; however, we couldn't procure*

[them] from the US, so we went to other countries, like China and Turkey." (Interviewee 6)

The second practice is differential analysis, which is concerned with analyzing the relevant costs and benefits arising from alternative courses of action relating to a particular decision. The practice of differential analysis was evident in the decision to buy other masks than the well-known 3M masks. The lack of availability of 3M masks in the international market prompted the analysis of relevant costs and benefits regarding the alternative masks that were available on the market. An interviewee provided the following statement regarding the use of masks:

"*Another thing is that the 3M masks … there was high demand for 3M masks, and the US was the main supplier of 3M masks. Despite all efforts from our Embassy, we couldn't procure the masks from them, because they needed them first for their own country. Then we started, with the help of the Infection Control Department, to evaluate other alternatives that were available. We came across another mask, which is of high quality that matches our standards, the KN95, and there is another one, the KN99, and these are produced in Turkey and China. Although they were more expensive, but they satisfied our needs and quality standards, so we went for this option.*" (Interviewee 6)

The third practice is TQM in the supply chain processes. The importance of TQM was greatly emphasized by the Infection Control Unit, which is responsible for ensuring compliance with the quality measures and standards. Notwithstanding, the flexibility of the Infection Control Unit was required in approving other alternatives for medical equipment or consumables, due to the decreased availability of medical equipment and consumables.

However, quality measures were greatly prioritized; for instance, supply chain employees used to assess the quality of products by inspecting a sample before submitting it to the Infection Control Unit so that they could check the quality standards. The interviewees provided the following statements regarding the quality assurance process at HMC:

> "*The crisis requires some flexibility, like, infection control was allowing us to procure from new suppliers and use new alternatives, because of the scarcity and high demand. However, quality measures needed to be maintained. For instance, it's ok to bring me sanitizer from a new supplier, but it has to be in compliance with the standards. Like, not a liquid with some spurious ingredients that's not a sanitizer, or don't bring me any mask that's useless or cuts easily, it has to be up to standard.*" (Interviewee 6).

> "*Although, because of the crisis, we had to deal with new suppliers, the Infection Control Committee were making sure that we procured them from reputable suppliers and that the product met the quality standards. I used to check on the masks physically, although that's not my job -- to check the quality of masks -- just to make sure that we were procuring and submitting the right products.*" (Interviewee 13)

5.3.1.2.3 Performance system. The study also examined the performance system practices in the supply chain, as demonstrated in Figure 10. The results suggest that there is one practice under the performance system, namely KPIs.

The analysis indicates that the main KPI used during the COVID-19 crisis was the achievement of self-sufficiency in the availability of medical equipment, consumables, and logistics. These were crucial in delivering healthcare services, at a certain level of quality, without compromising the health of society. As a consequence, a strategy of maintaining a surplus in the availability of medical equipment and consumables was adopted. This was to

ensure that the required stock for the strategic inventory "safety stock" was preserved, which is a key factor for achieving self-sufficiency in the supply chain processes in the healthcare services in Qatar. An interviewee provided the following statement regarding KPIs:

> "*[The] outcome is evidence of failure or success. We had all [of the] medical consumables and equipment, beds, staff, in place, and we didn't have any delays. I mean nobody came to us with no bed available. We treated everybody equally. We managed to have everything on hand, whether [it was] drugs, consumables, food …*" (Interviewee 4)

Further, as stated in the Qatar National Action Response Plan (2020):

> "*We must prepare emergency response systems, increase capacity to detect and care for patients, ensure hospitals have the space, supplies and necessary personnel; in order to develop life-saving medical interventions.*"

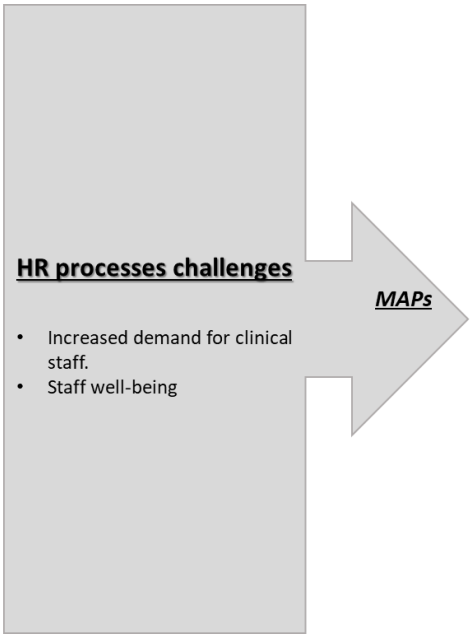
5.3.1.3 Interplay Between Human Resources (HR) Processes and Management Accounting Practices (MAPs)

The HR processes in healthcare services in Qatar are responsible for the usual HR activities (recruitment, payroll, training, and development) in addition to other newly designated tasks. These included the management of quarantine and isolation facilities in the country. These combined tasks were assigned to the Chief Human Resource Officer (CHRO) as noted by one of the interviewees in the following statement:

> "*She [the CHRO] was given the responsibility of managing quarantine and isolation facilities.*" (Interviewee 7)

The HR processes encountered several challenges, which required the utilization of

MAPs, as illustrated in Figure 11. First, there was increased demand for clinical staff. The interviewees argued that the demand was especially high for staff positions such as nurses, physicians, and allied health professionals (e.g. laboratory staff). In addition, the challenge was further magnified by the demographical needs, e.g. increased demand for male staff. The COVID-19 crisis required the effective and efficient utilization of the available staff. Additionally, the shutdown of international airports and the lockdown of countries exacerbated the challenge, particularly during the first wave of the pandemic in March 2020. This indicated that there were limited options for clinical staff recruitment from Qatar. Furthermore, there was a sudden expansion of operations, such as the opening of new hospitals and facilities.



Planning	Decision support practices	Performance system
Rolling forecasts	Differential analysis	Key performance indicators (KPIs)
Prediction models	Benchmarking	
	Total quality management (TQM)	
	Just-in-time (JIT)	
	Process re-engineering	

Figure 11 Interplay between Human Resources (HR) Processes and Management Accounting Practices (MAPs)

The interviewees provided the following statements regarding the HR process challenges:

> "*We realized that we don't have any more local staff, local clinical people anymore. So, I had to go international and offer people a three or four month contract.*" (Interviewee 8)

> "*We had to hire a lot of staff, and our existing staff was insufficient to do everything; don't forget that we had other non-COVID-19 healthcare activities that had to continue.*" (Interviewee 4)

> "*... and then there are some areas in which we needed more males. So for example, Mekaines, during that time, where the majority of the patients to be quarantined were male laborers. Um, we could not give all of our male staff just to Mekaines.*" (Interviewee 8)

> "*Finding a way to recruit temporary staff was a challenge. You've exhausted all of your*

local people. What else can you find? We are not a big country. We are a small country." (Interviewee 8)

"*See, we follow the Canadian standards in staff allocation, which state that, for example, for every ICU bed there has to be one nurse, and for every three ICU beds there has to be one doctor, for every 10 beds in the ICU we need to have one clerk. So, opening beds in their thousands requires a large number of clinical staff and administrative staff as well.*" (Interviewee 11)

Staff well-being was a significant challenge to the HR process. This refers to the extent that the staff are fit mentally, physically, and physiologically to perform their duties. Interviewees argued that the level of fear was higher in the first wave of the crisis relative to the second wave. This was due to the heightened level of uncertainty, which had never been witnessed prior to COVID-19. In addition to the physiological aspect, the probability of becoming infected with COVID-19 was high, especially at the beginning of the first wave. The following statement was provided by one of the interviewees:

> "*The level of fear was very high in the first wave.*" (Interviewee 7)

Due to the lockdown, many government sectors were working remotely, except for the military, security, and healthcare sectors. The non-COVID-19-related activities were conducted remotely as part of the remote working policy. Although all government sectors maintained an 80% remote work policy, this was not the case for HMC. In the context of non-COVID-19-related activities, the remote work policy was applicable to 50% of the healthcare staff. The interviewees provided the following statements regarding remote work:

> "*As you know, the remote working policy of 80%–20% was not applicable in the healthcare sector, so there was a risk of getting positive cases.*" (Interviewee 9)

> "*So, for non-COVID-19 activities, we applied the remote policy, but with a different percentage, instead of 80%–20%, we applied 50%–50%, meaning 50% of the staff would work remotely, while the rest would work in their offices, so we could ensure safety and the required level of efficiency.*" (Interviewee 9)

Further, as stated by the Qatar National Action Response Plan (2020):

> "*The Council of Ministers implemented the remote working policy for 80% of the public*

sector employees, except for the military, security, and healthcare sectors."

To overcome these challenges and facilitate the decision-making process, several MAPs were utilized to provide useful information and to mitigate uncertainty. As shown in Figure 11, the MAPs that were explored fell mainly into three categories of management accounting: planning; decision support practices; and the performance system.

5.3.1.3.1 Planning. The findings suggested two practices that were evident in the HR processes during the COVID-19 crisis: rolling forecasts; and prediction models.

The first practice is rolling forecasts, which are a form of flexible budgeting that ensures alignment with the changing business environment. In the context of workforce planning in HR, rolling forecasts are a routine activity. This is aligned with the annual business plans, i.e. whenever a change occurs or expansions or adjustments need to be made for staff allocation in the healthcare facilities. A request is raised, and thereafter it is subject to evaluation by the Workforce Planning Unit, with the proposal subsequently being either accepted or rejected. If the request is approved, it is reflected in the budgets in the form of rolling forecasts, and therefore communicated to the recruitment unit to take action accordingly. An interviewee provided the following statement regarding the rolling forecasts process:

> "*The budget is allocated based on whatever has been approved. So, for example, during every year we do a business plan. Further, when we submit manpower requests, normally, it covers continuation, meaning that if a facility tries to increase bed capacity, that's not a new business case, that's a continuation of the facility. For example, it only has 15 beds, but I know that I can fit in another five beds, so I will add five more beds, but, obviously, if we add five beds, we need more staff [for the] five beds, because we already have existing work; the beds that we're going to need can be taken from another facility that is close, but we still need staff. So, we would then*

submit, for example, a request for staff." (Interviewee 8)

The second practice is prediction models, which is a form of forecasting technique that allows the prediction of future outcomes using statistical models, such as regression analysis (Omidi et al., 2019; Sivarajah et al., 2017). In addition, prediction models enable the effective allocation of manpower, thus allowing the achievement of organizational goals while delivering quality healthcare services. An interviewee provided the following statement regarding the use of planning models:

> "*We developed workforce planning models to easily help nursing departments calculate how many nurses they require. If I have* X *number of beds, and this is the expected occupancy rate, and this is the expected number of hours the patient requires, then the model calculates how many nurses the facility needs. So, we have developed these tools and they're readily available for use.*" (Interviewee 8)

5.3.1.3.2 Decision support practices. The analysis revealed five decision support practices related to the HR processes for healthcare services during the COVID-19 crisis: differential analysis; benchmarking; TQM; JIT; and process reengineering.

