sustainability

MDPI

Article

Managers' Competences in Private Hospitals for Investment Decisions during the COVID-19 Pandemic

Isabel Marques [1,*], Zélia Serrasqueiro [1] and Fernanda Nogueira [2]

[1] Department of Management and Economics, University of Beira Interior, 6200-209 Covilhã, Portugal; zelia@ubi.pt
[2] ISCSP, University of Lisbon, 1649-004 Lisbon, Portugal; fnogueira@iscsp.ulisboa.pt
* Correspondence: isabel.marques@ubi.pt

Abstract: The COVID-19 pandemic has posed an unprecedented challenge for health systems worldwide. The increased demand for investment in hospitals has become one of the greatest financial vulnerabilities, and in this context, the manager's involvement in decision-making is associated with better analysis in order to achieve better results. This article aims to define a model to outline the manager profile in private hospitals, as well as the process and the relationship with investment decision-making, so as to guide future work to improve institutions' performance and ensure the sustainability of patient care processes and the use of resources. Semi-structured interviews were held with an administrative (or financial) director in Brazil, Canada and Portugal and analyzed by the conventional content analysis method and coded, using NVivo 11, identifying the main topics. A model for investment decision-making is proposed to improve resource allocation and performance. The results indicate, for multidisciplinary training, where managers contribute to an efficient use of resources and contribute to the maintenance of quality of care, including about investment and financing of hospitals, where performance analysis reflects on decision-making.

Keywords: COVID-19; hospitals; investment; performance; decision-making

Citation: Marques, I.; Serrasqueiro, Z.; Nogueira, F. Managers' Competences in Private Hospitals for Investment Decisions during the COVID-19 Pandemic. *Sustainability* **2021**, *13*, 1757. https://doi.org/10.3390/su13041757

Academic Editor: Justo García Sanz-Calcedo
Received: 6 January 2021
Accepted: 3 February 2021
Published: 6 February 2021

1. Introduction

Hospital investment planning, analysis and decisions require the manager's involvement. In analyzing investment, according to De Marco et al. [1], types of risk are designated to influence the percentage participation of investment—in this case, the financial risk associated with stability. The initial level of investment is the main way to reduce the weight of project risks in private hospitals [2]. The definition of risk found here is observed in different contexts, such as risks that affect institutions' financial performance [3] and the volatility of companies' stock returns [4], as well as risks associated with organizational decision-making on investment and agency costs due to withholding information [5].

The World Health Organization (WHO) declared the new coronavirus 2019 (COVID-19) an infectious disease caused by SARS-CoV-2, as a pandemic in March 2020 [6]. It becomes necessary to take decisive measures to lessen the impact of this pandemic that affects many hospital investments in structure, acquisition of equipment, individual protection supplies and human resources, among others, for better management of performance and a rapid response to the community faced with the pandemic. The manager's role continues to grow in importance as the care health sector evolves and focuses more on managing the needs of the population [7].

A great majority of national health systems present serious financing problems, largely due to the change in the demographic paradigm and the introduction of new technology, which results in steadily increasing expenditure. According to Siskou et al. [8], increased private expenditure on health and development of the sector are associated with the increased demand for services and the shortage of resources and public funding, leading the private sector to fill the gap through increased investment [9,10], but various studies

indicate difficulties for state hospital managers in decision-making on investment, due to a wide range of budget restrictions [11,12].

The efficiency scores of private hospitals, many of them specialized, are better than those of many state hospitals, due to the efficient use of resources, infrastructure and good financing choices for new investments [13,14], but as far as we know, few studies have focused on investment decisions and performance analysis in decision-making in private hospitals.

Organizational performance can be achieved with fluid, efficient, effective and technological processes. It is also related to the workforce [15] and to the managers' competencies to achieve efficient and effective management of the work process [16], allowing a sustainable manutention of the health institutions.

This study is an exploratory study that sought to develop a model to outline the decision processes, competencies and role of managers of private hospitals in Brazil, Canada and Portugal, through the qualitative analysis of interviews to identify the specific factors that influence the investment decision-making. For Gandhi and Sharma [14], the increased demand for medical and hospital care, and for better health services with a better cost–benefit relation, promotes growth in the number of private hospitals, partly due to how they are managed in terms of resource use to create income and the speed of service, without submitting the patient to long waiting lists.

Regarding the participation of the private sector and the relationship with the public sector, private institutions can participate in the Brazilian Single Health System (SHS), in a complementary way, following its guidelines. Fiscal austerity policies have been used in response to economic crises and fiscal deficits in developed and developing countries. Although they vary in terms of their content, intensity and implementation, these models recommend reducing public spending and social investments, shrinking public service and replacing the private sector instead of the State to provide certain services linked to social policies [17]. In Portugal, patients covered by private voluntary health insurance or health subsystems (such as civil servants and workers in some companies) have the option of using a network of contracted suppliers, depending on the health insurance plan or the health subsystem. Moreover, this is the main difference between the use of private contracted providers and the use of the National Health System (NHS). If a patient covered by voluntary private health insurance is referred for an outpatient consultation or surgery from a basic NHS health unit or a private provider, he or she has the option to choose any private contracted provider and quickly schedule the appointment or surgery [18]. Waiting time is not a problem in private hospitals, as in NHS hospitals, there may be long waiting times for outpatient visits, depending on the specialty. The Canadian healthcare system is unique in the world in that it discourages basic insurance coverage (medical and hospital) from private insurance companies, allowing supplemental insurance only for requirements such as private hospital rooms [19]. This ban restricts the emergence of a parallel private medical or hospital sector and puts pressure on provinces to meet the expectations of middle-class Canadians.

The originality of this study lies in the fact that, to our knowledge, few studies have addressed the relationship between the investment decision process and the skills of managers in private hospitals. After this introduction, this paper is structured as follows: Section 2 presents the methodology approach, and Section 3 describes the main research results. In Section 4, the discussion of the results is presented, and in Section 5, the practical implications, limitations, and future research perspectives are presented.

2. Materials and Methods

For the study, the open qualitative interview was adopted to give insights into managers' real experience. The semi-structured interview design joined the narratives, giving managers the chance to speak about their own experiences or concerns and inducing a definition of their managerial involvement.

An administrative director was interviewed in Brazil and Portugal, countries with national health systems in which public and private services coexist, being semi-decentralized and inspired by the British model. The responses to the interviews conducted with the directors from Brazil and Portugal were compared with the responses of the financial director of the hospital in Canada, a country with universal public health insurance, completely decentralized and different from European national health systems and from the American and Brazilian models. The interviews were conducted in June 2020, in the middle of the pandemic caused by COVID-19, which made access to hospital managers more difficult. The hospitals involved in the study were selected according to the classification criteria of the National Register of Health Establishments of the Unified Health System and DataSUS [20], as presented in Figure 1. Use of the Brazilian classification allows comparison between the three countries, due to its simpler format, which is applicable and able to identify any hospital unit regarding characterization (financial objective, area of care, size and ownership regime). Therefore, the research is limited to private hospitals, which are medium-sized or large and dealing with patients who need treatment of high or medium complexity (Table 1). The hospitals were chosen partly because of their relatively good perceived performance and functioning as regards service provision.

