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The Role of Public Resource Desynchronization on Business Model Sustainability in the Private Healthcare Industry

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Abstract: The research objective to examine the role of public resource desynchronization on business model sustainability in the private healthcare industry based on the application of a public policy. This study is based on recently reported data on bed occupancy rate and stakeholder insights during the SARS-CoV-2 pandemic in the private healthcare industry in Spain. The findings reveal how desynchronization of a public health policy can undermine business model sustainability in the private healthcare sector. The role of public resource desynchronization in the private healthcare sector is linked to an applied public health policy, which affects the business model sustainability of private hospitals. Private hospitals need to be vigilant regarding the role of public policy on resource desynchronization in the healthcare industry, which can affect the sustainability of their business models. This study contributes to linking the role of resource desynchronization with the application of a public policy in the healthcare industry which can affect the sustainability of private hospitals' business models.

Keywords: healthcare; business model; public policy; private hospital; sustainability; unsustainability; desynchronization

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1. Introduction

The literature does offer sustainability research in the healthcare sector [1–5]. However, no previous studies have examined the role of resource desynchronization in business model unsustainability within the healthcare sector, such as private hospitals. A resource desynchronization that affects business model sustainability occurs when cooperation and coordination fail within and between healthcare sectors.

The present study examines the role played by public policy in resource desynchronization and on its effect business model unsustainability in private hospitals. It provides a foundation for a complementary contribution to existing theory and previous studies. To the best of the authors' knowledge, it is an area of research in which considerable additional knowledge may be generated, thus shedding additional light on resource desynchronization and business model unsustainability in the healthcare sector.

The research objective is to examine the role of public resource desynchronization in business model sustainability within the private healthcare industry, based on the application of a public policy. The aim is to shed light on the role of resource desynchronization on the sustainability of private hospitals' business models.

Consequently, this study contributes on the role of resource desynchronization with the application of a public policy in the healthcare industry, which affects the sustainability of private hospitals' business models. This process limits the effective and efficient use of human, technical and medical resources in the private healthcare sector. Desynchronization sheds light on the unsustainability of private hospital business models during the SARS-CoV-2 pandemic. The focus is on visualizing how a desynchronization of the bed occupancy

rate affects business model unsustainability in private hospitals, as the result of an applied public health policy.

The rest of the article is structured as follows: (i) research context is outlined followed by the theoretical framework; (ii) materials and methods are described followed by data collection; (iii) results are reported followed by a discussion of the results; and finally, (iv) conclusions are presented with research limitations and suggestions for further research.

1.1. Research Context

The research context of this study is the healthcare sector in Spain, which suffered from a particularly large volume of SARS-CoV-2 patients in the first wave of the pandemic. There was also a large volume in the subsequent second wave, and yet again with the third wave.

Currently, there is no immediate end of the pandemic in sight, and a fourth wave may even evolve, causing immense stress on human, technical and medical resources in the Spanish healthcare sector. The research focus in this study is on the first wave of the pandemic, because empirical data are available to examine the application of a public health policy for managing the health crisis that occurred in Spain during early stages of the SARS-CoV-2 pandemic. This application has affected the business model sustainability of private hospitals.

The Spanish research setting is appropriate for this research, as circumstances prevail that make it possible to examine an applied public health policy. Quaglio et al. [6] states that " . . . *it is governance and leadership that will mostly determine how well health systems are prepared to face the crisis and find ways to mitigate its effects* . . . ".

The Spanish constitution and legislation offer the central government in Madrid the option of declaring a 'state of alarm' with the support of the Parliament, but it is only applicable when there is a societal crisis. This implies that the government has full power to handle the human, technical and medical resources in the entire healthcare sector (i.e., including private hospitals), in order to manage the needs and demands of the public healthcare sector.

The government declared the 'state of alarm' at the beginning of the SARS-CoV-2 pandemic (i.e., March and April 2020). The action of declaring the state of alarm is in line with Hendriks et al. [7] who write, " . . . *integrated public health policies are often advocated, since they are assumed to pave the way to a healthier society* . . . ".

This study examines the application of the public health policy during the specified 'state of alarm' period, focusing on the desynchronization of human, technical and medical resources in the private healthcare sector in relation to the public one. The aim is to evaluate the effects of resource desynchronization, so as to also assess business model sustainability, based on the public health policy applied at the beginning of the SARS-CoV-2 pandemic.

1.2. Framing Desynchronization and Business Model Sustainability

We frame the desynchronization of human, technical and medical resources in the healthcare sector, based on the assumption that resource desynchronization can reveal business model unsustainability.