The first practice is differential analysis, which is concerned with examining the relevant costs and benefits arising from alternative courses of action leading to a particular decision. The practice of differential analysis was evident in the decision to accept or reject the transfer of existing staff from one healthcare facility to another. An interviewee provided the following statement regarding the transfer of staff between different facilities:

> "*When we get a transfer request, such as a transfer from one department to another, or one hospital to another, doing the same job, there'll be no cost impact. The reason for the transfer is because the staff member has relocated their residence. But then, we*

analyzed this, and said, ok, the move that you're going to make will result in under-staffing this department. It will create an imbalance, and this will have a negative impact. Meaning existing staff will be doing more overtime than what's required to cover the shortage. Um, and then this might impact the service delivery to patients. Then the department is going to request additional manpower because of this transfer, which is then an added cost to the organization, because, if I give them a budget, then there'll be a cost associated with it. Then, when I look at the department that the candidate wishes to transfer to, they are overstaffed; they don't need more staff. So, if I allow the transfer, I'm letting them be inefficient." (Interviewee 8)

The second practice is benchmarking, which is the practice of comparing the organization's activities, performance, or any business information, with other organizations' "best practices" (leading organizations in the industry and/or competitors) (Prašnika et al., 2005). Based on the results of the analysis, healthcare services in Qatar used benchmarking tools, such as the standards and guidelines of the WHO and Health Canada's service standards. Subsequently, benchmarking enabled healthcare services in Qatar to strive continuously towards the improvement of their performance. As a result, benchmarking provided useful insights, which allowed HMC to cope effectively with the crisis, while considering the unique context of each entity or country. Interviewees provided the following statements regarding benchmarking:

"*So, one of the things that I did is the back to normal proposal. So, basically, I relied on an extensive review of the 'best practices' in the world, such as those of the WHO, by analyzing what has been done, and how it may be applicable to our context.*" (Interviewee 9)

"*As I told you, we use the Canadian system for staff allocation in some facilities, mainly the ICU. For example, for each emergency bed, you need one nurse. For every three beds, you need a doctor, and for every 10 beds, you need a clerk. Everything is considered and calculated on the bed scale; this is in order to achieve your goal. As for the crisis, thank God, this standard was present.*" (Interviewee 11)

The third practice is TQM, which is the process of ensuring customer satisfaction and delivering perceived value to customers (Hackman and Wageman, 1995). TQM was greatly emphasized in the recruitment of staff, mainly clinical staff. The interviewees argued that, since the clinical staff would be directly involved in the treatment process of the patient, it was crucial to ensure the hiring of qualified staff. This was carried out by verifying the staff's clinical practice licenses and ensuring that hiring healthcare workers was a priority. It can be said that TQM is a continual process of eliminating errors (Yusuf et al., 2007). Interviewees provided the following statements regarding the hiring process:

"*Even during the crisis, we were making sure that we were hiring qualified staff, mainly in clinical activities, because this has an impact on the lives of patients. So, credentialing was ongoing, even during COVID-19. We were verifying that these candidates have the credentials and the licenses to practice the relevant clinical activities. This was the case for nursing and physicians and allied health professionals; for example, a permit to practice, registry with the Ministry of Public Health, and passing the Prometric test.*" (Interviewee 12)

"*Despite the scarcity of clinical staff during COVID-19, we always ensured that we were hiring qualified staff, because, if we did not, people's lives might be at risk. So, we always made sure that our candidates passed the credentialing and obtained a*

license in order to practice their profession." (Interviewee 8)

The fourth practice is JIT, which, in the context of healthcare services, refers to the accessibility of accurate and real-time information in decision-making (McGowan et al., 2008). JIT has had a positive impact on the decision-making process in Qatar's healthcare services. Furthermore, the analysis indicated that the developed IT infrastructure systems enabled automation and real-time reporting, and therefore enabled the provision of JIT information in healthcare services in Qatar. An interviewee provided the following statement regarding real-time reporting:

> "*Through Oracle, real-time and updated information was reflected and communicated to the teams about the recruitment demand progress and whether there was an update on the budget. There were also updates related to the assignment status of employees, like, whether [they were] active or non-active.*" (Interviewee 9)

The fifth practice is process re-engineering. The interviewees had a positive perception about the role of innovative practices. As the crisis enforced restrictions on social gathering, certain policies were impacted, such as staff rotation. An interviewee provided the following statement regarding the policy change:

> "*We used staff rotation to minimize social gathering and to eliminate COVID-19 risks. So, we divided our staff into groups. For example, those who worked in Group A would come and work together, and would not work with Group B. So, if we had a positive COVID-19 case, we knew who was supposed to take a COVID-19 test while, at the same time, ensuring that we had backup.*" (Interviewee 9)

5.3.1.3.2 Performance system. Performance system practices were used to address HR challenges. The study's results reveal one practice of performance system in the HR process, namely KPIs, which are a measurable indicator that illustrate how effectively an organization is achieving its business goals. HR process decision-makers relied on certain KPIs that measure the extent of the achievement of their goals. In the context of COVID-19, KPIs mainly focused on addressing recruitment demands, the deployment of qualified staff, and diversifying recruitment avenues. An interviewee provided the following statement regarding the use of KPIs:

> "*We have some KPIs that we always make sure that we achieve in addressing demands. This encompasses ensuring the quality of the recruited staff by raising the pass grades for the Prometric tests and diversifying recruitment sources.*" (Interviewee 12)

5.3.2 Critical Success Factors (CSFs)

CSFs are variables or characteristics that must be established in order to have a significant impact on the success of an endeavor or entity (Rockart, 1979). The study examined CSFs in the context of healthcare services in Qatar during the COVID-19 crisis and found five factors: good leadership; government support and collaborative partnership; staff resilience and commitment; digitization and technology; and hospital emergency preparedness (see Figure 12). The five CSFs are the results of Question 2.5: "*In your opinion, what are the key factors that have contributed towards tackling the COVID-19 crisis in the healthcare services in Qatar?*" (see Appendix A).

Figure 12 Critical Success Factors (CSFs) in Tackling the COVID-19 Crisis

5.3.2.1 Good Leadership

It has been argued that good leadership is crucial in times of crisis and is often tested during periods of disasters and uncertainties (Demiroz and Kapucu., 2012). Prior studies suggest that the core of good leadership is being able to make and implement decisions (Beilstein et al., 2020; Haddon et al., 2015). The results indicate that there is consensus among the interviewees on the role of good leadership in tackling the COVID-19 crisis. Additionally, the interviewees appreciated the vital role of the healthcare leaders in Qatar in confronting the crisis. They perceived that those leaders emphasized effective decision-making and had a clear vision and

effective planning. This was evident from the following statements made by interviewees:

> "*First, Dr. Mona Amuslamani [the Director of the CDC]. I mean the crisis was handled by qualified leaders, which made us succeed.*" (Interviewee 1)

> "*Ms. Fatima [the CHRO] is a very important person and she was central to everything. She was asked to do things that she was not supposed to be doing. But she pulled through. So, without Ms. Fatima, in my honest opinion, I think the whole HMC COVID-19 response would have crumbled.*" (Interviewee 8)

> "*The management of crisis and the leadership made us succeed. We had the right people at the right time, and the right mindset about how to manage.*" (Interviewee 4)

5.3.2.2 Government Support and Collaborative Partnership

The interviewees argued that one of the most influential factors in enabling the healthcare sector in Qatar to tackle the COVID-19 crisis successfully was the unlimited support provided by the government. Moreover, the collaborative partnership with governmental and non-governmental entities, such as the Ministry of the Interior (MOI), the Ministry of Defense, the Ministry of Foreign Affairs (MOFA), and private healthcare providers. As a result, the support provided enabled the availability of resources on time. The interviewees provided the following statements about collaboration and government support:

> "*This support was required, and, thankfully, it was provided well. This helped us a lot in developing and expanding our services. Thank God, we didn't reach a point where we did not have enough medical equipment or staff. All of these things were overcome by the presence of strong support from the State.*" (Interviewee 3)

"*Government support provided all rents and all consumables, medical staffing, the food – three meals a day, the logistics, and transportation. This included bringing them from home to hospital. Everything was provided by the government, so that's a huge blessing [that] you will not find in any other country.*" (Interviewee 4)

"*I repeat that credit should go to the government. They were really supportive, really, they supported, to be fair, without any limit.*" (Interviewee 4)

In addition to government support, the interviewees confirmed the importance of collaborative partnership with governmental and non-governmental entities in confronting the COVID-19 crisis. To that effect, the following statement was provided by one of the interviewees:

"*The private health sector supported us by allowing us to borrow their staff to come and work with us. Even other services, like vendors and other companies. Also, MOI and the Ministry of Defence, those people were always standing with us, without saying no to us. They offered us their airplanes to bring things from China. QP [Qatar Petroleum] purchased things on our behalf. The Ministry of Foreign Affairs, and all the embassies, were on standby to help us.*" (Interviewee 4)

5.3.2.3 Staff Resilience and Commitment

The results suggest that staff resilience and commitment played an important role in tackling the COVID-19 crisis in Qatar. Nine out of the 13 interviewees have stressed this point. Despite the sudden increase in the workload, the healthcare staff worked diligently. Not only were they hardworking, but they were also enthusiastic and flexible when it came to the constant changes in circumstances. In addition to their workload being increased, they were not allowed to take vacations or leaves of absence. Furthermore, new tasks were added to the workload of

administration and support staff.

