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BUSINESS PROCESSES AND PERFORMANCE MANAGEMENT OF MEDIUM-SIZED OUTPATIENT CLINICS THROUGH THE SARS-COV-19 PERIOD. A CASE STUDY FROM POLAND

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Purpose: The purpose of this paper is to study how the Sars-Cov-19 pandemic has affected the processes and performance management of medium-sized outpatient clinics in Poland. Given the novelty of the studied area and lack of relevant literature, the case study approach has been employed.
Design/methodology/approach: The case study was performed at CortenMedic, a medium-sized outpatient clinic located in Poland. We analyzed materials obtained from CortenMedic and interviewed its management board. Following an in-depth restructuring of processes, performance management, and business processes management governance, the CortenMedic adjusted to an environment and has taken advantage of opportunities.
Findings: As a result, the CortenMedic recognized outstanding results superior to those before the Sars-Cov-19 period. This study shows that the business processes management and performance management should be dynamic and follow the changes identified inside and outside the companies. The changes through Sars-Cov-19 appear very quickly and are of temporary nature. We postulate the threat of the Sars-Cov-19 pandemic can be converted by the healthcare organizations into an opportunity.
Research limitations/implications: Several limitations of our research must be acknowledged. Firstly, we shall note we based our study on only one organization located in Poland. Since we do not compare our results with other Polish and European clinics, obtained in this study results might not be generalizable.
Practical implications: The increased role of BPM governance in the pandemic period, as compliance with processes, especially with work safety standards, become of utmost importance, posing a thrill of infection otherwise. In this sense, the postulates of this study might be applicable to other healthcare services providers. Additionally, the results of the paper can provide guidance to a decision-maker or management staff through improving the structure of primary and secondary processes depending on the needs and expectations of a dynamic environment.

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Social implications: The article's findings may still offer astute insights to researchers and practitioners who wish to consider more information regarding the importance of the BPM and PM in the healthcare sector through the business process restructuring.
Originality/value: The added value of the article is the answer to the question study how the Sars-Cov-19 pandemic has affected the BPM and performance management (PM) of medium-sized outpatient clinics in Poland.

Keywords: business processes management, performance management, healthcare, BPM governance, Sars-Cov-19.

Category of the paper: case study.

1. Introduction

Healthcare sector organizations are increasingly looking for effective methods and tools to support management processes. One of the popular concepts implemented in medical facilities is business process management (BPM), enabling the control of treatment processes, cost monitoring and the effective use of resources. The implementation of BPM in healthcare facilities requires a lot of efforts and efforts of top management, as well as commitment on the part of the staff (BPM Governance). This enables the provision of medical services in line with patients' expectations. In healthcare organizations, services are performed with due diligence to ensure adequate quality. Moreover, there is a noticeable improvement in the effectiveness of units' operations and the efficiency of the primary and secondary processes (Lenz & Reichert, 2007). The most significant advantage is being achieved when secondary (service provision) processes are optimized, due to which primary processes (medical treatment) can be left undisturbed, and so enhance the overall processes flow (Lennerts et al., 2005). Through the Sars-Cov-19 pandemic, the secondary processes become particularly important for the continuity of primary processes. Pursuant to the onset of Sars-Cov-19, a number of new primary processes appeared, while the secondary processes have been thoroughly adjusted. The Sars-Cov-19 pandemic has been an uneven period, with at least two phases, which differently affected the primary and secondary processes and triggered their restructuring (Alreshidi et al., 2020; Bellino et al., 2021; Levin et al., 2021). BPM restructuring means a change in the process map. There is little research on the restructuring of service provision processes in the context of the Sars-Cov-19 pandemic, in particular the secondary processes. This is a consequence of, firstly, the novelty of the problem and, secondly, the focus on the process of providing services to Sars-Cov-19 -patients. To our best knowledge, this is the first study aimed to fill this gap.

