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ABSTRACT

Patient advocacy organizations (PAOs) require systems to control their strategy. However, only a limited number of studies have discussed the types of management control systems appropriate for membership-based non-profit organizations. This study aimed to design an appropriate diagnostic control system for use in a PAO. Employing the case study method in a rare blood disorder patient organization, this research used between-method triangulation and collected data through interviews, questionnaires, and archival analysis. The results demonstrated that a diagnostic control system in the form of a strategic performance measurement system using the four perspectives of a balanced scorecard can be used to set objectives, identify critical performance variables, and choose strategic performance measurements for use in a non-profit PAO.

Keywords: critical performance variable, diagnostic control system, non-profit organization, patient advocacy organization

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1. INTRODUCTION

There are a total of 2,797 diagnosed people with hemophilia (PWH) in Indonesia (World Federation of Hemophilia, 2021). However, it is estimated that 90% of the PWH in Indonesia remain undiagnosed (Mantik, Gunawan, & Wowiling, 2020; O'Mahony & Black, 2005). Hemophilia is a rare genetic disorder in which blood is unable to clot appropriately, causing prolonged spontaneous and traumatic hemorrhages. If left undiagnosed and not properly treated, PWH can suffer severe complications, permanent disability, and death (Chozie, Gatot, Windiastuti, & Handryastuti, 2016; Gurcay, Eksioglu, Ezer, Tuncay, & Cakci, 2006; Setiabudy, 2017; Srivastava et al., 2020). In Indonesia, hemophilia diagnosis and care remain limited due to the lack of healthcare infrastructure, lack of hemophilia awareness, expensive clotting factor replacement therapy, limited attention from the government, and lack of research (Ghosh & Ghosh, 2015; O'Mahony & Black, 2005).

To address the complex challenges in hemophilia care, hemophilia patient advocacy organizations (PAOs) play a pivotal role in ensuring PWH in Indonesia receive proper care. The Indonesia Hemophilia Society (IHS) is a hemophilia PAO registered as the national member organization (NMO) from Indonesia in the World Federation of Hemophilia (WFH). Since its founding in 1994, IHS has played an important role in improving the quality of life of PWH in Indonesia. The work of IHS includes lobbying for a better hemophilia treatment policy, driving outreach and diagnosis programs, facilitating research initiatives, and distributing donations to PWH (World Federation of Hemophilia, 2019). While it has achieved tremendous results, the IHS management remains suboptimal compared to other, more established NMOs. This reflects a lack of resources and organizational management ability on the part of IHS. Currently, IHS is seeking to transform the organization in a bid to drive better outcomes. However, it does not have a structured system with which to control its new intended strategy. Therefore, this study poses the following research question: "How can a diagnostic control system support IHS to achieve its objectives?"

By applying the case study method, this study aims to design an appropriate diagnostic control system for IHS. Using Simons' (1994, 1995, 2014) diagnostic control system as the theoretical framework, the research attempts to contribute to the accounting and non-profit management literature. We propose that non-profits can design a diagnostic control system that fits their organization's critical performance variables (CPVs) and resources.

This book chapter is structured in five sections. The introduction has discussed the background, research question, purpose, and contribution of this research. The literature review section will synthesize the appropriate research framework based on the strategic management and management control system literature. The research method section will then describe the research process and data collection. Next, the data collected will be discussed and analyzed based on the research framework to design the most appropriate management control system. The chapter ends with the conclusion and suggestions.

2. LITERATURE REVIEW

2.1. DIAGNOSTIC CONTROL SYSTEM

While non-profit organizations tend to rely on informal control, formal control is also important (Moxham, 2009; Tucker & Parker, 2013; Tucker, Thorne, & Gurd, 2013). Non-profit organizations use budgets to compare the realization of budgeted expenses and income (Tucker et al., 2013). In addition, they use diagnostic control systems to monitor non-financial performance (Corduneanu & Lebec, 2020).