This is evident from the following statement provided by one of the interviewees:

> "*I really salute the [healthcare] staff, because people like you and me had the option not to come to work. People working in corporate services, if they decided not to come [to work] today, nothing was going to collapse. The [healthcare] staff didn't have the choice, but they were enthusiastic. They were hardworking. They were out there in all these hospitals, swapping teams, swapping people, and so on.*" (Interviewee 7)

As well as the clinical staff's resilience, one of the interviewees highlighted the vital role of the admin staff's resilience in confronting the crisis:

> "*I would say staff resilience, and I would give credit also to our administrative and support services, because whether they were asked to be redeployed, or they were asked to do other jobs [that were] different from their day-to-day duties, they managed to just go ahead and do it, putting their heads down, accepting whatever was being asked of them. Some of them didn't know how to use Cerner [a health system]. They weren't trained to use Cerners. Some of them didn't know how to deal with patients on a day-to-day basis, but they accepted it with enthusiasm. Some of them became receptionists in the hotels, and some in COVID-19 facilities.*" (Interviewee 8)

Additionally, an interviewee elaborated further on the commitment of the supply chain management staff, by their being cooperative and taking voluntary actions in order to ensure the timely availability of resources:

"*The commitment of staff in the supply chain; they used their private cars to distribute medical consumables, like masks, although that was not required, so it was completely voluntary. Those*

staff did that with the intention of helping each other towards addressing the common goal, which was to tackle COVID-19, because of, for example, the quarantines and hotels and the new facilities, each in a different region, north and south, like Ras Laffan [and] then Hazem Mubirek. So, we understood that delays were probable, but, at the same time, we needed to put these things in place at the right time. So they were trying to be proactive in ensuring that things were in place on time." (Interviewee 6)

On the contrary, one of the interviewees stated that there was a challenge with the new hired clinical staff. Thus, the contagious nature of the disease has raised the anxiety and fear level among staff, which has had adverse impact on the service delivery. As depicted below:

> *"One of the biggest challenges is the staff, for example in CDC [Communicable disease centre] staff are already aware and experienced with communicable diseases. However, with the new hiring, those staff were scared because of the huge number of positive cases that we had to manage during COVID-19 time, and this was affecting negatively not just the healthcare service delivery, but also on HR recruitment services."* (Interviewee 2)

5.3.2.4 Digitization and technology

Digitization refers to the transformation of a non-digital item (object) into a digital representation (Smith, 2018). As is evident in the results, digitization and technology were among the influential factors that were used to tackle the COVID-19 crisis. Digitization enabled business continuity and improved the efficiency of the healthcare outcomes. In addition, digitization enabled real-time reporting. Consequently, digitization improved the usefulness of information, which had positive implications for decision-making. For instance, the cloud enterprise resource planning (ERP) system enabled HR services to continue without

the physical presence of staff in the office. Moreover, virtual consultation enhanced the efficiency of the healthcare outcomes, while adhering to the social restriction protocols. Furthermore, decision-making was supported by real-time reporting in the form of live dashboards. Interviewees provided the following statements regarding digitization:

> "*... [The] information system was a great help, thus it was a big plus point. Like, for instance, our work was mainly done in Oracle. You are able to finish your work and know the status, whether you are at home or at work. Moreover, the crisis has taught us to decrease our dependence on face-to-face transactions and paperwork. Everything is documented on email, so there is no need for an employee to come and leave his duty or tasks to submit his transaction to HR face to face, all she/he needs to do is scan and submit it, then the Help Desk will track it.*" (Interviewee 9)

> "*We have dashboards that reflect up-to-date information, like the number of patients administered, the number of ICUs, the number of discharged patients, and so on. These dashboards were providing us with useful insights for decision-making, like whether we needed to open a new isolation site or increase bed capacity.*" (Interviewee 1)

The digitization of activities improved the efficiency of the healthcare outcomes while maintaining the adherence to control measures relating to gatherings. For instance, this was evident in relation to virtual consultations:

> "*I mentioned new services that had to be developed, such as virtual consultation, which was used as the number of people who became infected grew. The CDC worked with partners to set up a home isolation call center, which at one point had over 10,000 patients/people on the list who were being followed up. So, we had to use technology to support the management of the crisis.*" (Interviewee 5)

"*Technology was a great help, like the virtual appointments, so, for example, if I am a patient, I will book an appointment, and then the doctor will call me on my phone or via MS Teams, WhatsApp, or Webex, depending on what I have on my phone. They conducted appointments on the phone, so the good thing with this was that the appointment timing was very much shortened. So, doctors, before, maybe saw 10 patients in their shift, but now, with the virtual model, they see 15 to 20 patients during their shift. So it's more efficient.*" (Interviewee 7)

5.3.2.5 Hospital Emergency Preparedness and Planning

Hospital emergency planning and preparedness refers to how a healthcare entity is prepared to respond to a crisis, given the unique context of the crisis (Adini et al., 2006). It is related to the availability of crisis recovery plans and the adequacy and availability of the resources that enable healthcare services to adapt and respond to a crisis effectively (Adini et al., 2006). The results of the analysis suggest that the crisis recovery plans and the preparedness for the emergency had a significant influence in healthcare services in Qatar tackling the COVID-19 crisis. As five out of 13 interviewees asserted on the role of the emergency preparedness and planning in confronting COVID19 pandemic in the healthcare service in Qatar. This enabled the availability of resources, for instance, through the strategic inventory. Furthermore, existing plans, such as triage criteria and escalation plans, provided useful guidelines and pathways for tackling the COVID-19 crisis. The interviewees provided the following statements regarding emergency planning and preparedness:

"*We have evacuation plans for fires in hospitals, and we have a committee for managing crises. For instance, we have triage criteria; triage is the assessment of patients' care, on the basis of the severity, type, and nature of the injury, together with*

the available resources, to identify patients [who are] in need of immediate assessment and intervention." (Interviewee 1)

"*We have this SWICC [System Wide Incident Command Committee], which is a committee that's activated whenever there is a crisis. So, we have protocol set for each crisis situation, whether [it is] a flood, or a hurricane, or, a pandemic. So, one of the existing protocols is the escalation protocol. We adapted the plan to fit the COVID-19 context. So, the plan says we use all existing hospitals, then we open Ras Laffan and Muaseed, and then we open field hospitals in industrial areas. We still had Umgarn, which is massive, and takes almost 30,000 patients; if had come to a point where even Umgarn was almost full, like 80% of the capacity was used, then our last phase would have been to set up tents. Yeah, so the tents would have been set up, and then the patient would have been in a bed. We didn't really exhaust our facilities, thank God.*" (Interviewee 7)

Additionally, as depicted in the COVID-19 Qatar National Action Response Plan (2020), the healthcare services in Qatar had prepared a comprehensive response plan for communicable diseases:

"*Before COVID-19, the Qatar National Preparedness and Response Plan for Communicable Diseases was a comprehensive plan that embodies capacity building and readiness to manage potential outbreaks and pandemics. The purpose of developing the response plan was to manage the threats of communicable diseases, in terms of preventing their occurrence, mitigating the risks, controlling and containing the disease that occurs. It also covers the management of different outbreaks and pandemic scenarios. The plan was developed by adapting the WHO's recommended*

Pandemic Influenza Risk Management Guide, 2013."

Nevertheless, the lessons learned from previous crises were useful in confronting the COVID-19 crisis. For instance, the blockade on the State of Qatar by the United Arab Emirates, Saudi Arabia, and Bahrain on June 5th, 2017 enabled the healthcare system to expand the strategic inventory, which had positive implications for increasing the availability of medical resources. The following statement was made by on the of the interviewees regarding the blockade:

> "*What helped us with the coronavirus was, one, the blockade. We had to think strategically to have our medical supplies on hand. We used to keep enough stock for eight months. But, because of the blockade, we increased that to one to two years, and we planned to have a strategic stock. There are items which are frequently used, so that things that we learned from the blockade really helped us with the coronavirus.*" (Interviewee 4)

5.3.3 Success in Healthcare Services in Qatar Tackling the COVID-19 Crisis

The results suggest that HMC's success in tackling COVID-19 crisis lies in the interplay between BPs and MAPs with respect to decision-making. Furthermore, the results show that the establishment of CSFs by healthcare services in Qatar played a significant role in dealing with the crisis. MAPs enabled the provision of useful information, which had a positive impact on the decision-making process. Similarly, CSFs ensured that these decisions were implemented successfully. All of the recruited interviewees in the study confirmed the success of tackling COVID-19 in the healthcare services, as evidenced by the quality of healthcare outcomes, high satisfaction levels, and business continuity.

The interviewees reflected on the definition of healthcare outcomes with respect to

COVID-19. From their perspective, healthcare outcomes were the extent that the healthcare entity can provide quality healthcare services to the patient within the least amount of time. In the context of COVID-19, the common measures of health outcomes are the mortality, morbidity, and comorbidity rates (CDC, 2021). The mortality rate refers to the death rate with respect to the population. The morbidity rate is the rate at which acute or chronic diseases occur in a population. It therefore describes the severity of disease in order to determine the healthcare needs of the population. The comorbidity rate simply means that there is more than one illness, or disease, affecting one person at the same time (Holguin et al., 2005; Sung et al., 2006). As is evident from the results, (13 out of 13) the interviewees argued that healthcare services in Qatar succeeded in tackling the COVID-19 crisis, emphasizing that Qatar was among the top three countries with the lowest mortality rates, as well as low levels of morbidity and comorbidity rates. Furthermore, Qatar had the lowest rate of infected healthcare staff. The interviewees provided the following statements:

> "*The response here, and the care provided to the patients, was exceptional really. Nobody can provide this quality of care to patients in the world, even in the UK or the USA. You will never find patients selecting their meals from a menu, like they do in hotels. That's what we do in the CDC. It's really like hotel service, and it's really exceptional. Nobody can provide this quality of care in the world – free of charge.*" (Interviewee 1)

> "*As evidenced by the monitoring of our performance, this is excellent. We have been able to provide healthcare at the highest levels of quality, so far. We were prepared with more than was required, praise God, we were able to keep things under control. And the health outcomes also, like the mortality and morbidity rates, were lowest in Qatar, whether for COVID-19 or not, and also the comorbidity rate."* (Interviewee 2)

"*In general, compared to what we see in the world, we are considered one of the few health systems that have succeeded in confronting the pandemic. We measured our success in providing vaccinations in the required time. Qatar is one of the countries with the least number of infected medical staff, with almost 90% of the staff not being infected.*" (Interviewee 3).

"*Generally speaking, the public healthcare sector did outstanding work. This includes all of the HMC primary healthcare centers. I think everyone agreed on this. We succeeded. To see if the outcome is a failure or success, we need to compare with other countries. The number of deaths was not that many. We had all of the medical consumables, equipment, beds, and staff in place. As a result, we didn't have any delays, I mean, nobody came to us without us having a bed for him/her; we treated everybody equally.*" (Interviewee 4)

The satisfaction surveys showed that patients had a very positive perception of the healthcare provided. This was evident in the statements provided by the interviewees, who argued that Qatar's success in tackling COVID-19 was reflected in the patients' high satisfaction levels. Hence, this confirms the achievement of the HMC's main goal, which is to deliver high quality services to the society, its citizens, and its residents. The following statement was provided by one of the interviewees:

"*We have customer satisfaction surveys, and almost all of the responses are 100%, indicating the excellent service provided, and we get reports from 'We Hear You,' and they are perfect, in terms of results, not just for the CDC, but for all of the facilities of the HMC.*" (Interviewee 1)

The success in tackling COVID-19 was evident in the continuation of business

activities. Healthcare services were able to manage and to continue running their non-COVID activities during the COVID-19 crisis. The interviewees argued that, despite the growing restrictions and the postponement of elective surgeries, the healthcare services in Qatar ensured the continuity of other non-COVID activities, such as dialysis, cancer, obstetrics, and gynecology patient services. To that effect, the interviewees provided the following statements:

> "*We were keen to continue providing the necessary services, other than for the coronavirus, to our society members, without being negatively affected, like cancer, dialysis, obstetrics, and gynecology.*" (Interviewee 3)

> "*We managed to have everything on hand, whether this was drugs, consumables, food. At the same time, we were ensuring that other activities were ongoing. Yes, we didn't discontinue these.*" (Interviewee 4)

To conclude, the analysis of the results indicates that the mobilization of MAPs and the establishment of CSFs empowered decision-makers to take strategic actions to confront the COVID-19 crisis successfully during the two waves of the pandemic in Qatar's healthcare services. Thus, the useful information provided by MAPs enabled addressing the challenges imposed by the COVID-19 crisis (clinical services, supply chain, and HR BPs). The five CSFs explored facilitated the achievement of an efficient and well-planned response to the crisis: good leadership; government support and collaborative partnership with governmental and non-governmental entities; staff resilience and commitment; digitization and technology; and hospital emergency preparedness.