Desynchronization refers in this study to the usage and coordination failures of available resources in a process or system, such as of human, technical and medical resources in hospitals within and between public and private healthcare sectors. Although the private and public hospitals operate in the same healthcare industry, and to a large extent undertake similar operations, their organizational sustainability initiatives in the past, present and expected future vary substantially. The meaning and content of sustainability between private and public hospitals also varies over time [8] Desynchronization may lead to decreased output due to an inefficient or ineffective application and coordination of resources in a process or system. It may emerge when the attention is on one sub-process or sub-system, instead of paying attention to the output in the overall context of processes or

system. The outcome of public and private hospitals' business model sustainability relies to some extent on the whole picture of synchronization being taken into consideration. The public health policy applied determines the degree of desynchronization of available human, technical and medical resources in the healthcare industry.

The next section contextualizes the pros of synchronization of intra- and interorganizational resources. It also implicitly contextualizes the cons of desynchronization.

1.3. Resource-Based Theory and Network Theory

The resource-based theory stresses the role of both intangible and tangible resources [9,10]. These resources are viewed as the ultimate source of competitive advantage and performance. The health crisis generated by the pandemic demonstrate the role of human, technical and medical resources in healthcare in facing the consequences of SARS-CoV-2.

Research widely acknowledges the importance of strategic alliances [11–14]. A strategic alliance can be defined as a voluntary arrangement among organizations that exchange or share resources and engage in the co-development of products, services or technologies [11]. A strategic alliance implies striving to enhance the synchronization of interorganizational resources. It also implies striving to improve the use and coordination of available resources, which is about intra- and inter-organizational synchronization.

The resource-based theory proposes strategic asset idiosyncrasy and resource immobility [15]. This implies that the maintenance of intra-organizational resources which offer competitive advantage should be controlled and kept within organizational boundaries. In fact, the resource-based theory builds on the logic that value-creating resources are owned and controlled by the focal organization [16,17]. Furthermore, the interaction between interorganizational resources and organizational performance is oriented towards competitive issues [18]. Synchronization becomes vital to the outcome of using intra- and interorganizational resources.

Intra-organizational resources of alliance partners that are synchronized and applied to interorganizational interactions, reveal a substantial impact on organizational performance [19–22].

Existing theory and previous studies on the resource-based theory and network theory acknowledge that network resources available to organizations through its interorganizational interactions need to be synchronized with intraorganizational resources [15,22–25] The literature indicates that using the same definition of network resources [26] demonstrates that synchronization enhances organizational performance [27,28].

Stakeholders (such as the government, policy- and decisionmakers, individuals, managers) are closely inter-connected in the healthcare industry [29,30]. This provides a basis for synchronizing human, technical and medical resources in the healthcare sector industry. Nevertheless, it also requires a desire to cooperate and coordinate resources between stakeholders.

Interorganizational dependence is another boundary that may limit coopetition over resources, and it constitutes a considerable challenge [31]. For example, unidirectional or unbalanced dependence between organizations, rather than bidirectional or balanced, may be problematic in the case of asymmetric power or power imbalances. An organization may be opportunistic, with counterparts abusing the unbalanced dependence and power. For example, it may occur when a private hospital which wins a public bid to deliver healthcare services to the society.

We contend that the synchronization of human, technical and medical resources in the healthcare sector offers a basis for sustainability. By contrast, the desynchronization of resources in the healthcare sector may led to unsustainability.

1.4. Sustainability

The recent study of Moro and Visconti et al. [32] serve to frame sustainable development in the healthcare sector, acknowledging the emerging unsustainability due to

aging populations, and much needed achievement of sustainable financial models in the healthcare system.

The concept of sustainability is interconnected with sustainable development [33] (Hawkins and Wang, 2012), well defined by the World Commission on Environment and Development [34]. Sustainable development entails " ... *meeting the needs of the present, but without compromising those of future generations* ... ".

Sustainability clearly relates to the Triple Bottom Line (TBL—[35]). The concept refers to economic, social and environmental actions undertaken by organizations in the context of sustainable operations. The SARS-CoV-2 pandemic has revealed a situation of limited availability of human, technical and medical resources [36–38]. Lefebvre [39] (p. 65) writes that the sustainability of public healthcare is " ... *one of the most important topics* ... " in this field of healthcare research.

Sustainable development in management research is often framed in relation to TBL [35] suggesting that true sustainability is achieved through economic, social and environmental values being synchronized [40]. This means that all are seen as peers of the others. In reality, economic values influence environmental ones and social ones mediate the effect [41]

The peer view of TBL components implies a comprehensive understanding of organizational values in terms of social and environmental pros in the context of economic benefits [42]. Spohrer et al. [43] (p.75) writes: " ... *restrained by natural resources, the main challenge for service systems is to achieve a triple target of efficiency, effectiveness and sustainability* ... ". Healthcare organizations need to pursue sustainability goals to enhance their economic and social outcomes [44].