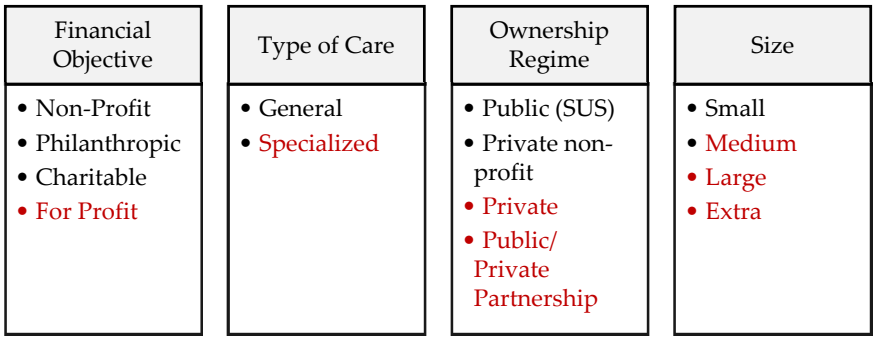

Figure 1. Classification of hospitals. Source—adapted from DataSUS (2019). SUS, Unified Health System.

Table 1. Hospitals' characteristics for data collection. Source—adapted from the National Register of Health Establishments (CNES, 2019) of the Unified Health System (SUS), Ministry of Health (MS), Brazil.

Administration (1)	Hospital Size (2)		Hospital Complexity (3)	
Private	Medium	50 to 149 beds	Medium	Intensive therapy, surgery and anesthetics, and mother and child care
	Large	150 or more beds	High	The characteristics of medium complexity plus radiotherapy, chemotherapy and chronic renal Disease

The interview script was elaborated from the literature review and piloted with a respondent in each country, so that linguistic adaptations could provide greater clarity and ease of understanding. The interviews were held in the interviewee's mother tongue (English or Portuguese), either face-to-face or via Skype, and lasted from 60 to 90 min, with an average duration of 75 min. These were transcribed completely, and respondents' identities were hidden prior to data analysis.

The data were analyzed inductively, using a conventional content analysis method [21]. The subset of interview transcripts was studied, and an "open code" book was developed on NVivo 11, searching for common points in the interviews that involved placing data extracts in a procedure of thematic grouping [22]. Aspects such as search for patterns, recursion, flexibility, internal homogeneity in the categories/themes and external heterogeneity between the categories/themes are fundamental characteristics of qualitative analyses. Thematic analysis was of the reflective type, where the coding is fluid and the main point is not to achieve accuracy, but immersion and deep engagement with the data [23]. After the interviews, the data were transcribed, reviewed and then coded into potential themes,

generating a thematic map of the analysis. Subsequently, the details of each theme were refined, and a concise, coherent and logical description was issued. The names of the hospital groups were coded, and the themes refined in specific matters, added to the code book and assessed by consensus, in this way contemplating the organization of the findings.

3. Results

3.1. The National Health Systems Targeted by the Study

In Brazil, Single Health System (SHS) is organized in regional, hierarchical networks and operates throughout the country with single direction in each sphere of government [24]. As for the management model, the SHS is based on the principle of universality (access ensured to the whole population), equity (identical care) and completeness (health actions dealing with all individuals' needs), counting on the action of various public and private organizations [25]. It has incomplete and participated decentralized management, with a model of financing shared between the three federal spheres of government (42% Union, 26% State and 31% Municipal), defined in the public budget and originating in tax collected [26].

The Portuguese National Health System (NHS) has administrative and financial autonomy, and is structured as a decentralized organization, including organs of a central, regional and local nature. It has incomplete decentralized management, and on behalf of the State, has the responsibility of effectively safeguarding individual and collective health. In Portugal, health is financed mostly through the annual State budget, with around 30% of the healthcare provided being financed by private entities and directly by citizens. Private insurance is complementary to the NHS.

Five basic principles govern the organization and financing of the healthcare system in Canada: (i) public administration of the province's insurance plan, on a non-profit basis; (ii) coverage of all necessary hospitalization services, including remedies, tests and diagnoses, as well as outpatient treatment and nursing services at home; (iii) universality of treatment; (iv) portability of benefits; and (v) accessibility, which is the provision of all medical resources, without imposing any financial barrier [27]. Medical, hospital and outpatient insurance plans are administered by the provinces, but according to legal conditions established by the federal government. Private health insurance cannot compete in the range of services available on the public network, but it can compete in the market for supplementary benefits for private rooms, expenses with medications, cosmetic surgery, home care, dental treatments and optometric services.

3.2. Hospital Characteristics, Manager Profile and Competences

The training of health managers reflects the concern with the leadership capacity [28] that supports the organizational strategy [29]. Clarity of objectives [30], motivational factors [31], communication [25], decentralized decision-making [14], the establishment of bonds relational [32], transformational leadership [33] and innovation [34] are fundamental for the training of health managers [35].

The Brazilian hospital studied is situated in Rio Grande do Norte, in the northeast region of Brazil. It was inaugurated 20 years ago and is considered large (over 150 beds). It specializes in cardiology and kidney transplants characterized as being of high complexity. The hospital's performance is assessed every six months, through a set of indicators that are comparable among private hospitals in Brazil, aiming for strategic resource management. The hospital has a board of administration that manages the institution, formed of an administrator and three directors, with the latter all being doctors: administrative, financial and medical, all aged 60 or over. The hierarchy in charge of the hospital is established at the top of the organizational chart, in the form of shared power with the board of directors. The manager's role becomes relevant as the healthcare sector focuses on management of the population and relations with stakeholders [7] and can help in the response capacity and sustainability of health services [10].

The Portuguese hospital studied here is situated in Lisbon and is formed of four buildings constructed between 1972 and 1998. It has 180 beds and is characterized as being large and of high complexity, as it has an oncologic department, with radiotherapy and chemotherapy. With 500 permanent employees and more than 700 others providing services, among them doctors, the hospital is one of a number of establishments belonging to a North American group, under the management of a clinical analyst. Regarding performance analysis, objectives are defined annually for the following year; business meetings are held monthly (Monthly Business Review—MBR), where results are checked and deviations are analyzed, to recover or invest. The main moments of investment decision are the annual and quarterly plans, which are monitored by the directors, to confirm if the projections are being fulfilled or if there is a need for adjustments in the allocation of values between the areas.

In Canada, the hospital chosen is located in Ontario. The institution was inaugurated 97 years ago and is highly complex; it specializes in cancer treatment, emergency medicine and geriatrics, and it is considered large, with 442 beds. It has Exemplary Standing from Accreditation Canada, with assessment every two years. The interviewee is male, economist, between 45 and 59 years old, and is executive vice-president of finances and the financial director. He joined the hospital in 2019, to orient the organization's financial sustainability and provide financial and operational leadership regarding renewal of the premises, which includes doubling the size of the emergency department and opening up new operating theatres. As for assessment of the hospital's performance, he points out that indicators are implemented at all levels of the organization, from the front-line team to the board of administration. Data are monitored and tracked, using the Balanced Scorecard.

The interviewees were asked about training, relevant and desirable responsibilities and competencies for the professional involved in hospital management (Table 2).

Table 2. Training, responsibilities and skills of the hospital manager (source: authors' elaboration).

