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THE IMPACT OF DYNAMIC INNOVATION CAPABILITIES ON ORGANIZATIONAL AGILITY AND PERFORMANCE IN SAUDI PUBLIC HOSPITALS

Impacto das capacidades de inovação dinâmica na agilidade e desempenho organizacional em hospitais públicos sauditas

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ABSTRACT

Despite the fact that the public healthcare sector has improved significantly, inefficiency persists, and little progress has been made in learning how to solve inefficiencies. Consequently, one of the most important concepts that affect the organizational agility and performance in healthcare are dynamic innovation capabilities. This study aims to investigate the impact of dynamic innovation capabilities on agility and performance in public hospitals in Saudi Arabia. The researcher utilized a dynamic capabilities theory to describe how four important contextual characteristics (sensing capabilities, combination capabilities, networking capabilities and learning capabilities) may affect the agility of healthcare organizations. The population sample for this research included 151 leaders and managers of public hospitals. After responding to the questionnaire, the Statistical Package for Social Science (SPSS) was used to analyse the data. The data collection process involved exploring the independent variables dynamic innovation capabilities that are expected to influence the dependent variable of organizational agility and performance in the public hospitals. The major results of the research showed that there is a positive relationship between the independent variables of the dynamic innovation capabilities and the dependent variables of organizational agility and organizational performance.

Keywords: Healthcare Innovation (HCI); Dynamic Innovation Capabilities (DIC); Organizational Agility (OA).

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IMPACTO DAS CAPACIDADES DE INOVAÇÃO DINÂMICA NA AGILIDADE E DESEMPENHO ORGANIZACIONAL EM HOSPITAIS PÚBLICOS SAUDITAS

The impact of dynamic innovation capabilities on organizational agility and performance in saudi public hospitals

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RESUMO

Embora o sector da saúde pública tenha melhorado significativamente, persistem ineficiências e poucos progressos têm sido feitos na aprendizagem de como os abordar, pelo que um dos conceitos mais importantes que afetam a agilidade organizacional e o desempenho na saúde é a capacidade de inovação dinâmica. Este estudo visa investigar o impacto das capacidades de inovação dinâmica na agilidade e desempenho em hospitais públicos na Arábia Saudita. Utilizamos uma teoria de capacidades dinâmicas para descrever como quatro características contextuais importantes - capacidades de deteção, capacidades de combinação, capacidades de rede e capacidades de aprendizagem - podem afetar a agilidade das organizações de saúde. A população desta investigação está formada por líderes e gestores na saúde pública. A amostra populacional do estudo foi de (151) participantes de hospitais públicos que responderam ao questionário de investigação. O *Statistical Package for Social Science* (SPSS) foi aplicado para a análise dos dados após a entrada da data de recolha. A recolha de dados para o estudo envolveu as variáveis independentes de capacidades dinâmicas de inovação que se espera que influenciem a variável dependente de agilidade organizacional e desempenho nos hospitais públicos. Os principais resultados da investigação mostraram uma relação positiva entre as variáveis independentes de capacidades de inovação dinâmica e as variáveis dependentes de agilidade organizacional e desempenho organizacional.

Palavras-chave: Inovação e Tecnologia em Saúde; Recursos Dinâmicos de Inovação; Agilidade Organizacional.

INTRODUCTION

Hospitals are dynamic and competitive workplaces, and this has increased particularly since the start of the COVID-19 pandemic. Indeed, it has been a huge challenge for healthcare providers across the globe, including the health and medical units in Saudi Arabia. Amid the current health crisis, hospitals have become obliged to come up with new and effective methods to successfully handle the unique workplace conditions that now exist and, simultaneously, to create new opportunities to introduce creative solutions through which organizations can survive and flourish.

However, innovation in hospitals requires obtaining powerful capabilities and comprehensive knowledge. Accordingly, the authorities and government in Saudi Arabia have provided substantial support at all healthcare levels to improve services (Meyer, 2014). The importance of services provided by hospitals stems from the necessity to enhance the quality of life in general and the well-being of patients and communities in particular (Mu et al., 2018). Hospitals realize that by innovating they can offer new services that satisfy patients' needs, ensure a high-quality performance and fill any gaps in the services.

Indeed, innovative hospitals have the opportunity to develop capabilities that will result in sustainable growth. Furthermore, by being creativity, it facilitates them to pinpoint patients' interests, perform according to the highest standards and meet patients' expectations. Furthermore, focusing on innovation provides them with competitive advantages, also ensuring organizations are able to grow sustainably.

