Adoption of Practices for Organizational Effectiveness in Healthcare Supply Chains: Insights from the United Arab Emirates (UAE)

Purpose of the research: The primary focus of this research is to explore the adoption of practices and investigating of commonalities/ intensities between the factors for measuring organizational effectiveness (OE) across healthcare supply chains in the United Arab Emirates (UAE).

Design/method/approach: System theory coupled with the Supplier-Input-Process-Output-Customer (SIPOC) tool was applied to facilitate the linkage between different nodes of the healthcare chain. An exploratory approach was used to explore and measure the importance of various OE factors across various nodes of the healthcare supply chain. Data was collected using a two-stage questionnaire process addressed at personnel in the UAE's healthcare sector.

Findings: The study identified 62 OE factors in the health are supply chain. Of these, 15 are related to suppliers, 14 to the healthcare process, 12 to employees, 8 to patients and the community, 6 to government directives, and 7 to branding. Twenty-one common factors were identified and clustered into groups based on commonalities and intensities.

Research limitations/implications: The study identifies the most important factors for healthcare organizations to achieve OE for different dimensions of operations or performance. These factors will provide valuable insights for decision makers in the sector, it will provide valuable insights to healthcare professionals and academia to investigate more on these factors.

Research originality: While there is increasing research interest in healthcare supply chains, this is the first study to investigate OE across the entire chain while also evaluating the importance of and commonalities in OE-enabling factors.

Research type: Exploratory paper

Keywords*:* Organizational effectiveness, Healthcare, SIPOC, System theory, United Arab Emirates (UAE).

1. Introduction

In recent decades, the healthcare system has been the subject of several technological and operational changes. To quantify how well the goals and objectives of hospitals are achieved, performance measurement has emerged in healthcare organizations to evaluate overall performance and drive excellence (Gu & Itoh, 2016). Growth in the field of performance measurement has raised awareness and use of performance measurement systems in organizational settings (Anjomshoae, Hassan, & Wong, 2019). Their popularity status led to the development of a wide range of process-oriented measurement methods (e.g., Six Sigma) and philosophies (Lean Enterprise) that are commonly incorporated into an organization's process management and monitoring systems (Martz, 2008).

Hospitals are struggling to increase their efficiency and effectiveness, and are under pressure to cut costs and maintain budget containment; but the literature lacks a comprehensive framework for measuring effectiveness throughout the entire healthcare chain (Al Hammadi & Hussain, 2019; Hussain, Malik, & Al Neyadi, 2016). Measuring organizational effectiveness across a healthcare chain is a complicated phenomenon, and it requires a holistic system approach. Previous studies have focused on a single tier of the healthcare supply chain. For example, (Al Jaberi, Hussain, & Drake, 2017) focused on operations; (Badri, Attia, & Ustadi, 2009)measured OE through patient satisfaction; (Jabnoun, Khalifah, & Yusuf, 2003) concentrated on management style while (Kak, Burkhalter, & Cooper, 2001) addressed service quality. Focusing on one tier may not increase overall performance because local optima do not guarantee a chain-wide optimum (Drake, Myung Lee, & Hussain, 2013). Consequently, it is important that the entire chain be considered a single entity and that a holistic system approach should be used for measuring OE.

Since the 1950s, many studies in the organizational theory literature have centered on the concept of effectiveness (Hopper & Powell, 1985). The evolution of performance measurement models and organizational effectiveness (OE) can be compared to other disciplines that have grown similarly such as accounting management (Henri, 2004). Many organizations are still relying on traditional financial performance measures (Tangen, Performance measurement: from philosophy to practice., 2004). OE models have influenced performance measurement models significantly (Henri, 2004). In essence, OE embodies the outcome of organizational activities, whereas performance metrics comprise an assessment tool to measure effectiveness.

This paper applies system theory, which has been defined as a group of independent but interrelated components comprising a unified whole (Yuchtman & Seashore, 1967) for measuring OE across the healthcare supply chain. A structured system approach using the Supplier-Input-Process-Output-Customer (SIPOC) chart is used to facilitate the linkage between the different nodes (supplier, employees, process, patients, and community) of the healthcare chain. A system is always affected by external factors; therefore, two external factors (government directives and branding) have been added to the recognized system nodes through SIPOC to enable a holistic system approach. The aims of the paper are fourfold:

1) Develop a comprehensive OE framework that integrates both internal and external components of the healthcare system within the context of the UAE;
2) Explore the drivers of OE across different nodes of a healthcare supply chain using a holistic system approach;
3) Identify commonalities of OE across various internal and external nodes of the healthcare chain;
4) Identify the level of importance of OE across different nodes of the healthcare supply chain;

The focus of the paper is the identification of OE factors across different nodes of the healthcare chain and so an open-ended questionnaire (exploratory approach) was distributed to experts in different departments (e.g. procurement, supply chain, operations, human resources, marketing, strategy) across selected hospitals in the UAE. The study has implications for the growing healthcare industry of the UAE and provides a structured approach for measuring OE across healthcare supply chains.

2. Literature Review

2.1. Organizational Effectiveness

Performance measurement has attracted much attention in recent years in both operational and academic disciplines. An organization is said to be effective if it can achieve its objectives with the resources given which involves doing the right thing with the right quality at the right time (Tangen, Demystifying productivity and performance, 2005); (Laosirihongthong, Adebanjo, Samaranayake, Subramanian, & Boon-itt, 2018). This means that effectiveness is commonly defined as the degree to which predetermined objectives are accomplished (Georgopoulos & Tannenbaum, 1957), whereas efficiency refers to the economical manner in which objective-oriented operations are carried out, e.g., an input/output ratio (Cameron, 2010). Several factors have been used to express organizational effectiveness, including production, quality, efficiency, flexibility, satisfaction, competitiveness, development, and survival (Cameron, 2010). Similarly various aspects of OE has been explore; see for example, (Gregory, Harris, Armenakis, & Shook, 2009) investigated the relationship of organizational culture and OE and (Masa'deh, Obeidat, Maqableh, & Shah, 2018) assessed the effect of talent management on OE and (Diamantidis & Chatzoglou, 2019), explored the factors affecting employee's and organizational performance and so on.

