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Factor Analysis of Dynamic Capabilities on Public Health Centers Operation Performance

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Abstract:

Purpose: The purpose of this study was to determine how the variables of supply chain performance, performance of medical personnel, and occupancy overload affect operating performance moderated by dynamic capability variables. In a case study of public health center in Indonesia.

Design/methodology/approach: This study uses the SEM-PLS quantitative method to analyze the questionnaire data obtained from 112 respondents consisting of medical administrators, nurses, and doctors. Validity and reliability tests were also used to ensure that the data were normally distributed and reliable.

Findings: This study found that the supply chain performance variable and the performance of medical personnel had a positive effect on the operational performance of the public health center either through moderating the dynamic capability variable or not. Meanwhile, occupancy overload was found to have a negative effect on the operational performance of the public health center. And the moderating of the dynamic capability variable is only able to reduce its negative impact.

Research limitations/implications: This study covers only a small number of public health center in Indonesia, so it is quite difficult to produce generalizable findings. This study also did not involve other internal and external variables that could potentially affect the operational performance of the public health center.

Practical implications: The findings of this study can be a suggestion for the government and the management of the public health center to pay more attention to the variables that affect the operational performance of the public health center. Variables that have a positive impact should be increased and variables that have a negative impact should be mitigated.

Social implications: Health centers that have effective and efficient operating management will be able to maximize the performance of patient services armed with available resources. The findings of this study can help the public health center to anticipate a surge in patient visits which can reduce the operating performance of the public health center.

Originality/value: This study combines the variables of supply chain performance, medical personnel performance, occupancy overload, dynamic capability, and operating performance in one causality model framework. In contrast to other studies that did it separately.

Keywords: supply chain, medical personnel, occupancy overload, dynamic capability, operation performance, healthcare management, Indonesia

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1. Introduction

Public Healthcare Centers (PHCs) or Puskesmas as they are called in Indonesia, are the frontier of healthcare facilities provided by the government to ensure that every civil-occupied area is served with adequate basic healthcare service. PHCs are usually small in scale –and this is intentional– so they can be built quickly in cities with crowded areas where space is scarce, or in rural areas where people live at large distances and paved roads are not always available. The small scale of PHCs also gave them the advantage of relatively low operational cost, low maintenance cost, and easily upgradable when the necessity arises. But it also comes with drawbacks, its small scale only allows a small number of people to work effectively on a PHC, and in rural areas, the government must recruit healthcare workers like nurses and doctors from nearby cities thus providing them with enough living conditions to serve in rural PHCs (Laksono & Wulandari, 2019). Rural PHCs are also at a disadvantage when it comes to access to healthcare supply where they ought to send requests to the Province level Healthcare Bureau, wait for budgeting and purchasing bureaucracy, and then wait for the supply goods to arrive at each PHC.

Supply chain uncertainty and limited healthcare workers' capacity are not the only factors to consider in the overall risk faced daily in PHCs, but also the uncertainty of daily incoming patient encounters. Each PHC is designed so they have the capacity to handle a small number of encounters of 30 to its highest peak of more than 100 encounters a day. When the encounter number is small, the PHC management could adjust resource consumption by shortening the working hours of healthcare workers, minimizing the usage of healthcare supply, as well as electricity used by all facilities. But once the encounter number rose past its highest peak due to some circumstances, PHCs found it struggling to meet the overflowing demand. The difference in the overflown state could reach up to 150 to 160 encounters a day, if the PHC management could not find a way to adjust the resources accordingly, they would be at risk of having patients rebound where they leave and look for another PHC to get healthcare service from.