It is necessary to constantly improve BPM in healthcare units and adapt to the requirements of the environment and the dynamic changes taking place in the environment, in particular Sars-Cov-19. We employ a case study carried out in the CortenMedic, a healthcare service provider in Poland. The objective of this paper is to study how the Sars-Cov-19 pandemic has affected the BPM and performance management (PM) of medium-sized outpatient clinics in Poland. The rest of this paper is structured in the following way. In Section 2, we provide a brief literature review of BPM and PM. In Section 3, research methods are given. Section 4 provides results derived from our study. Section 5 provides a discussion and limitations of this study. Finally, we provide conclusions and practical implications.

2. Business process and performance management in healthcare

The key concept used in contemporary healthcare organizations is a BPM, which encompasses the discovery, modelling, analyzing and improvement of processes (De Ramón Fernández et al., 2020; Zacarias et al., 2017). This approach is also used in healthcare institutions that should respond to the needs of patients. As we already mention, healthcare processes can be classified as primary (medical treatment) and secondary (facility management, service provision) processes (Lenz & Reichert, 2007). A medical treatment process is also named a clinical process and is directly related to the patient. This process is performed according to a diagnostic and therapeutic cycle of observation, reasoning and action (De Ramón Fernández et al., 2020). The diagnostic and therapeutic cycle depends largely on the medical knowledge of case-specific decisions, which are made through the interpretation of patient-specific information (Rebuge & Ferreira, 2012). Secondary processes, on the other hand, are general process patterns that support medical treatment processes. They are not tailored to a specific condition but are intended to coordinate treatment among different individuals and organizational units. They are performed in an environment that is constantly changing and are widely recognized as one of the most complex compared to other environments (Poulymenopoulou et al., 2003). The healthcare environment and its underlying processes have special characteristics in terms of their degree of dynamism, complexity and multidisciplinary nature.

In order to adapt to the environment of healthcare, the companies need to learn how to manage and restructure both primary and secondary processes in an efficient and effective way (Bogodistov et al., 2019). Several primary processes will remain unchanged (e.g. connected with diagnosis), whereas secondary processes (e.g., health data analysis, internal communication) will change immediately (Bogodistov et al., 2019). BPM aims at improving some existing processes and is connected with is the strategic transformation of interrelated organizational subsystems, producing varying levels of impact (Dumas et al., 2018).

It has been already acknowledged, the implementation of BPM in healthcare organizations provides many benefits, including (1) order improvement, (2) clarification and limitation of employees responsibility, (3) improvement of communication and information sharing, (4) improvement of individual employees performance through independent decision-making, (5) streamlining of processes means that work is performed where there is a demand for it, (6) improving the quality of medical services provided and contacts with patients, (7) reduction of operating costs, rational management of the institution's resources, (8) an increase in the efficiency and effectiveness of the operation of the entire organization, and consequently the increase in profitability (Cid-De-La-Paz et al., 2019; De Ramón Fernández et al., 2020; Dumas et al., 2018).

As postulated by A. Spanyi, the metrics, performance and chief executive officer (CEO) responsibilities in the context of processes capacity are the foundation for success in building BPM governance (Bandara et al., 2019; Spanyi, 2004). Although the concept of PM has been already over 100 years old, with the Du Pont model (published at the very beginning of the last century) to be considered as the first PM system (Taticchi & Balachandran, 2008), following the 1990s', it has become increasingly popular among scholars and decision-makers. The popularity of PM can be best described with the fact that around 70% of large and medium-sized firms located in the USA and Europe have already used this concept (de Waal & Kourtit, 2013). Despite the fact that many scholars define PM in various ways, according to Melnyk (Melnyk et al., 2014), all of the definitions refer to the measurement, which cannot be separated from PM (Hourneaux et al., 2017). It has been already discussed in the literature that the PM should: (1) measure and support the execution of the strategy, (2) provided a holistic and balanced view of the organization and (3) be dynamic, continuously adjusting to changes inside and outside the organization (Korneta, 2020; Taticchi et al., 2010). The concept of PM is also tightly linked with the processes of the organization and should provide timely and reliable information on how the processes flow and on their efficiency. Since the overall objective of PM is to support the strategy of the organization, it should therefore primarily focus on the critical process. This can be well achieved with the assignment of key performance indicators (KPI) to the processes, which provide a comprehensive summary of the processes. KPI should be specific, measurable, attainable, realistic and time-sensitive (Korneta, 2019; Parmenter, 2015).