It is important to ensure that performance measures are linked to their mission objective, which is usually related to non-financial performance (Kaplan, 2001; Niven, 2008). For each strategic objective, non-profit organizations must identify CPVs.¹ They can then use metrics to monitor the strategy's CPVs (Ferreira & Otley, 2009; Simons, 2014). The CPVs of non-profit organizations are interdependent; therefore, non-profits require comprehensive performance measurement systems to monitor their CPVs (Gamble, Thorsen, & Black, 2019). In addition, diagnostic control systems in non-profit organizations must be capable of connecting organizational performance with market expectations. Parallel to the market satisfaction initiated by Simons (2014), non-profit organizations can use performance measurements for beneficiary, donor, and input factor satisfaction. A non-profit organization can also use a balanced scorecard to develop a comprehensive dashboard of its performance measurements based on the customer, internal process, learning and growth, and financial perspectives (Bryson, 2017; Kaplan, 2001; Moxham, 2014; Niven, 2008).

However, non-profit organizations may not have the appropriate resources to operate sophisticated control systems (Daff & Parker, 2020). Moxham (2014)

¹ "Critical performance variables are those factors that must be achieved or implemented successfully for the intended strategy of the business to succeed" (Simons, 2014, p. 227).

noted that several studies (e.g., Bozzo, 2000; Buckmaster, 1999; Thomson, 2011) identified the gathering of the data required to operate a performance measurement system as an issue for non-profit organizations. Therefore, non-profits need performance measurement systems that do not involve too many resources (Moxham, 2014).

2.2. RESEARCH FRAMEWORK

Drawing on the diagnostic control system literature, we infer that a diagnostic control system allows a PAO to control its strategy. A PAO's diagnostic control system must therefore monitor the CPVs of the intended strategy. Using the four perspectives in the balanced scorecard framework, a PAO can monitor its financial and non-financial performance. It can also link its performance measurement with beneficiary, donor, and input factor satisfaction. However, the PAO must take resources into account when assessing the feasibility of operating the diagnostic control system.

3. RESEARCH METHODS

This research applied the case study method to IHS. IHS was chosen as our case study subject as it is a membership-based PAO that requires a better system to control its strategy. IHS comprises one national chapter, which governs 21 regional chapters. The unit of analysis is the IHS national chapter. This is because the national chapter is responsible for planning IHS's strategic direction, while the regional chapters are responsible for implementing the strategic plan of the national chapter. As IHS has undergone significant growth and faced new challenges, the national chapter management wanted better resources for IHS and to improve its capabilities.

The data were collected using between-method triangulation. This technique offers the advantage of increasing validity by mitigating the bias of using only one data collection method (Modell, 2005). We therefore conducted interviews, questionnaires, and archival analysis. The interviews aimed to gain an in-depth understanding of the organization's purpose, goals, and strategy from the perspective of its management and donors. The interviewees comprised five top and senior managers in the national chapter as they possess a deep understanding of IHS's strategic directions. Two heads of regional chapters were also interviewed in an effort to understand the issues facing the regional chapters. To understand the donors' expectations, a representative was interviewed from the WFH. We used a semi-structured interview method to

enable data to be gathered from the interviewees' experiences and the questions constructed (Galletta & Cross, 2016). The interviews were conducted via video calls, which were recorded, transcribed, and noted.

Questionnaires were administered to members and regional chapter volunteers. The questionnaire for members was adopted from Narver and Slater (1990) in an effort to understand the beneficiaries' value expectations. In contrast, the questionnaire for the regional chapter volunteers was intended to build an understanding of the resources, expectations, and existing control system of the regional chapters. The questionnaire was adopted from Widener (2007), Hermawan, Bachtiar, Wicaksono, and Sari (2021), and Saraswati and Hermawan (2020). The member and regional chapter volunteer questionnaires consisted of close-ended questions with responses arranged on a four-point Likert scale and an open-ended question. This study used an online-based questionnaire to bolster the assurance of respondent anonymity, thereby enabling the respondents to answer truthfully (Babin & Zikmund, 2016; Joinson, 1999; Ong & Weiss, 2006). Before the questionnaires were disseminated, a pilot test was conducted to ensure their credibility and validity. The questionnaire was then sent twice to increase the response rate (Fan & Yan, 2010). Analysis of the organization's past reports and documents was conducted to understand its mandates and strategic plan. The case study subject, as well as the interview and questionnaire respondents, provided signed consent to participate in the research.