Within the context of the healthcare sector, some studies have focused on a specific dimensions of organizational performance, (e.g. patient satisfaction and quality (Si, You, Liu,

& Huang, 2017); effectiveness and quality indicators in healthcare (Cinaroglu & Baser, 2018) ; principles of learning organization and OE (Jeong, Lee, Kim, Lee, & Kim, 2007). However, quality of care can imply different things from the perspective of an individual patient and could mean either access to care or effectiveness of care. Do patients get the care they need, and is the care effective when they get it? Therefore, an understanding of both clinical care and the effectiveness of care is important (Campbell, Fitzpatrick, Haines, Sandercock, & Tyrer, 2000) and investigations across multiple dimensions in healthcare are lacking.

2.2 Organizational Effectiveness in Healthcare

Healthcare systems have undergone many changes, ranging from technological to operational in recent decades. Nonetheless, numerous problems remain in the healthcare sector, and the operation of hospital management needs massive improvement (Dahlgaard, Pettersen, & Dahlgaard-Park, 2011; Böhme, Williams, Childerhouse, Deakins, & Towill, 2013; Sinha & Kohnke, 2009). In an effort to evaluate how well organizational objectives are achieved, performance measurement has been adopted in healthcare organizations (Gu & Itoh, 2016; Liu, 2013). To drive excellence and reach effective performance, evaluating both clinical and service performance is crucial. For example, various national projects and international projects have been initiated for measuring the performance and quality of healthcare services (McNatt, et al., 2015; El-Jardali, Saleh, Ataya, & Jamal, 2011). Although many performance indicators for hospitals exist, it is very hard to improve simultaneously because of inherent constraints, including resources for hospital management (Groene, Skau, & Frølich, 2008). The optimization of a specific process deviates from the overall welfare of a whole system and no comprehensive frameworks have been presented to enhance and analyze healthcare performance across the entire system (Si, You, Liu, & Huang, 2017).

2.3 Measuring Organizational Effectiveness in Healthcare

Measuring organizational effectiveness in the healthcare sector is complicated, especially when it comes to saving people's lives. According to (Burris, 2013),there is a lack of understanding in healthcare leadership about the associative nature and application value of systems theory and organizational learning as both operational and conceptual tools that may impact strategic effectiveness in healthcare organizations. Thus system theory is an applicable theory when studying organizational effectiveness within the context of healthcare systems. A clear gap exists in the literature related to OE factors in healthcare chains, this research aims to close this gap by exploring OE factors, identifying the metrics for these factors, and drawing boundaries between them to find the commonalities.

3. Theoretical Background

Many theories can be used to capture the richness of organizational effectiveness, such as goal theory, system theory, strategic-constituencies theory, competing-values theory, and ineffectiveness theory. A summary of each theory is given in Table 1.

Insert Table 1 approximately here

This paper will focus on system theory, which focuses on the necessary resources to achieve the required performance in terms of inputs, acquisition of resources, and processes (Yuchtman & Seashore, 1967). It has been defined as a group of independent but interrelated components comprising a unified whole. Systems thinking flourished following World War II, influenced deeply by (Bertalanffy V. , 1950; Von Bertalanffy, 1956; Bertalanffy L. , 1962; Bertalanffy L. V., 1968) general systems theory and the concept of the open system. An open system is one that exchanges matter with its environment (Bertalanffy L. V., 1968). An open system has been defined as having the property of self-maintenance, the goal of survival, and the ability to maintain its existence by adapting to the environment (Boulding, 1956). In fact, the open system approach grounds system theory whereby the inputs, processes, and outputs are all part of the performance because business organizations are manmade systems that have

dynamic interplay with their environment, customers, competitors, suppliers, and governments (Johnson, Kast, & Rosenzweig, 1964). This means that, under the system approach, each part of the organization is interrelated, working in conjunction with each other to accomplish common goals. In addition, system theory has been explored a great deal in the literature, where about 30 criteria of effectiveness have been identified, including productivity, quality, accidents, absenteeism, job satisfaction, motivation, flexibility, and innovation (Yuchtman & Seashore, 1967). The advantage of system theory is that it allows the assessment of progress toward the aim of long-term survival and interdependency of organizational activity (Robbins, 1983). The reason for selecting this theory in the current research is to build a comprehensive model to measure the OE across the entire health care chain; looking into the entire system from input to feedback is essential. System theory has been succefully applied in health care supply chains; e.g. (Jordon, Lanham, Anderson, & McDaniel Jr, 2010); (Wichers, Wigman, & Myin-Germeys, 2015); (Kaakinen, Coehlo, Steele, & Robinson, 2018); In addition, the study will expand system theory by introducing some external factors such as branding and government directives in developing the overall system for OE.

Insert Figure 1 approximately here

3.1. System Theory and SIPOC

System theory is a theory used to examine organizational effectiveness, and there is a need to find a suitable tool for measurement to enable such examination. The Supplier-Input-Process-Output-Customer (SIPOC) framework is used in this research as a platform to present the relevant information that underpins the OE structure. SIPOC is a widely used tool for process investigation and improvement in business planning, re-engineering, and continuous improvement (Rasmusson, 2006). SIPOC covers the entire system and has been used as a tool to measure effectiveness across healthcare chains. (Tolga Taner & Sezen, 2009).