CHAPTER 6: DISCUSSION

This section deliberates upon the findings presented in Chapter 5. The aim of this study is to explore the extent of the interplay between MAPs, BPs, and CSFs in HMC tackling the COVID-19 crisis. This chapter reflects on the results, while providing an argument that links them to the relevant literature, hence highlighting the thesis's theoretical contribution.

6.1 Interplay between Business Processes (BPs) and Management Accounting Practices (MAPs)

Prior literature has defined BPs as a set of the general activities that an organization performs in order to achieve its business outcomes, such as fulfilment, procurement, production, finance and accounting, and HR and customer service processes (Ammar, 2017; Davenport and Short, 1990, Davenport et al., 2004). Within a healthcare context, BPs are classified into clinical and non-clinical processes, with each being connected in a cycle through which healthcare services are delivered to patients (Rebuge and Ferreira, 2012). Furthermore, Ammar (2017) argued that MAPs address BP issues and support the achievement of business process management (BPM). Endenich (2014) stated that, during crises, the uncertainty level increases, along with the information requirements of managers. The management accountant's role and the use of MAPs are thus further magnified to address these issues and to mitigate these uncertainties. Furthermore, Hopwood (2009) argued that economic crises increase the importance of MAPs, as they ensure sustainable success by providing useful information and mitigating the uncertainty level (Shields, 1998). Accordingly, it is expected that the MAPs' importance increases during periods of crisis. This is mainly due to the assumption that uncertain environments require decision-makers to take proportionate decisions, which are based on useful information.

In so doing, the current study focused on three main BPs in HMC. The purpose was to

explore the role of MAPs in addressing BP challenges during the COVID-19 crisis. The study's findings support the view of MAPs' usefulness in addressing BP issues and mitigating the uncertainty level (Ammar, 2017; Endenich, 2014; Hopwood, 2009). In line with Endenich (2014), the results suggest that MAPs play an effective role in addressing BP issues, particularly during the COVID-19 crisis. Several MAPs were utilized by HMC to provide useful information for decision-makers and to mitigate the uncertainty level. Moreover, the clinical services BPs adopted the greatest number of MAPs. This finding supports Endenich's (2014) view that, during crises, uncertainty levels increase, thereby increasing information requirements. This, in turn, highlights the role played by management accountants and increases the use of MAPs in order to address these issues and mitigate uncertainties.

Additionally, the results analysis revealed that strategic management accounting (SMA) practices were considered important, thus being used extensively in confronting the COVID-19 pandemic during the two waves in the healthcare services of Qatar. This finding supports the argument of Kober & Thambar (2021), Passetti et al. (2021), and Pavlatos & Kostakis (2015) regarding the inherent ability of S-MAPs practices in providing useful information; which therefore enables organizations to cope with the uncertain business environment successfully. The COVID-19 crisis has highlighted the important need for better analysis and evaluation both internal and the external environments during decision-making.

The mobilization of MAPs provided useful information for decision-makers in Qatari healthcare services during the COVID-19 crisis (Ammar, 2017; Endenich, 2014; Hopwood, 2009; Kober and Thambar, 2021; Leoni et al., 2021; Passetti et al., 2021; Pavlatos and Kostakis, 2015; Velayutham et al., 2021). The remainder of section sheds light on the information provided by MAPs.

First, MAPs enhanced the preparedness level of the healthcare system in Qatar. As argued by one of the directors, regarding the role of prediction models:

"*… of course, they [prediction models] helped. They allowed us to be more prepared in confronting the crisis. What you see now, they already informed us about maybe two months back.*" (Interviewee 4)

In addition, MAPs enabled the addressing of resource shortages effectively. As illustrated in the pharmacy unit, prediction models were adopted to provide proactive and timely responses to address the shortages of medications. An interviewee commented as follows:

"*In regard to medication, we just had to do one thing to address the medication shortage effectively, and we are still doing this. We had to estimate, so we made estimations for the patient population.*" (Interviewee 2)

Second, MAPs provided effective means through which to allocate the organization's resources. For instance, the supply chain BP benefited from the flexible form of budgets and rolling forecasts. This was to ensure alignment with the contemporary business environment and achieve an effective allocation of resources. Passetti et al. (2021) provided similar findings with respect to the budgeting process in supporting a Italian food retail cooperative's response during the COVID-19 lockdown period.

Third, MAPs allowed for greater visibility of potential outcomes, leading to better adaptability in a complex business. For instance, scenario planning enabled the capturing of the potential outcomes of positive cases. Healthcare practitioners should therefore act with respect to ensuring the availability of the resources needed to deliver healthcare services. This is detailed in the following statement, which was provided by one of the interviewees:

"*… to address the issues of COVID-19, we put [together] scenarios, so our response was to put [together] for several scenarios, based on the plateau or the number of cases and the number of admissions to the hospital, with a focus on the worst-case scenarios. So, what we did [was that] we created scenarios, like, if we have this number of positive cases, we will provide a certain number of beds. So, we could align the plan*

for opening beds. And when we are talking about opening beds, we are talking about staff, equipment, and all these things." (Interviewee 14)

This is in line with what has been reported in prior literature. Scenario analysis was used by an Italian food retailer to confront the COVID-19 crisis (Passetti et al., 2021), and by five hospitals in Germany (Huber et al., 2021).

Fourth, MAPs motivated decision-makers at HMC to explore international best practices, which provided useful insights into performance improvement. As depicted in the study's findings, benchmarking provided a powerful tool with which to explore best practices around the world and to enhance performance accordingly. Moreover, it enabled effective coping with the crisis. However, the organization's environment and unique context must be taken into consideration. For instance, as detailed in the following statement of an interviewee, the residential structure is a considerable factor that requires further analysis:

"*We listened to scientific knowledge and information, like the CDC, the WHO's updated information, which helped us to understand what they were saying and what they were implementing. However, each country has its own context and means, for example Qatar. How many nationalities? 80–90, and this might not be the same in other countries, so, these things need to be analyzed and adjusted accordingly.*" (Interviewee 4)

Fifth, MAPs provided a means for quality optimization in healthcare services in Qatar. A prime example is TQM, which played a pivotal role in addressing the health outcomes, helping to raise satisfaction levels amongst patients. Furthermore, the provision of free healthcare services created a more socially responsible environment. Additionally, this facilitated the accessibility of healthcare services by all community members, which enabled healthcare practitioners to address and identify the population of COVID-19 positive cases in

society. Therefore, this enabled the exertion of a high level of control over the spread of the virus between community members.

Furthermore, during the first wave of COVID-19, the government of Qatar brought back Qatari citizens who were outside the country. All the while, HMC continued to provide visitors to Qatar with treatment for chronic and severe disease and special needs. During the same period, quarantine was mandatory for people arriving in the country. This prompted the opening of three quarantine hotels, which were dedicated to severely ill visitors. Later, the three hotels were transformed into hospitals, where clinical machines were set up and were attended to by clinical staff. Furthermore, the ordering of medication for the quarantined visitors beforehand (prior to the visitors arriving in Qatar) helped safeguard against deterioration in visitors' health and wellness.

Sixth, MAPs promoted innovative practices in healthcare services in Qatar. More specifically, the practice of process re-engineering enabled healthcare practitioners to analyze the current business processes for the purpose of developing new methods or modifying current processes. Another practice was reviewing the workflows to optimize processes and to cease non-value-added activities. Due to COVID-19 control measures, healthcare practitioners mobilized technology in the process of re-engineering, thus ensuring the maximum level of efficiency. This was especially the case during strict social distancing guidelines. The following statement provided by an interviewee shed light on these practices:

> "*We transformed patients' appointments into virtual appointments, to enhance the efficiency levels and eliminate social gathering.*" (Interviewee 7)

TC enabled the healthcare decision-makers to take proactive actions to mitigate COVID-19's negative impacts. Decision-makers identified the activities that resulted from social gatherings in order to impose restriction measures and help slow the spread of the virus. One of the

examples was the home-delivery of medications, which was meant to restrict social interactions and adhere to social distancing protocols. Healthcare practitioners collaborated with Qatar Post to provide medication delivery to patients' residences.

Seventh, MAPs provided better vision of the performance of healthcare processes. The use of patients' satisfaction surveys offered a strategic non-financial performance measure for analyzing patients' feedback. In the context of the healthcare services in Qatar, patients are the core stakeholders, and services are created and delivered to satisfy their needs. Moreover, HMC healthcare practitioners relied on certain KPIs to measure the extent of achieving their goals. In the context of COVID-19, KPIs were mainly focused on health outcomes and staff efficiency. As depicted by Interviewees 1 and 5, mortality, morbidity, and comorbidity rates were strong measures of the health outcomes.

Notably, the findings indicated that the COVID-19 crisis eliminated the relevance of costing information in the decision-making process for healthcare services in Qatar. These results are in contradiction to those found in prior studies (Erokhin et al. 2019; Passetti et al., 2021; Pavlatos and Kostakis, 2015), who found a great emphasis on costing information, particularly for cost management and controlling during the global financial crisis and the COVID-19 pandemic in the food and retail sector. However, it is important to note that the disruptive impact of the crisis in prior literature findings was mainly focused on the financial perspective in the studied cases. Accordingly, cost management was crucial for the sustainability of these studied cases. The current study case, however, was based on the public healthcare sector, which is backed by government support. The goal here was to provide quality life-saving healthcare services to society members. Moreover, the contagious nature of COVID-19 has had significant implications for people's lives. Notably, there has been increased demand for medical equipment and medication, specifically lifesaving equipment, such as ventilators. As a consequence, decision-makers at HMC prioritized the provision of

high-quality care over the monetary cost of these services. The following statements provided by interviewees reflect the high value placed on patient care:

> "*The safety of patients and the clinical output and the reputation of the manufacturer are prioritized before cost. In addition, the scarcity of medications globally, and the increased demand, has forced us to ignore costs and focus on getting the inputs needed to deliver the highest quality care for our community. However, if we have more than one company, we do consider paying a lower price more efficient.*" (Interviewee 2)

> "*Cost was not an issue to us, we had support from the higher authorities, and the cost was the last thing to think about. The availability of resources was crucial because there were things that were lifesaving, like ventilators. Without having these things, people would die, so we needed to get them.*" (Interviewee 4)

In summary, the study contributes to the literature by providing evidence of the mobilization of MAPs in addressing BP issues within healthcare services in Qatar during the two waves of COVID-19. MAPs enabled the provision of useful information, which empowered decision-makers to take well-balanced decisions towards confronting the COVID-19 crisis. Furthermore, the study's findings have highlighted the relevance of SMA practices during times of uncertainty. However, the unprecedented crisis brought about by the pandemic prompted decision-making in the healthcare services to place less value on cost relative to providing high-quality patient care.

