Thai Private Hospitals' Innovative Healthcare Cultivation: An Exploratory Factor Analysis (EFA)

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Abstract

Innovation in hospital healthcare is fundamental to differentiating treatment and creating consumer value. However, the creation and cultivation of innovative treatment in private hospitals has been overlooked. This study developed an innovative incubation evaluation tool based on an analysis of several incubation parameters. Based on a book study, interviews, and a poll of 280 health professionals at private Thai hospitals, this report was compiled. Corporate education, innovation, and empowerment are marketing-oriented ideas of value and usage context. In order to determine the efficacy of this Thai private hospital's efforts to incubate health care innovations, it is necessary to conduct an evaluation. It can be used to establish benchmarks for business innovation cultivation. It measures how innovatively a company is operating. However, this incubation method needs additional testing to continue evolving to become more effective.

Keywords: Innovative healthcare, Hospital, Marketing-oriented, Innovative cultivation, Exploratory factor analysis

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Introduction

In today's competitive marketplaces, innovation is vital to a company's long-term success. Thus, innovation's determinants are increasingly studied. Today, the focus is on these aspects relating to people and behaviour, highlighting the significance of innovative cultivation in organizations, which can both encourage or limit innovation and affect firm performance. However, private hospital research on these variables is scarce. According to Amara and Landry (2005), innovative firms must emphasize innovation in their plans to maintain long-term viability and profitability in a changing environment.

Creating economic and social value from knowledge, combining ideas, expertise, and technology improves performance. It works. Innovation's importance has changed since the second half of the 20th century (mostly between the 1930s and 1960s). In 40 years, it has changed drastically, according to De Silva and Wright (2019). In the last two decades, innovation has been a key driver in academic, (Patangthabutr, Ariratana, Sirisooksilp and Somprach, 2018). societal, and political life. According to Van Looy (2006), innovation is a key driver of economic growth.

Despite innovation's growing importance, Phonkaew (2001) suggested a deeper understanding. Its boundaries are always shifting. The complexity of innovation is not measured. Nieto (2004) says innovation's complexity can cause even the most prepared manager to lose sight of his goals, but advances in science and technology have made studying innovation more important. Hellström (2004) studied "innovation as social action" (i.e., a phenomenon). He said that innovation as a social and analytical event requires normative activity. Nieto (2004) referred to "innovative cultivation" and "shared ideals" as determining a company's innovation potential. It is innovative. Shared values "contribute to job satisfaction, staff

morale, an organization's success, competitiveness, speed-to-change, and creativity."

Ramachandran and Sarbadhikari (2021) investigated the question, "How do we innovate with COVID-19?" Microsoft and IDC conducted research into innovation and recovery. Their company resilience is enhanced by innovation. Positive cultivation fosters creativity. EFA investigated novel cultivation methods. EFA examined variable interrelationships as well as factor structures. EFA identifies variables that are relevant. This method can be used to investigate the broad relationships between many variables by revealing their common dimensions. Wipulanusat, Panuwatwanich and Stewart (2017) retained several factors in the construct based on EFA results and a clear estimation of the factor structures to be used as measures. Both EFA outcomes and factor structures improved.

Wang and Ahmed (2004) and Dobni (2008) developed an innovation scale. Churchill (1979) and Anderson and Gerbing (1988) described the scale. Most measures are unidimensional, ad hoc, and unsystematic. Studies show that company cultivation promotes innovation and creates methods for assessing it. This article aims to create a comprehensive, innovative cultivation measurement tool. When creating a reliable scale, consider the domain, item creation, and item purification. The article's conclusion discusses future research and management.

Objective of this study

This study fills a void in the literature. Using exploratory factor analysis, the most pertinent characteristics of innovative cultivation were compared to the cultural dimensions and typologies of the competing values model after a review of the literature. The objective of this study is to ascertain whether techniques for modeling observed variables and their covariance

structures in terms of latent factors enhance innovation and performance. Innovative cultivation enhances performance and innovation, and innovation influences performance.