Figure 2 presents a SIPOC template for a health care chain. Different operational attributes at various nodes of the health care supply chain have been highlighted. For the suppliers the important features are the four quality standards, plus cost effectiveness and lead time (Elmuti, Khoury, Omran, & Abou-Zaid, 2013). Strategic priorities, learning and development, and communication both internal and external are the major inputs for health care systems (Finney & Corbett, 2007). Process deals with operational issues starting at appointment booking until leaving the facility, and the emphasis lies on efficiency, effectiveness, benchmarking, and social testing (Gomes, Yasin, & Yasin, 2010). The output of a health care facility focuses on five main features: individual performance, operation efficiency, innovation, environmental friendliness, and community responsiveness (Lipson, Colby, Lake, Liu, & Turchin, 2009). Regarding customers, there are three measurements: patient satisfaction, patient choice, and quality assurance (Si, You, Liu, & Huang, 2017).

Insert Figure 2 approximately here

4. Research Methodology

This section will introduce the research context, justify the use of research methodology, and introduce the research questions in each phase, sample selection and data collection process.

4.1. Research Context

In the UAE, the government is investing actively in the national healthcare sector to meet the growing needs of its population and to support economic diversification by enabling world-class international hospitals (Vision 2021). According to the United Arab Emirates business council organization (US-UAE Business Council, 2014), in 2010, there were 104 hospitals throughout the seven emirates, more than half of which were private hospitals.

Insert Table 2 approximately here

In 2014, as shown in Table 2, there were 104 hospitals in the UAE, 32 of them public and 71 private, serving over 7 million people. This implies that private hospitals are very

important to the UAE's long-term development in healthcare. The table also shows that only 49 hospitals are accredited by the Joint Commission International (JCIA), which sets the global standards of healthcare in terms of patient safety and quality. This means that almost half of the hospitals in the UAE may not meet the global standards for health are, and thus it is important to determine whether their performance is effective or not. Under the UAE's Vision 2021, the country will continue spending to build world-class healthcare infrastructure, expertise, and services to fulfill the growing needs of the population (Vision 2021, 2010). The healthcare sector in the UAE has been striving to keep up with immigration-driven population growth and struggling to control increases in per capita healthcare spending caused by high levels of affluence and chronic diseases (INSEAD, 2016). Although the UAE has worked hard to establish the country as a center of excellence and a preferred destination for patients seeking cost effectiveness, high-quality care, and good procedures, the country still faces many challenges to operational excellence, thereby hampering effectiveness (Al Jaberi, Hussain, & Drake, 2017). Few authors have attempted to investigate and measure quality in UAE healthcare sector, but very few have addressed organizational effectiveness (Jabnoun & Chaker, 2003). Thus, there is a pressing need to investigate effectiveness throughout the healthcare supply chain.

4.2. Justification of research methodology

Many early systems theorists targeted in finding systems theory that could explain system in all fields of science. It was restricted to science context of biology, ecology and psychology (Huang, Acero, Hon, & Reddy, 2001). Hence, our proposed research framework (Figure 2) encompasses the perspectives of different stakeholder groups inside and outside healthcare chain. Those groups are: suppliers, process, patients, employees, government directives and branding and are presented as exploratory factors in table5. To explore OE from the stakeholders' perspectives, we rely on system theory to cover all aspects of the entire healthcare

chain at different tiers. (Tolga Taner & Sezen, 2009). Realizing that few papers have addressed OE in healthcare chain from the holistic view, this study expanded the system theory by adding external factors like government directives and branding (Jabnoun & Chaker, 2003). As making decisions in healthcare is very important, hospitals should consider the impact of stakeholders including employees, customers (Sarkis, Gonzalez-Torre, & Adenso-Diaz, 2010), suppliers, government, and media (Friedman & Miles, 2006). Toward this end, system theory has been applied in this study to explore and assess the OE in the entire healthcare supply chain. Similar research approach has been applied for exploratory studies by (Al-Amor & Hussain, An assessment of green practices in a hotel supply chain: A study of UAE hotels, 2017; Al-Amor & and Hussain, An assessment of adopting lean techniques in the construct of hotel supply chain, 2018). This is important to mention that formal research methods including regression and structural equation modelling are beyond the scope of this work. Yet, the exploratory findings of this study will help authors to propose a formal framework, test and validate it using *Exploratory Factor Analysis* and *Confirmatory Factor Analysis* techniques.

4.3. *Questionnaire Development*

Phase 1 questionnaire. The purpose of the phase 1 survey was to explore the factors affecting OE. Section one of the survey focused on general respondent information: gender, age, years of experience in healthcare, and areas of expertise (e.g. HR, operation, patient affairs, supply chain, etc). Section two contained open-ended questions on the factors affecting the OE. This is an exploratory investigation and open ended question based on proposed SIPOC, as shown in Figure 2, were used in Section 2 of the survey. The content of the questionnaires used in in Phase 1 and 2 were discussed for content validity with a group of 3 academicians and 3 professionals working in the area of health care operations management. Based on their reviews and feedbacks, statement of the few questions were amended and modified.

Phase 2 questionnaire. The purpose of the phase 2 survey was to identify the intensity of measurement factors using SIPOC for each node and to find the commonalities between these factors. The survey had two sections; section one was similar to section one in phase 1, while the second section focused on the importance of the identified factors from phase 1, with respondents required to classify the factors as low, medium or high.

4.4 *Sample Selection and Data Collection*

Data was collected from employees working for the Abu Dhabi Healthcare Service Provider (SEHA). SEHA is an independent public joint stock company that owns and operates all public hospitals and clinics across the emirate. It has over 17,000 employees in various categories, from nursing and medical to technical and administration. There are more than 90 senior manager positions and directors at SEHA. For the purpose of this study, potential respondents were shortlisted based on their job titles and years of experience in their department.

As shown in Figure 2, there are six relevant nodes (suppliers, process, patients, employees, branding, and government directives) across the healthcare chain. Ninety senior managers and directors at SEHA from different departments were contacted through emails and phone calls, and they were briefed about the content of the research; 54 agreed to participate. Questionnaires were emailed to the selected 54 respondents, and a reminder was sent after 2 weeks. After 4 weeks, 44 answers were received, and three of them were discarded because of incomplete information. Thus, 41 were used in this study, and the literature indicates that this is an acceptable sample for exploratory research (Hussain, Malik, & Al Neyadi, 2016).