When it comes to services, innovation creates new and distinguished services that are directed at customers and stakeholders which results in new values.

Innovations in service can be achieved by developing current ones on offer, initiating new practices and new ways of utilizing resources, and integrating all of the processes to meet unmet needs (Woo et al., 2019).

1 THEORETICAL BACKGROUND

The dynamic capabilities theory (DCT) identifies essential competencies for organizations to develop, in order to gain a long-term competitive advantage. It focuses on how organizations survive in a dynamic and changing environment. In addition, it helps managers of an organization to assess which new strategies to adopt to challenges, situations and changes as they emerge and, ultimately, survive, regardless of whether these changes are radical or incremental. Three dynamic capabilities are considered essential for an organization to survive: learning capabilities, integration capabilities, and transformation capabilities. It has been reported that dynamic capabilities appear to criticize Resource-Based Theory (RBT), which states that it is an organizations resources that allow it to gain strategically sustainable competitive advantage (Andersén, 2010).

Many kinds of research use dynamic capabilities theory, and one study conducted by Kurtmollaiey (2017) discussed the approaches used to identify dynamic capabilities in organizations. In his research, he noted that Teece was the first to use the term dynamic capabilities in 1997 to refer to an organization's ability to implement, develop, and respond to changes in the environment.

In addition, dynamic capabilities were analyzed from different perspectives, including: dealing with uncertainty in the environment, addressing and reframing challenges through sensing capabilities and doing the right things to develop faster than competitors. Dynamic capabilities are one of the organizations' sources of competitive advantages that help an organization adapt to a dynamic environment and create a sustainable source of competitive advantages and more advanced performance. Moreover, one of the significant researchers contributing to DC theory is Teece, who built foundations for each of DC's three components, namely sensing, seizing, and transforming. There are three main activities in dynamic capabilities theory: sensing, learning, and reconfiguring.

However, this research will discuss the dynamic capabilities theory as a collection of internal capabilities and external factors that affect organizational performance. The major capabilities are sensing, combination, networking and learning, and they help build competitive advantages and cope with rapid changes and trends.

2 METHODOLOGY

The objective of this research was to explore the impact of dynamic innovation capabilities on organizational agility and performance in Saudi public hospitals. This chapter explains the research methodology process that was adopted to reach the main research objective. Research methodology is seen as a guide for researchers to achieve their research goals effectively and efficiently. Therefore, the methods and tools for data collection, as well as form of analysis, need to be defined in the research methodology, in addition to the population of the study from which the sample is selected. In addition, the researcher should define the statistical methods that are used for data analysis.

Goundar (2012) defined research methodology as a systematic approach used to define and solve a specific problem and as a scientific approach used by researchers to carry out research. However, there are a variety of research methods involving different procedures, schemes and algorithms that are utilized in research to collect samples, data and find a solution to a specific problem. Furthermore, research methodologies can be quantitative, meaning that they tend to be systematic and use numbers, or qualitative, which means they tend to be subjective and descriptive. This research used a quantitative approach.

Studies adopting a quantitative design use numerical analysis to collect data, either through surveys or questionnaires or through computational techniques, in order to help the researcher, explore the research problem and hypothesis in detail. However, a key feature of the quantitative method is that it relies on having a theory which is tested by a statistical hypothesis for the research question. In quantitative research, the methods used for many types of research are descriptive, correlation and experimental.

This study was correlational; therefore, the researcher investigated and tested the hypothesis and studied the relationship between the variables that were adopted in this study. One of the methods used for quantitative data collection is surveys, which involves asking a specific sample certain questions in order to generate responses either in-person or online (Bhandari, 2020). In order to be able to explore the impact of dynamic innovation capabilities on organizational agility and performance, public hospitals were chosen as a sample. The reason for choosing a public hospital was because it has many valuable resources and has been dealing with a great number of changes in the external environment since the COVID-19 pandemic began. Consequently, it is an ideal time to examine the pressure on healthcare providers to deal with these external challenges. Indeed, this research highlights the most important dynamic innovation capabilities that help public hospitals to become more flexible and rapidly respond to challenges in order to survive.

3 RESULTS

Testing Research Hypothesis: The research aimed to find out the impact of dynamic innovation capabilities on organizational agility and performance. The hypotheses was developed for the project to providing answers to the research questions and problem. These hypotheses summarized in the research model in Figure 1 and Table 6. The hypotheses were tested and the results are summarized in Table 6. The researcher found strong support for all of the proposed hypotheses.