The notion underlying delivering services in a sustainable manner is to preserve health, society and the environment [45]. Managers need to include sustainability and sustainable development in their models of operation [46]. The idea of healthcare services becoming sustainable is acknowledged in both theory and empirical studies [47,48]. However, the concept of sustainability in the sense of sustainable development requires behavioral change [36]. Sustainability changes interorganizational interactions and how they are managed [49].

Although sustainable development and sustainability have been on the agenda of theory building for quite some time, the implementation in organizations remains unclear [50]. As a consequence, there are still white spots in the healthcare industry on how to apply knowledge regarding changes for confronting existing and potential challenges in the healthcare sector [51–53]. Moreover, sustainability is one of three factors identified as influencing the implementation of national programs for the prevention and control of healthcare-associated infections by Nogueira and Padoveze [54].

In sum, regarding the influence of hospital actions on sustainable development and sustainability, there are limited previous studies in the healthcare sector [3,4]. Principally, the little evidence that exists focuses on the management of both hospital waste and energy efficiency [55] Nevertheless, there are no previous studies focusing explicitly on desynchronization to reveal unsustainability in the healthcare industry, and that is our focus here.

2. Materials and Methods

This study is based on recently reported data on bed occupancy rates and stakeholder insights into the healthcare industry during the first wave of SARS-CoV-2 pandemic in Spain. The bed occupancy rate is a measure that enables examining the used resources capacity in hospitals. Consequently, this study applies an approach which provides statistical numbers, broadens and deepens our understanding of the role of desynchronization in business model unsustainability.

This research is based on data mainly provided by the Spanish Ministry of Health and Spanish Statistic National Institute, and communicated by various different journals on- and offline. The data analysis focuses on hospitals' bed occupancy rates.

Hospitals comprising the healthcare system are part of the service industry in which qualitative research methods are highly applicable [56] Qualitative research methods fit perfectly with our study, which is mainly focused on assessing the implementation of a public health policy by exploring the desynchronization of the medical, technical and human resources available in the private healthcare sector, in relation to the public one. Walters [57] highlighted that qualitative studies involve the interpretation and collection of subjective information that is usually shaped by the cultural, political and social realities that are clear at the time of data gathering. In this study, we use secondary quantitative data as a foundation that is complemented with primary qualitative data.

3. Healthcare Sector and 'State of Alarm'

Spain consists of 17 autonomies (i.e., autonomous communities or regions), with the central government located in Madrid. Each autonomy oversees its regional healthcare sector. The 'state of alarm' transfers authority to the central government that take charge of the autonomies' healthcare resources. Consequently, the authority of all resources in public and private sectors is centralized. Espinosa-González et al. [58] write: " . . . *descentralisation has also been a central subject in the public health policy agenda during the COVID-19 pandemic, with national governments regaining control to coordinate and execute the response in some devolved nations such as Spain and Italy . . .* ".

The 'state of alarm' was declared by the central government, imposed by the severe healthcare situation in Spain generated by the SARS-CoV-2 pandemic. The 'state of alarm' was exercised in different stages during 2020, as shown in Table 1.

Table 1. Different Stages of the 'state of alarm'.

Royal Decree */**	Time Period	Meaning
463/2020 of 14 March 2020	16 March–29 March	Population Confinement—with the exception of work
10/2020 of 29 March 2020	30 March–9 April	Population Confinement—non-essential activity forbidden
487/2020 of 10 April 2020	10 April–26 April	State of alarm extended

* The Royal Decree 10/2020 of 29 March 2020 regulated a recoverable paid leave for employed personnel, of a mandatory nature and limited in time between 30 March and 9 April (both included), for all employed personnel who provided services in companies or entities of the public or private sector that provide non-essential activities. ** The extension established in the Royal Decree 487/2020 of 10 April 2020 was in force until 00:00 h on 26 April 2020, and subject to the same conditions established in Royal Decree 463/2020, of 14 March, modified by Royal Decree 465 / 2020, of 17 March, and by Royal Decree 476/2020, of 27 March, which extended the state of alarm declared by Royal Decree 463/2020, of March 14, which declares the state of alarm for the management of the health crisis situation caused by SARS-COV-2.