3. Research methodology

Given the novelty of the studied area, we employed a case study in one of the medium-sized outpatient's clinics located in Poland. Case study research, as an overall approach, is based on in-depth explorations of complex phenomena in their natural or real-life settings. Empirical

case studies typically enable dynamic understanding of complex challenges and provide evidence about causal mechanisms and the necessary and sufficient conditions (contexts) for intervention implementation and effects. Case study research provides evidence about context and transferability but also for helping strengthen causal inferences when pathways between intervention and effects are likely to be non-linear (Fàbregues & Fetters, 2019; Hyett et al., 2014; Paparini et al., 2020). Here, the data was gathered from participatory observation and individual interviews as well as document analysis.

An important source of data involves two years period of participatory observation (2019-2020) to gain insight into the dynamics and practices within and around the Sars-Cov-19 situation. One of the authors contributed as an insider-researcher as he has been employed in the organization for a long time and was thus able to work closely with the informants, resulting in many open talks and discussions.

We also draw on the detailed accounts of key actors obtained from three in-depth interviews with board members. During the in-depth interviews, we focused on identifying key processes characteristic for different pandemic phases and before they commenced. We also discussed the roles of these processes, including why are they important and how the CortenMedic approached measuring them. Finally, we have identified the five key processes for the CortenMedic in each of the studied periods. By key processes, we define the process that requires the most attention of the management board. These processes can be either primary or secondary; noting, however, our objective is to identify the process which reflects the true focus of the management board on the CortenMedic.

We also draw on the materials obtained from CortenMedic relating to BPM, PM, corporate governance and financial results for studied periods.

The case study was carried out in CortenMedic. CortenMedic is a polish, medium-sized healthcare services provider established in 1993. The CortenMedic is located in two major districts of Poland and operates 12 multi-clinics. 5 – years ago, the CortenMedic changed its strategy, and as a consequence, through the last three years before the pandemic, the sales revenue of the CortenMedic grew around 20%. The employment of CortenMedic amounted to around 500 and 700 employees in the end of 2019 and 2020 respectively.

At the time the article is written, the key primary CortenMedic processes are (1) dental treatment; (2) primary healthcare; (3) outpatient specialist care; (4) mobile dental treatment and during the pandemic period Sars-Cov-19 (5) Sars-Cov-19 testing and (6) Sars-Cov-19 dentistry. The execution of primary processes requires a considerable number of secondary processes, including, inter alia, (1) HRM, (2) procurement, (3) accounting and payroll, (4) work safety, (5) sales development, (6) operations management, (7) Information *technology* (IT) management and (8) strategic ones (new initiatives, acquisitions, develop a strategy).

4. Business Process Restructuring of the CortenMedic from a performance management perspective

4.1. Business processes and performance management before Sars-Cov-19

In due course of our interviews, we have identified five key processes and attached them to the performance indicators for the CortenMedic before the pandemic has commenced. In Table 1, we provide the list of these processes and selected by the management board key performance indicators measuring their efficiency. The decisions relating to listed in Table 1 processes were taken by: chief operating officer (COO) (processes 3 and 4), chief financial officer (CFO) (processes 1 and 5), and chief strategy officer (CSO) (process 2).

Table 1.
The list of top 5 processes for value creation at CortenMedic before the Sars-Cov-19 pandemic commenced

	Process	**Key performance indicators**		
1	Recruitment of orthodontists and dental prosthetics	Number of orthodontists/dental prosthetics	S	CFO
2	Acquiring new contracts	Number of new contracts signed	S	CSO
3	Scheduling of medical doctors work	Number of patients per hour, patient waiting times	S	COO
4	IT and Management Information Systems (MIS) development	Number of new initiatives implemented	S	COO
5	Acquisitions	Number of acquisition evaluations	S	CFO

Note: S – denotes secondary process.