Literature Review

The gap in previous knowledge

In the past, insufficient research has been conducted on the topic of innovative cultivation as opposed to the culture of innovation. A "culture of innovation" is a work environment that is fostered by leaders in order to encourage innovative ways of thinking and the application of those ideas. Innovative cultivation is the practice of seeking to acquire or develop a characteristic or talent linked to innovation. Innovation is not the exclusive domain of the organization's senior leadership but can come from any member of the organization, according to the view prevalent in workplaces that nurture an innovative culture. However, "innovative cultivation" has a deeper significance. This article provides a synopsis of the key theories, arguments, and statistics given in the research on the significance of worker skills in the innovation process in industrialized economies. It gathers information from a variety of sources. In this category are innovation studies, neoclassical human capital theory, labour market research, and organizational discipline. It is also usual practice to rely heavily on official survey data when describing and quantifying the range of skills and occupations required for various sorts of innovative activity.

Issues of definition

Cultivation divides innovative cultivation into two distinct categories: innovative cultivations value adaptability, creativity, risk-taking, and entrepreneurialism while exploring new resources and challenging norms. A cultivation that fosters innovation encourages employees to implement new services, product development technology, and organizational

procedures and structures. Cultivating employee attitudes towards innovation may persuade them that the organization has spirit, is able to manage uncertainty, and minimizes negative outcomes. The emphasis on creativity in the innovation orientation leads to inventive accomplishments. Laegreid, Roness & Verhoest (2011) argued that innovative cultivation can inspire innovation in employees. This can aid them when their innovative ideas encounter difficulties. The second type of innovative cultivation emphasizes organizational performance orientation, which comprises three elements: well-developed goal orientation, task performance, and service delivery quality. Performance-oriented cultivation is acceptable for fostering organizational innovation because governments must respond to the needs of their clients and citizens to meet goals and the requirements of performance evaluation systems. Even though those authors found that organizations with well-developed cultivation that focuses on performance are more likely to encourage creative activities, they did not find a link between the two.

From Table 1, the cultivation of innovation is a multidimensional process that includes the intent to be innovative, the infrastructure to support innovation, the operational-level behaviours required to influence the market and value orientation, and the environment to implement innovation. This investigation is described. Utilizing the existing literature, the initial versions of each dimension were then enhanced using these techniques. Innovation in the workplace frequently involves concrete actions or behaviours. Examples include the implementation of ideas for new products or services, or modifications to existing ones (product or market focus), restructuring or cost-cutting initiatives, improved communications, personnel plans (process-related), new technologies (technology- or R&D-based), unique employee behaviours (behavioural-based), and organizational responses to opportunities and unscripted situations. In these situations, success is often determined by changes in how things go and what happens as a result.

Singh and Aggarwal (2022) synthesized 208 definitions of innovation using grounded theory. The data analysis indicated seven fundamental characteristics of innovation: creative capacity, motivation, action, psychological processes, ecological processes, novelty, value creation, competitive advantage, technology or invention utilization, and economic growth. According to code co-occurrence analysis, “newness” is the most common theme in sample definitions. An integrative definition is constructed using input, intermediary processes, and outcomes. Innovation is the application of novel adaptive solutions to produce value, exploit innovative technologies, and advance the economy. It is an example of inventiveness. Rejon-Parrilla, Espin and Epstein’s (2022) definition of innovation encompasses product, market, process, behaviour, and strategic components. Innovation is associated with creativity and change, or is something innovative that causes change. Innovation criteria include product or service, processes, and behavioral (cultural) or infrastructure issues.

Low, Chapman and Sloan (2007) define “market orientation” as an organizational cultivation that supports employee marketing implementation behaviours. Meanwhile, Udriyah, Tham and Azam (2019) noted that innovation and market orientation are additional emerging themes, and this is not the only one. Astuti, Sanawiri and Iqbal (2020) have successfully captured market orientation in a cultural context. In addition, Singh, Del Giudice, Tarba and De Bernardi (2019) discovered that market-focused cultivation fosters innovation. In addition, Hutahayan (2021) discovered that market sensing, customer linking, competitor sensing, and customer service are essential market orientation skills. Technology development, product or service development, and organizational communication are additional examples.

Singh, Del Giudice, Tarba and De Bernardi (2019) reported that innovation and cultivation are linked in the literature. Innovativeness is associated with, for instance, learning growth and participatory decision-making. According to the same authors, weak innovation structures create a gap in market orientation models; market orientation and innovation are not two separate fields, and "certain tools and policies evaluated on the innovation scale are more heavily adopted by market-oriented enterprises". This is in line with what Dobni (2008) found when he compared innovative cultivation to market-focused cultivation.