In phase 2, the objective was to measure the importance of each OE factor across the healthcare supply chain and node and find the commonalities among them. The shortlisted candidates from phase 1 were again contacted and briefed about this phase; 40 agreed, 34 replied, and two were discarded because of missing information. Thus, 32, also an acceptable

sample size, participated in this phase (Hussain, Malik, & Al Neyadi, 2016). Again, respondents were selected from various departments of the healthcare chain, including suppliers, process, patients, employees, branding, and government.

The extent of data collected from the empirical study should support the purposes of the study to explore and assess the OE of healthcare chain. The findings were analyzed using descriptive statistics, listing the main factors using system theory and grouping the sub factors under each main factor. The coding was introduced to simplify the grouping exercise. The results of the survey were validated for content to explore and assess the effectiveness of the healthcare chain.

Phase 1. Among the 41 respondents, 20 of them are males. Their years of experience vary from 5–20. Four are from the supply chain, five from operations, six from HR, three from patient affairs, one from excellence, and one from marketing. For the 21 female respondents, their years of experience vary from 5–20. Three are from the supply chain, three from operations, three from HR, five from patient affairs, four from public relations/marketing and excellence, and three from government support/CEO's office.

Insert Table 3 approximately here

Phase 2. The second phase has 31 respondents, 11 males and 20 females with a range of experience from 5–30 years. Five are from the supply chain, six from operations, five from HR, seven from patient affairs, five from excellence/marketing, and three government support/CEO's office. An average response was used to analyze the feedback of the experts on three scales: low, medium, and high importance. Six main findings emerged in this research to determine the importance of the identified factors.

Insert Table 4 approximately here

5. Findings of the Study

This section will cover the findings of the studies in terms of descriptive statistics, the most important factors for OE and commonalities.

5.1. *Descriptive Statistics*

This paper set out to explore the OE factors across the healthcare supply chain in the UAE, identify their importance, and find the commonalities. The feedback of the participants was analyzed to generate main themes to cover the entire healthcare supply chain, and the feedback was categorized to develop elements of an OE framework. The findings from the research analysis are shown below:

Part 1. This stage focused on the identification of OE factors across healthcare supply chains. In this stage, OE factors identified by survey respondents were assigned codes and categorized to the different SIPOC and external factor nodes as shown in Table 5. Overall, 62 OE factors were identified by respondents from different parts of the healthcare supply chain. These identified factors were discussed with five academicians and seven industry experts in the healthcare sector to confirm accuracy and validity on the categorization. There was general consensus on the accuracy and validity of the categorization. Out of the 62 factors, 15 are related to suppliers, 14 to the healthcare process, 12 to employees, 8 to patients and the community, 6 to government directives, and 7 to branding. However, as a vast variety of OE factors was explored for a few nodes, these were further clustered in two different groups; OE factors for the supplier node were grouped/clustered under **operational business strategies (AA)** and **accreditations (AB).**

Suppliers. The two main clusters are (i) operational/business strategies, or the methods used by companies to reach their objectives so they can examine and implement effective and efficient systems by using resources, personnel, and the work process. These include Six Sigma, Lean Enterprise, total quality management (TQM), financial health, the operational

performance matrix, the business process and practices, enabling behavior, cultural factors, and risk factors and, (ii) certification and accreditation that are essential to companies because they provide confidence that processes are in place and that the processes are adopted to improve performance. These include international standards of quality (ISO), the Environment, Health and Safety Management System (EHSMS), Joint Commission international accreditation standards (JCIA), the Abu Dhabi occupational safety and health system (OSHAD), the Sheikh Khalifa excellence award (SKEA), and JAWDA data certification (which is the Arabic word of quality according to Department of Health (DOH) accreditations in the UAE).

Process. The factors relating to process were further classified under process lean waste and green environment. These factors were deemed essential for companies to reduce costs by eliminating waste and non-value-added activities. The factors classified under lean waste include inventory, transportation, over-processing, waiting time, overproduction, defects, and motion, whereas those under green environment include reuse, recycle, OSHAD, EHSMS, and information sharing and technology.

Employees. The factors related to employees were the competency framework, employee productivity, capabilities assessment, job descriptions, performance appraisals, innovation and creativity, flexibility and advancement, fairness and equity, organizational culture, management support, and research and education. These HR-related practices are important to organizations to reach effectiveness through attracting, developing, and maintaining high quality human capital.

Patients. For the patient node, the factors identified were patient experience, cost effectiveness, patients' rights, social sustainability, readmissions, mortality rate, communication, and medical errors.

Government directives. The analysis shows the following subfactors under government directives: mystery shoppers' feedback, employment of Emirati, scholarships,

budget support, laws and regulations, and partnership/management contracts with international healthcare providers.

Branding. The factors related to branding **were** employer of choice, interaction, engagement and participation, sustainable practices, patient choice, competitive advantage, accreditations and awards, *Estidama*, safety, and smoking.

Insert Table 5 approximately here

Part 2. This stage dealt with measuring the extent of the importance of identified OE factors across the healthcare chain. After the exploration of OE factors through surveys, the next step focused on measuring the intensity of these factors. Data were collected from the same experts, and a rating of low, medium, and high were used to identify the level of importance of each factor. Table 6 presents the results of this phase. The factors identified as high in importance were the following:

- Suppliers: Operational and business strategies, financial health, operational performance matrices, business processes and practices, enabling behaviors or cultural factors, risk factors, certification and accreditations, ISO, EHSMS, JCIA, OSHAD, and JAWDA.
- Processes: Waste, inventory, waiting time, defects, and most of the green environment subfactors, including reuse, recycling, OSHAD, and information sharing and technology.
- Employees: All factors except innovation and creativity, i.e. competency framework, employee productivity, capabilities assessments, job descriptions, performance appraisals, flexibility/advancement, fairness and equity, organizational culture, management support, and research and education.
- Patients: All factors, i.e., patient experience, cost effectiveness, patient rights, social sustainability, readmissions, mortality rate, communication, and medical errors.