As disclosed in Table 1, the five key processes before the pandemic commenced had been the secondary ones. The management commented it was because the primary processes had been already fully efficient and under good control. Hence, there was no point in further improvements. The first key process was the recruitment of new orthodontists and dental prosthetics. The highest rank of these processes results from significant shortages of these specialists in the polish healthcare market. The waiting times for these specialists, depending on the clinic and the medical doctor, vary up to even three months. Since the CortenMedic has under good control the remaining sub-process of orthodontic and prosthetic healing processes, the recruitment was a bottleneck. At the end of 2020, CortenMedic employed 23 orthodontists and 22 dental prosthetics. The Chief Operations Officer of CortenMedic stated: "If it was only possible, we could give full-time employment for ten new orthodontists and dental prosthetics starting even from today". The CortenMedic measures this process with the following key performance indicator (KPI) the number of new orthodontists and dental prosthetics hired (monthly measurement). Additionally, the CortenMedic uses several performance indicators, acting as auxiliary indicators to stated KPI. The second key process is assigned to the business development department of the CortenMedic, which hires two business developers who acquire new B2B contracts (business to business) from public institutions and the companies.

The third process relates to efficient scheduling of medical doctors work and requires constant attention. The CortenMedic measures this process with two key performance indicators: (1) the number of patients per medical doctor working hour and (2) waiting times.

The fourth process was the IT and Management Information Systems (MIS) development. The role of IT and MIS in the healthcare industry is increasingly growing. As a result, many healthcare services providers, among which the CortenMedic is, pay a lot of attention to IT and MIS development. The CortenMedic measures IT and MIS development with the number of new IT and MIS initiatives implemented (quarterly).

The fifth process relates to acquisitions. The Polish healthcare market is highly fragmented, with many mergers and acquisitions continuously taking place. CortenMedic acknowledges mergers and acquisitions as an important source for further growth; hence, the remaining KPI before the pandemic was the number of evaluated acquisitions (quarterly).

4.2. Business processes and performance management during Sars-Cov-19

In conducting in-depth interviews, we have identified that the pandemic period from March to December 2020 was not homogenous but comprised two different periods, with considerable differences between them.

The beginning of the pandemic (March-May 2020)

At the beginning of the pandemic, the reluctance of medical doctors emerged as a key issue, with dentists being especially against providing any physical services. This is because, during the dentistry process, tissues get scattered, enabling the quick spread of infected material. As a result, more than half of medical doctors refused to go to clinics. The CortenMedic had to launch several new subprocesses to ensure the continuity of services provided.

The risk of Sars-Cov-19 infection forced the CortenMedic to restructure and implement new safety, anti-Sars-Cov-19 standards and procedures. Although safety standards had been under good control before the pandemic and required almost no attention from the management board, these processes became critical.

The following process, which becomes critical to the CortenMedic at the beginning of the pandemic, was purchases and management of safety materials usage. It was tough to purchase any antiseptic materials due to their shortages.

Since the vast majority of dentists in Poland withdraw from the provision of services, pain patients had significant problems with treatment. A fraction of these patients had Sars-Cov-19 symptoms. National Health Fund agreed with CortenMedic to start in its selected dentistry clinics 24 hours per day pain patients with Sars-Cov-19 symptoms treatment. Table 2 provides key processes and their measurement on which the management focused in March-May 2020 period. The decisions relating to listed in Table 2 processes 1-4 were taken by the COO. Additionally, the CFO supported the COO with ensuring the continuity of dentistry services provision (process 1). CSO initiated and developed process 5, specific for the Sars-Cov-19 pandemic.

Table 2.

The list of top 5 processes for value creation at CortenMedic in March-May 2020

	Process	**Key performance indicators**		
1	Ensuring the continuity of dentistry services provision	Daily number of dentists available hours	P	COO&CFO
2	Ensuring the continuity of primary healthcare services provision	Daily number of general practitioners available hours	P	COO
3	Implementation of work safety standards against Sars-Cov-19	% of clinics sufficiently secured against Sars-Cov-19 per day	S	COO
4	Anti-Sars-Cov-19 protection materials purchases and management	Sars-Cov-19 safety materials stock levels and their usage (per employee)	S	COO
5	Implementation of Sars-Cov-19 dentistry	Number of clinics ready to provide dentistry services to Sars-Cov-19 patients	P	CSO

P – denotes primary process; S – denotes the secondary process.