Although the health authority is gradually transferred back to the autonomies, the Ministry of Health takes control of all decisions at the beginning, to face the emerging SARS-CoV-2 pandemic. This is established in the Royal Decree of the 'state of alarm' (see Table 1). Consequently, the authority of the healthcare resources in the public and private sectors was merely centralized at the beginning of the SARS-CoV-2 pandemic. The autonomies recovered, to some extent successively, the independence to handle their healthcare resources. In fact, the autonomies did not legally maintain the competence, but in practice it was maintained as the government does not assume full control the health competences in the autonomies.

When the central government implemented rules, all regions' public and private healthcare hospitals were treated analogously.

Normally, when the central government implements rules, each local government of the autonomies implements its own adapted rules. Private healthcare entities are treated differently, depending on the conditions in each autonomy, all of which affects their total investment, and costs related to the pandemic.

4. Data Collection

The collected data in this study was gathered from Spanish health associations such as 'Alianza de la Sanidad Privada Española' (ASPE) or 'Associació Catalana d'Entitats

de Salut' (ACES). They are organizations that affiliate around 80% of Spanish private healthcare centers. In the Spanish National Healthcare system, there are 806 hospitals, 468 of which are private [59] There are more than 143.000 beds available in the whole healthcare system [59,60].

The sample is based on a nationwide spectrum of representing private Spanish hospitals (ASPE). Hospitals represented in this study correspond to 27% of the total number of private hospitals and also 24% of the beds. Considering general hospitals (i.e., excluding long-stay hospitals, geriatric hospitals, psychiatric or monographic) the hospitals represented in this study cover 42% of all private hospitals and 41% of beds, as shown in Table 2.

Table 2. Number of Hospitals and Beds Available in the Private Healthcare Sector of Spain.

	Count	% Private Sector Hospital	% Private General Hospital
Hospitals	124	27%	42%
Beds	12.582	24%	41%

Source: ASPE.

5. Results

The private health sector attempted to synchronize its human, technical and medical resources with the public sector, as requested by the 'state of alarm' (i.e., central and local governments and administrations) from the beginning of the SARS-CoV-2 pandemic. Josep Ignasi Hornos, ACES president, mentioned that: " . . . *I had to put my shoulder in, we did it and we will do it again, but coordination makes everything easier* . . . ". Carlos Rus [61], ASPE president, mentioned that: " . . . *we have understood our role as a service to the country of which we are proud* . . . " [62].

Private hospitals made substantial efforts in responding to the societal healthcare needs at each point in time, as stated by Carlos Rus in the Congress of deputies [63] Juan Castro, CEO of Hospital Nosa Señora dos Ollos Grandes, reported that: " . . . *the coronavirus pandemic has had disastrous effects. We have had a huge drop in billing and activity. The admission of patients has fallen by 75 percent, emergencies more than 60 percent, activity in the operating room more than 90 percent. A total ruin. The level of invoicing that we have had is not enough to support a basic structure. The basic costs cannot be maintained* . . . " [64].

Private hospitals increased their number of staff, re-scheduled their activities, modified spaces, acquired equipment and closed non-urgent healthcare services not linked to SARS-CoV-2. Carlos Rus (2020c) stated that: " . . . w*e have to achieve a balance of care and availability of resources, human and technical, to avoid the deprogramming of interventions, the worsening of other pathologies due to delays in diagnoses and treatments, as well as the unaffordable congestion of waiting lists* . . . " [61].

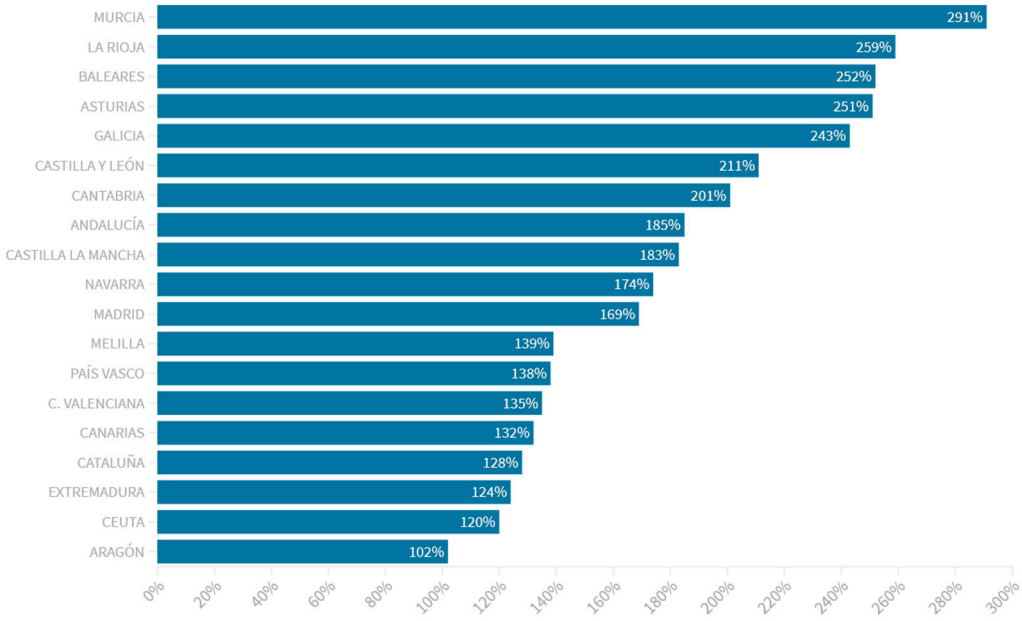
Private hospitals also made efforts to handle hospitalized patients with coronavirus, and those admitted to intensive care units (ICU). Carlos Rus stated: " . . . *the private infrastructure available at the national level is 52,000 general beds and 2800 ICUs, counting among the latter, both those permanently installed, as well as the beds required to be expanded in regions with very active sources of contagion* . . . " [61].