- Government directives: Mystery shoppers' feedback, employment of Emirati, laws and regulations, and partnership/management contracts with international hospitals.
- Branding: All factors, i.e., employer of choice, interaction, engagement and participation, sustainable practices, patient choice, competitive advantage, accreditations/awards, *Estidama*, safety, and smoking.

Insert Table 6 approximately here

Part 3. This stage focused on presenting common factors across various nodes of the healthcare chain. The commonalities are important so that senior managers can work in alignment with other managers to focus on collaborative efforts. Table7 shows a summary of the commonalities by grouping the common factors under each main factor. Twenty-one common factors were identified in different groupings from F to N. For example, N, which contains process and government directives, has three common factors: budget support, volume of patients, and length of stay. The patients' category has common factors with suppliers, process, and government directives, grouped as H, I, and M, respectively.

Insert Table 7 approximately here

6. Discussion

1- Supplier main finding: *The most effective factor in organizational performance under suppliers <u>is</u> operational business strategies/certification and accreditation.*

Under suppliers, six factors were identified as highly important: financial health, operational performance metrics, business process and practices, enabling behaviors or cultural factors, and risk factors as operational/business strategies, whereas under accreditation and certification of suppliers, the factors were identified as highly important: ISO, EHSMS, JCIA, OSHAD, and JAWDA. One factor under suppliers was identified as having low importance: Lean Enterprise. Thus, a hospital's supply chain management includes both an internal chain (e.g., patient care unit, hospital storage, patient, etc.) and an external chain (e.g., vendors,

manufacturers, distributors, etc.) (Rivard-Royer, Landry, & Beaulieu, 2002; Schneller & Smeltzer, 2006), incorporating business operational activities to integrate a continuous, smooth flow of materials and services for healthcare (Rivard-Royer, Landry, & Beaulieu, 2002; Shih, Rivers, & Hsu, 2009). In addition, some experts in the healthcare industry revealed that some certifications are now mandatory and considered a bare minimum to operate (Malik, Abdallah, & Hussain, 2016). The key suggestion from these findings is that suppliers must not only operate according to the dictates of accrediting bodies, they also need to have robust business and operational practices.

2- **Process main finding:** *The most effective factor for organizational performance under process is lean waste/green environment*

Regarding process, two categories were identified: lean waste—which includes inventory, waiting time, and defects, whereas both transportation and overproduction were identified as of low importance—and green environment, where reuse, recycling, OSHAD and information sharing, and technology were identified as highly important. However, to emphasize the competitive position of the organisation, there should be a focus on adopting lean supply chain practices for healthcare to be effective and sustainable. Therefore, while previous studies have identified the increasing relevance of lean principles in the healthcare sector (Kumar, Ozdamar, & Ning Zhang, 2008; Sagha Zadeh, Xuan, & Shepley, 2016; Aronsson, Abrahamsson, & Spens, 2011), this study has shown that not all lean practices are important in enabling OE in healthcare settings. The study has also shown that green/sustainable supply chain practices are also relevant the healthcare sector (Sayed, Hendry, & Zorzini Bell, 2017). Such practices work to decrease waste and harmful environmental impacts across the chain while maintaining effectiveness and profitability (Hussain, Malik, & Al Neyadi, 2016; Hervani, Helms, & Sarkis, 2005). This study also indicates that the scope of green supply chain practices ranges from physical activities such as reuse, recycle, and

refurbish (Srivastava, 2007) to more technology-enabled information management activities. These technology-enabled activities have been identified in other studies as being relevant to healthcare supply chains (Swinehart & Smith, 2005; Storey, Emberson, Godsell, & Harrison, 2006) but this study further suggests that they are important factors in underpinning sustainability in the healthcare sector and ultimately improving OE in the sector.

3- HR main finding: *The most effective factor for organizational performance under employees is HR practices*

For HR practices, most factors were identified as of high importance: competency framework, employee productivity, capabilities assessments, job descriptions, performance appraisals, flexibility/advancements, fairness and equity, organizational culture, management support, research and education. One factor, innovation and creativity, was identified as of low importance. (Ullah & Yasmin, 1970), found that HR practices are more connected to internal customer satisfaction and organizational effectiveness. Therefore, within the context of the healthcare supply chain and OE, the abilities, performance, management personal attributes of personnel in the healthcare sector are of critical importance. Perhaps, more importantly, the fact that these factors were identified by practitioners from across the healthcare sector suggests that these HR factors are important not only to frontline medical personnel but to professionals across the sector. .

4- Patient main finding: *The most effective factor for organizational performance under patients is patient experience*

All factors under patients were identified by the respondents as of high importance: patient experience, cost effectiveness, patient rights, social sustainability, readmissions, mortality rate, communication, and medical errors. To support this, there is a positive association between patient experience, self-rated and measured health outcomes; adherence to recommended medication and clinical practices; preventive care (such as health-promoting

behavior, screening services, and immunization); and usage of resources (e.g., hospitalization, length of stay, and primary-care visits) (National, C.G.C.U, 2012). Patient Experience in Adult NHS Services: Improving the Experience of Care for People Using Adult NHS Services: Patient Experience in Generic Terms. Thus, there is evidence of positive associations between patient experience and technical measures of the quality of care and adverse events. It was more common to have positive associations between patient experience and patient safety and clinical effectiveness than to have no association (Doyle, Lennox, & Bell, 2013).