The Indonesian Government through the body of the Healthcare Ministry and BPJS has made regulations that allow each PHC in either cities or rural areas to be occupied by 5000 people at maximum. Each patient registered in the BPJS system is assigned to occupy a certain PHC to get their healthcare from, usually determined by distance from their house to the nearest available PHC. Patients are also allowed to choose another PHC –which is not necessarily close to home– to be occupied, but they are discouraged to do so once the selected PHC has reached the maximum recommended. This discouragement is both government and BPJS's effort to ensure that all patient's occupations are well dispersed among available PHCs. But due to the nature of the large size of Indonesia, the government also does its best effort to maximize the coverage of PHCs across those areas. At this time of writing, there are 216 units of PHCs covering an area of 87 thousand kilometers in Riau Province, where they are supposed to serve 6.83 million of civilians (Afrizal, Effendi & Handayani, 2019). According to those numbers, we can calculate approximately that each PHC potentially has to serve 31,620 people each, while the suggested maximum occupation is only 5000.

With all the circumstances, PHC management should be aware that an overflow of patient encounters is imminent. But with all the resources they had, they should be able to mitigate such risks and minimize loss due to extreme conditions. Therefore –ceteris paribus– this paper is solely focused on finding out how each of the perceived variables (supply chain uncertainty, healthcare worker capacity, overflow occupation) could affect operational performance in general. Thus this article explores various literature to find out if there are any other variables that can alter the specified variables to operational performance. Turned out that among many articles read prior to this paper, some suggested that dynamic capability variables could be involved in both risk mitigation and performance improvement. So this paper is trying to find out how the specified variables affect operational performance by considering dynamic capability for moderation. Will dynamic capability help PHCs help (or not) maintain operational performance albeit in unexpected circumstances? If it does, how much dynamic capability could help PHC management control unexpected circumstances? What could be derived from the findings for future suggestions?

2. Literature Review

It has been long known in the literature of healthcare management that organizational resources be it in the form of facilities, tools, consumables, people, the process holds vital roles in determining the operating performance of healthcare facilities (Roth & Dierdonck, 1995; Wright, Williams & Wilkinson, 1998; Harper, 2002; Hongoro & Pake, 2004). Especially in the healthcare industry where each operation requires certain resources to be available at the right amount, in the right place, and at the right time (Daniels & Sabin, 2008; Pallas, Baumann & Donner, 2001). Failure of maintaining the required resources will affect operation performance negatively (King, Clarkson & Wallace, 2010; Salyers, Bonfils, Luther, Firmin, White, Adams et al., 2017; Moyo, Bhappu, Bhebhe & Ncube, 2022). Healthcare facility management has implemented various practices for resource optimization such as management by objective, lean management, to just-in-time supply chain (Baker, Taylor & Mitchell, 2011; Rosenman, Vik, Hui & Breitfeld, 2005). Studies show that good resource management not only affects operation management directly but also manages to improve financial performance as well for they can minimize waste and better purchasing. Though they are not free from the risk of external factors such as supply chain uncertainty, force majeure, and epidemic which can directly affect healthcare facility operation performance (Zhong, Clark, Hou, Zang & Fitzgerald, 2014; Masoumeh, Khankeh, Mosadeghrad & Farrokhi, 2015). Healthcare workers are proven to be one of the most important factors that determines the operational performance in any healthcare facility. Well managed team of healthcare workers would make any process involving them more effective and efficient. While on the other hand, failure in creating an effective team will risk both the operational performance in general and the patients being treated. Indicators for measuring healthcare performance ranged from quantity and quality of the tasks being done, length of working time, and the complexity of the tasks (Wallace, Lemaire & Ghali, 2009; Joseph & Merlyn, 2016; Zayed, Edeh, Darwish, Islam, Kryshtal, Nitsenko et al., 2022).