6.2 Critical Success Factors (CSFs)

CSFs are those factors that are necessary in order for an organization or project to achieve its goals and fulfil its mission (Rockart, 1979). The results of the current study revealed the importance that interviewees placed on CSFs in confronting the COVID-19 crisis. The following statement provided by an interviewee highlights the importance of providing useful information:

> "*During COVID-19, it was important to have accurate and updated information, and, of course, this information would help you prepare a master plan for the COVID-19 response. But, still, you cannot execute it successfully if you don't have good leaders who know how to implement decisions. Moreover, you need the resources, which were provided mainly by the support of higher authorities, like the government, so we could ensure the availability of resources on time. These things were important and key aspects in confronting COVID-19.*" (Interviewee 4)

Accordingly, the study's findings revealed five CSFs: good leadership; government support and collaborative partnership; staff resilience and commitment; digitization and technology; and hospital emergency preparedness. According to Demiroz & Kapucu (2012), leadership is often tested in times of disasters and uncertainties. Prior studies have suggested that leadership competencies determine the success or failure of any crisis management (Bhaduri, 2019; Lockwood and Sphr, 2005). The findings of the current study support these arguments regarding the significance of leadership in managing crises. As all the interviewees recruited in the study; had very positive perceptions with respect to the role of leadership in tackling the COVID-19 crisis in healthcare services in Qatar, as exemplified by the following statement in support of the leadership's handling of the crisis:

> "*The management of the crisis and leadership made us succeed. We had the right people at the right time and the right mindset about how to manage.*" (Interviewee 4)

Government support and partnership played an integral role in confronting the COVID-19 crisis in healthcare services. Gedam et al. (2021) stated that, due to a sudden surge in the number of positive cases in India, the availability of healthcare resources was crucial in ensuring sustained healthcare services. According to Campiranon & Scott (2014), the collaborative partnership with the government enabled the financial recovery of Phuket hotels during the global financial crisis. Similarly, the findings from the current study indicate that the availability of medical resources and staff is crucial for the delivery of healthcare services. Accordingly, the interviewees argued that the unlimited support provided by the government and the collaborative partnership with governmental and non-governmental entities, such as the MOI, the Ministry of Defense, and the private healthcare sector, enabled the availability of resources on time. These resources included medical equipment and clinical staff, which are vital for healthcare services' delivery. An interviewee provided the following statement in support of the government's intervention:

> "*This support was required and, thankfully, it was provided well and helped us a lot in developing our services and expanding our services. Thank God, we didn't reach a point where we did not have enough medical equipment or staff. No, no, all of these things were overcome by the presence of strong support from the State.*" (Interviewee 3)

One of the CSFs was staff resilience and commitment. The extended period of the crisis, along with all the uncertainty that accompanied this unprecedented event, required healthcare practitioners to provide a healthy and motivational environment for their staff. This is in line

with Gedam et al. (2021), who argued that the commitment of healthcare workers was a key factor in confronting the COVID-19 crisis in India. Correspondingly, the findings of the current study revealed that nine out of 13 interviewees had a very positive perception regarding the role of healthcare workers' commitment and resilience towards tackling the COVID-19 crisis. The following statements provided by interviewees confirm this sentiment:

> "*The attitude of the staff; I really salute them because people like you and me, we had an option to not come to work because we are working in corporate services. They didn't have that choice, but they were enthusiastic, they were hardworking. They were out there in all these hospitals, swapping teams, swapping people.*" (Interviewee 7)

Notwithstanding the preponderance positive perception regarding the role of healthcare workers' commitment and resilience towards tackling the COVID-19 crisis. As depicted in the study findings, the contagious nature of the disease has raised the anxiety and fear level among staff, which has established a severe burden in the service delivery. one of the interviewees stated that there was a challenge with the new hired clinical staff:

> "*One of the biggest challenges is the staff, for example in CDC [Communicable disease center] staff are already aware and experienced with communicable diseases. However, with the new hiring, those staff were scared because of the huge number of positive cases that we had to manage during COVID-19 time, and this was affecting negatively not just the healthcare service delivery, but also on HR recruitment services."* (Interviewee 2)

Digitization and technology are considered an important CSF. According to Comfort (1993), digital technology mitigates crisis disruptions. In the context of a healthcare crisis, as was evident in China during the SARS-CoV crisis in 2003, the internet and videoconferencing played a vital role in mitigating the disruption to the economy of China (Katz et al., 2020). It

thus promoted innovative practices, such as e-commerce and enabled business continuity (Katz et al., 2020). Additionally, Amirhiseini & Pilevari (2021) suggested that technology mitigated the disruption of the humanitarian supply chain during the COVID-19 crisis. Furthermore, Khan et al. (2020) provided evidence on the role of medical robots and tele-medicine systems in managing and controlling the spread of COVID-19 in China. The findings of the current study provide evidence regarding the role of digitization and technology in tackling the COVID-19 crisis in healthcare services in Qatar. It thus provides an effective platform for business continuity in healthcare services in Qatar, while maintaining the social restriction protocols. An interviewee provided the following statement regarding the role of digitization and technology in dealing with the COVID-19 crisis:

> "*[The] information system was a great help, and it was a big plus point; for instance, in our work, mainly in Oracle, with a notification you can finish your work and know the status, whether you are at home or at work. Moreover, the crisis has taught us to decrease our dependence on face-to-face transactions and paperwork, like, now, everything is documented*." (Interviewee 9)

Furthermore, technology supported the provision of real-time reporting, e.g. the live dashboards showing the number of positive cases and the number of ICU patients. Digitization has also opened new avenues for healthcare service delivery, such as virtual consultations. The following statement was provided by an interviewee regarding technology:

> "*Technologically, this crisis accelerated our digital transformation and transition in how we work to deliver the best care to our patients and to thrive in a virtual/hybrid future.*" (Interviewee 5)

One of the important success factors was shown to be hospital emergency planning and

preparedness. According to Spillan & Hough (2003), the preparedness and development of a crisis management plan are a key factor in enabling organizations to cope with unexpected and adverse events. Moreover, they can identify potential threats, which might make it less costly and traumatic during the incidence of a crisis (Devlin, 2006). Campiranon & Scott (2014) suggested that the establishment of crisis management plans is one of the CSFs that enabled the financial recovery of Phuket hotels during the global financial crisis. Similarly, the findings of the current study indicated that crisis recovery plans and the preparedness for an emergency had a significant influence with regards to tackling the COVID-19 crisis in healthcare services in Qatar. Alongside the importance of crisis recovery plans, the study's findings also revealed that lessons learned from prior crises were useful in confronting the COVID-19 crisis. A prime example is the blockade on the State of Qatar on June 5th, 2017, which was imposed by the United Arab Emirates, Saudi Arabia, and Bahrain. This event raised the awareness of the healthcare decision-makers in Qatar, which led to increasing the inventory size of medical supplies.

In conclusion, this study contributes to the literature by highlighting the role of CSFs in relation to the provision of useful information during COVID-19 crisis management. It has identified five CSFs in the context of healthcare services in Qatar: good leadership; government support and collaborative partnerships; staff resilience and commitment; digitization and technology; and hospital emergency preparedness.

6.3 Success in Tackling the COVID-19 Crisis via the Theoretical Framework

As revealed in the study's results, the interaction between MAPs and BPs, and the establishment of CSFs, enabled the healthcare sector in Qatar to tackle the COVID-19 crisis during the period March 2020 to May 2021 (the two waves of the pandemic). The mobilization of MAPs enabled the provision of useful information, which empowered decision-makers to

take strategic actions that allowed them to confront the COVID-19 crisis. CSFs facilitated an efficient and well-planned response to the crisis. As shown in this study, success in tackling COVID-19 was measured in terms of the quality of healthcare outcomes, high satisfaction levels, and business continuity.

Healthcare services in Qatar were able to successfully deal with the COVID-19 crisis as a result of mobilizing MAPs. The purpose was to provide useful information that would enable the creation of strategic actions to confront the crisis. The strategy creation process in the decision-making involved active interaction between human and non-human actors, which were deployed towards a unified goal. This was to ensure the successful implementation of the strategic decisions used for COVID-19 crisis management. The following sub-section discusses the notion of ANT and strategizing to confront the COVID-19 crisis. The framework for success in tackling the COVID-19 crisis is shown in Figure 13.