Figure 1: Coefficient Path for Hypothesis Model

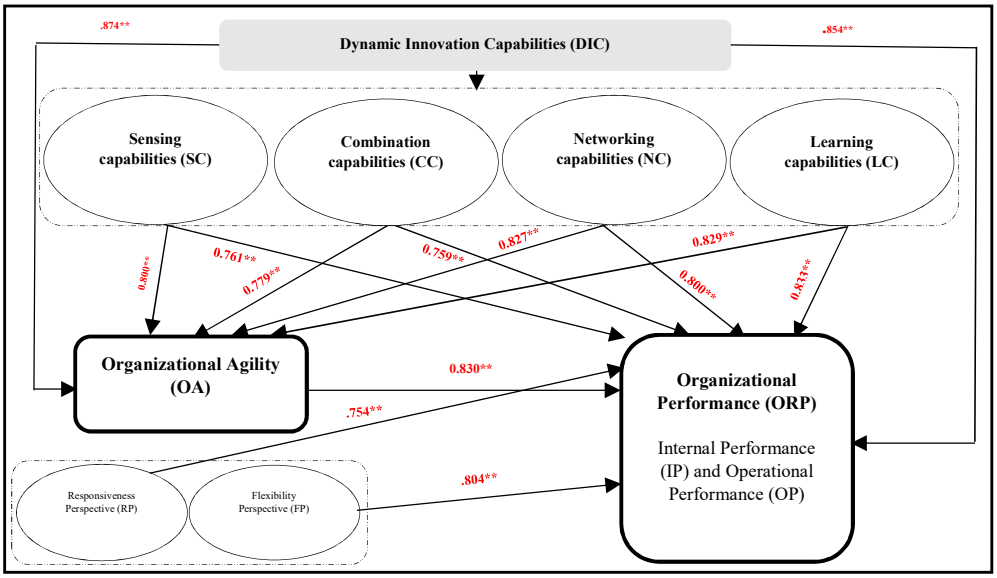

Table 1: An Assessment of the Hypothesis Model

No.	Hypothesis Path	R^2	Path Coefficient (β)	T-Value	P-Value Sig.
H1	Dynamic Innovation Capabilities (DIC) → organizational agility (OA)	0.764	.874	21.460	.000
H1a	Sensing capabilities (SC) → organizational agility (OA)	0.640	0.800	16.211	0.000
H1b	Combination capabilities (CC)→ organizational agility (OA)	0.606	0.779	15.152	0.000
H1c	Networking capabilities (NC) → organizational agility (OA)	0.683	0.827	17.686	0.000
H1d	Learning capabilities (LC) → organizational agility (OA)	0.688	0.829	17.924	0.000
H2	Dynamic Innovation Capabilities (DIC) → organizational performance (ORP)	.730	.854	19.512	.000
H2a	Sensing capabilities (SC) → Organizational performance (ORP)	0.579	0.761	14.181	0.000
H2b	Combination capabilities (CC)→ Organizational performance (ORP)	0.576	0.759	14.131	0.000
H2c	Networking capabilities (NC) → Organizational performance (ORP)	0.640	0.800	15.961	0.000
H2d	Learning capabilities (LC) → Organizational performance (ORP)	0.694	0.833	18.136	0.000
H3	Organizational agility (OA) → organizational performance (ORP)	0.689	0.830	18.057	<.001
H3a	Responsiveness perspective (RP) → Organizational performance (ORP)	.569	.754	13.934	.000
H3b	Flexibility perspective (FP) → Organizational performance (ORP)	.646	.804	16.368	.000

H(1): dynamic innovation capabilities have a positive impact on organizational agility. To examine if dynamic innovation capabilities have a positively effect as an independent variable on organizational agility in healthcare organizations as a dependent variable, simple regression analysis was conducted and the results are displayed in Table 2.

Table2: Simple Regression Analysis to Examine the Impact of Dynamic Innovation Capabilities on the Organizational Agility

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.450	.145		3.110	.002
	DICmean	.886	.041	.874	21.460	.000

a. Dependent Variable: OAmean

In Table 2, it is evident that the regression coefficient of the independent variable dynamic innovation capabilities was equal to .874, with the T-test being equal to 21.460, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation between dynamic innovation capabilities and organizational agility. Thus, dynamic innovation capabilities have a significant influence on organizational agility in healthcare organizations. Accordingly, hypothesis one is supported.