Healthcare facilities are meant to serve a certain number of patients per day according to serving capacity planned before, having marginally less number of patients encountered in a day than expected would not trouble healthcare management as the excess resources could be saved. Having significantly less number of patients encountered for days consecutively would make the healthcare management have to reconsider the reduction of capacity to minimize resource waste (Lopez, Harti, Rodriguez & Roberts, 2014; Soril, Leggett, Lorenzetti, Noseworthy & Clement, 2015; Khan, Razzak, Saleem, Khan, Mir & Bushra, 2011). On the other side, having a marginal surge of patients encounters could render the facility busier than usual but may not hurt the performance significantly. But having a significant surge of patients encountered a day could risk the entire process service as many patients have to be served consecutively or simultaneously (Burns, Chilingerian & Wholey, 1994; Nap, Andriessen, Meessen & van der Werf, 2007). Fluctuations of patients encounters could be determined by the health environment in the vicinity of that healthcare facility, people tend to visit healthcare facilities more only when they feel uneasy or sick, and less when they have no urgency to do so. Population density could also determine whether patients encounter fluctuations to a healthcare facility, even more so when few healthcare facilities are placed in close vicinity against each other (Ong, Mangione, Romano, Zhou, Auerbach & Chun, 2009; Babarro, Mochales & Cortes, 2012; Volpe & Magalhaes, 2013). When two or more healthcare facilities are placed close to each other, any patient has the opportunity to choose one they are more comfortable with, but could also move to the other when they please. But the biggest contributor to the surge of patient encounters in healthcare facilities is large scale endemic, be they nationally or globally. COVID-19 is one particular circumstance when most countries in the world failed to meet the demand of healthcare once the majority of its population was infected, and healthcare facilities are barely enough to cover them (Barrett, Khan, Mac, Ximenes, Naimark & Sander, 2020; Janke, Mei, Rothenberg, Becher, Lin & Venkatesh, 2021; Kahkonen, Evangelista, Hallikas, Immonen & Lintukangas, 2021). Supply chain uncertainty plays a huge role in giving a negative impact for overall operation performance. Especially when a healthcare facility could not afford a large or adequate storage system to ensure that all their supply needs are always available, they tend to rely upon suppliers to deliver their needs at the right time and the right amount. This dependence made them vulnerable to extreme circumstance due to supply chain uncertainty, as the resource went low and the supplier failed to deliver as requested, it shall impact the healthcare facility performance negatively (Syahrir, Suparno & Vanany, 2015; Francis, 2020; Eslamipoor & Nobari, 2023).

If the internal factors of healthcare facilities like supply chain and healthcare workers are controllable, the external factors are less controllable as they are determined by the environment holistically. Among many practices of management related to adjusting resources to maintain or improve performances such as management by objective, lean management, and just-in-time management, dynamic capability has features uniquely feasible for both maintaining performance as well as mitigating risks from unknown circumstances (Stevens & Phelan, 2012; Amaral & Costa, 2014; Mandal, 2017). Studies of dynamic capabilities shows that it is general purpose management practice which can work in any industry, including healthcare systems (Wu & Hu, 2012; Agwunobi & Osborne, 2016). Dynamic capability may help healthcare facility management to continuously adjust the resources to meet external demands at a certain level. Healthcare facilities which have implemented dynamic capability practice show more resilience in extreme circumstances like managing catastrophe affected environmental health where the entire supply chain changes to rapid distribution. On the other hand, dynamic capability may also help a healthcare facility to improve performance by changing the process of health promotion from conventional medium to digitalization, which effectively increases patient awareness (Leung, 2012; Stronen, Hoholm, Kvaerner & Stome, 2017; Murphy & Wilson, 2020).

Although studies have shown that healthcare facilities are expected to do well in normal circumstances of regular patients visits, there are only a few studies that discuss how the condition becomes uncontrollable when the number of patients visits went up higher than the provided capacity. This unexpected circumstance may risk both healthcare facilities and the patient as the facility can not provide enough resources to serve all patients at the same time or even consecutively. Some studies claimed that dynamic capability could help both maintain or even improve the operational performance of a healthcare facility but this is yet to be proven quantitatively through surveys and statistics. This paper is aiming to find out how dynamic capability could help healthcare facilities when they are faced with unexpected circumstances like supply chain uncertainty, limited healthcare worker capacity, and occupation overload or in other words patients visiting overflown. If the theory of dynamic capability for managing risks and improving performance is true, then the use of dynamic capability on healthcare facilities should be able to show performance improvement or the ability to maintain manageable situations when negative circumstances occur.

2.1. Research Purpose

This study aims to investigate how dynamic capabilities can moderate the impact of supply chain uncertainty, medical personnel performance, and occupancy overload of patient visits, on the performance of health facilities in general. By knowing how each variable plays a role and the level of influence between one another, we will be able to conclude how dynamic capabilities should be applied to health facility management, especially to mitigate the risk of spikes in patient visits.