The remaining empirical findings focus on the bed occupancy rate in private hospitals during SARS-CoV-2 pandemic. It is a widely used measurement criterion for assessing the capacity and use of available resources in hospitals. The bed occupancy rate is a relevant indirect and objective measure, as it may reveal a desynchronization of available human, medical and equipment resources between public and private healthcare sectors.

5.1. Bed Occupancy Rates in Private Hospitals

Figure 1 displays the percentage change between the number of ICU beds available before the pandemic based on 2019 and the average number of ICU beds available in hospitals reported to the Ministry of Health in August 2020. It should be noted that some

autonomous communities (such as Murcia, La Rioja, the Balearic Islands and Asturias) have increased their ICU bed capacity by 250–300% [65].



Source: Ministry of health

Figure 1. Capacity increase in available ICU beds across autonomies.

The size of the private healthcare sector corresponds to 30.4% in 2019, in relation to the whole sector regarding the number of beds (Ministry of Health, 2020b) ASPE (2020a) indicates that the bed occupancy rate in private hospitals turned out to a large extent to be very low, although the beds had to be available because of the state' of alarm' and emerging SARS-CoV-2 pandemic [61].

Only Madrid, Catalonia, La Rioja and the Basque Country strove to synchronize the public resources with those in private hospitals, while remaining autonomies hardly used them. For example, during one of the worst phases of the SARS-CoV-2 pandemic (i.e., between 25 March and 2 April), only 600 out of 2800 private ICU beds were used (i.e., 2200 equals 78.6%) based on data from ASPE (2020a). This is evidence of desynchronization between the human, technical and medical resources available in the private healthcare sector compared to the public ones [61].

The Government advertised a medicalized 'AVE train' (i.e., high-speed train) to transfer SARS-CoV-2 patients to less congested autonomies and where the bed occupancy rate of private hospitals was practically zero, such as the autonomies of Valencia, Murcia or Andalusia. José Luis Ábalos, Minister of Transport, Mobility and Urban Agenda, stated " . . . *we already have adequate trains at our disposal for the transport of patients for when we are required* . . . " [66].

However, the 'AVE train' was not used in the end, because the autonomies did not request its services, according to José Luis Ábalos [66]. In fact, José Luis Ábalos, commented there were no cases of referrals between autonomies [66].

There are no collaborations between autonomies beyond the shipment of some units of respirators or ICU material, The Spanish government did not consider other mechanisms for activation, such as the distribution of health personnel from regions with a lower rate of hospitalization or the transfer of patients [67]. This appears to be a second item of evidence of desynchronization between the human, technical and medical resources available in the private healthcare sector compared to the public ones.

As a consequence, the private hospitals were not willing to offer their beds again, as in the first wave, and enforced by the health authority during the 'state of alarm' [68].

The Ministry of Health was claimed by Santiago Mediano Abogados to have violated the statement of " . . . *articulating a clear agreement of collaboration and coordination* . . . " with the private hospitals regarding their unused private ICU beds [64].

Table 3 displays the bed capacity across autonomies divided into beds used for SARS-CoV-2 and others in private hospitals, while only the total percentage of the full capacity has been available for the public hospitals. However, Table 3 indicate that there was available capacity of conventional beds in public hospitals, while the capacity of UCI beds was very limited. Table 3 also indicate that the bed occupancy rate for SARS-CoV-2 in the private hospitals was low across autonomies. Though the public hospitals run out of SARS-CoV-2 bed capacity.