H(1a): sensing capabilities have a positive impact on organizational agility. The evidence to support this hypothesis is shown in the results in Table 3 show, as it is clear that the regression coefficient of the independent variable sensing capabilities was equal to .800. In addition, the T-test was equal to 16.211, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation the sensing capabilities and organizational agility, thus it can be concluded that sensing capabilities have a significant influence on organizational agility in healthcare organizations. Accordingly, hypothesis one (1a) is supported.

Table 3: Simple Regression Analysis to Examine the Impact of Sensing Capabilities on the Organizational Agility

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.023	.156		6.557	.000
	scmean	.703	.043	.800	16.211	.000

a. Dependent Variable: OAmean

H(1b): combination capabilities have a positive impact on organizational agility. To test this hypothesis, the results of running a simple regression analysis are presented in Table 4 below:

Table 4: Simple Regression Analysis to Examine the Impact of Combination Capabilities on the Organizational Agility

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.929	.173		5.367	.000
	ccmean	.756	.050	.779	15.152	.000

a. Dependent Variable: OAmean

The results in Table 4 show that the regression coefficient of the independent variable combination capabilities was equal to .779, with T-test being equal to 15.152, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation between combination capabilities and organizational agility, which means that combination capabilities have a significant influence on organizational agility in healthcare organizations. Accordingly, hypothesis one (1b) is supported.

H(1c): networking capabilities have a positive impact on organizational agility. To test this hypothesis, the results of a running simple regression analysis are presented in Table 5 below:

Table 5: Simple Regression Analysis to Examine the Impact of Networking Capabilities on the Organizational Agility

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.741	.160		4.640	.000
	ncmean	.782	.044	.827	17.686	.000

a. Dependent Variable: OAmean

The results in Table 5 show that the regression coefficient of the independent variable networking capabilities was equal to .827 and the T-test was equal to 17.686, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation between networking capabilities and organizational agility, which means that networking capabilities have a significant influence on organizational agility in healthcare organizations. Accordingly, hypothesis one (1c) is supported.

H(1d): learning capabilities have a positive impact on organizational agility. To test this hypothesis, the results of a simple regression analysis are presented in Table 6 below:

Table 6: Simple Regression Analysis to Examine the Impact of Learning Capabilities on the Organizational Agility

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.836	.151		5.520	.000
	lcmean	.800	.045	.829	17.924	.000

a. Dependent Variable: OAmean

The results in Table 6 show that the regression coefficient of the independent variable learning capabilities was equal to .829 and the T-test was equal to 17.924, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation between learning capabilities and organizational agility, which means that learning capabilities have a significant influence on organizational agility in healthcare organizations. Accordingly, hypothesis one (1d) is supported.

H(2): the dynamic innovation capabilities have a positive impact on organizational performance. To examine if there was a positive impact of the dynamic innovation capabilities as an independent variable on the organizational performance in healthcare organizations as a dependent variable, simple regression analysis was conducted and the results are displayed in Table 7 below:

Table 7: Simple Regression Analysis to Examine the Impact of Dynamic Innovation Capabilities on the Organizational Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.004	.171		.023	.982
	DICmean	.950	.049	.854	19.512	.000

a. Dependent Variable: ORPmean

The results in Table 7 show that the regression coefficient of the independent variable dynamic innovation capabilities was equal to .854, with the results of the T-test being equal to 19.512, which is statistically significant at the (0.01) level. This indicates that there is a significant positive correlation between dynamic innovation capabilities and organizational performance. This means that dynamic innovation capabilities have a significant influence on organizational performance in healthcare organizations. Accordingly, hypothesis two is supported.

H(2a): sensing capabilities have a positive impact on organizational performance. To test this hypothesis, the results of running a simple regression analysis are presented in Table 8 below:

Table 8: Simple Regression Analysis to Examine the Impact of Sensing Capabilities on the Organizational Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.688	.187		3.670	.000
	scmean	.735	.052	.761	14.181	.000

a. Dependent Variable: ORPmean

The results in Table 8 show that the regression coefficient of the independent variable sensing capabilities was equal to .761 and the T-test was equal to 14.181, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation relationship between the sensing capabilities and organizational performance. Consequently, this means that sensing capabilities have a significant influence on organizational performance in healthcare organizations. Accordingly, hypothesis two (2a) is supported.