2.2. Hypotheses Constructs

H1: Supply chain performance has a positive impact on operational performance in public health centers.

H2: Supply chain performance moderated by dynamic capability has a positive impact on public health center operation performance.

H3: Medical personnel performance has a positive effect on the operation performance of the public health center.

H4: Medical personnel performance, moderated by dynamic capabilities, has a positive influence on the operation performance of the public health center.

H5: Occupancy overload has a negative effect on the operation performance of the public health center

H6: Occupancy overload moderated by dynamic capability has a negative effect on the operation performance of public health center

3. Method

This study adopted a quantitative method to test the theoretical framework. Data were collected by distributing questionnaires to 112 respondents in public healthcare centers. This research also conducts direct observations, interviews, and document reviews based on reports from the Indonesia Health Ministry which are published online. The concepts of variables and indicators are shown in Table 1.

There are 3 independent variables (supply chain performance, medical personnel performance, and occupancy overload), 1 moderating variable (dynamic capability), and 1 dependent variable (operation performance). Supply chain performance variables are measured using several indicators such as quantity accuracy, timeliness, quality of goods, and affordable prices (Akyuz & Erkan, 2009; Shepherd & Gunter, 2010; Beamon, 1999; Gunasekaran, Patel & Mcgaughey, 2004). Medical personnel performance variables were measured using several indicators such as work quality, length of work, the quantity of work, and work complexity (McCloskey & McCain, 1988; Wei, Sewell, Woody & Rose, 2018; Chu & Hsu, 2011). The occupancy overload variable was measured using several indicators such as workload, facility load, and resource load (Olshaker, 2009; Krochmal & Riley, 1994; Somma, Paladino, Vaughan, Lalle & Magrini, 2014). The dynamic capability variable is measured using several indicators such as sensing, seizing, and transforming (Teece, 2018; Wang & Ahmed, 2007; Eisenhardt & Martin, 2000; Barreto, 2009). Operation performance is measured using several indicators such as quality of service, process speed, service cost, and service flexibility (Voss, Ahlstrom & Blackmon, 1997).

Variable and References	Description	Indicators	Measure Scale
Supply Chain Performance (Akyuz & Erkan, 2009; Shepherd & Gunter, 2010; Beamon, 1999; Gunasekaran et al., 2004)	The ability of the supply chain to provide the resources needed by the organization	Quantity accuracy Punctuality Quality of goods Affordable prices	Likert 1-5
Medical Personnel Performance (McCloskey & McCain, 1988; Wei et al., 2018; Chu & Hsu, 2011)	The ability of medical personnel to serve patients in a certain amount and time	Work Quality Length of working Work quantity Work complexity	Likert 1-5
Occupancy overload (Olshaker, 2009; Krochmal & Riley, 1994; Somma et al., 2014).	The condition of spikes in the number of patient visits at health facilities that exceed the daily capacity	Workload Facility load Resource load	Likert 1-5
Dynamic Capability (Teece, 2018; Wang & Ahmed, 2007; Eisenhardt & Martin, 2000; Barreto, 2009)	The organization's ability to adapt resources to provide added value	Sensing Seizing Transforming	Likert 1-5
Operation performance (Voss et al., 1997)	The ability of health facilities to serve patients with existing resources effectively and efficiently	Quality of service Process speed Service cost Service flexibility	Likert 1-5

Table 1. Variables, descriptions, indicators, references, and measurement scales

This study uses Structural Equation Model-Partial Least Squares (SEM-PLS) to analyze the data. This method is the best way to test the relationship between exogenous variables and endogenous variables. SEM-PLS can also be used to test constructs with small samples (Hair, Sarstedt, Ringle & Gudergan, 2017). The analysis procedure includes descriptive, validity test, reliability test, and multicollinearity test. The descriptive analysis provides general information about the respondents of this study. Then it is accompanied by a validity test to ensure that the instrument used is valid, and a multicollinearity test can determine whether or not there is a relationship between variables. To better understand the relationship between the independent and dependent variables, regression analysis was also used in this study. Furthermore, the presence of moderating variables prompted this research to conduct a moderation analysis to find out the role of dynamic capabilities in the relationship between supply chain, medical personnel performance, occupancy overload, and public health center operating performance.

