Research article

Exploration on the gap of single- and double-loop learning of balanced scorecard and organizational performance in a health organization

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ABSTRACT

This paper addresses and interprets learning styles, namely, single- and double-loop learning, of BSC implementation in the background of healthcare organizaiton/industry, through which barriers and facilitators are inducted for the BSC for the healthcare industry. Samples of this study are from a community hospital with 290 beds was probed with samples of 34 BSC members interviewed. Based on the qualitative research's grounded theory, the transcript data of this study were analyzed using open, axial, and selective coding through NVIVO 10.0. By using single- and double-loop learning, this study distinguishes between adding and changing a health organization's specific capabilities, routines or abilities. Findings of this study indicated that BSC learning is more likely to improve the efficiency of the strategic management and strengthen the company's existing capabilities and routines; but it is not possible for single-loop learning to develop new capabilities. This study contributes to indicate that single-loop learning can be useful facilitators for organizational learning via affecting the positive performance of the organization, because employees are in favor of following existing routines and rules and allowing the employees to see the meaning of this balanced scorecard. However, employees still do not have the power to make changes they expect, because they do not have the power and right to change. The purpose of this research is to evaluate organizational learning performance via the implementation of the balanced scorecard in order to understand the mechanism's impact on organizational development. In short, this paper contributes practically to depict the process of executing BSC in learning organization in detail, and theoretically to understand the mechanism in optimizing organizational learning effect via BSC implementation through discussion of (1) downward penetration of single-loop learning from organization vision and goals, and upward following and promotion of double-loop learning of sub-units in the form of routines, norms, action plans and others; (2) ways of eliminating the gap by linking organizational member's values with the organization's vision in the form of giving individuals opportunities to make their own interpretation of learning results in the workplace.

1. Introduction

This case explores one health organization's learning on balanced scorecard (BSC) in order to integrate the organizational goals and visions into subunits' action plans, activities, and departmental goals, as well as promote the subunit and organizational performance. At the same time, through learning of BSC consistently, employees are able to learn in the organization.

The authors interviewed members who joined BSC learning plans in the hospital with the ground theory of qualitative research method, and found out the single- and double-loop learning phenomenon. Members have mentioned facilitators, interventors, and barriers for them during

the process of BSC learning. In addition, the authors also found there is a gap existing between single-loop learning (SLL) and double-loop learning (DLL). Through analysis, the authors believe that through good utilization of the gap, organizational performance in terms of learning efficiency and effectiveness can even be improved - better than ignoring the gap, which may lead to "un-learn" of the new double-loop knowledge from the outer world.

In this study, the authors try to claim the ideas that BSC learning represents the source of progress for enterprises to learn new knowledge, as well as a measurement of standards for employees to get in order to promote their performances. That is to say, BSC learning results represent enhancing performance through employees learning the spirit of BSC

(including organizational goals). Learning resistance is generated during the learning new concepts, especially in the part of double-loop learning.

These are the highlights of this article. When the organization is learning SLL, the members of the organization have the interest and motivation to learn the existing system of the organization such as routines and rules, because SLL is existing item. On the other hand, DLL is the organization's newly transferred knowledge from the outer world. For employees, DLL is relatively new, innovative and not easy to understand. Therefore, a learning gap exists between SLL and DLL.

The author believes that the improvement method for the SLL and DLL gaps is that: The organization learns from outside, gets new concepts, sets new short-, medium- and long-term goals for the organization, absorbs newly learned new concepts through BSC learning, and integrates them into subunits to become revised routines, policies, and norms, etc., and offer sufficient cognitive logics for employees to absorb during the learning process, and eliminate the impact sourcing from revised routines, rules, and norms, as much as possible. In this process, the focus should be minimizing the gap between the new and the old items. This research mainly uses facilitators, barriers, and interventions to find ways to reduce the gap, and make suggestions to integrate the new and the old concepts. Try to keep consistency as much as possible, so that organizational resistant phenomenon will be eliminated or even not occur.

The purpose of this research is to evaluate organizational learning performance via BSC implementation for understanding the mechanism's impact on organizational development both in downward penetration of single-loop learning and upward following and promotion of double-loop learning, as well as ways of eliminating the gap between the organizational member's values and the organization's vision. Therefore, the author's discussion of BSC practice in learning organizations is not only the top-down implementation of single-loop from the organizational top management team but also the making closer of the gap between double-loop learning results of the sub-units and the organization level's single-loop learning instructions. Thus, the goal of this study is to improve the efficiency and effectiveness of the learning organization; the learning effect can also be deeply rooted in the people's hearts, more sustainable, and thus become part of the organization's deep-rooted social norms and routines, values, etc.