Table 3. Autonomies' occupancy rate.

		Conventional Beds		UCI Beds		
Autonomy	**Nº Beds**	**SARS-CoV-2**	**Otros**	**SARS-CoV-2**	**Otros**	**Total**
Madrid	Pub = 13,872					75.90%
	Priv = 6644	9.30%	73.70%	37.84%	38.07%	
País Vasco	Pub = 5976					69.08%
	Priv = 2213	9.40%	67.50%	32.46%	36.62%	
La Rioja	Pub = 810					52.83%
	Priv = 214	6.10%	74.00%	32.08%	20.75%	
Cataluña	Pub = 14,916					73.34%
	Priv = 19,696	3.80%	80.10%	30.24%	43.10%	
Aragón	Pub = 4362					60.43%
	Priv = 892	6.30%	65.60%	26.96%	33.48%	
Castilla y León	Pub = 7212					53.65%
	Priv = 2202	3.70%	66.80%	23.85%	29.81%	
Ceuta	Pub = 252					35.29%
	Priv = 0	3.30%	34.80%	23.53%	11.76%	
Castilla-La Mancha	Pub = 5213					52.99%
	Priv = 376	6.40%	60.10%	22.55%	30.43%	
Cantabria	Pub = 1385					47.46%
	Priv = 635	5.40%	68.80%	16.95%	30.51%	
Navarra	Pub = 1397					57.14%
	Priv = 903	4.80%	64.50%	15.79%	41.35%	
Andalucía	Pub = 15,669					40.44%
	Priv = 5680	4.90%	59.00%	14.68%	25.77%	
Canarias	Pub = 4964					48.85%
	Priv = 2587	2.40%	75.90%	13.63%	35.22%	
Asturias	Pub = 2775					35.74%
	Priv = 1010	2.60%	68.50%	12.13%	23.61%	
Murcia	Pub = 3331					32.00%
	Priv = 1578	1.30%	68.00%	6.11%	25.89%	
Extremadura	Pub = 3418					35.85%
	Priv = 444	1.00%	59.60%	5.66%	30.19%	

Table 3. *Cont.*

		Conventional Beds		UCI Beds		
Autonomy	**Nº Beds**	**SARS-CoV-2**	**Otros**	**SARS-CoV-2**	**Otros**	**Total**
Baleares	Pub = 2465					47.46%
	Priv = 1386	1.00%	70.10%	5.43%	42.03%	
Galicia	Pub = 7541					34.70%
	Priv = 2268	1.90%	68.10%	4.64%	30.07%	
CValenciana	Pub = 11,534					49.39%
	Priv = 2458	1.10%	68.40%	3.67%	45.72%	
Melilla	Pub = 168					11.76%
	Priv = 0	10.90%	40.00%	0%	11.76%	

Source: Ministry of Health, Consumption and Social Welfare [69].

Despite the fact that private hospitals with ICUs had numerous beds available, temporary health facilities (such as field hospitals), were built, although there had been no use and coordination of private hospital beds from existing resources. This appears to be a third item of evidence of desynchronization between the human, technical and medical resources available in the private healthcare sector compared to the public ones [70].

Consequently, ASPE (2020b) indicates how the private healthcare sector was obliged to be on stand-by to serve the public sector. This caused additional costs to private hospitals that were not fully compensated for, in contrast to what had been expected [71]. The issue of compensation is generally still unresolved in most autonomies. However, Catalonia is the only autonomy out of 17 that established by decree, compensation for each SARS-CoV-2 patient who was discharged from hospital after being in ICU, as Lluís Monset, ACES general director commented [72].

In the autonomies of Valencia and La Rioja, such mechanisms have also been activated and the referrals of these patients achieved at a public price, which is six times lower in the private healthcare sector compared to the public one, such as ASPE claims [73]). However, the remaining autonomies are still, after one year, evaluating it and have not fixed a price for the private sector.

5.2. The Case of Bed Occupancy Rates in the Autonomy of Madrid

The following data provided by Ministry of Health [74] indicates, private hospitals in Spain had 47.825 beds of that in total were 157.249 in 2019.

Table 4 shows the number of beds in private hospitals by functional dependence. Consequently, the private healthcare sector possesses a relatively large number of beds [74]

Table 4. Private Hospital Beds across Functions.

General Hospitals	Specialized Hospitals	Medium and Long Stay	Hospitals' Mental Health and Drug Treatment	Hospitals' Other Centers	Total
29,465	1492	8180	7125	1563	47,825

Source: Ministry of Health, Consumption and Social Welfare.