4. Results

The characteristics of respondents were categorized based on gender, age, education level, and length of service at the public health center. As shown in Table 2, 82% of the respondents were women, with an age range of 28 to 44 years. The majority are high school graduates from nursing to medic. The number of sample researchers involved in this study was 112 people.

This study uses SEM-PLS, which consists of 2 stages. The first starts with testing measurements and structural models. The measurement model looks for whether the instruments used are met with aspects of validity and reliability. Tables 3 and 4 show the results of the analysis.

Gender information	Male		Female	
	23 (28.57%)		89 (79.46%)	
Age	**25-30 year**	**31-40 year**	**41-50 year**	**>50 year**
	46 (41%)	32 (28.5%)	18 (16%)	16 (14.2%)
Educational level	**Diploma/Bachelor**	**Medical Sc.**	**Specialist**	**Professor**
	65 (58%)	28 (25%)	19 (16.9%)	0 (0%)
Work experience	**1-5 Year**	**6-10 Year**	**11-15 Year**	**>15 Year**
	79 (67%)	12 (10.7%)	21 (18.7%)	0 (0%)

Table 2. General information of respondents

Variable	Items	Convergence Validity		Discriminant Validity				
		Loading Factor	AVE Value	X1	X2	X3	Mod	Y
X1	8	0.116-1.120	0.502	0.688				
X2	8	0.359-1.267	0.454	0.787	0.688			
X3	8	0.255-0.966	0.355	-0.769	0.724	0.811		
Mod	9	-0.26-1.486	0.613	0.706	0.724	0.732	0.719	
Y	11	-0.016-1.068	0.542	0.782	-0.684	-0.806	0.646	0.730

Table 3. The result of the convergent and discriminant validity test

Variables	Cronbach's Alpha	Composite Reliability
X1 (Supply Chain Performance)	0.901	0.930
X2 (Medical Pers. Performance)	0.873	0.875
X3 (Occupancy Overload)	0.929	0.931
MO (Dynamic Capability)	0.908	0.933
Y (Operation performance)	0.866	0.868

Table 4. Result of the reliability test

The results of the analysis show that all AVE values are greater than 0.5, indicating that convergent validity is accepted (Hair et al., 2017). The reliability test also shows that all variables have a Cronbach alpha value and composite reliability of more than 0.7, indicating that all of these variables are accepted (Hair et al., 2017) and can be continued to the next stage, namely structural measurement. A structural model test is used to find the relationship or influence of each variable on other variables. According to Hair et al. (2017), this analysis can be done by comparing the value between the coefficient of determination and the path. The first structural model is tested by establishing the relationship between the independent variable and the dependent variable, then forming a moderating interaction. The findings are shown in Figure 1 and Table 5.