2. Literature review

2.1. The balanced scorecard (BSC)

Being a successful tool for performance evaluation, BSC is a measurement tool to balance organizational performance measurement between financial, internal process, customer, and nonfinancial aspects, such as learning in this case. Aside from becoming a performance measurement system, BSC has advanced and transformed into a strategic management system (Kaplan and Norton, 2007). Gallo et al. (2018) utilized BSC as a strategic management tool for Slovak's tourism sector. Further, Hladchenko (2015) made a comparative content analysis of the BSC of four higher education institutions and found that BSC as a strategic management tool ensures the organization's successful implementation of their strategy, combines strategic and operational levels of the strategy, provides an effective measurement of performance, and determines whether strategic goals are achieved based on the developed indicators. BSC, as a performance measurement system, provides managers with a set of measures that gives a fast but comprehensive view of the business (Kaplan and Norton, 2007). According to Quesado et al. (2018), BSC plays an integral part in the organization's identification of its mission and the formulation and implementation of appropriate strategies (Figure 1). The BSC, since its conception in 1992, has evolved greatly and in various ways, and has been widely utilized by different organizations because of its adaptability; the concept can be interpreted, understood, and enacted in many different ways by organizations operating under different settings (Madsen and Stenheim, 2015). Mehralian
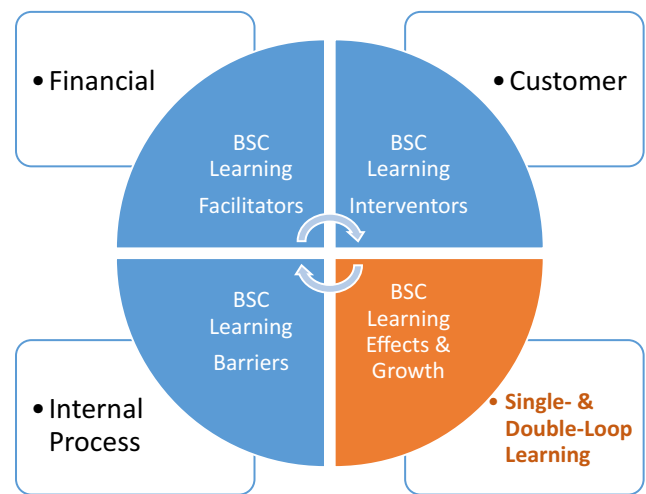

Figure 1. The conceptual implementation plan of BSC learning for performance promotion in the health organization of this case study.

et al. (2017) utilized BSC as a measurement tool to assess the performance of pharmaceutical companies. However, BSC learning in healthcare organization's applications was not much discussed. Following are some relevant healthcare cases. And this study has focused its discussion on BSC single- and double-loop learning aspects in promoting the performance of healthcare context.

2.2. The development of BSC in healthcare settings

The balanced scorecard (BSC) was developed in 1992 and has become a strategic tool that ensures organizations' ability to adapt to a changing environment (Kaplan and Norton, 2007). It has been adopted by various organizations, including healthcare organizations, as a conceptual framework for improvement (Gurd and Gao, 2008). According to Tsai et al. (2017), BSC is an important tool for hospitals in establishing their performance indicators. In 2001, Mackay Memorial Hospital (MMH) was the first hospital in Taiwan to fully implement the BSC across all of its departments (Chang et al., 2008). However, BSC is far from being perfect; Inamdar et al. (2002) suggested that learning strategies are needed for the continuous improvement of BSC. Previous empirical researches have shown that due to the lack of relevant knowledge on learning strategies, BSC has failed to learn and grow (Antonsen, 2014; Pessanha and Prochnik, 2006). Therefore, by using a health organization located in Taiwan, the authors of this study aim to extensively explore the learning aspects of BSC implementation under healthcare setting. Such as inside the healthcare organization, workplace learning is influenced by learning context and different learning methods. Learning in the workplace may be the result of one's experience from daily work routines (Siadaty et al., 2011) or of informal social learning in a "community of practice" setting (Wenger, 1998). This also applies to the phenomenon of BSC learning in a healthcare setting such as hospitals. Most traditional learning concepts originated from formal education and are not easily transferred to workplace learning (Tynjälä, 2008). Moreover, recent studies lacked the appropriate theoretical knowledge for workplace learning (Martin et al., 2018). BSC focuses on the learning styles and the levels of changes triggered by it can also help fulfill the gap, especially under the context of the healthcare industry, as proposed by this study.

Adopting similar qualitative in-depth interview research method, Tu (2012) uses both quantitative and qualitative (in-depth interviews) research to see if there were any differences in employee perception of BSC key performance indicators (KPI); its findings showed that KPI has an important influence on the ultimate "Financial dimension" in the BSC of medical institutions.

Indicating that BSC application to non-profit public sector organizations is very different from private organizations, Taufik et al. (2019) utilized BSC to measure the performance of hospitals in Pasuruan, and concluded that the performance of the three hospitals in Pasuruan, based on BSC measurement results, is good.

The performance evaluation of most hospital medical staff turns to be broad and vague frequently, which makes difficult for managers to reflect and measure the actual working situation of employees accurately by lacking of factual data, objectivity and rationality (Chen et al., 2010). Therefore, BSC measurement becomes an appropriate measurement tool being applied to healthcare organizations. Dewi and Santoso (2018) used Tria Dipa hospital as a public organization to measure BSC performance; the results indicated to be good, except the learning and growth perspective showed employees are in unsatisfied and employee retention. As a result, hospitals will be able to process its next step in organizational change with the indicated weak aspects in learning such as in the case of Tria Dipa. As suggested by the original authors (Norton and Kaplan, 2006), at the final steps of BSC implementation, organizations must take to build their own Scorecards and let BSC results be used as a driver of organizational change later.

Hospitals with a vision to carry the hospital forward and develop better services, continuous business process improvement is needed, including innovation and performance evaluation strategies (Dewi and Santoso, 2018). Stakeholders are putting increasing stress on providers for the measured performance of the healthcare organizations (Broccardo, 2015), for which, managing the costs and understanding the relationship between quality and cost have become significant, in order to promote satisfaction level of customers (patients) and simultaneously pressing for lower costs. Thus, BSC has become strategically important as a management tool for health care organizations.

