The impact of employees' perceptions of a learning organization on innovativeness in a healthcare organization

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Abstract

Healthcare organizations are recognized as knowledge-driven entities that prioritize the quality of patient care and adapt to dynamic environments. The adoption of learning organization practices can support healthcare professionals in enhancing their skills and knowledge, as well as discovering more effective approaches to their work. Furthermore, fostering innovativeness enables organizations to remain effective and successful amidst unpredictable and diverse circumstances. This study aims to assess the extent to which the dimensions of a learning organization are associated with innovativeness. The study involved 336 medical personnel working at My Duc Hospital, and there were two scales used in the study: the Dimensions of the Learning Organization Questionnaire (DLOQ) developed by Watkins and Marsick (1997) and the Perceived Organizational Innovativeness (PORGI) scale proposed by Hurt and Teigen (1977). The study revealed a substantial influence of all learning organization dimensions on innovativeness. Results further indicate that the dimensions of the learning organizations explained 39.8% of the variance for innovation. The findings from the regression analysis further demonstrated that the elements of Systems connections and Strategic leadership accounted for the variations observed in innovativeness.

Keywords
Learning organization, innovativeness, healthcare, perception, DLOQ.

1. Introduction
Organizations should adapt to the fast environmental changes in today's world to survive in the competitive market. One way to self-improve companies' capabilities is to focus on learning as a critical element in reducing the significant shocks of change through quickly reconfiguring and reallocating resources based on uncertainty (Slater and Narver 1995). A learning organization is defined as skilled at creating, acquiring, and transferring knowledge and modifying its behavior to reflect new knowledge and insights (Garvin 1993).

Innovativeness is a meaningful way many companies use to adjust to changes. Most definitions share that innovation implies adopting a new idea or behavior. Companies can stay effective and successful in unstable and varied environments by improving innovativeness. A learning culture encourages organizations to question the information they process and whether their approach to innovation is applicable (Baker and Sinkula 1999). Therefore, building a learning organization means becoming an innovative firm.

Like other industries, healthcare organizations also face challenges from environmental fluctuations. Implementing learning organization practices can assist medical personnel in enhancing their competencies and expertise and exploring more effective approaches to their work. Moreover, by focusing on innovation, healthcare organizations can

improve treatment, diagnosis, education, outreach, prevention, and research to enhance quality, safety, outcomes, efficiency, and costs (Omachonu and Einspruch 2010). Studies in healthcare illustrated that building a learning organization would improve the organization's innovation capacity (Hussein et al. 2014; Ugurluoglu et al. 2013).

While literature has recognized the importance of a learning organization in promoting innovation in various industries, there is a need for more research specifically focused on the healthcare sector. Understanding the impact of employees' perceptions of a learning organization on innovativeness in healthcare organizations can provide valuable insights for leaders and managers seeking to foster a continuous learning and innovation culture. Thus, the current paper is, to our best knowledge, a pioneer work in the healthcare sector in Vietnam.

1.1 Objectives

Many researchers and practitioners recognized the significance of innovation and have investigated the relationship between learning organizational dimensions and innovative behavior (Ismail 2005; Hussein et al. 2014; Ugurluoglu et al. 2013), but these are not specific to the case of healthcare organizations in Vietnam. This study aims to assess whether a learning organization's perception is associated with innovativeness in a Vietnamese hospital and the extent to which the dimensions of a learning organization are associated with innovativeness.

2. Literature Review

2.1. Learning organization

The idea of a learning organization has been popularized since 1990 by Peter Senge. With the publication of "The Fifth Discipline: The Art and Practice of the Learning Organization," Senge described that learning organizations were places "where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together." He also firmly stated that the organizations that would truly excel in the future would be discovering how to tap people's commitment and capacity to learn at all levels.