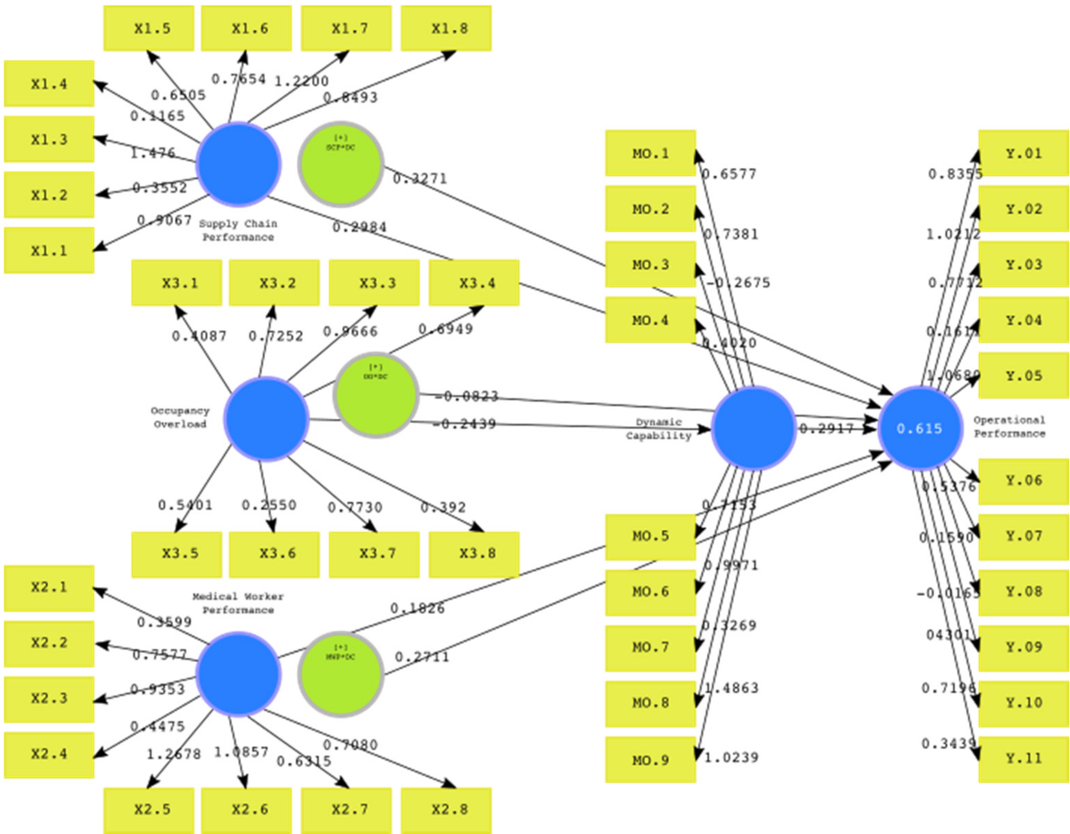

Figure 1. Research model testing

	R Square	Adjusted R Square
Operation performance (OP)	0.674	0.661

Table 5. Determinant coefficient

Figure 1 and Table 5 show that the determinant coefficient for operation performance has a score of 67.4%. This shows that the two independent variables studied (medical workforce, and supply chain) support the operation performance of the public health center by as much as 66.1%. And this value indicates a moderate relationship with a moderate level (Hair et al., 2017).

Hypothesis	Variables	Original Sample	T Statistics (|O/STDEV|)	P Values	Explanation
H1	SCP -> OP	0.2984	0.839	0.038	Accepted
H2	SCP*DC -> OP	0.3271	1.674	0.042	Accepted
H3	MWP-> OP	0.1826	2.929	0.021	Accepted
H4	MWP*DC -> OP	0.2711	3.348	0.584	Rejected
H5	OO -> OP	-0.2439	1.063	0.026	Accepted
H6	OO*DC -> OP	-0.0823	2304	0.721	Rejected

Table 6. Results of bootstrapping analysis

Furthermore, in SEM-PLS, the path coefficient test is carried out using a bootstrap approach, with the estimated value indicating the direction of the relationship and the t-table value indicating the level of significance. This test determines whether the hypothesis can be accepted or not. With 5 existing hypotheses, 3 pathways and 2 moderating effects were proposed. Table 6 shows that there are 4 accepted hypotheses (H1, H2, H3, H5) and 2 are rejected (H4 & H6). The findings indicate an impact on the public health center operation performance. The findings indicate that occupancy overload has a significant negative impact on the operating performance of the public health center. The moderating role of dynamic capability in the relationship between occupancy overload and public health center operating performance was confirmed with a negative value, so it is evident that even though there is dynamic capability occupancy overload, it still weakens public health center operating performance.