Dobre, Dragomir and Preda (2009) and Kratzer, Meissner and Roud (2017) described in a similar manner that an organization's innovativeness ranges from the ambition to be innovative to the capacity to introduce a new product, service, or idea, to the implementation of processes and systems that can enhance business performance. Innovation requires cultural openness. This is evidenced by market orientation and innovation. Cultural openness is the innovation-required cultural focus of the organization. This will determine the adoption of innovation initiatives.

Issues of measurement

Existing research on the success of innovation (Hsiao & Hsu, 2018; D'Attoma & Ieva, 2020) focuses on unidimensionality rather than scale development when it comes to the activities and parts of innovation. According to Anning-Dorson and Nyamekye (2020), all evaluations of inventiveness have been ad hoc, so the work cited is significant because it is the first known attempt to operationally validate innovativeness. A twenty-item validated measurement construct was introduced (Esfahani & Reynolds, 2021). The findings provided a foundation and direction for future research, as well as recommendations for the growth of manufactured products. Al-Henzab, Tarhini and Obeidat (2018), Acar and ÖzŞahin (2018), Christa and Kristae (2021), and Park and Lee (2022) demonstrated the importance of innovation

as a predictor of business performance. Their research demonstrated the importance of market orientation, learning orientation, and entrepreneurial orientation in fostering innovation. These orientations foster innovation and organizational success.

Issues of scope – cultivation and innovation

Most scholars view organizational innovativeness as a unidimensional topic, with a few exceptions (Acar & ÖzŞahin, 2018). Some of these dimensions have been highlighted, such as product or market focus (Acar & ÖzŞahin, 2018), process-related (Pouwels & Koster, 2017), technology- or R&D-based (Berger & Kuckertz, 2016), or behaviourally focused. The multidimensional perspective suggests innovativeness comes from a number of interrelated activities tied together by cultivation. For multidimensional measures, balanced organizational innovation is more effective (Scaliza et al, 2022; Imron et al, 2021; Poespowidjojo & Kamaruddeen, 2018; Kahn, 2018).

How businesses become innovative and how we measure this are equally important. This is clear from research on market orientation, organizational cultivation, and innovation. Market-oriented cultivation drives organizational innovation. Innovativeness develops over time in companies, according to Li, Wu and Xiong (2021). This is consistent with Liu, Yu, Guo and Li (2022), who emphasize organizational cultivation and innovation. This study aims to explain how innovative cultivation works.

Successful businesses integrate innovation into business development and management (Punpukdee, 2020). According to Lounsbury, Cornelissen, Granqvist and Grodal (2019), innovation depends on organizational cultivation. By bringing people together and demonstrating the value of structures, rules, and commonplace things such as practices and procedures, cultivation encourages creativity and the generation of novel ideas.

The term "organizational cultivation" refers to all employees' deeply established (sometimes subconscious) attitudes and beliefs, which are mirrored in the characteristics of the organization (called attributes). It expresses the expressive personalities of employees through symbolism, sentiments, relationships, language, behaviours, physical settings, and artifacts (Yang, Nguyen & Le, 2018). This is backed by the organization's strategic architecture and the expressive activities of its personnel (Teravainen & Ali-Loytty, 2018; Zeyada, 2018). Changing the focus of an organization, say, to innovation, necessitates a cultural shift.

The basic elements of cultivation (shared values and beliefs and expected behaviour resulting from the values and beliefs) influence innovation in two ways: through socialization (Abdul-Halim, Ahmad, Geare & Thurasamy, 2019), and through innovation (Baradarani & Kilic, 2018). A similar cultivation would reject rigidity, control, predictability, and stability, all of which kill creativity (Kashan, Wiewiora & Mohannak, 2021).

Research Methodology

Construct

The authors have different preferred conceptualizations of innovation, so initial domain specification may be difficult due to the many definitions. Attempts were made to define its scope in the section on measuring innovation. These efforts focused on identifying innovation-supporting principles.

To promote organizational innovation, define, instill, and reinforce innovation-supporting attributes among employees. Vision and mission, customer focus, management processes, leadership, support systems, employee constituency, and others determine favourable conditions for innovation. (Lestari, Leon, Widyastuti, Brabo & Putra, 2020). According to

Tonjang and Thawesaengskulthai (2020), management must send the right signals to change employee behaviour. Employees must embrace the new management orthodoxies' opportunities and challenges. Innovating depends on how management is set up, what strategies are in place to encourage innovation, and which employees are targeted (Yan, Hong & Warren, 2021).