Up to now, many versions of the learning organization's definition have been available in the literature. According to Watkins and Marsick (1993), in the book "Sculpting the Learning Organization: The Art and Science of Systematic Change," the concept of the learning organization was defined as "one that learns continuously and transforms itself…Learning is a continuous, strategically used process integrated with and running parallel to work… Learning also enhances the organizational capacity for innovation and growth. The learning organization has embedded systems to capture and share learning." According to Garvin (1993), a learning organization could create, acquire, and transfer knowledge and change its behavior to reflect new knowledge and insights more practically. Slater and Narver (1994) defined a learning organization as one that continuously acquires, processes, and disseminates knowledge about the market, products, technologies, and business processes. This knowledge was frequently based on experience, experimentation, and information from customers, suppliers, competitors, and other sources. More recently, Yang, Watkins, and Marsick (2004) proposed the learning organization as one capable of integrating people and structures to progress toward continuous learning and change. Jensen (2005) defined a learning organization as "an organization that is organized to scan for information in its environment, by itself creating information and promoting individuals to transform information into knowledge and coordinate this knowledge between the individuals so that new insight is obtained." From a more integrated environmental perspective, Song et al. (2008) described the learning organization as "…structure-based learning environment factors which trigger individuals' learning and knowledge transformation autogenously to promote continuous and spontaneous organizational learning process within the organization itself. The learning organization is the fundamental culture and structure for taking the market advantages through performance improvement."

2.1.1. Difference between learning organization and organizational learning

According to the literature, there have been various definitions and perspectives of the term “organizational learning.” Argyris and Schön (1978) coined organizational learning to describe detecting and correcting administrative errors. Fiol and Lyles (1985) later described it as enhancing activities via increased knowledge and understanding. Huber (1991) hypothesized that an entity learns if the range of its potential behaviors changes due to its information processing. According to Nevis et al. (1995), organizational learning was "the capacity or mechanisms inside an organization to sustain or improve performance based on experience."
Almost everyone used to mix the phrases organizational learning and learning organization until the mid-1990s when Tsang (1997) separated them: The term "organizational learning" referred to specific activities within an organization,

whereas a "learning organization" was a type of organization that excelled in such activities. However, the two concepts were closely related, as a learning organization was essentially an organization that was highly skilled in organizational learning. Örtenblad (2001) stated that the most common way to distinguish between organizational learning and learning organization in the existing literature was that learning organization was a form of an organization. In contrast, organizational learning was activities or processes (of learning) in organizations, and that learning organization needed efforts, while organizational learning existed without any actions. Birdthistle (2008) viewed organizational learning and learning organization as interconnected concepts, stating that a learning organization could not be achieved unless organizational learning was made a fundamental and crucial aspect. Burnes (2004) proposed a differentiation between "becoming" and "being." He stated that organizational learning was related to an organization's efforts to become a learning organization by systematically and collaboratively promoting learning across all levels of the organization. A learning organization was the ultimate stage of organizational learning in which an organization could continuously transform itself by engaging all its members in the learning process. Thus, once the definition of organizational learning was established, the characterization of a learning organization would emerge. While organizational learning was not a guarantee of a successful organization, a learning organization had to excel at organizational learning.

2.1.2. Measuring learning organization

There are several tools available for measuring and diagnosing learning organizations. Some researchers used Senge's (1990) model (Bui and Baruch 2012; Chang and Lee 2007; Kiedrowski 2006), while Thomsen and Hoest (2001) questionnaire used the 11 learning company practices developed by Pedler et al. (1991). Goh's (2001) questionnaire examined what managers must do to establish a learning organization, including mission/vision clarity, shared leadership, experimentation, knowledge transfer, and teamwork. Garvin et al. (2008) survey identified supportive learning environments, concrete learning processes and practices, and leadership that reinforce learning. In 1997, Watkins and Marsick developed one of these tools, the Dimensions of the Learning Organization Questionnaire (DLOQ). The tool was intended to measure the perceptions of employees regarding seven dimensions: (i) Continuous learning; (ii) Dialogue and Inquiry; (iii) Team learning and Collaboration; (iv) Empowerment; (v) Embedded systems; (vi) Systems connections; and (vii) Strategic leadership. These dimensions are of a supportive learning organization's positive nature and cultural aspects, encouraging dynamic organizational learning processes. Many companies worldwide have increasingly used the DLOQ, and over 70 articles have been published using the DLOQ (Watkins and O'Neil 2013). The questionnaire is a trustworthy research instrument for determining the extent of a learning culture's dimensions and reliably produces reliable data. The tool can aid in assessing the organization's current state and identifying areas that need improvement as researchers consider the concept of a learning organization and struggle to determine where to begin implementing it.