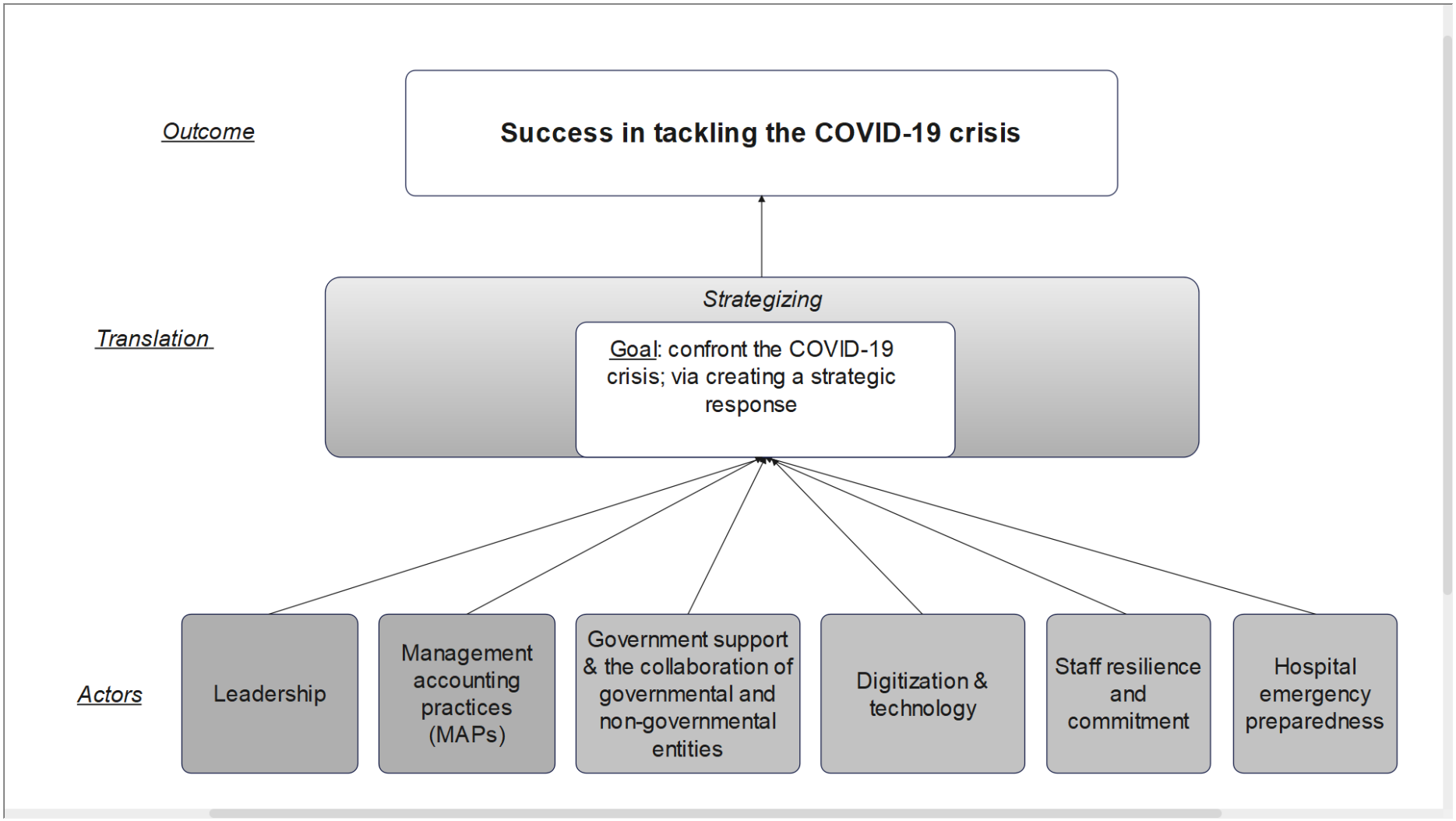


Figure 13 Framework for Success in Tackling the COVID-19 Crisis

6.3.1 How Actor–Network Theory (ANT) and Strategizing were Insightful in Understanding the Successful Response to the COVID-19 Crisis

The ANT framework explains how a network of human and non-human actors interact together to influence or produce an outcome (Callon, 1986; Latour, 1987; Law, 1986). According to Steen (2010), translation is the fulcrum that is used to understand the construction process of the outcomes that occur in ANT. Furthermore, translation describes the process of joining humans, technical devices, and strategies through articulating aligned goals and interests in order to produce the desired result (Callon, 1995). ANT has been insightful in explaining the diffusion of accounting practices and accounting change (Alcouffe et al., 2008; Hui, 2012; Robson, 1991; Steen, 2010). Additionally, in relation to crisis management (Rahmayanti et al., 2021; Thapa et al., 2017), ANT offers an approach to understanding the evolution and the creation of strategy (Montenegro & Bulgacov, 2014). Prior studies have suggested that strategizing is the translation process of ANT (Denis et al., 2007; Montenegro & Bulgacov, 2014). Similarly, the current study posits that ANT provides an insightful lens through which to view the dynamic interaction both of human and non-human actors in responding to the COVID-19 crisis. Strategizing, therefore, becomes the process of translation, thus enabling the creation of a strategic response to confront the crisis in healthcare services in Qatar.

The leadership in healthcare services in Qatar addressed BP issues and mobilized MAPs in the decision-making process, along with active interaction both with human (clinical and non-clinical staff) and non-human actors. Accordingly, healthcare staff were responsible for implementing the decisions in their duties and tasks with resilience and commitment to achieve optimal outcomes and to tackle the COVID-19 crisis successfully.

With respect to non-human actors, government support was provided for healthcare services in Qatar. It is important to note that HMC is a governmental institution, which is

funded by the government. In this context, the role of the government is vital in ensuring the availability of resources, such as medical equipment and clinical staff, to enable the delivery of quality healthcare services to patients. Moreover, the government support was extended through collaborative partnership both with governmental and non-governmental entities.

Digitization and technology provided an effective platform for business continuity (the cloud ERP). Moreover, this produced real-time reporting, which enabled the provision of useful information for decision-making. Digitization also facilitated the re-engineering of healthcare services. A notable example is virtual consultations, which were carried out in an effort to minimize physical contact and adhere to COVID-19 social distancing measures. Further, preparedness and crisis management protocols were key since they provided the means for the COVID-19 crisis management response.

It has been argued that non-human actors make it possible to translate human actors' "programmatic ideas" into practice (Miller, 1991). For instance, digital technology has enabled the transformation of healthcare service delivery through virtual consultations, thus improving healthcare delivery efficiency and healthcare outcomes while adhering to social distancing measures. Furthermore, the success in tackling the COVID-19 crisis in healthcare services in Qatar has been a result of the collective efforts of multiple actors rather than any single actor. Additionally, ANT highlights that the success of the crisis response is dependent on the actors' alignment of interests in the translation process (Thapa et al., 2017). For example, the misalignment of the actors' interests led to the failure of a non-governmental entity in the response to the Jakarta Flood Disaster in January 2020 (Rahmayanti et al., 2021). In the current study, meanwhile, the strategizing process demonstrated how the common goals and interests of actors unified efforts to confront the COVID-19 crisis successfully in Qatari healthcare services, as the leadership contributed towards effective decision-making with a clear vision and a crisis management plan. Furthermore, the staff showed resilience in terms of accepting

and implementing these decisions in their duties and tasks. Moreover, the government of Qatar provided unlimited support by accepting the healthcare services' requests, for instance by adjusting the financial budget, endorsing approvals for personnel requests, and also by ensuring that the availability of resources and government support were extended through effective collaboration both with governmental and non-governmental entities. In addition, MAPs were mobilized to produce useful information that enabled the creation of strategic decisions in relation to the COVID-19 response. Digitization and technology, meanwhile, enabled the effective application of business continuity, real-time reporting, and the re-engineering of processes.

The study findings have revealed several examples related to the valuable role of the study actors (human and non-human) in creating a strategic response to confronting the COVID-19 pandemic in Qatari healthcare services. For instance, to ensure the continuity of non-COVID-19 healthcare services, decision-makers transformed patient consultations' from in-person to virtual. This strategic decision was the result of an active interaction between HMC leadership and MAPs (the practice of TC and processes re-engineering), as well as the clinical staff who were responsible for the service delivery via the virtual consultation. Furthermore, the strategic decision to dispense the medications through an online delivery service was the result of active interaction between different actors articulating aligned goals toward confronting the pandemic. These actors included HMC leadership and MAPs (the practice of TC and processes re-engineering), technology, and staff, as well as collaborative partnerships, particularly with Qatar Post, whose role was pivotal in delivering the medications to patient's homes.

Consequently, the dynamic interaction between human and non-human actors, while ensuring the alignment of goals and interests, enabled the creation of strategic outcomes, and therefore led to a successful response to the COVID-19 crisis in healthcare services in Qatar during the two waves. Nevertheless, its undeniable that the COVID-19 pandemic created an uncertain business environment in healthcare services in Qatar, characterized by greater variability in the day-day business activities, which therefore led to strategizing the decision-making process.

The strategizing process in the context of healthcare services in Qatar incorporated: leadership's active participation; MAPs; government support and collaborative partnerships; staff resilience and commitment; digitization and technology; and hospital emergency preparedness. In combination, this led to goal alignment to confront the COVID-19 pandemic. Inevitably, the pandemic increased uncertainty levels, which created new daily challenges. In response to the adverse effects of COVID-19, the aforementioned actors were active participants in the strategizing process. Thus, the active interaction of the study actors in the strategizing process provided healthcare services in Qatar with the relevant information, capacities, and resources, which enabled them to leverage knowledge of the pandemic and to develop strategic actions in addressing COVID-19 challenges in their day-to-day business actions. As a result, there was a successful crisis response to the COVID-19 pandemic by healthcare services in Qatar. In line with Brown and Rocha (2020), McMullen and Shepherd (2006), Packard et al. (2017), and Regnér (2008), the findings of the current study highlight the essence of strategizing during uncertain and shock events, which enables organizational members to respond and adapt effectively to any contingencies, opportunities, or challenges encountered.

To conclude, the study contributes both to the ANT and strategizing literature, as it has provided a useful lens through which to visualize success when tackling the COVID-19 crisis

in Qatari healthcare services. Strategizing was shown to be the process of translation (in the ANT context), thus explaining the dynamic interaction between human and non-human actors that were articulating a unified goal, to create strategic actions, thus enabling the successful confrontation of the COVID-19 crisis.

CHAPTER 7: CONCLUSION

This chapter provides the conclusion of the study, thus reflecting on the overall research objectives and empirical findings. Furthermore, it illustrates the implications of the study findings along with recommendations for practitioners and policymakers. Finally, it highlights the limitations of the study and future research avenues.

7.1 Summary

This thesis has explored the interplay between MAPs, BPs, and CSFs in tackling the COVID-19 crisis in healthcare services in Qatar during the two waves. MAPs play an important role in the provision of useful information during uncertainties and crises (Endenich, 2014; Hopwood, 2009; Kober and Thambar, 2021; Leoni et al., 2021; Passetti et al., 2021; Pavlatos and Kostakis, 2015; Velayutham et al., 2021). This is particularly the case when it comes to addressing BPs issues (Ammar, 2017). Additionally, the establishment of CSFs enabled confronting the global financial crisis and the COVID-19 pandemic in healthcare services in India (Amirhiseini and Pilevari, 2021; Campiranon and Scott, 2014; Gedam et al., 2021), which further amplified the motivation for the present study. Analysis of prior literature indicates a clear gap regarding the role of MAPs and CSFs in confronting the COVID-19 crisis (Amirhiseini and Pilevari, 2021; Campiranon and Scott, 2014; Endenich, 2014; Gedam et al., 2021; Hopwood, 2009; Kober and Thambar, 2021; Leoni et al., 2021; Passetti et al., 2021; Pavlatos and Kostakis, 2015; Velayutham et al., 2021). In response to the literature gap, the researcher was motivated to explore the extent of the interplay between MAPs, BPs, and CSFs in successfully tackling the COVID-19 crisis in Qatar's healthcare sector. The study period was during the two waves from March 2020 to May 2021. Subsequently, the study applied ANT and the notion of strategizing as a theoretical lens in order to provide a useful direction for the study results on how MAPs strategized the decision-making along with other actors to respond to COVID-19 crisis in

healthcare services in Qatar.

The study utilized a qualitative approach by triangulating between semi-structured interviews and the analysis of the published documents and observations. Consequently, the researcher focused on HMC's three main BPs to explore the extent of the interplay between BPs, MAPs, and CSFs during the COVID-19 crisis: clinical processes; supply chain processes; and HR processes. The results indicated that the mobilization of MAPs enabled addressing BPs issues in healthcare services in Qatar during the two waves of COVID-19. Thus, MAPs contributed positively to the context of decision-making. Furthermore, the study highlighted the role of CSFs, along the provision of useful information from MAPs in the management of the COVID-19 crisis. Accordingly, five CSFs were revealed in the context of healthcare services in Qatar: good leadership; government support and collaborative partnership with governmental and non-governmental entities; staff resilience and commitment; digitization and technology; and hospital emergency preparedness. The dynamic interaction both of human and non-human actors, while ensuring the alignment of goals and interests, enabled the creation of strategic outcomes and therefore led to a successful response to the COVID-19 crisis in healthcare services in Qatar during the two waves.