Origin	Quotation from the Interview
	Training
G BR	"Directors should have a minimum of knowledge about managing people, resources, computing, clinical and administrative processes, but clinical knowledge is imperative; even if the organization aims for profit, in our view, quality of service for the patient predominates".
G PT	"I believe they must be competent people with the capacity to integrate all teams and competences regarding everyday decisions that have to be made".
G CAN	"Management involves different competences. In the field of health, the range should be even greater due to the complexity of these institutions. Knowledge of strategies, change management, innovation, sustainability are fundamental examples of what a hospital manager should have".
	Responsibilities and skills
G BR	"Knowledge about financial administration, resource management; the ability to recognize and manage the quality of services the organization provides to the community; willingness to learn and change; leadership, pro-activeness and empathy".
G PT	"Administrative, financial and human resources management is important".
G CAN	"Competence in managing information systems; knowledge of the target population regarding socio-demographic and behavioral factors; knowledge of financial administration, resource management".

G BR = Director in Brazil; G PT = Director in Portugal; G CAN = Director in Canada.

3.3. Governance in Health

Extended to the health sector, the literature on the topic of governance is diversified and covers corporate, integrated, hospital and clinical governance. The expression "Corporate Governance" is conceptualized as a system by which a firm's shareholders "govern", i.e., are in charge of their firm [36]. In this context, governance in health emerges as a new paradigm to solve health systems' problems and has an increasingly influential role in developing health systems [15,31,37].

Integrated governance is explained as a set of systems and processes through which health organizations orient, direct and check their functions, so as to achieve organizational objectives, safety and service quality [38,39]. As for hospital governance, this is defined by Fidler [40] as the use of institutions, rules and formal and informal processes by states, intergovernmental institutions and non-state actors, to deal effectively with health challenges that require cross-border collective action. Clinical governance was introduced for the first time in 1997 in the United Kingdom's National Health Service (NHS), as a strategy to modernize and improve quality in the health system [41], bringing clinical decisions to the managerial and organizational context [42]. Table 3 reflects the understanding of the hospital managers studied, concerning governance.

Table 3. Managers' qualitative quotations about the perception of governance (source: authors' elaboration).

Origin	Quotation from the Interview
	Perception of corporate, hospital, clinical and integrated governance.
G BR	"Corporate governance and hospital governance have the same format; both present similar ways, for top administration, to manage relations with those involved in processes. Integrated (clinical and corporate) management aims to minimize the risks involving patients, as well as risks associated with organizational decision-making on investments".
G PT	"Corporate governance reflects the institutional arrangement between shareholders and administrators while hospital governance covers resource management. When these are in harmony, strategies tend to be aligned, contributing to achieving the organization's objectives".
G CAN	"Corporate management concerns the shareholders, their relations with stakeholders and how processes are managed. Clinical governance refers to how patient treatment is carried out by the multi-disciplinary team. I believe that hospital governance is in fact a mediation between administrative and clinical processes, aiming to align them to obtain better institutional performance".
	Is there a board of directors that decides on questions of investment, financing and other matters? How is this board formed? Does nursing management belong to it?
G BR	"Yes, the Board is formed of shareholder representatives (3): medical, administrative and financial directors (all doctors) and an administrator, but Nursing management is not part of it. We recommend doctors' participation in the Board of Directors as we judge it important to control costs; a lot of wastage or badly used resources can originate in the doctor's pen".
G PT	"We have Clinical Direction, a Nursing Director, Pharmaceutical Direction and Technical Medical Coordinators from all areas. Every week we have a meeting with each manager, and every month, we have a meeting with all the Coordinators and management team".
G CAN	"There is a Board of Administration and an Executive Team. The Board is formed of the president of the Board of Administration, vice-president, treasurer and secretary. As for management of nursing services, the director belongs to the Board and her services cover academic professional practice, clinical operations, quality, patient safety, corporate risk management, information technology, sustainability and operational readiness, as well as strategic initiatives for clinical, administrative and academic change".
	Communication and spread of information throughout the institution. How is this done?
G BR	"Through monthly meetings with all managers, a WhatsApp group and e-mail".
G PT	"Through specific meetings, with the different work groups".
G CAN	"There are different weekly meetings, in various areas of the whole hospital complex. Then, every month, the main resolutions, initiatives are passed to the Board of Administration by the executive leaders".
	How is the institution's capital formed? Open or closed capital (company status)?
G BR	"Closed. A company".
G PT	"100% of the capital belongs to the North-American group".
G CAN	"This is a Foundation with the founders' own capital and is financed, mainly, by the province of Ontario, according to budgetary arrangements established by both".

G BR = Director in Brazil; G PT = Director in Portugal; G CAN = Director in Canada.

3.4. Hospital Financing and Investment

Decision-making on hospital investment is influenced by the characteristics of health systems, namely in terms of health insurance, financing methods and reimbursement [43,44]. Hospitals understand that an important way to handle competition lies in attracting

patients by (i) implementing new services that can deal with a wide range of patients [45,46]; (ii) investing in improved premises so that, allied with good quality of care, this can convey service organization [47]; (iii) providing modern equipment to help in diagnosis and therapy [48]; and (iv) investing in Innovation and Development (I&D), to allow increasingly good use of scarce resources, thus improving institutions' performance [49,50].

These decisions are extremely complex and can be influenced by agency costs [51], asymmetric information [51,52], product/input interactions [53] and considerations of corporate control [43]. Capital structure is also clearly influenced by historical indices and projected financial performance [54]. For privately owned hospitals, the use of leverage has the potential to increase the return for shareholders, as long as the return on assets is greater than the costs of debt. Table 4 contains quotations from the managers interviewed on hospital financing and investment.

Table 4. Managers' qualitative quotations concerning investment decisions (source: authors' elaboration).