The Hospital Spanish National Catalog of the Ministry of Health [74] indicates that there are 33 private hospitals in the autonomy of Madrid, and up to 50, adding in the hospitals owned by charitable organizations. Among the private hospitals, there were 6644 beds, representing approximately 35% of all beds available in Madrid [75].

Although Madrid was one of the autonomies with a better synchronization between public and private healthcare sectors, the Ministry of Health [73] calculates that less than 12% represented SARS-CoV-2 ICU patients in September 2020 at the beginning of the

second wave. It appears to be a fourth piece of evidence of desynchronization between the human, technical and medical resources available in the private healthcare sector compared to the public ones [76].

Specifically, according to ASPE data, approximately 300 of 6764 private beds were occupied by SARS-CoV-2 patients, representing less than 5%, taking as a reference both the data of the council (3174) and that of the Ministry of Health (3813), and about 25 of 225 ICU beds representing 11%. The private hospitals were not at all full, but patients were not transferred to them, a fifth piece of evidence of resource desynchronization in the private healthcare.

A temporary hospital (IFEMA) was built at the beginning of the SARS-CoV-2 pandemic in Madrid [77]. It became the largest hospital in Spain measured by the number of beds occupied, with almost 1300. It could house a maximum of 5500 beds with a thousand health professionals and health services, laundry, cleaning, a catering service that served more than 175,000 meals in total, as well as a small library for the sick. Isabel Diaz Ayuso, the Madrid Autonomy President, confirmed that 4000 people were treated at the IFEMA temporary hospital. In addition to the five Madrid hospitals with the most admissions due to SARS-CoV-2, the temporary hospital had 12% of patients in the autonomy [78].

In addition, the autonomy of Madrid invested EUR 18,755,402 for equipment and maintenance of the IFEMA temporary hospital, when it was opened for the first time [79] Nevertheless, the Ministry of Health to the Governing Council of the Community of Madrid sources estimate the total cost during its six weeks of activity at almost EUR 60 million. Recently, and with the prospect of reopening, Madrid allocated EUR 2.4 million for all the storage and logistics of the material that the IFEMA temporary hospital had during the first wave of the pandemic. This appears to be a sixth item of evidence of resource desynchronization in the private healthcare sector.

6. Discussion

The empirical findings based on bed occupancy rate, derived from the SARS-CoV-2 pandemic in the Spanish healthcare sector, reveal a desynchronization between human, technical and medical resources between the private and public healthcare sector. The findings demonstrate that the application of a myopic public health policy desynchronized the public and private healthcare sectors, affecting the business model sustainability of private hospitals. It is likely that the findings reported on resource desynchronization of the bed occupancy rate can to some extent be applied to other societies with public and private healthcare sectors.

The relevance of the bed occupancy rate is that it can be applied to other healthcare settings. Zhu [80] (p. 338) state that: "Beds are one of the most important resources in a healthcare system. How to manage beds efficiently is an important indicator of the efficiency of the healthcare system". Based on a Pakistani healthcare setting, Usman et al. [81] (p. 367) write that: "Bed-occupancy rates and length of stay are the measures that reflect the functional ability of a hospital". In addition, [82] conclude based on a Chinese healthcare setting that: "bed occupancy rate ... showed a positive sign with technical efficiency", Furthermore, there is also literature related to the importance of hospital beds in public and private hospitals, such as Ogunbekun et al. [83] who write that "There are also no private pay beds in Nigeria's public hospitals unlike the situation in Indonesia, Tanzania and Zimbabwe ... ". Bennett and Ngalande-Banda [84] and Muschell [85] emphasize the balance and synchronization between public and private healthcare sectors.

The findings regarding bed occupancy rate also indicate that the sustainability of the public healthcare sector depends on the private one, and the sustainability of the private one depends on the application of public policy during the SARS-CoV-2 pandemic. The human, technical and medical resources of the public and private healthcare sectors therefore need to be synchronized, but the resource synchronization has been neglected in the applied public health policy.

Public and private hospitals need to be aligned to some extent. Baxter and Casady [86] write that the healthcare systems in many countries were overwhelmed because of the pandemic: " . . . *governments are increasingly reaching out to the private sector to form sustainable, public-private partnerships* . . . . . *Unfortunately, many of these* ad hoc *efforts have been reactive and uncoordinated to date*". Warjri and Shah [87] (2020) emphasize the importance of preventive solutions, such as: " . . . *public-private partnerships can play a crucial role in sharing the risk. Not only does the private sector often have the capital to do so, but it is also more likely to attract the necessary expertise* . . . ". Wadvalla [88] (2020) addresses the importance of the synchronizing public and private sectors in South Africa, because they may have many beds together, but the public hospitals may mostly have basic beds receiving patients with mild symptoms. Kirby [89] comments about the public hospitals in Brazil having much less beds than the private one making efforts to increase the capacity of the public hospitals.