5- Government directives main finding: *The most effective factor for organizational performance under government direction is mystery shoppers' feedback.*

Under government directives, four factors were identified as having high importance: mystery shoppers' feedback, employment of Emirati, laws and regulations, and partnership with international management of contracted hospitals. As customer service initiatives for healthcare organizations become more crucial with new government initiatives, healthcare management and administration must explore tactics that will drive the patient experience and overall customer satisfaction. Mystery shopping has become one of the most accurate methods to assess customer service throughout many industries, including healthcare. With the use of mystery shopping and initial employee engagement surveys, companies can determine benchmark levels (Granatino, Verkamp, & Stephen Parker, 2013). The finding relating to the role of mystery shopper within the context of government directive is an important one as it introduces a new dimension to governmental oversight of hospitals. While studies such as (Adebanjo, Laosirihongthong, & Samaranayake, 2016) have suggested that meeting government targets is important, this study indicates that understanding the 'lived' experiences of patients through the perspective of mystery shoppers is, at least, equally as important as internal metrics and targets.

6- Branding main finding: *The most effective factor for organizational performance under branding is employer of choice.*

With respect to branding all factors were identified as being of high importance: employer of choice, interaction, engagement and participation, sustainable practices, patient choice, competitive advantage, accreditations and awards, *Estidama*, safety, and smoking. Management contracts with international hospitals. Because employer branding represents a firm's efforts to promote what makes it different and desirable as an employer both within and outside the organization, it has become crucial to healthcare to position itself as an employer of choice among its competitors as well as other industries. The variety of factors considered to be important under branding suggests that the branding of hospitals go beyond just patient outcomes and includes elements as diverse as sustainability, recognition, relationship building and perception.

6.1 Revisiting Systems Theory

The findings of this study reflect the importance of using system theory in exploring and assessing OE in the entire healthcare supply chain. The healthcare sector in unique in its nature and we can't apply simple system theory of input, process and output. It requires some customization by adding other factors in order to build a holistic system. For example, we used system theory by developing the main factors which are suppliers, process, patients, employees, government directives and branding. The first four factors are known as internal factors that are affecting OE which are suppliers, process, patients and employees. The other factors which are government directives and branding classified as external factors that are affecting OE. Therefore, this study suggests that while systems theory, in principle, may be applicable to healthcare supply chains, in practice, specifics of the healthcare industry need to be incorporated when applying enables such as SIPOC. The findings show 62 factors for OE

indicate applicability to all nodes as follows; under supplier (15), process (14), employees (14), patients (8), and branding (7). Moving to their level of importance in order from highest to lowest. The highest was under suppliers (12), employees (11), process (9), patients (8), branding (7) and government directives (4).

7. Conclusion

This study focuses on OE in the UAE healthcare chain and has implications for the industry at large. The study uses a survey-based explorative study and adopts the SIPOC structure of the healthcare chain, and uses a qualitative approach to measure the importance of OE factors. In addition to providing guidance and insight for the healthcare industry in different contexts, the results of this study reveal some internal and external factors identified for OE in UAE healthcare. This paper is amongst the first studies to examine organizational effectiveness in the UAE healthcare system and the first to adopt the theoretical perspective of system approach theory. The study has identified the contributory factors for improving healthcare effectiveness in the UAE. The novelty of this study can be considered as a significant contribution to the UAE healthcare sector, and its implications are essential for researchers, healthcare decision makers, healthcare professionals, suppliers, and patients to achieve complete healthcare chain effectiveness.

7.1 Research Implications

The study has both theoretical and managerial implications and these are described as follows;

Managerial implications. Stakeholders frequently are not clear about the metrics for effectiveness for their organization. Further, effectiveness is not a steady construct, and over time, stakeholders can change these implicit criteria for assessing effectiveness. This research will help decision-makers to review and amend the healthcare policies in the UAE for better patient satisfaction and quality. It will also help to work on the high-importance factors

identified by the experts in the field and to amend their spending. This study will help managers working in the healthcare sector to decide how to achieve effective performance, and in the future, further research can be done to sustain it. It is also essential for healthcare management to put the right resources in the right place for better outcomes throughout the healthcare system. Thus, they must take into account all factors listed that affect the effectiveness of suppliers, employees, patients, government, and branding. Management must consider the importance of accreditations and awards for patient choice and quality of care and services, HR practices for their staff, and all factors for patients, including waiting time, cost effectiveness, etc. It will help them also to revise their branding strategy to gain organizational effectiveness and compete with other healthcare providers in the region by offering high quality standards to become patients' choice.

This research will also help staff working in healthcare to develop their competencies to provide the best customer satisfaction and quality to their clients as well as to prevent medical errors or near-miss events.

Theoretical implications. This study will encourage researchers to investigate further in the area of organizational effectiveness in the healthcare supply chain. As mentioned earlier, no previous study has identified and measured the factors affecting the OE in the UAE healthcare chain. Authors like (Al Jaberi, Hussain, & Drake, 2017) have focused on the operation side in UAE health care sustainability, and authors like (Al Hammadi & Hussain, 2019) have studied sustainable organizational performance in the UAE healthcare sector, but no study has focused on the entire healthcare supply chain with respect to OE. The findings suggest that understanding of the factors and affect OE in the healthcare sector is still evolving particularly when a holistic view such as SIPOC is adopted. In addition, some authors have focused on management (Jabnoun, Khalifah, & Yusuf, 2003) and a few on motivation and job satisfaction in predicting work performance (Suliman & Al-Sabri, 2009). A few authors have

focused on leadership's impact on organizational performance (Al-Abrrow, 2014) and a few on service quality (Kak, Burkhalter, & Cooper, 2001). Therefore, there has been lack of focus on the entire healthcare chain. In the UAE healthcare sector, many studies have been done to measure quality, but very few have addressed organizational effectiveness (Jabnoun & Chaker, 2003). The novelty of this research is to introduce SIPOC model for OE in healthcare chain, adding two external factors which are branding and government directions, and finding the commonalities between the explored factors.

7.2 Limitations and Future Direction

As with all research endeavors, the study has some limitations. This paper aimed to identify and measure OE factors in the UAE healthcare chain, but it lacks prioritization of these factors. Also, it used a qualitative approach; future studies could focus on both qualitative and quantitative methods. Though the UAE healthcare system is unique in the region, it would be good if a comparative study were done with all private, public, and semi-governmental hospitals to identify which type is the best for patient choice in terms of safety and quality, and other methods can be used, such as analytical hierarchy approval (AHP) or another formal method to identify the factors affecting OE in the UAE healthcare chain, finding priorities on which is more effective.