2.2. Organizational innovativeness

Organizational innovativeness is an inherent characteristic that is valuable and difficult to imitate. Innovativeness is frequently (and incorrectly) used interchangeably with innovation (Wang and Ahmed 2004). This lack of clarity has resulted in significant difficulties in conceptualizing and measuring innovativeness (Lynch et al. 2010), and a multidimensional conceptualization is widely missing (Wang and Ahmed 2004). Therefore, the literature has separated the two concepts and described several definitions of innovativeness (Table 2).

Table 2. Some definitions of innovativeness in literature

Authors	Definitions
Burns and Stalker (1961)	Innovativeness was rooted in the idea of being able to innovate and referred to an organization's competence in effectively adopting or executing new ideas, processes, or products.
Hurt and Teigen (1977)	Innovativeness as a "willingness to change."
Midgley and Dowling (1978)	Innovativeness as both attitude and behavior.
Zaltman et al. (1973), Berthon et al. (1999)	Innovativeness as "open-mindedness," "enterprising," "willingness to change," "ability to innovate," or to be creative.
Avlonitis et al. (1994)	Innovativeness comprised a technological and behavioral dimension denoting a "technological capacity" and the firm's "behavioral willingness and commitment" to innovate.

Hurley et al. (1998)	Innovativeness as an organization's "cultural readiness" to innovate or to adopt new ways of doing things.
Kundu and Katz (2003)	Innovativeness as the organization's "intention to be innovative."
Hult et al. (2004)	Innovativeness as a firm's capacity to introduce new processes, products, or ideas to the organization.
Tellis et al. (2009)	Innovativeness was the willingness of organizations to take risks.
Akgün et al. 2013	Organizational innovativeness was a company's ability to develop new ideas and engage in creative processes that resulted in new products, services, or technological processes.

Like other organizations, a hospital must continuously improve its processes, products, services, and systems to cope with uncertainty. Innovation cannot be denied as it can create a competitive advantage for businesses (Hussinki et al. 2017). Hurt et al. (1997) established the Innovativeness Scale as a self-report measure of innovativeness. The measure was developed assuming that innovativeness is a personality feature defined as a propensity to adapt. The scale had 20 elements and was based on Rogers and Shoemaker's five types of innovativeness: innovators, early adopters, early majority, late majority, and laggards. These categories allowed assumptions to be made about where a person fell on the willingness-to-change continuum. Respondents were asked to rate how much they agreed or disagreed with each topic (Hurt et al. 1977). Then, in the same year, Hurt and Teigen (1977) created the Perceived Organizational Innovativeness (PORGI) scale as a self-report measure of organizational innovativeness as viewed through the employee's eyes. The scale was a 25-item survey with the same agree-disagree answer format as the Innovativeness Scale. PORGI was developed in an attempt to quantify observable characteristics that were directly connected to organizational innovativeness. PORGI enabled researchers to "correctly predict satisfaction with certain aspects of employment and the degree of employee participation in the organizational-decision process," as well as investigate "the impact of perceptual discrepancies of organizational innovativeness between employees and management personnel on the acceptance and continued use of an innovation" (Hurt and Teigen 1977). Until now, many researchers worldwide have used it to assess organizational innovativeness.

2.3. Research Framework

Despite numerous studies worldwide demonstrating the relationship between learning organizations and innovativeness, there is a need to research in Vietnam using DLOQ and PORGI to assess the correlation of learning culture with the innovativeness of a healthcare organization, in this case, a hospital. Therefore, we conducted this study and drew the framework:

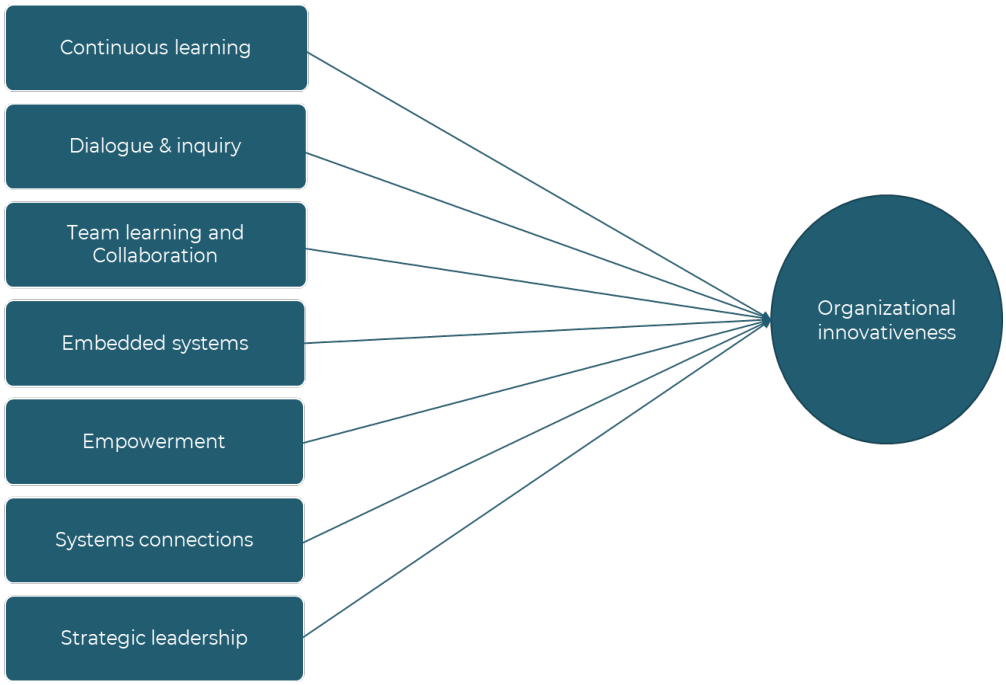


Figure 1: The research framework

3. Methods

The method of research for this study is the quantitative method. In this study, the survey tool was composed of two parts. The first part was based on the Dimensions of the Learning Organization Questionnaire (DLOQ) developed by Marsick and Watkins (1997). It consisted of 21 items and was used to measure the respondent's perception of their hospital's learning level. The DLOQ utilized a six-point scale, ranging from "almost never" to "almost always." The second part was the perceived organizational innovativeness scale – PORGI, developed by Hurt & Teigen in 1977 to measure the perception of innovativeness. This scale used a five-point scale ranging from "Strongly Disagree" to "Strongly Agree." The questionnaire was translated from the original English version into Vietnamese and then reverse-translated from Vietnamese to English. These versions were then sent to an Expert Council consisting of six experts to evaluate the content value of the questionnaire and assess the cultural suitability of the questionnaire with the cultural context in Vietnam. The questionnaire was then edited into the trial version and distributed to 10 medical staff to perform the assessment before being edited into the official version.

4. Data Collection

4.1. Sampling

The researcher administered the instrument via a Google survey. The official questionnaire was emailed to the healthcare workers, which contained 420 names, clearly describing how it was done and the time to complete it within seven days, from 20th July 2022 to 26th July 2022. The timeframe was then extended one more day to collect more samples. The second and third follow-up emails were sent on the third and sixth days following the initial email. After the above time, if the study participants did not respond, the research team would be excluded from the study. Not all participants completed all demographic questions on the survey, and 336 observations were utilized in the analysis with a response rate of 86%.

4.2. Data analysis

The baseline characteristics of people participating in the study were analyzed using descriptive statistics. To assess the internal consistency of the survey responses, the researchers used Cronbach's alpha coefficient. Then, Confirmatory Factor Analysis (CFA) was applied to test the construct validity of DLOQ and PORGI. The link between the seven dimensions of the learning organization and organizational innovativeness was then analyzed using the Pearson correlation coefficient and multiple regression. The P-value of 0.05 was considered to indicate statistical significance. All statistical analyses were performed using the R statistical package (R version 4.0.0, R Foundation for Statistical Computing, Vienna, Austria).