5. Discussion

Previous research has shown a lot about how dynamic capabilities play a role in companies across a multitude of industries. There are those who argue positively that dynamic capabilities have a strategic role to sustain the company in critical times and/or unstable environments (Furnival, Boaden & Walshe, 2019; Loureiro, Ferreira & Simoes, 2021; Kokshagina, 2021; Sermontyte, Pundziene, Gimenez & Perpina, 2022; Barreto, 2009). There are those who argue that dynamic capabilities play a role in transforming companies that work conventionally towards modern management based on information digitalization (Laaksonen & Peltoniemi, 2018; Nieves & Heller, 2014; Kwon, Kim & Martin, 2016; Ellstrom, 2021). There are those who argue that dynamic capabilities play a role in creating or increasing competitive advantage among others (Schoemaker, Heaton & Teece, 2018; Teece; 2018; Parida, Oghazi & Cedergren, 2016).

At the other end of the spectrum there are those who argue that dynamic capabilities are not well defined (Eriksson, 2014; Kurtmollaiev, 2020; Denford, 2013; Pisano, 2017), or who think that this is nothing more than jargon whose function overlaps with the concept of management dynamics that already existed (Helfat & Peteraf, 2009; Felin & Powell, 2016; Wohlgemuth & Wenzel, 2016; Stefano, Peteraf & Verona, 2010; Mohamud & Sarpong, 2016). And there are those who are skeptical about the role of dynamic capabilities which do not add value to tradition-based management and instead only cause disruption at the company and industry level (Wilden, Gudergan, Nielsen & Lings, 2013; Drnevich & Kriauciunas, 2011; Piening, 2013). While this research focuses on how dynamic capabilities can act as a moderating variable in health facilities facing difficult situations such as excessive patient visits, uncertain supply chains, and limited medical personnel. The final results of this study show how dynamic capabilities can help management adjust the conditions of all available resources to minimize risk and maintain the operating performance of the health facility.

Based on the findings of this study, it was found that supply chain variables have a positive effect on the operation performance of the public health center both directly (H1) and when moderated through dynamic capabilities (H2). Meanwhile, when the dynamic capability is moderated, the effect value of both supply chain performance and medical personnel performance is amplified. The better the management of the public health center manages the supply chain, the better the operation performance of the public health center will be (Mandal, 2017). Meanwhile, when the supply chain performance is moderated by dynamic capability variables, this moderating variable is reinforcing. This means that when the supply chain does not perform well while its dynamic capabilities are good, the operation performance of the public health center will also be helped (Hong, Zhang & Ding, 2018). These findings are in line with the findings of Swinehart and Smith (2005) where supply chain variables have a positive effect on the performance of public healthcare centers.

Based on the findings of this study, it was found that the occupancy overload variable has a negative and significant effect on the operation performance of the public health center both directly (H3) and when moderated through dynamic capabilities (H4). Meanwhile, when moderated by dynamic capabilities, the negative effect value is not significant. This shows that the dynamic capability of public health center management can mitigate the impact of occupancy overload (Rubbio, Mo & Gaglio, 2020). For example, when the public health center faces a surge in patient visits, the management of the public health center can divert the resources of its medical personnel to handle all incoming patients. Meanwhile, a public health center that does not carry out dynamic capabilities could be overwhelmed when there is a surge in the number of patient visits and does not have enough resources to handle them (Lima, Barbosa, Sobrinho, Calado & Sobral, 2021). The results of this study are in line with the results of Hussein, Abdelmaguid, Tawfik and Ahmed (2017) research which shows that occupancy overload has a negative impact on the performance of public healthcare centers in Egypt.

Based on the findings of this study, it was found that the medical workforce variable had a positive and significant effect on the operation performance of the public health center both directly (H5) and when moderated through dynamic capability variables (H6). Medical personnel carry out examinations and actions on patients according to minimum service standards. However, when there is a surge in the number of patient visits, medical personnel are overwhelmed (Fatovich & Hirsch, 2003). The presence of the dynamic capability of public health center management allows medical personnel to be able to manage time and resources more strictly so that all patients can still be served even though there is a surge (Stepanov, Stepanov & Shishkin, 2021). These findings are in line with the findings of Munaza (2019) which shows that the performance of the medical workforce affects the performance of public healthcare in general.