Moreover, interviewed management board members draw our attention to the increased role of corporate governance as non-compliance with the CortenMedic's standards, especially those relating to work safety ones, aimed to prevent the infections, could have a significant consequence to both the CortenMedic and the employees.

The second phase of the pandemic (Jun-Dec 2020)

In the second phase of the pandemic, the CortenMedic's focus shifted from mostly provision of treatment services to implementing the new process aimed to adjust the CortenMedic to the pandemic. The CortenMedic developed telemedicine considerably and opened new testing points. Next, the IT development followed together with the improvement of the CortenMedic's PM. The number of CortenMedic staff increased from 500 to over 700 employees. At the beginning of December 2020, the CortenMedic commenced preparations for the vaccination process. The decisions relating to listed in Table 3 processes were taken by: COO (process 3), CFO (process 4), and CSO (processes 1,2 and 5).

Table 3.

The list of top 5 processes for value creation at CortenMedic in the Jun-Dec 2020 period

	Process	**Key performance indicators**		
1	Development and provision of telemedicine	Number of telemedicine functionalities available	P	CSO
2	Opening and maintenance of new Sars-Cov-19 testing points	Number of new Sars-Cov-19 testing points opened	P	CSO
3	Development of IT tools for Sars-Cov-19 activities	% of integration completion with intercompany diagnostic platform (MARCEL)	S	COO
4	PM of Sars-Cov-19 dentistry	Gross (medical) margin	P	CFO
5	Preparation to Sars-Cov-19 vaccination process	% of preparation works done at each clinic	P	CSO

P – denotes primary process; S – denotes secondary process.

5. Financial results of the CortenMedic

The financial results of the CortenMedic are presented for 2019 and 2020 in two separate phases (table 5). The first one is adjusted figures as if no extra actions related to Sars-Cov-19 were taken by the CortenMedic. The second provides full financial results for 2020, i.e. the results of statutory and Sars-Cov-19 activities. For comparative purposes, we also provide the financial results of the CortenMedic for 2019 before the pandemic commenced.

Table 4.
The financial results of the CortenMedic in 2019. The financial results of the statutory, new and total activities of the CortenMedic in 2020. All amounts in PLN thousand

	2019	**2020**	**2020**	**2020**
	Statutory activities	Statutory activities	Sars-Cov-19 activities	Total
Dentistry	10 290	8 912		8 912
Primary healthcare	4 481	5 104		5 104
Specialists	4 168	2 214		2 214
Mobile dentistry	1 525	1 061		1 061
Sars-Cov-19 testing			8 267	8 267
Sars-Cov-19 dentistry			2 836	2 836
Sales revenues	**20 464**	**17 291**	**11 103**	**28 394**
Medical margin	7 087	4 931	6 312	11 243
Remaining running costs	-5 984	-5 984	-1 874	-7 858
Profit before tax	**1 103**	**-1 053**	**4 438**	**3 385**

As presented in Table 4, if the CortenMedic had not changed its strategy, followed by the change in its processes, their ranks. It is PM, the CortenMedic's sales revenue would have declined by PLN 3,172 thousand or by 15,5 % as compared to 2019, and the CortenMedic would recognize the loss for 2020 of PLN 1,053 thousand. The extra sales and profit recognized on the Sars-Cov-19 activate totalled PLN 11,103 thousand and PLN 4,438 thousand, respectively. As a result of that, CortenMedic's combined sales revenue increased by PLN 7,931 (or by 38,7%) and the CortenMedic's profit before tax jumped to PLN 3,385 thousand in the pandemic period. We also note very high medical margins recognized on Sars-Cov-19 activities of 28,5% of sales revenues.