2.3. Healthcare organizations' measuring learning goals through BSC

2.3.1. BSC performance measures vs. organizational learning (single- and double-loop learning)

In the organizational learning era, knowledge transfer has been proved to increase competitive advantages of the firms and organizational performance (Argote and Ingram, 2000); and Argyris distinguished double-loop learning to manage organizational knowledge assets in order to advance learning during knowledge transfer in the organization via helping managers to detect and correct errors (Argyris, 1992; Rothberg and Erickson, 2016).

Literature regarding to teaching hospitals' measuring learning goals through BSC, especially in the part of single- and double-loop learning is few (Trotta et al., 2013). Some researchers have tried to the investigated similar phenomenon from the perspective of knowledge management (Lin, 2015), comparison perspective. For example, Chen et al. (2006) firstly used the BSC to compare hospital performance between China and Japan; the results indicated performance of samples were depending on the selection of feasible and appropriate key performance indicators. Nevertheless, Trotta et al. (2013) investigated teaching hospitals and believed that owing to the complex dynamics and inefficiency issues traditional performance measurement systems seem to be inadequate BSC is good for the measurement of performance, and therefore have gone with a literature review on the BSC application of healthcare organizations. In the past, several studies looked into the BSC performance measurements of teaching hospitals (i.e., Rimar and Garstka, 1999; Chan and Ho, 2000; Modell, 2004; Ten Asbroek et al., 2004; Baraldi, 2005), but none in the depth of organizational learning aspects of single- and double-loop learning. Recent applications of the concepts of single-loop and double-loop learning to management are summarized in Table 1.

Kaplan and Norton (1996) proposed the double-loop process to help manage and implement organizational strategies. According to Kaplan and Norton (2007), double-loop learning facilitates strategic discussions and is a central component in BSC as a management tool. This paper is based on the assumption that the double-loop and single-loop learning theories in BSC intervention can be used to support the actual

Table 1. Recent applications of single-and double-loop learning to management.

Category	Single-loop learning	Double-loop learning	OL application
Stavropoulou et al. (2015)	the correction of operational errors without significantly changing the overall safety culture	The questioning and alteration of "governing variables" in safety culture and "mindset "in treating errors in health care organizations.	To review the effectiveness of incident reporting systems as a method of improving patient safety through single-loop and double-loop learning.
Reychav et al. (2016)	Physicians provide information by responding to questions from patients.	The physician initiates the process and plays a mentorship role in the learning process and thus helps patients gain a greater awareness of their situation.	How the integration of mobile technologies impacts the information seeking and learning process during a medical encounter.
Reddick et al. (2017)	Social media platforms are used to provide content to citizens/post information for and receive comments from citizens.	Active social media use, where conversations are started by citizens and governments provide meaningful change	Citizen interaction with e-government by use of social media
Kwon and Nicolaides (2017)	Being focused on the nature of doing and figuring out the most effective way to accomplish goals.	Being concerned with the nature of "knowing" and challenging what the right goals are to be pursued.	To explain the shift of paradigm of diversity management
Nyström et al. (2018)	To change some actions or strategies, but not their foundations	To reframe or alter basic assumptions and values, leading to deeper and more sustainable change.	an action-learning intervention in a Swedish healthcare region

implementation of workplace learning analytics. Learning analytics (LA) is defined as "the measurement, collection, analytics, and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs" (Siemens et al., 2011, p.4).

2.3.2. Single-loop learning: practical learning of BSC in the workplace-Enhancement of learning of organizational belief, policies and strategies

BSC links the long-term strategy with the short-term actions and creates strategic awareness among the organization's employees helping managers to focus on the variables that need to be assessed and how they will be measured, thereby avoiding potential conflicts between different objectives and indicators. BSC involves strategy learning which includes collecting feedback, testing the assumptions on which the strategy is based, and making necessary adjustments. The most valuable aspect of BSC is "its capacity for organizational learning at the executive level, what we refer to as strategic learning" (Kaplan and Norton, 1996 p.22). According to Argyris and Schon (1978), single-loop learning happens when individuals, groups, or organizations modify their behaviors based on the difference between expected and obtained results. Morgan (1997) agreed that questioning basic assumptions of organizational belief, policy, or strategy is a key component for strategic learning to take place. According to Stavropoulou et al. (2015), single-loop learning can be added to a firm's specific competencies, such as direct improvements to procedures. One example is adding a new bar code system leading to the correction of errors and improvements in patient safety (Askeland et al., 2008).

2.3.3. Strategic double-loop learning: catching up the leading units' visions

In this regard, learning in BSC is called strategic double-loop learning which facilitates critical assessment of the strategy (Kaplan and Norton,

2007). Contemporary strategic management must be treated as a continuous learning process based on both single and double-loop methods (Pietrzak and Paliszkiewicz, 2015). According to Argyris (1977) and Argyris and Schon (1978), double-loop learning occurs when individuals, groups, or organizations question the values, assumptions, and policies that lead to actions, and help managers to detect and correct errors. Nystrom et al. (2018) found that double-loop learning could be used to transform basic assumptions and facilitate changes in the workplace, including cultural changes. Fürstenberg and Görzig (2020) noted that double-loop learning may play a role in one's willingness to inquire about norms and confront the situation and correct errors. Double-loop learning involves changes in the "governing variables" of a culture and a "mindset" in treating errors. Kaplan and Norton (2007) claimed that double-loop learning allows managers to test, validate, and modify the hypotheses embedded in the business unit's strategy, and is involved in the entire assessment process when the unit needs a different strategy.