H(2b): combination capabilities have a positive impact on organizational performance. To test this hypothesis, the results from a simple regression analysis are presented in Table 9 below:

Table 9: Simple Regression Analysis to Examine the Impact of Combination Capabilities on the Organizational Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.536	.199		2.688	.008
	ccmean	.809	.057	.759	14.131	.000

a. Dependent Variable: ORPmean

The results in Table 9 show that the regression coefficient of the independent variable combination capabilities was equal to .759. Furthermore, the T-test was equal to 14.131, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation between combination capabilities and organizational performance. Thus, this signifies that combination capabilities have a significant influence on organizational performance in healthcare organizations. Accordingly, hypothesis two (2b) is supported.

H(2c): networking capabilities have a positive impact on organizational performance. To test this hypothesis, the results of a simple regression analysis are presented in Table 10 below:

Table 10: Simple Regression Analysis to Examine the Impact of Networking Capabilities on the Organizational Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.349	.189		1.847	.067
	ncmean	.832	.052	.800	15.961	.000

a. Dependent Variable: ORPmean

The results in Table 10 show that the regression coefficient of the independent variable networking capabilities was equal to .800 and the result of the T-test was equal to 15.961, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation between networking capabilities and organizational performance. Consequently, this means that networking capabilities have a significant influence on organizational performance in healthcare organizations. Accordingly, hypothesis two (2c) is supported.

H(2d): learning capabilities have a positive impact on organizational performance. To test this hypothesis, the results in Table 11 show that the regression coefficient of the independent variable learning capabilities was equal to .833, while the result for the T-test was equal to 18.136, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation between learning capabilities and organizational performance, which means that learning capabilities have a significant influence on organizational performance in healthcare organizations. Accordingly, hypothesis two (2d) is supported.

Table 11: Simple Regression Analysis to Examine the Impact of Learning Capabilities on the Organizational Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.339	.165		2.050	.042
	lcmean	.883	.049	.833	18.136	.000

a. Dependent Variable: ORPmean

H(3): organizational agility has a positive impact on organizational performance. To examine if organizational agility as an independent variable has a positive effect on organizational performance in healthcare organizations as a dependent variable, simple regression analysis was conducted and the results are displayed in Table 12 below:

Table 12: Simple Regression Analysis to Examine the Impact of Organizational Agility on the Organizational Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.060	.182		.329	.743
	OAmean	.919	.051	.830	18.057	.000

a. Dependent Variable: ORPmean

The results in table 12 show that the regression coefficient of the independent variable organizational agility was equal to .830 and the T-test was equal to 18.057, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation between organizational agility and organizational performance, which means that organizational agility has a significant influence on organizational performance in healthcare organizations. Accordingly, hypothesis three is supported.

H(3a): responsiveness perspective has a positive impact on organizational performance. To test this hypothesis, the results of a simple regression analysis are presented in the table 13 below:

Table 13: Simple Regression Analysis to Examine the Impact of Responsiveness Perspective on the Organizational Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.592	.198		2.989	.003
	RPmean	.781	.056	.754	13.934	.000

a. Dependent Variable: ORPmean

The results in table 13 show that the regression coefficient of the independent variable responsiveness perspective was equal to .754 and the T-test was equal to 13.934, which is statistically significant at the 0.01 level.

This indicates that there is a significant positive correlation between responsiveness perspective and organizational performance, which means that responsiveness perspective has a significant influence on organizational performance in healthcare organizations. Accordingly, hypothesis three (3a) is supported.

H(3b): flexibility perspective has a positive impact on organizational performance. To test this hypothesis, the results of a simple regression analysis are presented in Table 14 below:

Table 14: Simple Regression Analysis to Examine the Impact of Flexibility Perspective on the Organizational Performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.291	.187		1.553	.123
	FPmean	.837	.051	.804	16.368	.000

a. Dependent Variable: ORPmean

The results in Table 14 show that the regression coefficient of the independent variable flexibility perspective was equal to .804 and the T-test is equal to 16.368, which is statistically significant at the 0.01 level. This indicates that there is a significant positive correlation between flexibility perspective, and organizational performance, which means that flexibility perspective has a significant influence on organizational performance in healthcare organizations. Accordingly, hypothesis three (3b) is supported.

CONCLUSION

This study has addressed the most important key features of the impact of dynamic innovation capabilities on organizational agility and performance in Saudi public hospitals. The most important indicators are defining and underlining the benefits of innovation in healthcare, identifying and determining the dynamic innovation capabilities in public hospitals and addressing the impact of dynamic innovation capabilities on organizational agility and organizational performance. The recommendation is for future researchers to examine innovation and agility in public hospitals.

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