7.2 Implications and Recommendations

The empirical findings of the study provide useful implications for practitioners and policymakers.

First, the study provides evidence on the effective role of MAPs in addressing BPs issues in healthcare services in Qatar. MAPs enabled the provision of useful information, which empowered decision-makers to take strategic actions in confronting the COVID-19 crisis. Furthermore, the study findings highlight the relevance of S-MAPs practices during times of uncertainty. Therefore, the study calls attention to the need for useful information provision in

order to better manage future crises. Moreover, better appraisal of internal and external environment by using S-MAPs is required to ensure a greater level of alignment and adaptability within the complex business environment.

Second, with respect to establishing CSFs, this study provides useful insights to policymakers and healthcare practitioners concerning raising awareness in relation to having leaders with the right competences, as well as by highlighting the importance of effective collaboration with entities in crisis management. The significance of sustaining staff commitment and resilience in overcoming a healthcare crisis is also paramount. Additionally, the COVID-19 crisis has called attention to the need for digital development and transformation in order to deliver the best care. Furthermore, the need is highlighted for standby preparation and crisis management plans to confront potential threats or hazards in order to minimize damage and traumatic effects during a crisis.

Finally, success in tackling a crisis is a result of collective efforts from multiple actors rather than any single actor (Thapa et al., 2017). Additionally, the alignment of interests and goals between crisis response actors is crucial to ensure successful crisis response. Further, non-human actors, for instance technology, make it possible to translate human actors "programmatic ideas" into practice (Miller, 1991).

7.3 Limitations and Future Research Avenues

This thesis has several limitations that need to be recognized to pave the way for future research.

First, the findings are based on a single case, namely healthcare services in Qatar. This could bring into question the generalizability of the results. As a result, this study calls for future researchers to extend the research phenomenon beyond the geographical boundaries of Qatar. It would be informative for future researchers to conduct a comparative study involving

more than one country, for instance between developed and developing countries.

Second, the study lacks statistical testing of the COVID-19 crisis response framework. Therefore, future researchers should test the framework quantitatively using survey-based research or any other objective measure to validate the significance of the framework in other contexts and industries.

Third, the study sample and findings were limited to the most impactful BPs in healthcare services in Qatar during the COVID-19 crisis, namely clinical processes, supply chain process, and HR processes. Accordingly, future researchers should replicate the study by extending the findings to all BPs in healthcare services, for instance considering IT processes and finance processes.

Fourth, study interviews were focused on participants who maintain close relationship to the decision making, with regards to COVID-19 pandemic in the healthcare services in Qatar such as managers and directors. Subsequently, future researchers shall conduct interviews with both supervisory-level staff and middle-level staff. As it will be informative in exploring new themes; via the eye of middle-level staff, in addition to enabling the cross- verification of the arguments among the study participants.

Fifth, the interviews are prone to recall bias (Saunders et al., 2009). As interview respondents' descriptions do not necessarily correspond to the reality. Their responses may be subject to their own personal interpretation of the phenomenon or to some internal relationships. In order to mitigate this limitation, the researcher triangulated respondents' view with the analysis of archival and published documents.

Finally, the theoretical framework does not illustrate what motivates actors to act in the way they do. Therefore, future researchers should explore such "why" questions using other theories in addition to ANT, for instance stakeholder theory.

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APPENDICES

Appendix A: Invitation to Participants in the Interview

The implication of Management Accounting practices and Business process interplay on the successfulness of the decision making in the time of COVID-19 crisis: Evidence from the healthcare in Qatar.

Dear Mr. / Ms. ,

I hope this email finds you well,

My name is Alhanoof Alseari and I am a graduate student in the Accounting department at Qatar University. I am writing this email to invite you to participate in my graduation project. The study is entitled: *Management Accounting Practices and the Role of Business Process in Managing COVID-19 Crisis: Evidence from the Healthcare Services in Qatar*

My research aims to identify the key Business Processes (BPs) that were affected by COVID-19 within the healthcare sector in the state of Qatar, and to explore the role of Management Accounting Practices (MAPs) in addressing those BPs issues. Additionally, the research aims to highlight the MAPs - BPs dynamics on the success of the decision-making process, as related to COVID-19, and performance improvement of the healthcare sector. These issues will be examined interviews, which will be conducted with clinical and non-clinical staff members at Hamad Medical Corporation (HMC).

You are kindly invited to participate in the research study, as your input will of great and significant value. Your participation is fully voluntary, and any information you will provided will be treated with the highest of confidentially. The results will be used for academic purposes and thus the identity of the respondents will not be disclosed under any circumstance. Lastly, kindly requesting you to confirm your acceptance in the participation of the study by responding to the email. Additionally, would you please indicate your convenient time and mean to conduct the meeting whether face-to-face or via Microsoft teams.

The table below includes a list of the definition of the study constructs: -

Abbreviations	***Definitions***
MAPs	*Management Accounting Practices: focuses on the techniques and processes that are concerned with the provision of information, support of managers' decision making, planning, and ensuring efficient and effective direction of organizations resources, allowing the enhancement of both customers and shareholders value.*
BPs	*Business process (BP): underlines a set of logically related tasks or activities that are performed to achieve a defined business outcome. Fulfilment/customer process, the procurement process, production process, finance process and control/ performance process are examples of organizational BPs.*

Please refer to the attached questions, which will be discussed during the interview session.

If you have any questions, please do not hesitate to contact:

Ms. Alhanoof Alseari- 77770255- aalseari@hamad.qa.

I look forward to your response,

Round one:

1.1 Would you please introduce yourself, and state your current position and experiences?

1.2 What are the main objectives and activities of your department?

1.3 When it comes to efficiency, transparency and quality, can you tell me what are the measures that are taken at your department to achieve these constructs?

1.4 Could you describe the alignment level of your department activities and outcomes with the organization core activities?

1.5 Could you describe or tell me about the nature of decisions that your department undertake?

2. Round two:

2.1 When it comes to disruption or increased pressure or uncertainty at your department or your organization, is there a plan that your organization or department undertakes to address problems and mitigate the uncertainty level? if yes, kindly provide as much details as possible?

2.2 Could you please tell me, what are the challenges you have encountered in your department and organization as a result of COVID-19?

2.3 May I know your opinion about the performance of HMC during COVID-19 crisis?

2.3.1 What are the indicators that determines the performance of HMC during COVID-19 crisis?

2.3.2 Could you tell me what are the factors that determines the performance level in HMC at corporate level or department level or employee level?

2.3.3 In your point of view, to what extend mission and vision of HMC is aligned with performance system in HMC?

2.4 What measures did your department and organization undertake to address issues related to COVID-19, while considering important matters such as health of employees, as well as the quality and efficiency at your department?

2.4.1 In your point of view, to what extent, the measures or practices that were taken by your department and organization were effective in addressing COVID-19 disruptions?

2.5 In your opinion, what are the key factors that have contributed toward tackling

COVID-19 in the healthcare services, Qatar?

2.6 Describe HMC strategy during the pandemic and whether it was reactive or proactive? Kindly elaborate on your answer.

2.7 When it comes to decision making, was there a change in the nature of the decision making, in terms of authority, and decisions content..etc in your department?

- 2.7.1 could you tell the characteristics of information that the decision makers focus at in making decisions?
- 2.7.2 During the pandemic, how often does HMC use information generated from the Management Accounting practices, ie: costs, budgets, benchmarks in the decision making?
- 2.7.3 Would tell me what are the main sources of information that your department relay on in decision making during the pandemic?

2.8 Could you describe the significance of costs in decision making during the pandemic?

- 2.8.1 How does cost information is captured and determined in your department activities?

2.9 To what extend forward looking practices, such as budgets, target plans, and forecasts contributed toward addressing your department issues and in general the management of COVID-19 crisis in HMC?

- 2.9.1 What are the measures or tools taken to monitor the actions in your department and organization to ensure the achievement of the plans?
- 2.9.2 How Does your organization and department act when there is there is a diversion with respect to actions taken relative to the prepared plans?

Appendix B: Ethical clearance

I. Medical research Center approval letter

مؤسسة حمد الطبية
Hamad Medical Corporation

APPROVAL LETTER

MEDICAL RESEARCH CENTER

HMC, DOHA-QATAR

Abdulqadir Jeprel Japer Nashwan **Date:10th March 2021** **Director of Nursing/Midwifery Education (CF)** **Hamad Medical Corporation** **Doha-Qatar**	
Protocol No:	MRC-01-21-044
Study Title:	The implication of Management Accounting practices and Business process interplay on the successfulness of the decision making in the time of COVID-19 crisis: Evidence from the healthcare in Qatar.
Team Member List:	Mr. Abdulqadir Jeprel Japer Nashwan , Ms. Alhanouf Mohammed Alseari
Hospitals/ Facilities Approved :	HMC Corporate
Review Type :	Expedited
Decision :	Approved
IRB Approval Period :	07/03/2021 - 06/03/2022

The Medical Research Center has reviewed and approved the request for the above mentioned research study to be conducted in HMC on condition that continual approval from the HMC Institutional Review Board (IRB) is renewed as per the review board's terms.

This study must be fully compliant with all the relevant sections of the 'Rules and Regulations for Research' at HMC and the Medical Research Center should be notified immediately of any proposed changes to the study protocol. Wherever amendments to the initial protocol are deemed necessary, it is the responsibility of the Principal Investigator to ensure that appropriate reviews and renewed approvals are in place before the study will be allowed to proceed.

Please note that only official, stamped versions of the IRB approved documentation are to be utilized at any stage in the conduct of this study and follow the validity dates as mentioned in the IRB stamped documents. The research team must ensure that progress on the study is appropriately recorded in ABHATH, the online research system of the Medical Research Center.

We wish you success in this research and await the outcomes in due course.

Yours sincerely,

Prof. Michael Paul Frenneaux
Chief of Scientific, Academic and Faculty Affairs
Hamad Medical Corporation

Medical Research Center Hamad Medical Corporation Doha - Qatar

Date: 10th March 2021

II. Hamad Institutional Review board approval

مؤسسة حمد الطبية
Hamad Medical Corporation

INSTITUTIONAL REVIEW BOARD
HAMAD MEDICAL CORPORATION
DOHA-QATAR

Abdulqadir Jeprel Japer Nashwan **Director of Nursing/Midwifery Education (CF)** **Hamad Medical Corporation** **Doha-Qatar**	**Email: irb@hamad.qa Tel: 00974-40256410** **HMC-IRB Registration: MoPH-HMC-IRB-020** **IRB-MoPH Assurance: IRB-A-HMC-2019-0014**

APPROVAL NOTICE

Protocol No. :	MRC-01-21-044
Protocol Title :	**The implication of Management Accounting practices and Business process interplay on the successfulness of the decision making in the time of COVID-19 crisis: Evidence from Qatar's healthcare.**
Date of HMC-IRB Approval :	07 March 2021
Review Type :	Expedited
Decision :	Approved
Approved HMC Enrollment :	**Prospective Data Collection during 31 March 2021 - 30 April 2021**

The IRB has reviewed the submitted documents of the above-titled research, and approval for the study has been granted. The list of the approved document(s) is attached.