To summarize, the purpose of this study is to (1) apply LA to BSC implementation, (2) combine BSC learning with performance measurement in order to promote learning activities, and thus (3) understand their impact on organizational development. Further, it aims to assess the impact of BSC learning in the workplace and evaluates its learning effects on organizational performance, and analyze its context to understand and optimize BSC learning. Therefore, this study highlights the differences between BSC's single-loop learning and double-loop learning in terms of their applicability in a healthcare organization.

3. Materials and method

The implementation of Taiwan's National Health Insurance (NHI) in 1995, a series of cost control policies such as the "piecework reward system" and "global budget", have put medical institutions under tremendous pressure and competition. It is under this context that some hospitals have chosen the BSC as a specific organizational performance measurement tool (e.g., Chang et al., 2008; Chen et al., 2012) to enhance healthcare organization's work effectiveness and efficiency in order to control costs and reach the managerial targets. This study selected a community hospital, hereafter referred to as CS, with 290 beds through purposive sampling (Miles and Huberman, 1994) as its research subject. CS is a regional hospital located in central Taiwan and launched its BSC in 2012, following other city hospitals and medical centers. The said hospital was chosen based on the learning measures it implemented and the projects it accomplished. The chief executive officer (CEO) of CS adopted a top-down approach to start BSC. In the past few years, CS has applied quality control circles, benchmarking, and learning organizations to meet the requirements of Taiwan Hospital Accreditation.

During the development of BSC, CS held 11 workshops to discuss the skills and techniques of BSC. In the seminars, senior managers had the opportunity to articulate the mission, core values, and vision of CS. For the last two days of the seminar, BSC members were tasked to transform CS hospital's mission and vision into the unit's strategic goals and operational measures. The top management started monitoring the BSC process after 2 years of its implementation, which was done through an annual review policy. They required relevant departments to provide an annual report to determine whether the expected goals were achieved. After five years of implementation, BSC has become an ongoing process and routine management. In 2017, this study conducted in-depth interviews with 34 consenting BSC members comprising of 14 nurse managers, 7 middle managers in pharmacy, laboratory, rehabilitation, and radiology, and 13 administrative managers in the labor department, security department, public affairs, administrative department, human resources, social welfare, and telemedicine. The interview questions covered the learning styles, processes, and effects of BSC. The data obtained were analyzed through NVIVO 10.0 and was based on the steps proposed by Strauss and Corbin (1990), consisting of open coding, axial coding, and selective coding. The adopted research method for analysis, coding, and

building of structural concepts is based on the qualitative research's ground-theory as described in following section.

3.1. Ground-theory applications

The grounded theory, which is a significant application of the qualitative research method, emphasizes the use of field observations and in-depth interviews to collect and analyze data, in order to understand society from the perspective of social actors, and thus subtract theoretical concepts to build up a firm theoretical framework. Ground theory is better in exploration of influential variables. Therefore, based on grounded theory (Glaser and Strauss, 2017), this study uses open coding, the initial category of dimensions. In the beginning, this research used open coding to analyze, inspect, compare, conceptualize and categorize data, and put relevant concepts together into one category in order to form categories, subcategories and put names for them. Finally, we develop these categories, subcategories' properties, and distinguish these properties to form dimensions. Finally, the authors use axial coding, to correlate categories and subcategories in order to find out antecedents, causal conditions, phenomena, consequences, contextual conditions, and possible intervening conditions.

3.2. Coding

"BSC learning effect" and "learning obstacles/facilitators in BSC implementation", was formed. Before doing axial coding, this study determined the difference between single-loop and double-loop learning through the Deming cycle (Plan-Do-Check-Act/adjust or PDCA by Pietrzak and Paliszkiewicz, 2015). Single-loop learning is defined as a do, check, and adjust the phase of the Deming cycle without changes in the governing variables (Plan). Double-loop learning occurs "when mismatches are corrected by first examining and altering the governing variables and then the actions"; it is referred to as a complete Deming cycle in PDCA. In axial coding, the concepts of single- and double-loop learning were applied to make an iterative process of rereading the transcribed interviews to discern the learning types of the BSC implementation. In the analysis process, it was found that the BSC effects were in accordance with the single-loop learning, while the barriers/facilitators to BSC implementation were equivalent to double-loop learning. Finally, this study exemplified the variables related to learning processes in Table 2 based on the criteria detailed below.

3.2.1. Barriers to BSC

The LA definition previously proposed was followed to assess the statements on BSC learning contexts and to establish the barriers in the flow of information and confidence in BSC. Some examples include "superficial slogans" or "KPI not in their span of control". It was found that many hierarchical levels prevented the flow of information and that the technology in BSC was not learned and used by employees who do not hold supervisory positions. Further, it was noted that key performance indicators did not ultimately reflect the voice of front-line workers, as most employees believe that their voices were not used as key performance indicators.

3.2.2. Facilitators to BSC

Concepts such as "inter-departmental coordination or communication", "interactions bring solutions", "open discussion to get solution", "relational capital is high", and "reciprocal check and communication" were coded under this category.

3.2.3. BSC learning effects

As the analysis progressed, the author of this study had a conversation with internal information sources (members of the BSC committee) regarding employees' and managers' opinions on the learning process of BSC participation. It clarified the main patterns of learning types, which led to selective coding. Their perceptions were interpreted through

Table 2. Exemplification of the analysis process.