The results of previous studies show that many variables that can affect the operation performance of health facilities, especially those related to the resources used (Schmutz, Meier & Manser,, 2019). From this particular study, it was found that the performance of medical personnel, supply chain, and occupancy overload simultaneously or partially, either directly or when moderated by dynamic capability variables are related causality models. Based on the findings of this study, it is suggested to the management of health facilities such as health centers and the government pay more attention to the factors involved in this study. A public health center located further away from the city will be more vulnerable to getting a poor supply chain. A public health center occupied by many patients exceeds the ideal capacity and is prone to experiencing occupancy overload or overcrowding. A public health center that does not apply dynamic capabilities will be vulnerable to poor operating performance. The ability of the public health center management to properly manage the three resources (medical workforce, supply chain, and facilities) will determine the operating performance of the public health center in the future.

6. Conclusion

Public healthcare facilities are the first public facility that citizens attend whenever they feel ill, sick, or uneasy. Patients may visit in emergency circumstances or just for regular checkups to the doctors. Things go normally when the number of patient visits is less or slightly more than the capacity of patient visits the facility allows, and problems arise whenever the number of patient visits goes beyond the capacity limit the facility can afford. This overload phenomenon can be measured by longer patient waiting time, potent reduction of consultation duration between patient and the doctor, longer working hours for healthcare workers (doctors, nurses, and admins), faster depletion rate of resources, and to the extreme as unintentional abandonment of patients. Small-scale public healthcare facilities in Indonesia are designed to maximize the coverage area of civilian neighborhoods, the small scale allows the public healthcare facilities to be built rapidly and sporadically on diverse sites. But this design is not free of problems, the small-scale nature of public healthcare facilities in Indonesia comes with its limitations like compact building structure, limited electricity cap, few healthcare workers, small storage system for medicines and consumables, limited access to advanced medical equipment, and supply chain depended on government budgeting.

The main challenge prompted by these circumstances is not the flaw in the design, but rather the managerial aspect of the public healthcare facility. How could a small-scale public healthcare facility strive in extreme circumstances as patient visits overload? And what would the management do to maintain its optimal performance throughout extreme situations? There are diverse approaches to this problem like upgrading the public healthcare facility to bigger capacity if the budget allows it to do so. But when the resources are limited or scarce, the management should use another approach to optimizing performance without excessively depending on the abundance of resources. From the literature review, we learned that dynamic environments require the dynamic capability to help us mitigate risks and maintain optimal performance or even improve it. The nature of dynamic capability allows the management to continuously adjust the use of resources at any given circumstance to maximize the operation target of an organization. This concept is parallel with the given problem proposed in this study. According to the literature reviews extreme circumstances which pose risks to organization performance could be mitigated with proper application of dynamic capability. Thus, this study is aiming to understand how dynamic capability works and help the public healthcare facility in mitigating risk and maintaining operational performance.

Through quantitative methods and statistical tests, we have figured out how each variable such as supply chain performance, healthcare worker performance, and occupancy overload of patients could affect the operational performance of public healthcare facilities when they are moderated by dynamic capability as a variable. The results showed that dynamic capability could marginally affect operational performance when occupation overload was high. It means that when extreme circumstances such as patient visit overload occur, the management of public healthcare facilities could still be able to reach or maintain expected performance though not significantly. Continuous adjustment of resources (consumables, equipment, healthcare workers, and treatment rooms) allows the public healthcare facility management to mitigate and overcome the difficult situation that barely meets the expected demand, but this circumstance quickly exhausts the entire resources for the next wave of extreme numbers of patient visits and leave the public healthcare facility vulnerable for more risks in the future. We can conclude in this specific case that dynamic capability could act as a set of first aid to help a healthcare facility meet the demand in extreme situations but would not work for the long term as the exhaustion overload may persist.

This paper covers only specific areas of problems to appraise the feasibility of dynamic capability implementation in the public healthcare sector. The complete picture of healthcare system problems could not be presented solely in this paper as it is focused only on the context of occupancy overload and dynamic capability. Thus further research is required to fill the gaps left by this paper such as the effect of resource exhaustion on performance, and multi-disciplinary research of policy-making regarding this area of problems.

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