Origin	Quotation from the Interview
How are investment opportunities identified? What investments have been made in the last 5 years.	
G BR	"They are identified through market demand and technological development in the field of health. Opportunities to improve internal processes and growing demands for health services are always observed. **Extending the structure**: increased number of beds (35 more); **acquisition** of a new tomograph (due to increased patient demand); in terms of **I&D**, specific hospital costing software was acquired. A **new project** is being developed (unannounced due to being strategic)".
G PT	"In the analyses we do, we assess by sector what we need to continue growing, always assessing cost-benefit. We keep 5% of the amount destined to investment for "diverse", as a safety margin. Briefly, investments above 15 thousand euros must have a Business Plan, above 300 thousand euros besides the Group's approval, it must be approved by the American group. The only condition is that the amount approved must not be exceeded".
G CAN	"In-depth studies are elaborated, by different departments, to analyze the needs of the general population. **Physical structure**: modernization of the emergency department, extending the operating theatres, Intensive Care Units, main out-patient areas, and a new hospitalization unit. **Equipment**: new emergency vehicles, increased reserve of surgical equipment, integrated equipment to monitor patients in intensive care. **I&D**: service innovation; advanced training of Human Resources".
What are the main limitations to investment and what sources (types of financing) are used when deciding on investment for the hospital's projects? In the case of using External Capital as the source of finance, how is the risk of failing to meet the hospital's commitment to creditors dealt with?	
G BR	"The main limitation is the low net profit margin. We normally prefer to use equity when we decide to invest, and as a last resort, we turn to banks and others. When it is necessary to use outside capital, we look for medium-term financing so that new investment can generate income and in that way help to cover the funding".
G PT	"The only condition we have concerning investment is that the amount approved must not be exceeded. All the financing source comes from the group in the USA. In our investment analysis, we check the various alternatives and scenarios. Financing choices are adapted looking to optimize the investments we make as much as possible".
G CAN	"The capacity to decide which investments can produce the greatest financial results and which, at the same time, can satisfy the needs of the target population. The hospital is exposed to a variety of financial risks, including credit risk, liquidity risk and market risk, and so it has adopted an integrated risk management structure. Credit risk is attributed principally to payments it is owed".
To determine the amount of capital necessary for new investment, does the institution contrast short-term financial needs with medium and long-term needs? Does the institution have and follow strategic planning (for 3, 5 years)? Is an estimate made of the time for return on investments? Is the economic-financial viability of the investment analyzed?	
G BR	"According to the investment, medium-term financial needs are contrasted. The country's economic instability and the group's focus on equity as the source of finance does not allow us long-term debt". "Yes; five-year planning, seeking to meet targets to achieve objectives".
G PT	"There are meetings between all units of the Group to decide where we should invest. For example, in a certain year we decide to invest in the Diagnosis and Therapy Support Service, we identify all the equipment that has to be acquired for the Group, and in that way we have more negotiating power. Depending on the investment project, our strategic planning covers somewhere between 10 and 20 years".
G CAN	"It contrasts; however, there is the relation between the size of the investment and the availability of capital. Depending on this factor, short or medium and long-term investment is decided on, always analyzing the interest rates of bank financing. The institution's planning is always long-term".

G BR = Director in Brazil; G PT = Director in Portugal; G CAN = Director in Canada.

3.5. Performance Analyses and Investment Decision-Making

The strategic administration of hospital resources involves different aspects, such as the creation and sharing of knowledge [55], which can lower the cost of medicine [56], increase customer satisfaction [29], improve service cycle times [57], reduce the demands on professionals [58] and generate services of excellence [59]. Today, the use of indicators in integrated information systems has improved hospitals' financial results, promoting transparency in actions [60,61].

In addressing hospital performance at a time of pandemic, the rapid spread of the disease caught the scientific community unawares. Enforced quarantine has disrupted all commercial activity, with a considerable effect on various important environmental parameters directly related to human health [62,63]. Table 5 outlines the types of performance analyses made by the hospitals studied here, as well as guidelines for risk assessment of new investments.

Table 5. Managers' qualitative quotations regarding performance analyses for investment decision-making (source: authors' elaboration).

Origin	Quotation from the Interview
	Types of analysis made.
G BR	"BSC—Balanced Scorecard (tool to measure performance); Lean Six Sigma (practice of product and process improvement); ERM (Enterprise Risk Management), PDCA (Plan–Do–Check–Act) Cycle for internal processes".
G PT	"The Group uses BSC and the Lean Six Sigma mainly to obtain an analysis and process efficiency. Hospital management by the Group is relatively recent and here we are still molding the processes using the experience acquired by the group".
G CAN	"BSC—Balanced Scorecard (tool to measure performance); Lean Six Sigma (practice of product and process improvement); ERM (Enterprise Risk Management); GRC (Governance, Risk and Compliance), PDCA (Plan–Do–Check–Act) Cycle".
	Use of a costing method to determine the results of service to patients.
G BR	"Yes, software has been implemented for activity-based costing (ABC method). This method provides analyses of clinical or surgical hospitalization costs, as well as information about the costs of procedures by medical specialty or surgical team, which makes it easier to monitor where resources are being consumed".
G PT	"We have tools that let us know the costs. In the Clinic, we use data that come from analytical accounting. Surgery costs are analyzed at the level of the teams carrying out the operation; we don't yet have the costs of procedures specifically, but there is monitoring of the use of inputs by medical team, both as regards exams and the operating theatre".
G CAN	"Even if a product or information does not have a price, it certainly has a cost and this is determined in all areas, by different methods; there is a department dealing with these activities".
	How are the risks of new investments assessed?
G BR	"We always assess the market demand, the sustainability of the chain and competitors' quality/efficiency".
G PT	"We use the Enterprise Risk Management (ERM) method".
G CAN	"In relation to future situations, nobody can be certain that a given event will occur. As the project's forecast cash-flow is a future event, it may be of the amount foreseen or any other. We currently use two methods: sensitivity analysis and scenario creation".

G BR = Director in Brazil; G PT = Director in Portugal; G CAN = Director in Canada.

Forecasting the spread of the coronavirus disease worldwide and consequently equipping hospital premises with the necessary technology is a challenge. The availability of essential medical equipment to support patients infected by COVID-19 is globally limited [63,64], and in this unprecedented situation, scientists and medical and technological specialists work together to reassess risk analysis in managing medical equipment, premises and medical services aiming to improve medical care, maintaining a high standard of safety for patients [65,66].

The directors of the hospitals studied assess hospital performance in relation to the needs of users with COVID-19, as shown in Table 6.

Table 6. Managers' qualitative quotations regarding hospitals' performance analysis when faced with COVID-19 (source: authors' elaboration).

Origin	Quotation from the Interview
	Statements made:
G BR	"Staff reduction, closure of services, financial loss of about 22% per month, drastic reduction in non-emergency treatment, increased expenditure on disposable supplies and individual protection equipment, emergency investment in intensive therapy equipment".
G PT	"We had to close the hospital for a few weeks; maternity was re-allocated to another hospital in the Group, a lot of people lost their jobs, the operating theatres were almost idle".
G CAN	"Here, nothing was different from in other countries... even with the population's cooperation in terms of prevention, we had to make major investment in equipment due to the high demand for ventilators. It was also necessary to close various services that, during the pandemic, are not being used. There was certainly a great loss of income".

G BR = Director in Brazil; G PT = Director in Portugal; G CAN = Director in Canada.

4. Discussion

The managers' perception of the concepts of governance is consistent, demonstrating a broad understanding, by mentioning the inter-relation between the clinical and administrative aspects of hospital management, which complement each other. As for the guidelines from the direction, cost control is seen as essential to maintain the profitability of the hospital, patient satisfaction and the medical team's participation [67]. The small size of the board, in the case of Brazil, also implies that essential decisions on administrative and clinical matters can be made rapidly. The fact that management of nursing services is not part of the board shows the control and decision-making power of the members, mostly doctors, owners and founders of the hospital. In Canada, the composition of the board seems more heterogeneous. The management of the hospital, formed by the board of directors and the executive team, with the participation of the director of the nursing services, endows the institution with the knowledge and information of the main internal specialists of the hospital; consequently, the knowledge and experience of the professionals give the board competence in monitoring and conducting management more effectively [68]. In Portugal, the hierarchy is more complex, as the group of hospitals, including the one studied, has autonomy in managing resources, and these come from the North American shareholder group, which limits the amount of investment for each hospital.

An important question has been raised in recent decades, regarding hospital managers' training, about whether or not they should be doctors. For Chanes [28], the administrator's generalist training can affect understanding of the applicability of administration concepts to this segment (health), causing delays in the hospital's decision-making. Then again, having an excellent doctor in charge of a hospital is no guarantee of the best management, as understanding the factors affecting adoption of the best management practices is fundamental to improving hospital results. Besides basic training, relevant aspects such as capacities and skills can be developed [69,70], and many leaders who are doctors can have management skills, qualities or approaches that have a positive effect on hospital quality and the value of the care provided [71,72].