5. Results and Discussion

5.1. Numerical results

Over two-thirds of participants were under 35 (67.9%), with the mean age being 31.75±8.95. Participants were 86.0% female and only 14.0% male. Almost half of the participants in the study were married (47.6%), and the other half (52.4%) were single. In terms of degree, the participants in this study mostly held a bachelor's degree (48.2%), followed by those who had a vocational degree (20.2%), doctorate degree (13.7%), college degree (11.0%), and master's degree (6.8%). More than two-thirds of the participants had graduated from universities and postgraduate programs. The largest group of respondents were nurses, accounting for 59.2% of the respondents. Doctors comprised only 13.7% of the respondents. The remaining 27.1% of respondents were technicians, which could refer to various roles such as radiology technicians, lab technicians, or other technical support staff. Participants' job positions included 82.4% employees and 17.6% managers. Almost half of the respondents have worked in the healthcare sector for under five years (48.2%), one-third have been working for six to ten years (31.2%), and one-fifth have worked for over ten years (20.5%). Among them, 54.5% have worked at My Duc Hospital for under five years, 39% have worked for six to ten years, and only 6.5% have worked for over ten years.

Table 3: Descriptive characteristics of the respondents

Characteristics	N=336
Age, years n(%):	
<27	102 (30.4%)
28-30	76 (22.6%)

31-35	50 (14.9%)
>35	108 (32.1%)
Gender, n(%):	
Female	289 (86.0%)
Male	47 (14.0%)
Marital status, n(%):	
Married	160 (47.6%)
Single	176 (52.4%)
Job title, n(%):	
Doctor	46 (13.7%)
Technician	91 (27.1%)
Nurse	199 (59.2%)
Job position, n(%):	
Employees	277 (82.4%)
Managers	59 (17.6%)
Level of education	
Vocational degree	68 (20.2%)
College degree	37 (11.0%)
Bachelor's degree	37 (48.2%)
Master's degree	23 (6.9%)
Working experience in healthcare, year n(%):	
<=5	162 (48.2%)
6-10	105 (31.2%)
>10	69 (20.5%)
Working experience at My Duc hospital, year n(%):	
<=5	183 (54.5%)
6-10	131 (39.0%)
>10	22 (6.55%)

Cronbach's alpha coefficient was used to evaluate the internal consistency of the survey answer, varying from zero to one. Nunnally and Bernstein (1994) concluded that the minimum reliability (Cronbach's alpha) measures for scale reliability should be 0.70. In this study, six of the seven dimensions and organizational innovativeness achieved generally acceptable reliability estimates: Dialogue and inquiry (0.84), Team learning and collaboration (0.80), Embedded systems (0.84), Empowerment (0.80), Systems connections (0.76), Strategic Leadership (0.89), and innovativeness (0.86). Hair et al. (1998) deemed values of 0.60 to 0.70 as the lower limits of acceptability. The dimension of Continuous learning achieved Cronbach's Alpha value of 0.68. Therefore, all the variables were accepted for the next test.

All seven dimensions have significant moderate and positive relationships ($0.40 \leq r \leq 0.57$) with organizational innovativeness. This finding was in line with the findings of other research studies. For example, a research study examined the relationship between leadership, organizational learning, and innovation on organizational performance and found a significant and positive correlation between learning organizations and corporate innovation (Morales et

al. 2011). Similarly, a study carried out in Malaysia found positive associations between the dimensions of a learning organization and innovation (Ismail 2005). The study from Turkey (Ugurluoglu et al. 2013) also found that the correlations between learning organization dimensions and innovation were moderate to high ($0.50 \leq r \leq 0.78$).