The applications imposed in the Royal Decrees have revealed an inherent unsustainability in the Spanish public healthcare sector. The public health policy imposed during the state of alarm contained requirements of the private healthcare sector that drastically restricted hospitals' operational flexibility. This led to additional financial burdens of private hospitals threatening their business model sustainability, and leading to resource desynchronization within and between healthcare sectors during the SARS-CoV-2 pandemic.

Although the Spanish central government took the healthcare control through the Royal Decrees, the reality was that each autonomy controlled its own resources. Central government maintains that each community assumes its patients despite unifying command [67]. The decision to determine the responsibility of desynchronization of hospitals is mutual between the central and local governments.

The Pandemic affected each autonomy to different degrees, and resources are distributed heterogeneously. However, the main resources were not shared between autonomies and there were testimonial examples of common efforts between autonomies, which shows an important desynchronization at the national level.

Clearly, the application of a public health policy needs to address the whole healthcare sector, in order to counteract resource desynchronization. This requires the synchronization of healthcare resources within and between public and private hospitals. Consequently, the synchronization of human, technical and medical resources rely on thorough planning and a coherent implementation beyond myopia.

The public health policy applied in Spain suffers from shortsightedness on the park of public and private healthcare resources, instead of considering a broader perspective of healthcare resources within and between public and private hospitals. This demonstrates that sustainability between sectors relies on the outcome of synchronization between human, technical and medical resources. Consequently, the aim of a public health policy should be to synchronize the healthcare resources, as well as provide greater legal certainty, so as to avoid unsustainability when the sectors are exposed to a health crisis, such as the SARS-CoV-2 pandemic.

7. Conclusions

We conclude that the empirical findings based on bed occupancy rates reveal resource desynchronization in general between public and private healthcare sectors. We also conclude that the findings specifically shed light on the resource desynchronization of human, technical and medical resources in the private healthcare sector. Furthermore, the findings reveal the role of resource desynchronization on business model unsustainability in the private healthcare sector.

This study contributes to our understanding of the public role of resource desynchronization in private hospitals during the SARS-CoV-2 pandemic. We show how the desynchronization of a public health policy can undermine business model sustainability in the private healthcare sector. The paper also contributes to the field of public resource desynchronization in the private healthcare sector, demonstrating its link to an applied public health policy, which affects business model sustainability in private hospitals. It also

raises the concern that private hospitals need to be vigilant regarding the role of public policy on resource desynchronization in the healthcare industry, which affects the sustainability of their business models. Finally, the analysis contributes to linking the role of resource desynchronization with the application of a public policy in the healthcare industry affecting the sustainability of private hospitals' business models.

Business model sustainability in the private healthcare sector is not only an organizational concern, but relies on the public health policy applied, that may cause business model unsustainability. We therefore contend that the empirical findings in this study contribute to existing theory and previous studies revealing: (i) areas of desynchronization between public and private healthcare sectors; (ii) resource desynchronization in private hospitals; and (iii) resource desynchronization reveals unsustainability within the public healthcare sector during the SARS-CoV-2 pandemic.

The application of a public health policy in the healthcare sector, such as the one reported in this study based on bed occupancy rate, should be reformed to optimally use available resources in both public and private sectors. The implementation of a public health policy needs to integrate the sustainability efforts between public and private healthcare sectors, should searching for and establishing resource synergies between public and private hospitals. In addition, public health policy and its subsequent application should be developed between sectors, rather than relying on narrow ones based on each sector in isolation.

This study was undertaken in Spain, which is a country that has a well-developed healthcare system in place. This study is limited to the role of public resource desynchronization on business model sustainability in the private healthcare industry in Spain based on the application of a public policy. It is also limited to focus on the bed occupancy rate and stakeholder insights during the SARS-CoV-2 pandemic in the private healthcare industry. Both limitations provide opportunities for further research in other countries having similar and different public and private healthcare sectors.

Furthermore, this study focuses on general hospital settings that excludes other centers of healthcare, such as lengthy stay healthcare centers (elder people), which is also part of the healthcare system. The focus on public resource desynchronization on business model sustainability in private healthcare industry may be extended to focus on financial issues, access to appropriate resources (technological or human) and laws as well as regulations related to synchronization.

An opportunity for further studies is to examine the role of public policy on resource desynchronization in the healthcare industry of other similar and different countries, as well as continents. Another option would be to examine the role of desynchronization on business model unsustainability in other private hospitals.

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