Concerning investment needs, the financial director in Canada and the Portuguese administrator are concerned about the fine detail of the financial risks, compared to the administrative director of the hospital in Brazil. In the hospitals in Canada and Portugal, there is concern not only about the type of investment, but also about the credit, liquidity and market risks, leading the directors to adopt an integrated risk management structure. All three hospitals have medium- or long-term strategic planning, but in Brazil, the economic and political instability means medium- and short-term financing. The hospitals studied use indicators, such as BSC (Balanced Scorecard), Lean Six Sigma, ERM (Enterprise Risk Management) and others, to accompany and analyze the evolution of their processes before deciding on investments.

In times of pandemic, the calamities caused are different from others, due to their specific characteristics: their long-term nature and growing spread, which, when out of

control, both bring about serious interruptions in supply chains and communities, with important losses being registered. Coronavirus 2019 (COVID-19) is one of these episodes and is causing major disruption worldwide and in many supply chains, principally in the health supply chain [73]. Hospitals' daily processes were interrupted, including non-emergency surgery, outpatient treatment and restricted emergency services, affecting the daily workflow and having a potentially major economic impact on some medical specializations, and consequently on hospitals' financial performance [74]. Generally monitored indicators underwent a major change due to COVID-19, in regard to such things as bed allocation, length of stay, hospital occupancy rate and number of operations, and periods of time when some important limits were exceeded [75]. The health insurance sector has responded to COVID-19 by paying for tests and treatment, but many people are losing their jobs and potentially no longer have health insurance coverage [67,76,77]. Actions, for example, to screen public–private partnerships (PPP) need to be planned as a means of economic recovery [78].

Based on the qualitative analyses made, a model to integrate the involvement and competences of managers in private hospitals in Brazil, Canada and Portugal is proposed, to identify the specific factors influencing investment decision-making, as shown in Figure 2.

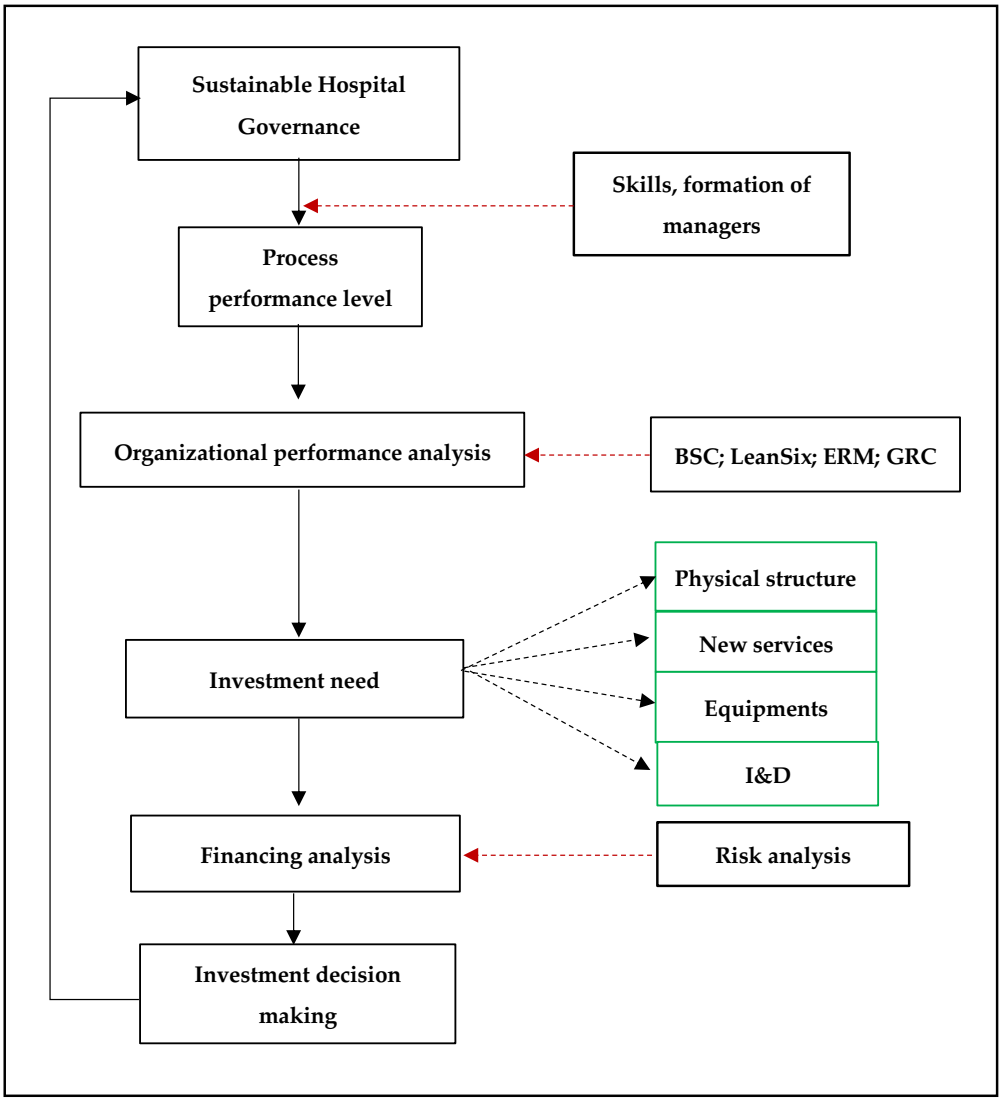

Figure 2. Model of integration between hospital managers and performance analysis for investment decision-making (source: authors' elaboration).

5. Conclusions

This research aims to fill a relevant gap in the literature concerning the importance of managers' competences, in private hospitals, in investment decisions and establishing a relation with hospital performance during the COVID-19 pandemic. When raising the question of who should manage a hospital, a doctor or a specialist in management, the best scenario is found to be one in which hospital management can count on experienced clinicians with vision and management skills, as well as a board of directors containing a multi-disciplinary technical team that intervenes coherently, even in matters of hospital investment and financing. In this context, performance analysis occupies center stage by supplying resources from different assessment methods for decision-making, transparency and justifying decisions to stakeholders. Different forms of investment in the hospital sector correspond to technology and innovation, changes in process management, extending infrastructure and installing new services and acquiring new equipment, among others, showing that investment can lead to innovation, improved efficiency and cost reduction.

The current coronavirus 2019 pandemic has modified global medical treatment as never before. Hospitals were restructured to improve the treatment of patients with COVID-19, adopting preventive strategies so as not to spread the infection between health professionals and patients with other illnesses. Consequently, the concept of urgency and indications for non-emergency treatment were greatly reformulated, resulting in a major rearrangement of hospital and outpatient care. High health costs, the lack of protective equipment and medical capacity, beds in intensive care units and ventilators expose weaknesses in healthcare provision and jeopardize financial performance and the capacity for hospital investment.