The procedure

To measure innovative cultivation, this study adhered to the widely accepted principles of instrument design outlined in these foundational works. These techniques are described in this article. This method was inspired by Ghasemzadeh, Nazari, Farzaneh and Mehralian (2019).

Creation of scaled items

This stage involved creating a list of items that could capture innovative cultivation. This step involves creating an inventory of items (Solis & Mora-Esquivel, 2019). Based on past studies, an extensive list was made for each dimension. The items are based on previous research on innovativeness and organizational cultivation. Each dimension's sphere needed direct communication. As a result, each determinant had several items. Two innovation managers from different companies chose a subset of items from this pool. The items' suitability, uniqueness, and ability to convey "different shades of meaning" to informants were considered. All four pillars of innovative cultivation saw growth (Amara & Landry, 2005).

Scale item cleaning

All original items from Tables 2 and 3 were reviewed for clarity and applicability before cleaning the scale. These products were distributed to 82 private hospital personnel who did not work together. These medical specialists were asked to evaluate the correctness of each item. This committee met multiple times to determine whether each item was acceptable, clear, and well-worded. Some things were eliminated or

altered to make their meaning clearer. This step removed and changed some items. Fifty-five scales remained. As factors, the following were found: implementation context (Cronbach's alpha = 0.77), organizational constituency (Cronbach's alpha = 0.72), organizational learning (Cronbach's alpha = 0.78), market orientation (Cronbach's alpha = 0.82), innovation propensity (Cronbach's alpha = 0.84), value orientation (Cronbach's alpha = 0.74), and employee creativity and empowerment (Cronbach's alpha = 0.81). This process eliminated some items and rephrased others to improve meaning. Each remaining item was used a Likert scale. According to Taber (2018), respondents could indicate whether or not they had adopted the practice. If these scale scores are accurate and reliable, a vector of their averages can be used to describe an organization's innovative cultivation. (It should be noted that in most social science research situations, a reliability coefficient (Cronbach's alpha) of 0.70 or higher is considered "acceptable".)

Testing and data collection in the field

The sample includes management and operational-level workers because the purpose was to measure innovative cultivation universally. Ekingen, Ekemen, Yildiz and Korkmazer (2018) advise using the instrument with its intended participants. These respondents are likely to be innovators, and innovative cultivation will affect their activities. The study was conducted in a southern Turkish hospital. The purpose was to produce a homogeneous sample to eliminate test score variations from cross-industry sampling. This company also prepared and distributed a position paper on innovation as part of its strategic plan. At the time of the study, the company did not know how their innovation project would influence them because they had not yet specified innovation measures or firm implementation dates.

A systematic questionnaire was used from January through July 2022. Based on the literature review, the instrument was self-developed using the four steps of instrument development: (1) concept identification; (2) item construction by determining the blueprint, format, item writing, readability, and scoring; (3) instrument validity through expert review and factor analysis (EFA), and (4) instrument reliability. The data were analyzed using SPSS. Data were screened during the initial factor analysis (EFA) phase using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (> 0.5) and Bartlett's Test of Sphericity (0.05) (Tabachnick, Fidell & Ullman, 2007; Taherdoost, Madanchian & Ebrahimi, 2022). The constructs' factors were analyzed and given descriptive titles. The sentences were loaded into components with minor logical errors.

Results

From Table 2 and Table 3, the result was most readily interpretable using unweighted least squares factoring and varimax rotation. The 27 scale items were first assigned to 7 factors with eigenvalues greater than 1. All factors were one-item fixes. A scree test was undertaken to provide an interpretable solution (Watkins, 2021). Scree tests have many interpretative factors. The test revealed that seven components were more logically coherent for further investigation; hence, the factor analysis was rerun. Final factor solutions, descriptions, variance explained, and alphas are given. Extremely high sampling adequacy and Bartlett's Test of Sphericity for the final factor solution suggest that the correlation matrices are representative identity matrices suitable for multivariate analysis. The analyzed factors were named to represent their construction. Respectable job loading statements were applied to components without logical errors.