Dimensions	Original Interview Text
BSC effects: ➢ To modify sub-units' goals to be in line with the organizational-level BSCs (34 codings) ➢ To set yearly goals in concrete ways (16 codings)	"When it is the time to set up actions and programs for the next fiscal year, we may see what this hospital is going to do and we will follow. Previously we did not know how the hospital-level plan came about. Currently, this becomes apparent after we have BSC courses (7A Head Nurse)." "Before, we might feel that this was not my business; why would they call me to do it. Now, we are more likely to feel that things may be an integral part of the hospital, so we may still have to go with it. (Nutritionist)." "BSC focuses on specific directions and short-term goals, so that work efficiency can be improved, and it can be done first and next in quantitative ways (Pharmacist)."
Barriers to BSC: ➢ Problems in human sides due to lack of interdepartmental coordination and adaptations (13 codings) ➢ Many hierarchical block information follows (10 codings) ➢ Gaps between physicians and others ➢ Gaps between employees goals and the corporate goals	"Some employees do not like to cooperate. This is similar to a situation where the boss may assign a task, while some employees put forward superficial views and propose unrealistic solutions (Public Relations)." "There is nothing wrong with the current action program. But there are issues related to people, not issues related to the execution of the program (Human Resources Manager)." "Because my members do not have ideas about the BSC; they do not know their yearly target. So I discuss the KPIs with directors and explain the results to my members (Nurse Head in the department of obstetrics and gynecology)." "I asked my supervisor, "Are there any important things at the executive committee meeting?" However, he depends on his mood to answer my questions (Cashier)." "Doctors think they are not fully restricted by the hospital policies. After all, they belong to the medical field, and we cannot force doctors to cooperate in BSC (7A Nursing head)" "Employees want their salary as high as possible, but the hospital has to consider the cost. You may be dissatisfied with certain things in the hospital, but strictly speaking, the hospital cannot resolve your dissatisfaction (Radiologist)"
Facilitators to BSC: ➢ To hold a BSC consensus camp	"We did not play too many roles in the balanced scorecard; our unit adopts an attitude of cooperating with BSC. Then, the BSC camp lets you know what you have contributed to other people's goals; in the camp, you have the opportunity to clarify different opinions and discuss solutions (Pharmacy Manager)."

Table 3. The organizational-level of the BSC performance measurements.

Vision	Perspectives & percentages	Strategic objectives	Indicators
To provide total medical care and become a community hospital for health promotion	Financial 20%	Promote the rights of property owners Increase medical projects	• Total revenue of profits • Number of medical projects
	Customer 20%	Increase the number of medical services Enhance customer satisfaction	• Number of the first-visit patient • Number of patients • Customer satisfaction rate • Number of customer complaint
	Internal processes 35%	Enrich the departmental facility and human resources and innovative service Holistic and integrated care Cultivate community health and identity Promote the ability of communication and information system	• Rates of medical technicians • Amount of total departments • Number of the new facilities • Number of integrated clinical care • Number of hospitalized integrated care • Number of an alliance of patients' organization • Number of medical tours and distance medical care • Rates of information system safety • Hours of training for information shared language
	Learning and growth 25%	Attract and cultivate professionals Learn happily and increase employee engagement	• Rates of key persons at the right position • Number of employee skills • Employee satisfaction rates • Level of employee engagement

single- and double-loop learning to determine the level of learning and the changes in the BSC. Table 3 presents the organizational-level of the BSC learning effects in operational measures pertaining to a specific perspective.

4. Results and analysis

From the analysis of this case, we understand that the case teaching hospital uses BSC learning as a tool to promote its sub-units' performance. The organizational level of goals, visions, and strategies were pushed downwards the sub-units as single-loop learning in the form of

routines, rules, norms, actions, and the like. And during learning, sub-units were upward following the new knowledge transferred by the leading level of the organization in the newly learned knowledge, such as BSC learning in this case, which is like double-loop learning. Figure 2 illustrated that the researchers went into the organization to find out facilitators, barriers, and interventors for implementation of BSC for finding out issues and influential factors in order to push downward penetration of the single-loop learning, as well as to push sub-units following upwards the new double-loop knowledge transferred down from leaning unit in the top management team.

4.1. BSC implementation process in health organization

In the workshops of the BSC, the top management and unit managers together translated CS hospital's mission, core values, and vision into strategic objectives and operational measures. CS gave relevant departments responsibilities and tasked them to take initiatives and

Figure 2. Conceptual Framework (Illustration of this study).

implement required measures to meet their set goals. Table 3 shows the quantitative indicators of performance measurements and the expected learning goals. The top management had set up a policy to review and monitor the results of BSC goals by asking relevant departments to provide an annual report.

4.2. BSC eliminates the gap between departmental and organizational goals by making employees' values in line with organizational vision

Through BSC, employees were able to make their unit goals in line with the corporate-level strategy more concretely and quantitatively and set their yearly goals. However, these quantitative learning goals were set up as the learning priority; e.g., *"In job planning, we focus on a particular direction; focus on short-term goals, that is, what can be done first and next, and be integrated with daily life (Nutritionist)"*. Also, BSC ensured that employees understand the organization's mission, key strategic goals, and, more importantly, the role that each person plays in the organization's goals. The linkage of one's value with the organization's vision gave individuals opportunities to make their own interpretation of learning in the workplace. This is evident in the statement: *"Previously we felt that this was not my business and I was wondering why they kept looking out for me …We had those kinds of ideas. Now, we feel that everything and everyone is an integral part of the hospital, so we have to adhere to its policies (Head Nurse in 7A)."*

4.3. Double loop is the pulling and positive power to advance organizational development

Arygris and Schon's definition of single- and double-loop learning was used to assess whether BSC could yield in two types of learning. Evidence of technical and operational improvements was coded as single-loop learning while changes in governing variables, that is, modifications in the KPIs were coded as double-loop learning. Single-loop learning occurred when employees followed orders "superficially" and "passively" from the senior management. The top management held the reasoning that BSC is an "efficient" instrument for performance monitoring in a top-down structure. BSC implementation depended on policies that are practiced top-down, with less true involvement from the majority of the staff but with the senior managers as links to information. The single-loop learning tends to be passive and reflects employees' submissive attitudes towards BSC intervention activities.