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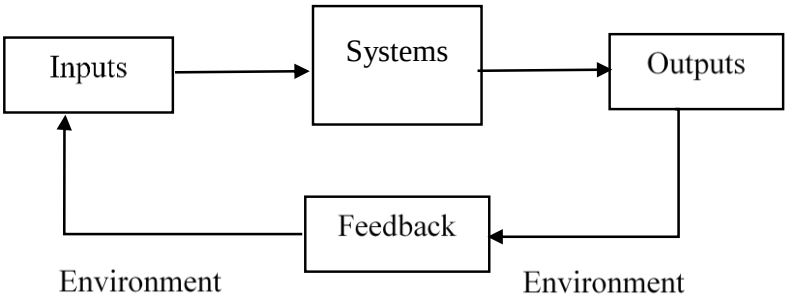

Figure 1. Summary of system theory (adapted from Gerald, 2018)

Table 1: *Organizational Effectiveness Models*

Model	Definition and focus	Advocates
Goal model	A traditional model where effectiveness is measured in terms of accomplishment of outcomes. Focuses exclusively on the ends, such as targets, objectives, etc.	(Etzioni, 1960)
Strategic-constituencies model	Has a broader scope by adding the expectations of the numerous powerful interest groups that gravitate around the organization.	(Connolly *et al*., 1980)
Competing-values theory	Views the assessment of OE as an exercise grounded in values that are juxtaposed to form different definitions of effectiveness (means-ends dilemma, internal/external focus, and control flexibility dilemma).	(Quinn & Rohrbaugh, 1983)
Ineffectiveness theory	Assumes that it is easier, more accurate, and more consensual to identify problems and faults (ineffectiveness) than criteria of competencies (effectiveness).	(Cameron, 1984)
System theory	Does not neglect the significance of the ends; highlights the means needed for the achievement of specific ends in terms of inputs, acquisition of resources, and processes.	(Yuchtman & Seashore, 1967)

Table 2: Hospital Distribution in UAE (USUAE, 2014)

Emirate	No. of hospitals	Public	Private	JCI accredited	Bed capacity	% Beds to population	Population served
Abu Dhabi	39	14	25	26	4,226	2.7/1500	2.5 million
Dubai	38	6	32	20	3,857	1/532	2.1 million
Sharjah	15	5	10	1	898	1/1679	1.5 million
Ras Al Khaimah	5	4	1	1	562	1/533	300,000
Ajman	3	1	2	1	189	1/1,269	240,000
Fujairah	3	2	1		358	1/558	200,000
Umm Al Quwain	1				165	1/606	100,000

*Note: "*JCI" refers to the Joint Commission International

Table 3 (Phase 1): Demographics

Comparison	Male	Female
Gender	20	21
Years of experience	5-20	5-20
Department	• 4 Supply chain • 5 Operations • 6 HR • 3 Patients affairs • 1 Excellence office • 1 Marketing	• 3 Supply chain • 3 Operations • 3 HR • 5 Patients affairs • 4 Public relations / Marketing/ Excellence office • 3 CEO, Government support office

Table 4 (Phase 2): *Demographics*

Comparison	Male	Female
Gender	11	20
Years of experience	5-30	5-30
Department	• 1 Supply chain • 4 Operations • 2 HR • 2 Patients affairs • 3 Excellence/ Marketing office • 2 CEO, Government support office	• 4 Supply chain • 2 Operations • 3 HR • 5 Patients affairs • 2 Public relations / Marketing/ Excellence office • 1 CEO, Government support office

Table 5: *Exploratory Factors for OE in the Health Care Sector in the UAE*

Suppliers	Process	Employees	Patients	Government Directives	Branding
AA. Operational/ business strategies	**BA.** Lean waste	**C.** HR practices	**D1**. Patients' experience	**G1.** Mystery shoppers' feedback	**H1.** Employer of choice
AA1. Six Sigma	**BA1.** Inventory	**C1.** Competency framework	**D2**. Cost effectiveness	**G2.** Employment of Emirati	**H2.** Interaction, engagement, and participation
AA2. Lean Enterprise	**BA2.** Transportation	**C2.** Employee productivity	**D3.** Patient rights	**G3.** Scholarships	**H3.** Sustainable practices
AA3. TQM					
AA4. Financial health	**BA3.** Over-processing	**C3.** Capabilities assessments	**D4**. Social sustainability	**G4.** Budget support	**H4.** Patient choice
AA5. Operational performance metrics	**BA4**. Waiting time	**C4.** Job descriptions	**D5.** Readmissions	**G5.** Laws and regulations	**H5**. Competitive advantage
AA6. Business process and practices	**BA5.** Overproduction	**C5.** Performance appraisals	**D6.** Mortality rate	**G6.** Partnership/ management contracts with international hospitals	**H6.** Accreditations/ awards
AA7. Enabling behaviors or cultural factors	**BA6.**Defects	**C6.** Innovation and creativity	**D7.** Communication		**H7.** *Estidama*, safety, smoking
AA8. Risk factors	**BA7.**Motion	**C7.** Flexibility/ advancement	**D8**. Medical errors		
AB. Certifications and accreditations	**BB.** Green environment	**C8.** Fairness and equity			
AB1. ISO	**BB1**. Reuse	**C9**.Organizational culture			
AB2. EHSMS	**BB2.**Recycle	**C10.** Management support			
AB3. JCIA	**BB3.** OSAHAD	**C11.** Research & education			
AB4. OSHAD	**BB4.** EHSMS certification				
AB5. SKEA	**BB5.** Information sharing and technology				
AB6. JAWDA					