The Brazilian private hospital is considered to be large and specialized in cardiology, and its management is centered on a medical director. Investment opportunities are identified according to market demands and technological development, using tools such as BSC, LeanSix Sigma, ERM and PDCA. With the pandemic caused by the Coronavirus, hospital performance was affected with the reduction of employees, termination of services, financial loss, reduction in non-emergency treatment and high investment in the purchase of intensive-care equipment.

In Portugal, the study target hospital (large) is highly complex and is responsible for the management of a director with training in clinical analysis. Cost–benefit analyzes are considered important in making investment decisions and follow the business plan instituted at the institution, with the help of BSC and Lean Six Sigma. The hospital was directly affected by the pandemic by having to close services and reduce the number of employees.

In Canada, management is centered on a financial director, an economist, and the hospital is considered to be highly complex and large. The investment decision-making process takes into account and analyzes issued by different departments of the hospital, using BSC, Lean Six Sigma, ERM, GRC and PDCA. Like hospitals in other countries, the Canadian hospital makes major investments in equipment, and it had the suspension of several services during the pandemic, as well as a great loss of revenue.

This study was carried out in three important hospitals in Brazil, Canada and Portugal, and we recognize the limitation in the number of interviews carried out, being unable to generalize the results obtained here. However, this study allows us to outline a model for future quantitative research, involving representative samples of private hospitals in these three and more countries, where it is expected to infer, with certainty, the deepening of our knowledge on the subject of management, performance, decision-making and investment in private hospitals.

True sustainability will only occur when it is assessed as part of the daily lives of individuals and cultures around the world. The balanced path towards the sustainability of patient care processes that involves good investment decisions, combined with proactive, value-oriented and long-term approaches, increasing the resilience of companies in dealing with extreme events, such as COVID-19. This study is one of the few that compares the

importance of managers' skills for making investment decisions in private hospitals in Brazil, Canada and Portugal. We applied the lens of the relationship between the principal and the agent, to reveal how investment decisions are made and how the skills of managers influence those decisions. By contributing a manager involvement model specific to hospitals, various intra-hospital teams can work to implement new interventions for greater involvement of employees, middle management and directors in institutional management and, in this way, improve organizations' performance, outlining the importance of private-hospital managers' competences.

Author Contributions: Conceptualization, I.M. and Z.S.; Data curation, I.M.; Formal analysis, I.M.; Funding acquisition, I.M. and Z.S.; Investigation, I.M., Z.S. and F.N.; Methodology, I.M.; Project administration, I.M. and Z.S.; Resources, Z.S.; Supervision, Z.S. and F.N.; Validation, I.M., Z.S. and F.N.; Visualization, F.N.; Writing—original draft, I.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: Data available on request due to privacy/ethical restrictions.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. De Marco, A.; Mangano, G.; Cagliano, A.C.; Grimaldi, S. Public Financing into Build-Operate-Transfer Hospital Projects in Italy. *J. Constr. Eng. Manag.* **2012**, *138*, 1294–1302. [CrossRef]
2. Akintoye, A.; Chinyio, E. Private Finance Initiative in the healthcare sector: Trends and risk assessment. *Eng. Constr. Arch. Manag.* **2005**, *12*, 601–616. [CrossRef]
3. Ch, F.N.; Jola, S.P. Bank health level analysis using rbbr in financial services sector—Case in Indonesian stock exchange. *Int. J. Econ. Res.* **2017**, *14*, 181–192.
4. Jizi, M.I.; Nehme, R. Board gender diversity and firms' equity risk. *Equal. Divers. Incl. Int. J.* **2017**, *36*, 590–606. [CrossRef]
5. Hsu, G.C.M.; Clarkson, P.; Ouyang, A.X. Do biotechnology and health-care firms have poorer continuous disclosure practices as reflected in ASX queries? *Account. Res. J.* **2019**, *32*, 88–112. [CrossRef]
6. World Health Organization. WHO Announces COVID-19 Outbreak a Pandemic. Available online: http://www.euro.who.int/en/healthtopics/healthemergencies/coronaviruscovid19/news/news/2020/3/whoan-nounces-covid-19-outbreak-a-pandemic (accessed on 22 November 2020).
7. Stark, P. Advancing Complex Case Management Competencies in a Health Care System. *Prof. Case Manag.* **2020**, *25*, 19–25. [CrossRef]
8. Siskou, O.; Kaitelidou, D.; Papakonstantinou, V.; Liaropoulos, L. Private health expenditure in the Greek health care system: Where truth ends and the myth begins. *Health Policy* **2008**, *88*, 282–293. [CrossRef]
9. Fernandes, A.C.; Nunes, A.M. Hospitals and the public-private combination in the portuguese health system. *Acta Med. Port.* **2016**, *29*, 217–223. [CrossRef] [PubMed]
10. Kakemam, E.; Dargahi, H. Competencies Gap in Hospital Management in Tehran, Iran: A Cross-sectional Survey. *J. Health Manag.* **2019**, *21*, 451–464. [CrossRef]
11. Diaconu, K.; Falconer, J.; Vidal, N.; O'May, F.; Azasi, E.; Elimian, K.; Bou-Orm, I.; Sarb, C.; Witter, S.; Ager, A. Un-derstanding fragility: Implications for global health research and practice. *Health Policy Plan.* **2020**, *35*, 235–243. [CrossRef]
12. Gordon, D.; McKay, S.; Marchildon, G.; Bhatia, R.S.; Shaw, J. Collaborative Governance for Integrated Care: Insights from a Policy Stakeholder Dialogue. *Int. J. Integr. Care* **2020**, *20*, 3. [CrossRef]
13. Cunha, C.L.F.; Moreira, J.P.L.; Oliveira, B.L.C.A.; Bahia, L.; Luiz, R.R. Private health plans and the health of workers in Brazil. *Collect. Sci. Health* **2019**, *24*, 1959–1970.
14. Gandhi, A.V.; Sharma, D. Technical efficiency of private sector hospitals in India using data envelopment analysis. *Benchmarking Int. J.* **2018**, *25*, 3570–3591. [CrossRef]
15. Binci, D.; Belisari, S.; Appolloni, A. BPM and change management: An ambidextrous perspective. *Bus. Process Manag. J.* **2019**, *26*, 1–23. [CrossRef]
16. Bonacci, I.; Mazzitelli, A.; Morea, D. Evaluating Climate between Working Excellence and Organizational Innovation: What Comes First? *Sustainability* **2020**, *12*, 3340. [CrossRef]
17. Almeida, A.S. The role of private non-profit healthcare organizations in NHS systems: Implications for the por-tuguese hospital devolution program. *Health Policy* **2017**, *121*, 699–707. [CrossRef]
18. Paes-Sousa, R.; Schramm, J.M.D.A.; Vilarinho, L. Fiscal austerity and the health sector: The cost of adjustments. *Ciência Saúde Coletiva* **2019**, *24*, 4375–4384. [CrossRef]
19. Prémont, M.-C.; Verbauwhede, C. Canadian legislatures and the regulation of the private health-care industry. *Univ. Tor. Law J.* **2018**, *68*, 231–258. [CrossRef]