Meanwhile, little conclusive or convincing evidence was found in relation to changes in KPIs; there was no update or revisions found. In terms of active learning and the testing validity of KPIs, interviewees reported that rethinking or adapting KPIs was not within their control. It

shows the "feeling of powerlessness" when employees perform KPI, BSC, MBO, even a resistant attitude, and a sense of rejection of learning new things.

However, they can put their reflection on the assumptions of a successful BSC implementation. The BSC implementation ranged from the identification of strategic goals, the translation of the goals into KPIs, and the alignment of actions to KPIs. Table 4 illustrates the examples of double-loop learning in terms of assessing and reviewing assumptions of the BSC implementation. Double-loop learning occurred when employees tried to identify sources of barriers originating in the hierarchical structure. This is evident in statements such as: *"hierarchical levels block information flow"*; *"lack of interdepartmental coordination and adaptation"*; and *"…our interaction with our director depends on his mood. A meeting with the Executive Committee seems to be only open to the directors; thus, it is less likely that we will have the latest information."* Double-loop learning also involved finding solutions and strategies to combat difficulties, which can be classified as learning facilitators. Some examples are: *"to participate in a BSC consensus camp and to elicit different opinions and discuss solutions"*; *"to explain new industry norms to employees"*; *"to create communication channels of vertical and lateral connections"*; and *"cross-team connections."*

5. Discussion and conclusion

This research provided an effective learning analysis method for BSC learning and combined BSC learning with performance measurement. Executing activities and adjusting actions in order to reach planned objectives are categorized as single-loop learning (Pietrzak and Paliszkiewicz, 2015). The result of the analysis showed strong evidence of single-loop learning. The aim of single-loop learning is to align the organization's activities to its strategy and to reach efficiency in business operation. Single-loop learning is based on a do, check, and adjust cycle: *Do* involves implementation of the strategy; *check* includes monitoring the progress of the initiatives and the accomplishment of targets; and *act/adjust* indicates fixing or correcting methods, which belong to aspects of double-loop learning. Therefore, in following Figure 3, the authors illustrate the concepts of single-loop learning is organization's using power to pull up of employees' values working in the subunits through action plans (do and check) to ensure perceived values of subunits' employees are in line with organizational visions, goals, and missions; and the concept of double-loop learning is organization's using power to push down of newly learned knowledge, concepts, and ideas to the sub-units in order to have employees of sub-units generate innovative ideas, which are harder and more challenging. So that when involving with double-loop learning, the analytical results of interviews also show

Table 4. Perceptions of the BSC values through single- and double-loop learning.

Single loop learning: PDCA (Effects of the BSC)	(1) When it is time to set up actions and programs for the next fiscal year, we let employees learn what this hospital is going to do and how to follow - (Nurse Head in the Nursing Department). -DO
	(2) to learn what should be done first and then they will produce some certain results later" (Vice President)-DO
	(3) Many things are related to policy issues. It is not to say we feel that this thing is not our business and we ignore. Things rely on everyone to work out for the hospital. We also transmit such messages to our subordinate members (Supervisor in Nursing Department)- Do: take an order
	(4) To tell the truth, when this hospital does the BSC, we have to do this. The Executive Committee is open to the directors for the checkup of monthly BSC improvement (Cashier Manager). - Do: top-down execution
	(5) Some indicators are in the manager's span of control. I am not competent to do KPI. I just come to work; I just want to work on time and do not give me too much of the burden of responsibility; I do not want to touch the BSC data." (Member in Management Center). - Do: a resistant approach
	(6) It is that every time, a hospital does a policy, and you have to cooperate with it. In fact, you do not mind what interest or influence BSC will make. You just passively cooperate (Member in Labor Safety Unit). - Do: a reactive approach
	(7) Because our members do not have any ideas about the BSC, they do not know their target this year. So I have a discussion of the KPIs with our directors and I explain the priorities to members. (Nurse Head in Department of Obstetrics and Gynecology). - Do: executed by senior managers.
Double-loop learning: PDCA-Review Assumptions-Update Parameters -Revise parameters (Facilitators/Barriers to the successful implementation of the BSC)	(1) We do not take so many roles in the BSC; our units take the attitude of coping with the BSC. Then, the BSC camp lets you know what other people's goals where you have a place to contribute; in the camp you have chances to clarify different opinions and discuss ways of solutions (Pharmacy Manager). Review: the BSC camp brings wider stakeholders for examining assumptions.
	(2) In the BSC camp, there are many participants from different departments, whose doing in fact we are not very aware of. After discussions, I feel a stronger sense of trust toward the hospital. The hospital has a lot of things we do not know that have made progress (Head Nurse in Anesthesia Department). Review: the camp clarifies the assumption of hospital goals.
	(3) BSC makes you think to have a link with norms of the government. We learn something related to the hospital and then the information comes in combination with updated norms of the hospital industry. BSC helps us see a broader vision or perception (Head Nurse in Long-term Care). Review the assumptions of industrial norms
	(4) So, BSC was added to our job and my cross-team members will be clearer about why I want them involved in such a team led by nursing staff instead of by doctors. A nursing home is relatively a unit that needs subsequent collaboration, including social workers, and rehabilitation. If all cross-team members had been involved in such a course, the concept of cross-team would get accepted better. (Supervisor in the Nursing