Complete item analysis

Reliability testing and item analysis refined the innovation factor measures. Nunnally developed a method for evaluating item-to-scale assignments in 1978. This method considers item-scale relationships. Item score to scale score correlations are used to determine whether an item belongs to a factor analysis dimension. Each measurement item's reliability contribution to the scale was evaluated. Any item that made a factor less reliable was removed (Taherdoost, 2019).

From Table 2, Cronbach's alpha is a measure of internal consistency, or how closely linked a group of things are. It is thought to be a scale reliability metric. A "high" alpha value does not mean that the metric is unidimensional. Additional analyses can be undertaken if, in addition to testing internal consistency, you want to provide proof that the scale in question is unidimensional. One way of determining dimensionality is through exploratory factor analysis. Cronbach's alpha is not a statistical test; rather, it is a measure of reliability (or consistency). Nunnally (1978) recommended deleting factors when alpha fell below 0.70 to improve study reliability. A new solution was developed. Early research on predictor tests or hypothesized construct measures suggested reliabilities of 0.70 or higher. Nunnally (1978) argues that increasing reliability beyond 0.80 is a waste of time and money because measurement error attenuates correlations very little. For example, to achieve 0.90 reliability, standardization and item addition are required. Since the goal of the study was to find the greatest internal consistency, 0.70 was chosen as the cut-off.

From Table 3, some items with values below 0.70 were removed from the factor solution. Maximized reliability coefficients were 0.84 to 0.72, above 0.70. This describes the final factor solution's constructs and loadings. The eliminated concepts are also listed. Cronbach's alpha (Cronbach & Furby,

1970) is the most widely used measure of reliability for single-instrument, single-administration methods. After the second round of detailed item analysis, the items were validated.

Validation analysis

Weaver and Maxwell (2014) respond that, after more than a century of development, exploratory factor analysis is one of the most widely used test validation techniques. EFA attempts to identify the minimum number of common factors required to replicate the item correlation matrix in this domain. According to Punpukdee (2016), given the technique's adaptability, it is crucial to learn EFA to make the best decisions to adapt to specific measurement conditions; otherwise, a factorial study guided by the software's default options may result in incorrect decisions regarding the number and definitions of the factors. The research report must contain all the information required to replicate the study. Validity is the degree to which a measure measures what it is intended to measure. The construct and content validity of this model were evaluated using exploratory factor analysis. We did not conduct any tests of criterion-related validity. The model did not have a clear way to measure a relative criterion, such as how well a business performed, or how happy its customers were.

Content validity

Content validity is determined by how well researchers create items that cover the content domain of the variable being measured (Nunnally, 1978). Despite being subjective, the methods employed guarantee a high level of content validity. The four innovative cultivation constructs were developed through a review of the literature and through evaluations by academics and practitioners. This multi-step process (reviewing the literature, asking experts for their opinions, and looking at the pretest samples) helped

improve the constructs that were used, and those who looked at the pretest samples reported that the final constructs did a good job of showing what each factor was about.

Construct validity

Construct validity is the measure's theoretical essence. Here, construct validity was assessed using convergent validity. This analysis found a strong correlation between the seven innovative cultivation index factors, indicating a common underlying construct. All correlations were above 0.70 and significant at 0.001. Exploratory factor analysis on a one-factor solution output (eigenvalue = 3.28, 68.7% variance explained) gave a high alpha (0.84), which shows convergent validity.

The main results of this study

Exploratory factor analysis (EFA) will be used in the study of an innovative healthcare cultivation factor. This is one of the most obvious benefits of using EFA in such a context. The main results of this study are that a private hospital's innovative healthcare cultivation factor consists of 4 sub-elements, which are innovation intention, innovative infrastructure, innovation influence, and innovation implementation. There are twenty-seven questions, or observational variables.

Discussion

According to Figure 1, the model supports the theory that innovative cultivation has four general dimensions: (1) the innovation intention, which is the desire to engage in creative activity; (2) the innovation infrastructure, which is the framework required to support various innovation initiatives; (3) the innovation influence, which is employees' knowledge and orientation to support innovative thoughts and actions, and (4) the innovation implementa-

tion (an environment or context to support implementation, which invariably involves inherent risk and reward trade-offs). Each of these elements is required for innovative cultivation.

Seven construct-based factors quantify the innovative cultivation of an organization. The loading of statements on to components utilizes inconsistent logic. Based on sound predictive and psychometric procedures, the resulting scale is brief and reliable. It looks as though it has enough psychometric properties to be used as a starting point for research in academia and business. Management must consider the application issues. The proposed seven-factor model measures the innovative cultivation of an organization. This scale concerns the things and actions that an innovative organization must have.