20. Department of Informatics of the Unified Health System. DataSUS. Available online: http://www.cns.org.br/links/D_SETOR_DATES.htm (accessed on 1 February 2019).
21. Hsieh, H.-F.; Shannon, S.E. Three Approaches to Qualitative Content Analysis. *Qual. Health Res.* **2005**, *15*, 1277–1288. [CrossRef]
22. Nowell, L.S.; Norris, J.M.; White, D.E.; Moules, N.J. Thematic analysis: Seeking to meet the reliability criteria. *Int. J. Qual. Meth.* **2017**, *16*, 1609406917733847. [CrossRef]
23. Braun, V.; Clarke, V. Using thematic analysis in psychology. *Qual. Res. Psychol.* **2006**, *3*, 77–101. [CrossRef]
24. Law No. 8,080, of September 19, 1990. Provides for the Conditions for the Promotion, Protection and Recovery of Health, the Organization and Functioning of the Corresponding Services and Provides Other Measures. Available online: http://www.planalto.gov.br/ccivil_03/leis/l8080.htm (accessed on 30 April 2020).
25. Paim, J.S.; Travassos, C.; Almeida, C.; Bahia, L.; Macinko, J. The Brazilian health system: History, advances, and challenges. *Lancet* **2011**, *377*, 1778–1797. [CrossRef]
26. Almeida, M.H.T. Federalism, democracy and government in Brazil: Ideas, hypotheses and evidence. *Braz. J Bibliogr. Inf. Soc. Sci. BBI* **2001**, *51*, 13–34.
27. Canada Health Act. Minister of Justice. Available online: http://laws.justice.gc.ca/PDF/C-6.pdf (accessed on 10 March 2020).
28. Chanes, M. The challenges in training leading health managers. *World Health Sao Paulo* **2006**, *30*, 326–333.
29. Tavangar, H.; Sherafat, A.; Vaezi, A.; Vafaeenasab, M.; Ehrampoush, M.; Fallahzadeh, H. Responsibility-evading performance: The experiences of healthcare staff about triage in emergency departments: A qualitative study. *Iran. J. Nurs. Midwifery Res.* **2019**, *24*, 379–386. [CrossRef] [PubMed]
30. Carsen, S.; Xia, C. The physician as leader. *Mcgill J. Med.* **2006**, *9*, 12. [CrossRef]
31. Shepheard, J.; Lapiz, E.; Read, C.; Jackson, T. Reconciling hospital-acquired complications and CHADx+ in Victorian coded hospital data. *Health Inf. Manag. J.* **2018**, *48*, 76–86. [CrossRef]
32. Pillay, R. The skills gap in hospital management: A comparative analysis of hospital managers in the public and private sectors in South Africa. *Health Serv. Manag. Res.* **2010**, *23*, 30–36. [CrossRef]
33. Shan, C.M.; Ab Razak, N.H.; Ali, A.B.I. The impact of board of directors' characteristics and remuneration on companies' performance in Malaysia. *Indian J. Public Health Res. Dev.* **2018**, *9*, 1220. [CrossRef]
34. Luleci, N.E.; Gemlik, H.N.; Bektas, G.; Manioglu, Y. The awareness of experience innovation and an application in private hospitals. *J. Pak. Med. Assoc.* **2015**, *65*, 1108–1111.
35. Wong, C.A.; Cummings, G.G.; Ducharme, L. The relationship between nursing leadership and patient outcomes: A systematic review update. *J. Nurs. Manag.* **2013**, *21*, 709–724. [CrossRef]
36. Phipps, F.M. Challenges of 21st-century health governance. *Int. J. Health Gov.* **2020**, *25*, 12–18. [CrossRef]
37. Fleet, R.; Dupuis, G.; Fortin, J.-P.; Gravel, J.; Ouimet, M.; Poitras, J.; Légaré, F. Rural emergency care 360°: Mobilising healthcare professionals, decision-makers, patients and citizens to improve rural emergency care in the province of Quebec, Canada: A qualitative study protocol. *BMJ Open* **2017**, *7*, e016039. [CrossRef] [PubMed]
38. Zhu, L.; Peng, Z.; Liu, L.; Ling, S. Combining Resource, Structure and Institutional Environment: A Configurational Approach to the Mode Selection of the Integrated Healthcare in County. *Int. J. Environ. Res. Public Health* **2019**, *16*, 2975. [CrossRef] [PubMed]
39. Helmers, R.A.; Harper, C.M. The mayo clinic model of clinical integration. *Healthcare* **2019**, *7*, 100330. [CrossRef]
40. Fidler, D. *The Challenges of Global Health Governance*; Council on Foreign Relations: New York, NY, USA, 2010.
41. Health Services Circular. Clinical Governance. Quality in the New NHS. Available online: http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4012043.pdf (accessed on 4 June 2020).
42. Price, T.; Tredinnick-Rowe, J.; Walshe, K.; Tazzyman, A.; Ferguson, J.; Boyd, A.; Archer, J.; Bryce, M. Reviving clinical governance? A qualitative study of the impact of professional regulatory reform on clinical governance in healthcare organizations in England. *Health Policy* **2020**, *124*, 446–453. [CrossRef] [PubMed]
43. Turner, J. *Predicting Long-Term Debt in the Healthcare Sector*; Scholars' Press: Saarbrucken, Germany, 2015.
44. Wernz, C.; Zhang, H.; Phusavat, K. International study of technology investment decisions at hospitals. *Ind. Manag. Data Syst.* **2014**, *114*, 568–582. [CrossRef]
45. Leite, H.; Hodgkinson, I.R.; Gruber, T. New development: 'Healing at a distance'—Telemedicine and COVID-19. *Public Money Manag.* **2020**, *40*, 483–485. [CrossRef]
46. Panigutti, C.; Perotti, A.; Pedreschi, D. Doctor XAI: An ontology-based approach to blackbox sequential data classification explanations. In Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency, Barcelona, Spain, 27–30 January 2020; pp. 629–693.
47. Navarro, T.M.; Durán, F.M.; Santos, J.L. A regional competitiveness index for Spain. *Rev. Estud. Reg.* **2017**, *109*, 67–94. (In Spanish)
48. Abedi, G.; Malekzadeh, R.; Moosazadeh, M.; Abedini, E.; Hasanpoor, E. Nurses' Perspectives on the Impact of Marketing Mix Elements (7Ps) on Patients' Tendency to Kind of Hospital. *Ethiop. J. Health Sci.* **2019**, *29*, 223–230. [CrossRef]
49. Shamayleh, A.; Awad, M.; Farhat, J. IoT Based Predictive Maintenance Management of Medical Equipment. *J. Med. Syst.* **2020**, *44*, 1–12. [CrossRef]
50. Fasterholdt, I.; Krahn, M.; Kidholm, K.; Yderstræde, K.B.; Pedersen, K.M. Review of early assessment models of innovative medical technologies. *Health Policy* **2017**, *121*, 870–879. [CrossRef] [PubMed]
51. Myers, S.C. The Capital Structure Puzzle. *J. Financ.* **1984**, *39*, 575. [CrossRef]