Table 4 (*continued*)

	Department) Review: BSC should be executed through cross-team connections
	(5) The president has some good ideas, but due to the communication gap, he may not know how to tell us, or we conjecture that it is the type of BSC that the president wants. So we should set a platform of communications (Human Resources manager). Review: the information gaps as a barrier
	(6) Physicians may think that it is so hard for them to fit in. After all, we think *his* culture belongs to the medical sector; we are in the nursing unit. We are not able to force any doctor to cooperate with us in BSC but the chief executive officer can do (Operation Room Nurse Head). Review: the physicians are a different group, which serves as a barrier

consistent conclusion, saying that concepts and ideas that are other than routines, policies, and norms seems more challenging and harder for employees to accept and understand. And employees feel comfortable to follow up with existing routines and system.

5.1. Managerial implications

This research analyzed the context to understand and optimize BSC learning and the environment in which it occurs. A top-down implementation coerces frontline employees to have a single-loop learning based on targets and objectives set by the senior management to strengthen institutional learning or what has been learned (Crossan et al., 1999). BSC's learning method was carried out in the form of organizational learning to reinforce existing norms and practices and strengthen routine behaviors. On the other hand, the double-loop strategic learning was a challenge for both this study and the practitioners. For the initial five years of BSC learning, organizational learning at the executive level did not receive any feedback from the lower levels of the hierarchy. This study showed that one of the influencing factors may be attributed to the invalid double-loop learning at the organizational level hindered by the organizational hierarchy. KPI indicators are within the control of the senior management, and the frontline employees were not given the opportunity to express themselves in terms of working on goals and measuring experiences. Most staff members did not have a chance to be involved in strategic levels of learning, and were more oriented in the single-loop learning; this limited the consequences of double-loop learning. Strategic double-loop learning therefore lacked inputs from the subordinates and their observed experiences were not taken into consideration. Argyris and Schon (1978) identified obstacles to double-loop learning in practice and argued that organizations are more likely to conduct single-loop learning. Our findings also indicated that BSC learning is more likely to improve the efficiency of the strategic management and strengthen the company's existing capabilities and routines; but it is not possible for single-loop learning to develop new capabilities.

Another influential factor may be occupational cultures. Wolff et al. (2016) suggested that double-loop learning is mediated by the one's maturity and the readiness and willingness of both the individual and the organization to question expectations, values, experiences, and actions. In healthcare organizations, it is obvious that differences in professional status are embedded in their culture; and this hierarchy creates a challenge for those in the lower ranks to speak up to their superiors (Edmondson et al., 2016). In the case of CS, it was found that doctors did not have the motivation to actively participate in BSC learning seminars, and the nurses felt powerless when they were tasked to provide doctors with BSC policy advice. Salient hierarchical structure, nested organizational structures, and powerful professional norms are characteristics of
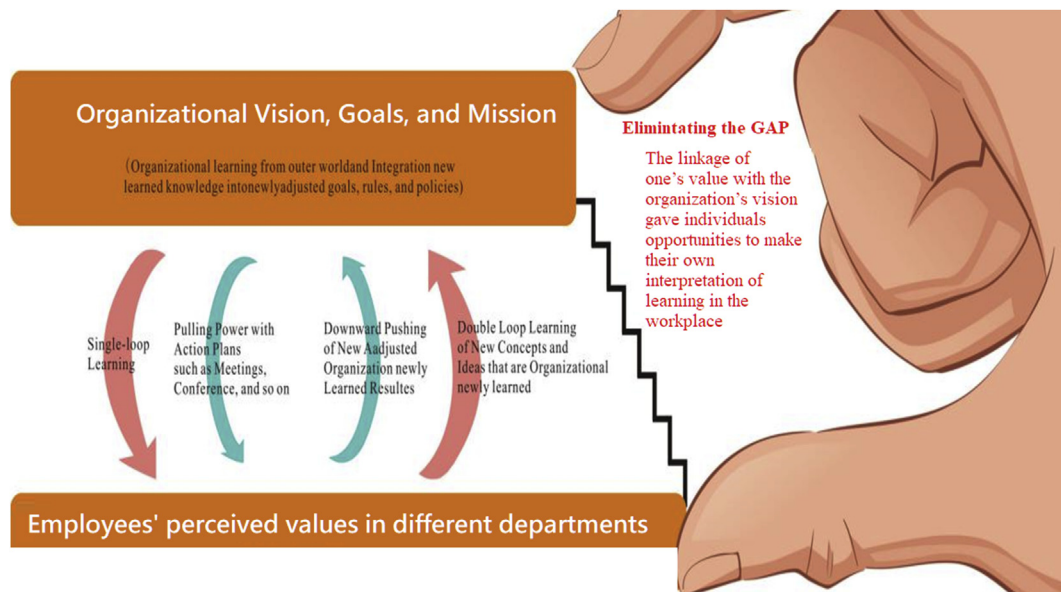
Figure 3. Illustrative concept about the organization's trying to eliminating organizational goals and perceived values of subunits' employees through single- and double-loop learning activities.