Table 6: Importance of the Factors Identified for OE

Node	Sub	Low	Medium	High
Suppliers	**AA Operational/business strategies**			*
	AA1. Six Sigma		*	
	AA2. Lean enterprise	*		
	AA3. TQM	*		
	AA4. Financial health			*
	AA5 Operational performance metrics			*
	AA6. Business process and practices			*
	AA7. Enabling behaviors or cultural factors			*
	AA8. Risk factors			*
	AB Certifications and accreditations			*
	AB1. ISO			*
	AB2. EHSMS			*
	AB3. JCIA			*
	AB4. OSHAD			*
	AB5. SKEA		*	
	AB6. JAWDA			*
Process	**BA Lean waste**			*
	BA1. Inventory			*
	BA2. Transportation	*		
	BA3. Over-processing		*	
	BA4. Waiting time			*
	BA5. Overproduction	*		
	BA6. Defects			*
	BA7. Motion		*	
	BB Green environment			*
	BB1. Reuse			*
	BB2. Recycle			*
	BB3. OSAHAD			*
	BB4. EHSMS certification		*	
	BB5. Information sharing and technology			*
Employees	**C HR Practices**			*
	C1. Competency framework			*
	C2. Employee productivity			*
	C3. Capabilities assessments			*
	C4. Job descriptions			*
	C5. Performance appraisals			*
	C6. Innovation and creativity		*	
	C7. Flexibility/advancement			*
	C8. Fairness and equity			*
	C9. Organizational culture			*
	C10. Management support			*

	C11. Research and education		*
Patients	D1. Patient experience		*
	D2. Cost effectiveness		*
	D3. Patient rights		*
	D4. Social sustainability		*
	D5. Readmissions		*
	D6. Mortality rate		*
	D7. Communication		*
	D8. Medical errors		*
Government Directives	G1. Mystery shoppers' feedback		*
	G2. Employment of Emirati		*
	G3. Scholarships	*	
	G4. Budget support	*	
	G5. Laws and regulations		*
	G6. Partnership/management contracts with international hospitals		*
Branding	H1. Employer of choice		*
	H2. Interaction, engagement, and participation		*
	H3. Sustainable practices		*
	H4. Patient choice		*
	H5. Competitive advantage		*
	H6. Accreditations/awards		*
	H7. *Estidama*, safety, smoking		*

Table 7: Commonalities of OE Factors

Stakeholder group	Common factor/s	Group
Suppliers- process	Patient safety	F
	Operational excellence	
	Cost effectiveness	
	Waiting time	
	Business process and mapping	
Suppliers- employees	Innovation and creativity	G
	Management support	
	Learning and improvements	
	Research and education	
Suppliers- patients	Cost effectiveness	H
Customers- government directives	Laws and regulations	I
Suppliers- branding	Sustainable practices	J
	Competitive advantage	
	Accreditations and awards	
Process- employees	Overtime	L
	Resource management	
Process- patients	Patient experience	M
	Patient access	
	Waiting time	
	Patient assessments	
Process- government directives	Budget support	N
	Volume of patients	
	Length of stay	

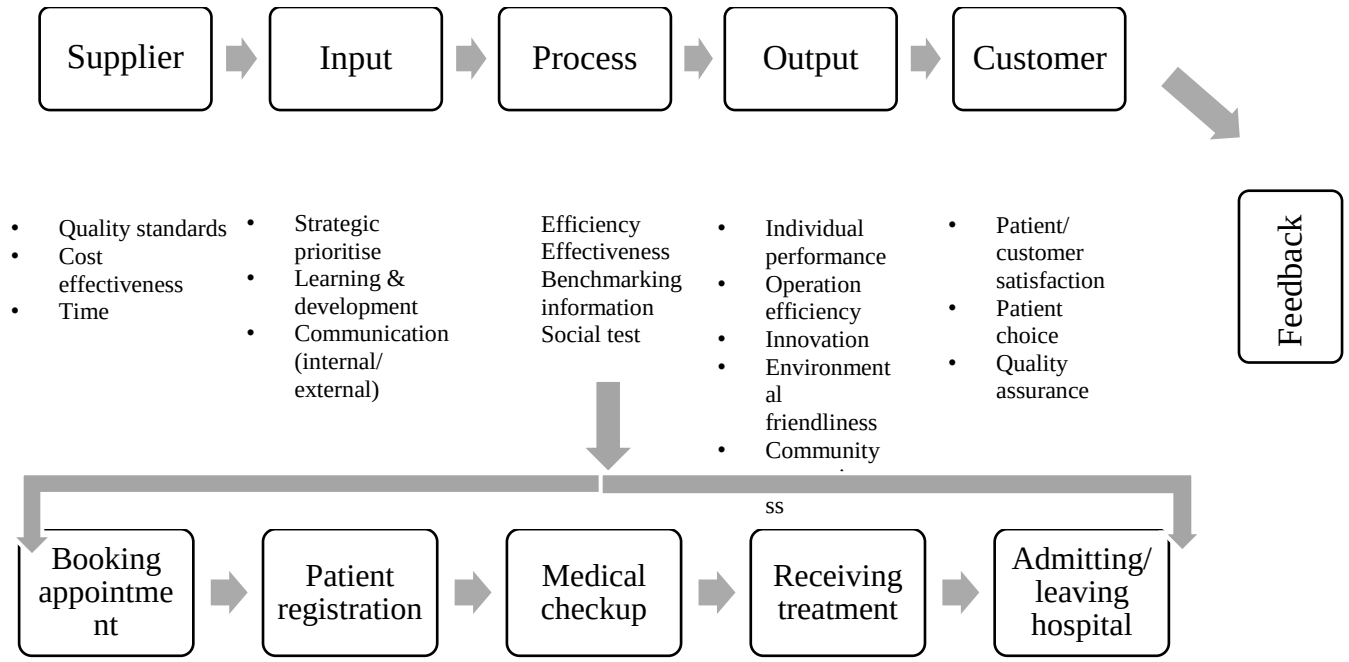

Figure 2. SIPOC framework for a health care supply chain