52. Myers, S.C.; Majluf, N.S. Corporate financing and investment decisions when firms have information that investors do not have. *J. Financ. Econ.* **1984**, *13*, 187–221. [CrossRef]
53. Sarig, O.H. The effect of leverage on bargaining with a corporation. *Financ. Rev.* **1998**, *33*, 1–16. [CrossRef]
54. Lemmon, M.L.; Roberts, M.R.; Zender, J.F. Back to the beginning: Persistence and the crosssection of corporate capital structure. *J. Financ.* **2008**, *63*, 1575–1608. [CrossRef]
55. Kaper, M.S.; Reijneveld, S.A.; van Es, F.D.; de Zeeuw, J.; Almansa, J.; Koot, J.A.R.; de Winter, A.F. Effectiveness of a comprehensive health literacy consultation skills training for undergraduate medical students: A randomized controlled trial. *Int. J. Environ. Res. Public Health* **2020**, *17*, 81. [CrossRef]
56. Mohan, D.; Wallace, D.J.; Kerti, S.J.; Angus, D.C.; Rosengart, M.R.; Barnato, A.E.; Yealy, D.M.; Fischhoff, B.; Chang, C.-C.; Kahn, J.M. Association of Practitioner Interfacility Triage Performance With Outcomes for Severely Injured Patients With Fee-for-Service Medicare Insurance. *JAMA Surg.* **2019**, *154*, e193944. [CrossRef] [PubMed]
57. Neves, J.B.; Shepherd, S.; Cullen, D.; Powles, T.; Aitchison, M.; Tran, M.G.B. Performance and cost of a renal cancer specialist multidisciplinary team meeting: Results from 1500 discussions. *J. Clin. Urol.* **2019**, *12*, 314–319. [CrossRef]
58. Luo, L.; Li, J.; Liu, C.; Shen, W. Using machine-learning methods to support health-care professionals in making admission decisions. *Int. J. Health Plan. Manag.* **2019**, *34*, e1236–e1246. [CrossRef]
59. Kulkarni, S.S.; Barnato, A.E.; Rosengart, M.R.; Fischhoff, B.; Angus, D.C.; Yealy, N.M.; Wallace, D.J.; Mohan, D. Does Preexisting Practice Modify How Video Games Recalibrate Physician Heuristics in Trauma Triage? *J. Surg. Res.* **2019**, *242*, 55–61. [CrossRef]
60. Salampessy, B.H.; Bijlsma, W.R.; Van Der Hijden, E.; Koolman, X.; Portrait, F.R.M. On selecting quality indicators: Preferences of patients with breast and colon cancers regarding hospital quality indicators. *BMJ Qual. Saf.* **2020**, *29*, 576–585. [CrossRef] [PubMed]
61. Comendeiro-Maaløe, M.; Ridao-López, M.; Gorgemans, S.; Bernal-Delgado, E. A comparative performance analysis of a renowned public private partnership for health care provision in Spain between 2003 and 2015. *Health Policy* **2019**, *123*, 412–418. [CrossRef]
62. Arora, S.; Bhaukhandi, K.D.; Mishra, P.K. Coronavirus lockdown helped the environment to bounce back. *Sci. Total. Environ.* **2020**, *742*, 140573. [CrossRef]
63. Carnevale, J.B.; Hatak, I. Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. *J. Bus. Res.* **2020**, *116*, 183–187. [CrossRef]
64. Garzotto, F.; Ceresola, E.; Panagiotakopoulou, S.; Spina, G.; Menotto, F.; Benozzi, M.; Casarotto, M.; Lanera, C.; Bonavina, M.G.; Gregori, D.; et al. COVID-19: Ensuring our medical equipment can meet the challenge. *Expert Rev. Med Devices* **2020**, *17*, 483–489. [CrossRef] [PubMed]
65. Goniewicz, K.; Khorram-Manesh, A.; Hertelendy, A.J.; Goniewicz, M.; Naylor, K.; Burkle, J.F.M. Current Response and Management Decisions of the European Union to the COVID-19 Outbreak: A Review. *Sustainability* **2020**, *12*, 3838. [CrossRef]
66. Kalyaev, V.; Salimon, A.I.; Korsunsky, A.M.; Denisov, A.A. Fast Mass-Production of Medical Safety Shields under COVID-19 Quarantine: Optimizing the Use of University Fabrication Facilities and Volunteer Labor. *Int. J. Environ. Res. Public Health* **2020**, *17*, 3418. [CrossRef] [PubMed]
67. Nikpay, S.S.; Smith, D.G. Hospital financial preparedness and covid-19. *J. Health Care Financ.* **2020**, *46*, 45–52.
68. Alexander, J.A.; Morrisey, M.A.; Shortell, S.M. Effects of competition, regulation and corporatization on hospital-medical relations. *J. Health Soc. Behav.* **1986**, *27*, 220–235. [CrossRef]
69. Abor, P.A. The effects of health governance and ownership structure on the performance of hospitals in Ghana. *Int. J. Law Manag.* **2015**, *57*, 107–140. [CrossRef]
70. Huhs, E.; Gliebe, W.; Sendlhofer, G. Qualitative analysis of lean management in healthcare: Perspectives of Aus-trian and Swiss experts. *Z. Evidenz Fortbild. Qual. Gesundh.* **2019**, *143*, 8–14. (In German) [CrossRef] [PubMed]
71. Tasi, M.C.; Keswani, A.; Bozic, K.J. Does physician leadership affect hospital quality, operational efficiency, and financial performance? *Health Care Manag. Rev.* **2019**, *44*, 256–262. [CrossRef]
72. Van De Riet, M.C.P.; Berghout, M.A.; Buljac-Samardžić, M.; Van Exel, J.; Hilders, C.G.J.M. What makes an ideal hospital-based medical leader? Three views of healthcare professionals and managers: A case study. *PLoS ONE* **2019**, *14*, e0218095. [CrossRef]
73. Govindan, K.; Mina, H.; Alavi, B. A decision support system for demand management in healthcare supply chains considering the epidemic outbreaks: A case study of coronavirus disease 2019 (COVID-19). *Transp. Res. Part E Logist. Transp. Rev.* **2020**, *138*, 101967. [CrossRef]
74. Dexter, F.; Elhakim, M.; Loftus, R.W.; Seering, M.S.; Epstein, R.H. Strategies for daily operating room management of ambulatory surgery centers following resolution of the acute phase of the COVID-19 pandemic. *J. Clin. Anesth.* **2020**, *64*, 109854. [CrossRef] [PubMed]
75. Manca, D.; Caldiroli, D.; Storti, E. A simplified math approach to predict ICU beds and mortality rate for hospital emergency planning under Covid-19 pandemic. *Comput. Chem. Eng.* **2020**, *140*, 106945. [CrossRef]
76. Smith, B.A. A novel IDEA: The impact of serial interval on a modified-Incidence Decay and Exponential Adjustment (m-IDEA) model for projections of daily COVID-19 cases. *Infect. Dis. Model.* **2020**, *5*, 346–356. [CrossRef]
77. Nicola, M.; Alsafi, Z.; Sohrabi, C.; Kerwan, A.; Al-Jabir, A.; Iosifidis, C.; Agha, M.; Agha, R. The socio-economic implications of the coronavirus pandemic (COVID-19): A review. *Int. J. Surg.* **2020**, *78*, 185–193. [CrossRef]
78. Baxter, D.; Casady, C.B. A Coronavirus (COVID-19) Triage Framework for (Sub) National Public–Private Part-nership (PPP) Programs. *Sustainability* **2020**, *12*, 5253. [CrossRef]