organizational culture in hospitals (Edmondson et al., 2016). Moreover, in healthcare organizations, a blaming culture arises from inherent power differences between employees and supervisors (Detert and Edmondson, 2011). In the hierarchical structure of CS, though respondents identified more appropriate KPIs when performing double-loop learning, they felt that learning remains reactive, relying heavily on the top-down approach for the implementation of actions. Most staff members are used to existing norms, polices, procedures, and goals and are afraid of change and failure; therefore, they tend to exhibit defensive behaviors protecting them against embarrassment and blame. However, impacts of double-loop learning require a climate of sufficient psychological safety to feed forward to organizational changes through team learning (Crossan et al., 1999). For CS, learning conditions need to be cultivated to support creative thinking. The organizational processes, procedures, cultural and political environments, and the value placed on learning are mainly controlled by the top level management (McClory et al., 2017). Studies suggested that leadership, guidance, and enthusiasm are required for an organization to transition to double-loop learning (Thomson et al., 2014).

5.2. Theoretical implications

According to Argyris and Schon (1978), single-loop learning occurs when individuals, groups, or organizations modify their behavior based on the difference between expected results and obtained results. Fürstenberg and Görzig (2020) pointed out that double-loop learning may play a role in people's willingness to ask about norms, face situations and correct mistakes. Kaplan and Norton (2007) claimed that double-loop learning allows managers to test, verify, and modify the assumptions embedded in business unit strategies, and participate in the entire evaluation process when the department needs different strategies. Thus, theoretically, this research contributes to further point out that applying LA to BSC implementation and combining BSC learning with performance measurement can promote learning activities and understand its impact on organizational development. It also emphasizes the single cycle of BSC The difference in applicability between learning and double-loop learning in medical institutions.

On the other hand, BSC is one of the most significant performance improvement measuring tools developed in the last decade by Kaplan and Norton. However, BSC's connection, implications, and applications upon organizational learning aspects were not specifically and explicitly described. Therefore, based on Kaplan and Norton's works, the authors of this study accumulatively researches into the BSC measures' applications into one health organizations, and BSC managerial and theoretical implications towards organizational learning in terms of single-loop learning and double-loop learning, such as interviewees' disclosed the facts that following single-loop learning via routines and policies seems easy, but for double-loop learning which is new ideas push down by organizational visions and goals seem challenging and hard for employees to illustrate.

This study also contributed to confirm the effects of BSC learning as a tool for strategic management. BSC learning helps employees understand the company's strategy and makes employees feel that they are part of a larger plan. In this way, BSC motivates individuals to learn and ensures that individuals play their role in achieving the organizational vision, mission, and goals. For the theoretical implication, this study believes that the excessive single-loop learning from BSC may be a response to its ethical and instrumental issues as raised by Cooper and Ezzamel (2016). According to them, Kaplan and Norton's BSC overemphasizes the advantages of shareholder interests. Though Kaplan and Norton mentioned double-loop learning and emphasized the value of employee feedback, empirically and generally, managers prefer a top-down and a linear way of learning. Although this can quickly increase current knowledge base and firm-specific competencies, it produces less innovative knowledge. The findings of this case study indicate that the establishment of a learning climate is conducive to double-loop learning, allows the discussion of alternative KPIs, and enables organizations to learn and adapt.

For practitioners, specific professional culture should be considered in the implementation of BSC. As far as hospitals are concerned, medical professionals have different medical experiences in various disciplines, and their understanding of KPIs develops in different cognitions. This study shows that when starting the BSC intervention program, the hospital can check its own organizational culture and determine whether the organizational environment is helpful for double-loop learning. This could help balance the various interests of stakeholders. Overemphasis on single-loop learning only enhances passive attitudes, leading the organization to stagnate and only maintaining existing core capabilities.

5.3. Research limitation

As much as this study tried its best to be objective and efficient in the process, there are still some limitations found. Since the CS utilized a top-

down approach, the results will only apply to organizations with bureaucratic structures, and the top-down implementation may only be effective for centralized organizations. In addition, the case showed that BSC learning emphasizes greater performance in financial measurement, but this research believes that non-financial factors, such as coordination between departments or within departments, may make BSC learning different. This study infers that the higher the intensity of horizontal communication, the better the hospital's performance in implementing BSC. Future research can prove whether this reasoning can be confirmed.

5.4. Future studies

In the case of CS, single-loop learning was reflected in the employees' reactive learning in which the strategy (plan) remained stable, since the objectives and targets were constant, and there was no need for the employees to verify and rethink the effectiveness of the hospital's strategy. On the other hand, the strategy (plan) in double-loop learning is not constant anymore, and the practitioners need to continuously testify, confirm, and rethink the validity of the strategy and adapt the strategic plans to environmental changes (Kaplan and Norton, 2007; Pietrzak and Paliszkiewicz, 2015). In the case of CS, double-loop learning for the BSC members occurred when they were able to identify potential barriers and solutions to a successful BSC implementation; however, they stated that they have no right to adjust the strategic plan or put the solution strategy into practice; most interviewees were middle-level managers who only influence their work units and were not invited to KPI's annual meeting review. Most BSC members did not play a role in strategic learning and correcting inappropriate KPIs. Therefore, it is suggested that for future studies, researchers can get involved in the studies of weary-power feelings of employees weaken the willingness to be involved in the double-loop learning, because they have no right to adjust the strategic plan, strategies, and KPI planning of the organization.

Declarations

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