This scale can be used for both descriptive and diagnostic purposes. It could be used to establish a baseline level of innovative cultivation within an organization or division, and then track its efforts to foster innovation. Thirdly, an organization can use the scale to differentiate innovation efforts across business units by establishing objectives and monitoring progress. Comparative measures enable the organization to identify areas of strength and weakness in one or more innovation dimensions (or scale properties) so that future intervention efforts can be directed toward addressing them. This scale can also be used for diagnostic purposes. If a company scores low on innovation intention or propensity, additional research may reveal areas for improvement. If a company (or business unit) excels at innovation, the efforts of that division can be mapped, replicated, and implemented in other divisions. The same applies to industry relations and practices in collectively innovative industries (for example, the health care industry, education, and biotechnology). Innovation levels can be compared across industries or regions, first as a starting point and then to see how they compare to each other.

As innovation "globalizes" and gains prominence in management, it is crucial to determine if scale properties apply to other languages and "business cultivations". The interpretation of specific constructs in this study was influenced by departmental and hierarchical arrangements. Consequently, the language was altered. Measurements could be extended to non-profit and non-traditional organizations such as chambers of commerce and economic development agencies to determine the limits of the scale, despite the scale's progression.

According to Livingstone and Day (2005), criterion-related validity was not examined in methodological challenges. This was not an error, but some may consider it a flaw. Several factors contribute. The innovative cultivation measures were developed using a variety of items, some of which were empirically evaluated for criterion validity. Second, the new items were theoretically and conceptually reasonable (including face validity). Third, the sample size was large, and the data came from an organization dedicated to innovation. The methods used an exploratory model and found no link between innovative cultivation and business performance. A confirmatory factor analysis and an independent measurement of a relative criterion, such as business performance or customer satisfaction, could be added in the future.

Two methodological issues raise future research questions. The informal ranking of scale factors is discussed first. This involves comparing one factor to another. Consistent with Kraus, Schiavone, Pluzhnikova and Invernizzi (2021), one could argue that innovation measurement metrics are more important than the ability to determine whether customers are overserved or underserved. If this conceptualization is accurate, analysis may be conducted using Guttman scaling or other discriminating methods. The second step is to revise, expand, and validate scale items. This could

be done with a cross-industry study instead of a single-firm study (Bouranta, Psomas, Suárez-Barraza & Jaca, 2019).

Revision of deleted scale items or additional modification (to better represent the population) of accepted scale items may be necessary (Jokiniemi, Pietila & Mikkonen, 2021). To assess the applicability of the measures, additional work on scale validation using annual reports, company websites, and possibly customer interviews will be conducted. Consider stakeholder perspectives on the meaning of innovation (Wagstaff, Flores, Cannella, Sarkar & Choirat, 2021). Examples include consumers, healthcare consultants, public healthcare partners, and government agencies. This highlights the characteristics of the index.

Conclusion, limitations, and future studies

The main conclusions of this study

The scale's original seventy-five elements were examined to ensure they made sense and were relevant. After conducting exploratory factor analysis on twenty-seven different innovation dimensions, this study proposes an innovation orientation scale. According to logic, the dimensions' factors can be either management- or employee-focused. We need to conduct further research on this.

The innovation climate of a company can be evaluated using this empirical scale. This opens the door for additional research, such as a comparison of innovative cultivation and performance or an examination of the innovative behaviours that contribute to long-term success. Innovation's effects on productivity also require further investigation.

The limitation of this study

The limited generalizability of current model frameworks must be addressed. It is important to expand the scope of this research beyond

the healthcare sector. If researchers pay close attention to the differences between industries, they may be able to devise more advanced and accurate ways to measure innovation as well to evaluate external validity.