Table 4: Descriptive statistics, correlations, and internal consistency

Variables	Median [Q1;Q3]	1	2	3	4	5	6	7	8
1. Continuous learning	4.67 [4.00;5.33]	(0.68)							
2. Dialogue and inquiry	4.00 [3.33;4.67]	0.56*	(0.84)						
3. Team learning and Collaboration	4.00 [3.67;4.67]	0.54*	0.61*	(0.80)					
4. Embedded systems	4.00 [3.67;5.00]	0.65*	0.61*	0.68*	(0.84)				
5. Empowerment	4.00 [3.67;5.00]	0.63*	0.55*	0.67*	0.76*	(0.80)			
6. Systems connections	4.33 [4.00;5.00]	0.58*	0.55*	0.65*	0.71*	0.74*	(0.76)		
7. Strategic Leadership	4.67 [4.00;5.33]	0.62*	0.53*	0.61*	0.73*	0.76*	0.75*	(0.89)	
8. Innovativeness	91 [86.0;95.0]	0.45*	0.4*	0.47*	0.49*	0.49*	0.54*	0.57*	(0.86)

Table 5 below illustrates the outcomes achieved following the implementation of a multiple regression investigation aimed at identifying the impacts of dimensions related to a learning organization on innovativeness. It was discovered that the learning dimensions accounted for about 39.8% of the contribution to innovativeness. In a study in the public sector of Malaysia, researchers aimed to identify the organizational learning culture and innovation, and they discovered that the traits of the learning organization explained 31.5% of the variation in innovation. Ismail (2005) also found that the learning culture and creative atmosphere accounted for 58.5% of the variation in the innovation construct. Another research on South Korean organizations found that learning organizations' dimensions significantly impacted innovation (Skerlavaj et al. 2010). A study of hospital managers working at public hospitals across Turkey showed that the dimensions of the learning organizations explained 66.5% of the variance for innovation (Ugurluoglu et al. 2013).

Table 5. Multiple regression analysis results in model 1

Variables **N = 336**	**Estimate β**	**Std. Error**	**t value**	**Pr(>|t|)**	**Collinearity Statistics**	
					Tolerance	***VIF***
(Intercept)	58.784	2.251	26.116	<0.001*		
1. Continuous learning	1.096	0.640	1.712	0.088	0.455	2.196
2. Dialogue and inquiry	0.033	0.571	0.058	0.954	0.505	1.978
3. Team learning and Collaboration	1.053	0.675	1.561	0.119	0.406	2.465
4. Embedded systems	-0.297	0.709	-0.419	0.675	0.314	3.184
5. Empowerment	-0.418	0.775	-0.540	0.590	0.269	3.715
6. Systems connections	2.352	0.775	3.034	**0.003***	0.310	3.231

7. Strategic Leadership	3.164	0.704	4.494	**<0.001***	0.301	3.319
R^2 = 0.411; Adjusted R^2 = 0.398 **Residual standard error: 6.49 on 333 degrees of freedom** **F-statistic: 110.5 on 2 and 333 DF, p-value < *0.001 (criterion: innovativeness)***						

Table 5 also showed the dimensions of Systems connections (β=2.352, p=0.003) and Strategic leadership (β=3.164, p<0.001) had significant predictive power on innovativeness. The multiple regression model was reconstructed with these two variables and the regression equation for the model was obtained:

Innovativeness = 61.191 + 2.764 (Systems connections) + 3.637* (Strategic Leadership)*

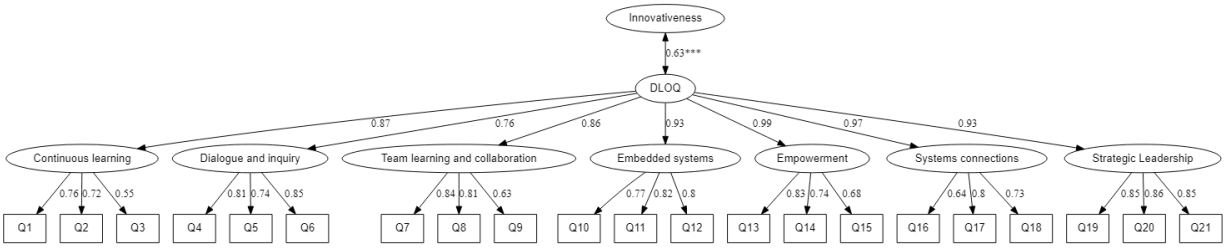
Table 6. Multiple regression analysis results in model 2