6. Discussion

The novel coronavirus disease 2019 (Sars-Cov-19) has altered the economy, society, and healthcare system (Wosik et al., 2020). While the Sars-Cov-19 crisis has presented the world healthcare delivery system with unprecedented challenges (Brownson et al., 2020), it has catalyzed rapid changes in primary and secondary processes. The primary process is

critical to the organization and is the first to be improved. Once they work efficiently, the organization moves to the secondary processes. Before the pandemic, the primary processes of CortenMedic had been already working well. Hence the full focus of the management was on the secondary processes, which required improvements and was expected to create more value than the primary ones. In the pandemic, the CortenMedic had to move back and once again pay attention to primary processes. In the first phase of the pandemic, three out of five key processes were primary ones, while in the second, four out of five processes were primary ones. None of the five key process characteristics for the CortenMedic before the pandemic remains critical in the time of the pandemic, except the IT. Those changes show that the Sars-Cov-19 crisis period is not homogeneous. Hence, our results are aligned with other research (Alreshidi et al., 2020; Ortiz-Prado et al., 2021).

An analysis of the literature shows that at least two phases during the Sars-Cov-19 crisis period can distinguish. In the first initial phase, virtually no country was prepared to deal with the influx of patients seeking medical help with almost complete paralysis of the healthcare system (Alreshidi et al., 2020; Ortiz-Prado et al., 2021). Units providing medical services in the face of a crisis situation had to answer the fundamental questions: how to change the structure of processes, how to adapt to the current situation, taking into account the specificity of the processes (Puri et al., 2020). In the second phase, the processes of development and strengthening of telemedicine and testing in anticipation of the appearance of a vaccine were particularly important (Post et al., 2021).

Only due to in-depth restructuring of business processes and PM, the CortenMedic improved its profitability in an unfavourable environment. Some researchers indicated that business process needs to be aligned with external dynamics through agile BPM (Badakhshan et al., 2019). This agile approach improves alignment, communication among customers and employees and ensure the response to change opportunities in efficient and effective ways (Zacarias et al., 2017). If the CortenMedic has not changed its process thoroughly, it will incur considerable losses.

The problems provided in the case study were typical of the healthcare services providers during dynamic changes in the actual environment. On the other hand, the solutions adopted by CortenMedic and the pace at which the restructuring of the processes took place were unusual. We chose CortenMedic to show that although the Sars-Cov-19 crisis triggered challenges to all healthcare services providers, only some of them were able to address them properly and improve the profitability.

7. Conclusions

The Sars-Cov-19 pandemic has caused the onset of many threats and opportunities for medium-sized outpatient clinics in Poland. Following many complex and significant changes to the BPM and PM, the organizations could convert the threats into opportunities. These changes appeared suddenly and were of temporary nature. The case of CortenMedic shows that approaching the Sars-Cov-19 pandemic without an in-depth restructuring of business processes and PM would result in significant losses. That is why BPM and PM must be dynamic and follow the changes of strategy and operation perspective. PM hence, are not only the target values of performance indicators that in all cases must be meet but dynamic systems which should follow the changes within and outside organizations. We recommend the organizations approach a Sars-Cov-19 pandemic in an agile way towards the BPM and PM. The traditional approach might not be suitable for such conditions, especially for healthcare services providers.

Finally, we shall note the increased role of BPM governance in the pandemic period, as compliance with processes, especially with work safety standards, become of utmost importance, posing a thrill of infection otherwise. In this sense, the postulates of this study might be applicable to other healthcare services providers. Additionally, the results of the paper can provide guidance to a decision-maker or management staff through improving the structure of primary and secondary processes depending on the needs and expectations of a dynamic environment.

The article's findings may still offer astute insights to researchers and practitioners who wish to consider more information regarding the importance of the BPM and PM in the healthcare sector through the business process restructuring.

Several limitations of our research must be acknowledged. Firstly, we shall note we based our study on only one organization located in Poland. Since we do not compare our results with other Polish and European clinics, obtained in this study results might not be generalizable.

Further investigation on this topic should be incentivized to generalize and complement the findings as far as possible, as well as to other healthcare providers and their experiences with the BPM and PM in the contemporary environment.

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