The recommendations for future study from this research

Innovation is becoming increasingly valued in today's businesses. Management is coming to terms with the fact that innovation yields sustainable gains in competitive advantage. If successfully implemented, innovative cultivation can boost a company's performance, bringing it to the forefront of its field. Innovation within organizations was the focus of this study. Although there is still work to be done on both the methods and the content, these findings are promising. In addition to the traditional innovative cultivation framework, this model provides an alternative one. A new metric for innovation has been provided by the research results and recommendations. A structure for further study is provided. The study suggests that because EFA analysis cannot confirm a theoretical model like CFA analysis (Punpukdee, 2016), one should utilize CFA to assess structural validity, and social capital model measurements obtained from CFA analysis can be used to evaluate the social capital pattern of the sample. However, if a survey or confirmation component analysis, or both, is chosen, the following difficulties must be considered. According to Tedeschi and Calhoun (2004), if the research has generated a question based on the original question, then to reflect the study context, questions should be added to the original questionnaire. The study should undertake an EFA analysis to determine whether or not the elements may be categorized. An analysis can then be undertaken to confirm the theory of the analysis (Tedeschi & Calhoun, 2004).

The new knowledge and practices of private hospitals' innovative cultivation factor analysis

The benefits to practices of factor analysis in private hospitals' innovative cultivation are as follows. First is the identification of groups of variables that are interconnected in order to determine their correlations. Factor analysis can be used to uncover hidden elements or components of revolutionary healthcare cultivation that would otherwise be undetectable through direct inquiry. Both objective and subjective qualities might be used. Two or more variables can be combined into a single component to reduce the number of variables. The use of dimensions allows for more imaginative naming. It is simple to implement, inexpensive, and precise.

The value of the research is determined by the researcher's capacity to build a complete and exact set of product qualities while exploring the benefits and drawbacks of revolutionary healthcare cultivation. The procedure's value is diminished if critical aspects are overlooked. It can be difficult to identify the factors. Multiple qualities can be closely connected for no immediately apparent reason. The factor analysis cannot provide a meaningful pattern if the observed variables are completely unrelated. It is impossible to know what factors they represent; only theory can assist researchers in this regard. As a result, when the study basis lacks knowledge, has very little knowledge, or there are very few studies on the structure of the variable relationship to reduce the number of existing variable combinations, only the most obvious benefits of utilizing EFA in the study of private hospitals' innovative cultivation factor will be used. This is one of the most obvious benefits of using EFA in the research into private hospitals' innovative cultivation factor.

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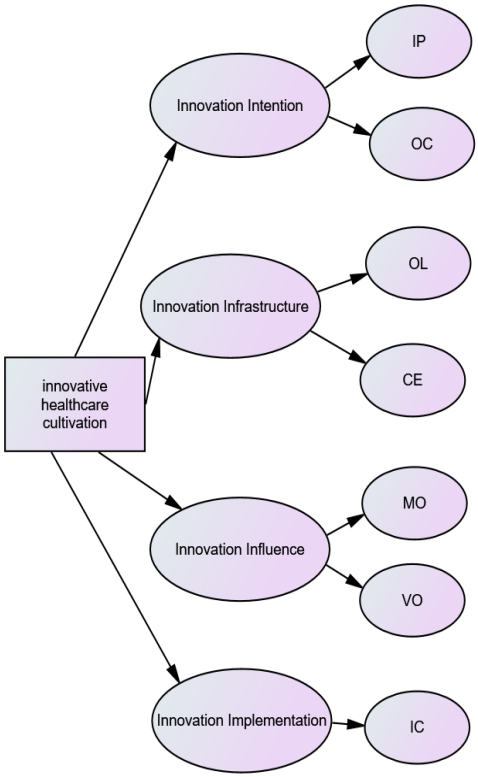


Figure 1 Thai private hospitals' private hospital's innovative cultivation was analyzed by EFA.

Table 1 Issues of scope - cultivation and innovation

Dimension	Author
Innovation intention (Intention to engage in creative activity)	Zhang, Zou, Qiao, Sun and Xu (2022) Beynon, Jones and Pickernell (2020) Su and Wang (2020)
Innovation infrastructure (The framework necessary to support various innovation initiatives)	Borisova and Erygin (2019) Kniazevych, Kyrylenko and Golovkova (2018) Cojocaru, Rosca, Rusu and Guzun (2018)
Innovation influence (Employee knowledge and orientation to support innovation thoughts and actions)	Rejon-Parrilla, Espin and Epstein (2022) Sari and Sukmasari (2018) Tian, Deng, Zhang and Salmador (2018)
Innovation implementation (An environment or context to support implementation, which invariably involves inherent risk and reward tradeoffs)	Gimenez-Fernandez, Abril, Breuer and Gudiksen (2021) Singh, Paul and Dhir (2021) Singh, Akbani and Dhir (2020) Gale, Alemdar, Lingle and Newton (2020)