IRB oversight expires 12 months from the date of approval indicated above. It is the responsibility of the Investigator to ensure timely renewal of study oversight. IRB must approve progress reports for continuing review before the expiration date. Therefore, submissions must be received by the IRB 60 to 90 days before the expiration date.

Requested Resolutions: PI must ensure that the subject's anonymity is maintained throughout the study's conduct.

Any resolutions submitted must include a letter indicating that the submission is a follow-up request by the IRB, ensuring that resolutions are processed appropriately and on time.

Please note; this approval only covers HMC. You may also need approvals from other institutions involved in your study. You should not start your study until all of these have been obtained.

If you have any questions or need additional information, please contact IRB at the above-mentioned email address or telephone number.

Important Note: The list of your responsibilities as Principal Investigator is attached to this letter.

مؤسسة حمد الطبية
Hamad Medical Corporation

Sincerely,

Acting Chairman of Institutional Review Board: _____

Date: _____

M. Bashir
Dr. Mohammed Bashir
Sr. Consultant, Endocrine &
Diabetes Medicine - HMC
038537

Signature:

List of Approved Documents:

S.No	DOCUMENTTYPE	DOCUMENTNAME	LANGUAGE	NOOFPAGES	VERSIONNO
1	Research Protocol	MRC-01-21-044_ResearchProtocol_V1.0_07-MAR-21_18Pages_1905995.7_07-MAR-21_18Pages_1905995.pdf	English	18	V1.0
2	Research Info Sheet	MRC-01-21-044_ResearchInfoSheet_Eng_V1.0_07-MAR-21_1Pages_1906438.2_07-MAR-21_1Pages_1906438.pdf	English	1	V1.0
3	Interview/ Script	MRC-01-21-044_Interview/Script_Eng_V1.0_07-MAR-21_1Pages_1906492.3_07-MAR-21_1Pages_1906492.pdf	English	1	V1.0

III. Qatar University Institutional review board approval

جامعة قطر
QATAR UNIVERSITY

Qatar University Institutional Review Board **QU-IRB**

QU-IRB Registration: IRB-QU-2020-006, QU-IRB, Assurance: IRB-A-QU-2019-0009

DATE:	April 13, 2021
TO:	Osama Mahd
FROM:	Qatar University Institutional Review Board (QU-IRB)
PROJECT TITLE:	1711780-1The implication of Management Accounting practices and Business process interplay on the successfulness of the decision making in the time of COVID-19 crisis: Evidence from the healthcare in Qatar
QU-IRB REFERENCE #:	QU-IRB 1521-E/21
SUBMISSION TYPE:	New Project
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	April 13, 2021
REVIEW CATEGORY:	Exemption category # 3&4

Thank you for your submission of New Project materials for this project. The Qatar University Institutional Review Board (QU-IRB) has determined this project is EXEMPT FROM IRB REVIEW according to Qatar Ministry of Public Health regulations. Please note that exempted proposals do not require renewals however, any changes/modifications to the original submitted protocol should be reported to the committee to seek approval prior to continuation.

We will retain a copy of this correspondence within our records.

Documents Reviewed:

- Consent Form - Consent Form for the interview (002).docx (UPLOADED: 03/10/2021)
- Other - HMC-IRB approval.pdf (UPLOADED: 03/10/2021)
- Other - QU-IRB Check List (1).pdf (UPLOADED: 03/10/2021)
- Other - HMC-MRC Approval.pdf (UPLOADED: 03/10/2021)
- Other - IRBNetDocument (2).pdf (UPLOADED: 03/10/2021)
- Other - QU-IRB Brief Application Form_v3_01 Sept 2020_FINAL.docx (UPLOADED: 03/10/2021)
- Proposal - research proposal.pdf (UPLOADED: 03/10/2021)
- Protocol - QU-IRB Application Human Subject (1).doc (UPLOADED: 03/10/2021)
- Questionnaire/Survey - interview questiones.docx (UPLOADED: 03/10/2021)

If you have any questions, please contact QU-IRB at 4403 5307 or qu-irb@qu.edu.qa. Please include your project title and reference number in all correspondence with this committee.

Best wishes,

Dr. Ahmed Awaisu
Chairperson, QU-IRB

جامعة قطر
QATAR UNIVERSITY
Institutional Review Board
(IRB)
Office Of Academic Research

IV. Qatar University Institutional review board approval

Consent Form

جامعة قطر
QATAR UNIVERSITY
Institutional Review Board (IRB)
APPROVED

Date: ….

Dear Participant:

We would like to invite you to participate in this research study titled *The implication of Management Accounting practices and Business process interplay on the successfulness of the decision making in the time of COVID-19 crisis: Evidence from the healthcare in Qatar*. My research aims to identify the key Business Processes (BPs) that were affected by COVID-19 within the healthcare sector in the state of Qatar, and to explore the role of Management Accounting Practices (MAPs) in addressing those BPs issues. Additionally, the research aims to highlight the MAPs - BPs dynamics on the success of the decision-making process, as related to COVID-19, and performance improvement of the healthcare sector. These issues will be examined through interviews, which will be conducted with clinical and non-clinical staff members at Hamad Medical Corporation (HMC).
The study is approved by the Qatar University Institutional Review Board with the approval number……..; If you have any questions related to ethical compliance of the study you may contact them at (QUIRB@qu.edu.qa). This study was also approved by the Medical research center at Hamad Medical Corporation.

Your input is an essential element in this study and will be kept strictly confidential. This information will be used for research purposes only. Please note that your participation is voluntary. If you decide to participate, you will be asked to answer questions mentioned in interview guide. You can skip any question or withdraw from participating at any time.

There are no associated risks or harms involved through participating in this interview. The interview will take approximately 20-30 minutes of your valuable time. The information collected will be kept strictly confidential and secure, where only the researchers have access to it. We appreciate your time and effort. If you have any questions about this study, please feel free to contact us; Alhanoof Alseari, aa1511368@qu.edu.qa / +974-77770255 or Dr. Osama Mahd, almansour80@qu.edu.qa / +974-70793456 .

Sincerely,

I have read the above statements and have been fully informed of the procedures to be used in this project. I have been given sufficient opportunity to ask any questions I had concerning the procedures and possible risks involved. I understand the potential risks involved and I assume them voluntarily. I likewise understand that I can withdraw from the study at any time without being subjected to reproach.

I agree to the Audio/Video recording of my interview Yes / No

Appendix C: Consent form

Consent Form

جامعة قطر
QATAR UNIVERSITY
Institutional Review Board (IRB)
APPROVED

Date: ….

Dear Participant:

We would like to invite you to participate in this research study titled *The implication of Management Accounting practices and Business process interplay on the successfulness of the decision making in the time of COVID-19 crisis: Evidence from the healthcare in Qatar*. My research aims to identify the key Business Processes (BPs) that were affected by COVID-19 within the healthcare sector in the state of Qatar, and to explore the role of Management Accounting Practices (MAPs) in addressing those BPs issues. Additionally, the research aims to highlight the MAPs - BPs dynamics on the success of the decision-making process, as related to COVID-19, and performance improvement of the healthcare sector. These issues will be examined through interviews, which will be conducted with clinical and non-clinical staff members at Hamad Medical Corporation (HMC).
The study is approved by the Qatar University Institutional Review Board with the approval number……; If you have any questions related to ethical compliance of the study you may contact them at (QUIRB@qu.edu.qa). This study was also approved by the Medical research center at Hamad Medical Corporation.

Your input is an essential element in this study and will be kept strictly confidential. This information will be used for research purposes only. Please note that your participation is voluntary. If you decide to participate, you will be asked to answer questions mentioned in interview guide. You can skip any question or withdraw from participating at any time.

There are no associated risks or harms involved through participating in this interview. The interview will take approximately 20-30 minutes of your valuable time. The information collected will be kept strictly confidential and secure, where only the researchers have access to it. We appreciate your time and effort. If you have any questions about this study, please feel free to contact us; Alhanoof Alseari, aa1511368@qu.edu.qa / +974-77770255 or Dr. Osama Mahd, almansour80@qu.edu.qa / +974-70793456 .

Sincerely,

I have read the above statements and have been fully informed of the procedures to be used in this project. I have been given sufficient opportunity to ask any questions I had concerning the procedures and possible risks involved. I understand the potential risks involved and I assume them voluntarily. I likewise understand that I can withdraw from the study at any time without being subjected to reproach.

I agree to the Audio/Video recording of my interview Yes / No

_____ _____
Signature of Participant Date

_____ _____
Name & Signature of Researcher Date

Appendix D: Ethical certificates

I. HMC Good Clinical Practice certificate

CITI PROGRAM

Completion Date 16-Jan-2021
Expiration Date N/A
Record ID 40362876

This is to certify that:

Alhanoof Alseari

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

HMC Good Clinical Practice
(Curriculum Group)
Medical Research Center Reviewers (GCP)
(Course Learner Group)
1 - Stage 1
(Stage)

Under requirements set by:

Hamad Medical Corporation

CITI
Collaborative Institutional Training Initiative

This GCP training contains all of the attested CITI Program modules from the **GCP for Clinical Trials with Investigational Drugs and Medical Devices (U.S. FDA Focus) Version 2**. This ICH E6 GCP Investigator Site Training meets the Minimum Criteria for ICH GCP Investigator Site Personnel Training identified by TransCelerate BioPharma as necessary to enable mutual recognition of GCP training among trial sponsors.

Verify at www.citiprogram.org/verify/?wcf4624a1-f31c-434c-b605-0771fbf9fb2b-40362876

II. CITI Health Information Privacy and Security (HIPS) certificate

CITI PROGRAM

Completion Date 15-Jan-2021
Expiration Date N/A
Record ID 40362877

This is to certify that:

Alhanoof Alseari

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

CITI Health Information Privacy and Security (HIPS)
(Curriculum Group)
HMC Research Students and Instructors (HIPS)
(Course Learner Group)
1 - Stage 1
(Stage)

Under requirements set by:

Hamad Medical Corporation

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wdf471be2-dfba-41b8-91b6-b358c568afcf-40362877

III. HMC Social & Behavioral Researchers certificate

CITI PROGRAM

Completion Date 15-Jan-2021
Expiration Date 15-Jan-2024
Record ID 40362875

This is to certify that:

Alhanoof Alseari

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

HMC Social & Behavioral Researchers
(Curriculum Group)
HMC Social & Behavioral Researchers (Basic Course)
(Course Learner Group)
1 - Stage 1
(Stage)

Under requirements set by:

Hamad Medical Corporation

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w15f1d8e9-739a-40ab-a447-847e17906a57-40362875