Variables **N = 336**	**Estimate β**	**Std. Error**	**t value**	**Pr(>|t|)**	**Collinearity Statistics**	
					Tolerance	***VIF***
(Intercept)	61.191	2.021	30.281	<0.001*		
Systems connections	2.764	0.673	4.108	<0.001*	0.413	2.422
Strategic Leadership	3.637	0.603	6.032	<0.001*	0.413	2.422
R^2 = 0.399; Adjusted R^2 = 0.395 **Residual standard error: 6.49 on 333 degrees of freedom** **F-statistic: 110.5 on 2 and 333 DF, p-value < *0.001 (criterion: innovativeness)***						

In this study, two dimensions, Systems connections and Strategic leadership, had significant predictive power on innovativeness. Compared to the other studies, Ismail (2005) discovered that the learning dimensions of Embedded Systems, Systems Connection, and Continuous Learning had substantial predictive effects on innovative activities occurring inside the company. According to Maria and Watkins (2003), embedded systems, strategic leadership, continuous learning, and team learning accounted for more significant variance in adopting innovation than the other three elements of the learning organization. Ugurluoglu et al. (2013) discovered Embedded systems, Systems connection, and Continuous learning to be significantly predictive of innovation. The predictive factors of learning organization's dimension for innovation of each study from different countries, sectors, and organizations are variable.

5.2. Graphical results

The CFA was used to confirm the model proposed. The results below showed that chi-square/df = 2.489 <3, p<0.000. Also, all estimates of comparative fit indices (CFI, TLI, GFI) were well above 0.90, and RMSEA = 0.067 < 0.08. Moreover, the standardized regression weights of observables are all greater than 0.5 with a p-value less than 0.05. Thus, these indicators confirmed that the structural model was fit and appropriate to the research data.



Chi-square = 502.702; df = 202; p = 0.000; CFI = 0.936; TLI = 0.927; GFI = 0.988; RMSEA = 0.067

Figure 2. Results of Confirmatory Factor Analysis

6. Conclusion

The study's findings have important implications for achieving the organization's goal. By focusing on creating a workplace that encourages a learning culture, healthcare organizations may deliver effective interventions to improve their workers' creative behavior, leading to improved patient care, operational efficiency, and competitive advantage in the healthcare industry.

The results from this study suggested that medical professionals have a high perception of the learning culture and innovative capability in their organization. The seven dimensions of a learning culture are correlated with innovativeness. Among them, the dimensions of Systems connections and Strategic leadership significantly influenced innovativeness. Human resource practitioners and managers should include actions for improving the system and leadership role while establishing relevant programs. Also, they should be involved in the strategic planning process since fostering an innovative culture necessitates organizational transformation activities and improving individual capabilities.

It is essential to conduct more research about learning organization and innovativeness in the future. Although more and more researchers have used DLOQ and PORGI to discover their learning and innovative position, literature still needs more study about how, when, and how much to transition into a learning organization. Further study is required to offer a more profound knowledge of the obstacles and enabling aspects to foster professional learning and innovativeness in the company. An in-depth interview may be beneficial in providing additional information about the learning culture to enhance health professionals' learning and innovation.

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Biography

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Mr. Cao Tri Nguyen received his MSc in Biotechnology at the University of Science, Vietnam National University, Ho Chi Minh City, 2018. He had ten years of experience working as a researcher and data analyst in the biotechnology field, especially in embryology. He is now a data analyst at the HOPE research center, My Duc Hospital, a leading clinical research center in Asia in Reproductive Medicine, and has more than 10 publications in well-respected journals.

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Dr. Tuong Manh Ho was among the first IVF team in Vietnam in 1997 and has experienced more than 20,000 ART cycles since then, including conventional IVF, ICSI, oocyte donation, oocyte freezing, and frozen embryo transfer. He is the Director of HOPE Research Center, My Duc Hospital, and Head of IVFMD, My Duc Hospital. Dr. Tuong has authored or co-authored more than 50 publications in high-impact journals of reproductive health (such as NEJM, The Lancet, Human Reproduction, Fertility & Sterility, etc.) He has also been involved in training and technical support for establishing most IVF centers in Vietnam and is a senior lecturer of many ART training courses in Vietnam. He has more than 100 presentations (oral, and poster) at regional and international meetings and congresses. He has been invited speakers at many regional and international meetings and congresses.

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