Table 2 Twenty-seven different innovation constructs of private hospital's innovative cultivation

Implementation context (IC) (The alpha coefficient= 0.76)
1. To make room for new products and services, we are willing to end products and services that do not fit our goals as well as we'd like. 2. We can quickly implement modifications to our products and services in response to clients' or competitive feedback. 3. We turn ideas into commercial products or services in a timely manner.
Organizational constituency (OC) (The alpha coefficient= 0.72)
4. As an employee, I believe I am able to develop ideas. 5. I am encouraged to question the decisions and actions of the organization if I think there is a better way. 6. I think I'm trusted to do what's best for the organization with little to no oversight.
Organizational learning (OL) (The alpha coefficient= 0.79)
7. The training I get is focused on helping with strategic efforts and is not general. 8. The training I receive is geared towards assisting me in providing customer value. 9. It is expected that this organization will gain new skills, abilities, and knowledge to help it be more innovative. 10. It is recommended that organizations keep learning, and there is time and opportunity to improve skills and competencies. 11. Mentorship and post-training assistance are available.

Table 2 Twenty-seven different innovation constructs of private hospital's innovative cultivation (Con.)

Market orientation (MO) (The alpha coefficient= 0.80)
12. We take the time to understand our competitive environment so well that we can predict industry shifts. 13. We know which competitors will target particular clients. 14. When I learn something essential about a client or competitor that may have an impact on others in my business, I know what to do with that information. 15. We are encouraged to seek information on what most people would consider "not so obvious" or even obscure topics.
Innovation propensity (IP) (The alpha coefficient= 0.84)
16. Innovation is a way of life, not just a buzzword. 17. Our top leaders are able to get the message of innovation across to the rest of the organization. 18. We have a vision for innovation that is linked to projects, platforms, or initiatives. 19. In this organization, innovation is a core value.
Value orientation (VO) (The alpha coefficient= 0.73)
20. I am free to design suitable responses in order to provide value for our clients. 21. I am aware of the systems/processes in which we must excel in order to provide value to customers/stakeholders. 22. All of the employees agree on what gives customers and stakeholders value. 23. We define value through collaboration with our consumers.

Table 2 Twenty-seven different innovation constructs of private hospital's innovative cultivation (Con.)

Creativity and empowerment (CE) (The alpha coefficient= 0.83)
24. This organization benefits from my creativity, that is, it makes effective use of it.
25. If given the opportunity, I am willing to do things differently.
26. I see uncertainty as an opportunity, not a risk.
27. Employees who are allowed to be different and let their differences show in their daily actions are more likely to help our organization come up with new ideas.

Table 3 Construct validity of private hospital's innovative cultivation

Dimension	Cronbach's Alpha	Factor
Innovation Intention	0.84	1) Innovation Propensity (IP)
	0.72	2) Organizational Constituency (OC)
Innovation Infrastructure	0.79	3) Organizational Learning (OL)
	0.83	4) Creativity and Empowerment (CE)
Innovation Influence	0.80	5) Market Orientation (MO)
	0.73	6) Value Orientation (VO)
Innovation Implementation	0.76	7) Implementation Context (IC)

Table 4 The seven innovative cultivation index factors description

Factor	Factor Description
1) Innovation Propensity	willingness to explore, accept, and adopt innovative external ideas; to take risks without fear in areas outside the organization's immediate field; and to value the ability to think differently and support radical ideas.
2) Organizational Constituency	Successful managers understand employees. Every innovative organization needs to mobilize, organize, or recruit a constituency.
3) Organizational Learning	An organization develops through experience accumulation and knowledge generation. New information is shared with employees.
4) Creativity and Empowerment	determination of an employee's creative potential and allowing creative expression at work. It also evaluates employees' decision-making authority and ability to improvise and act independently.
5) Market Orientation	A business strategy that focuses on learning what customers want in order to meet their needs. Market-focused businesses pay close attention to customer feedback when creating new products.

Table 4 The seven innovative cultivation index factors description (Con.)

Factor	Factor Description
6) Value Orientation	A framework that uses an organization's cultivation, structure, capital, knowledge, and understanding of its external environment to encourage innovation-based practices and values that improve employee and company performance.
7) Implementation Context	The organization's ability to implement valuable ideas involves proactively adjusting systems and processes to competitive changes.