The transcription and notes from the interviews were codified and grouped according to the interview question construct. We were able to systematically identify IHS's stakeholder expectations, strategy, goals, and existing management control system. The results from the questionnaire were analyzed using descriptive statistics. We calculated the mean of all the responses to the close-ended questions to determine whether the statement was scored low or high. The archival documents were also summarized and codified to identify the organization's mandates and strategy. The codified results from the interviews, questionnaires, archival analysis, as well as the descriptive statistics of the questionnaire result were then compared.

4. ORGANIZATION PROFILE

IHS is a hemophilia PAO in Indonesia that was founded in 2004. IHS is registered as the NMO of the WFH in Indonesia. The organization has 2,670 members, who are all hemophiliacs in Indonesia, and 140 volunteers. The

volunteers comprise hemophiliacs, their families, and medical practitioners interested in hemophilia. IHS comprises one national chapter, which governs 21 regional chapters. The structure of the national chapter is illustrated in Figure 1.

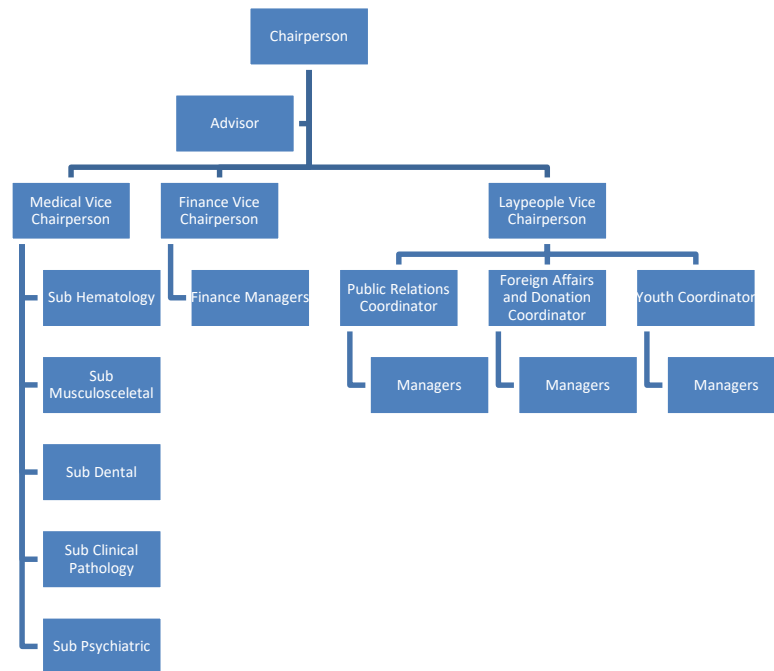


Figure 1. IHS National Chapter Organization Structure.

According to the IHS Article of Association, the organization has the following purposes: to bring together hemophiliacs and their families, doctors, other health workers working in the field of hemophilia, and the community; to improve the quality of life of PWH, and to develop and improve integrated services for PWH in Indonesia. To achieve these purposes, IHS's main activities involve advocating for integrated health services and improved quality of life for PWH in Indonesia, organizing educational programs in the field of hemophilia, conducting research and development in the area of hemophilia, and seeking funds for hemophilia development and services in Indonesia.

5. RESULT AND DISCUSSION

5.1. DATA

The interviews ranged in duration from 40 to 57 minutes. Five of the respondents were IHS Central Managers, three of whom were medical

personnel, and two were laypeople. One respondent was a representative of WFH. The Chairperson of Regional Chapter A was a layman, while the Chairperson of Regional Chapter B was a member of medical personnel.

Based on the initial submission of the questionnaire, the percentage of members who completed it stood at 3.30% of the patients' parents and 2.70% of the adult patients in the population proportion. The questionnaire was then sent a second time, following which the percentage of members who participated increased to 3.55% for the patients' parents and 3.19% for the adult patients. The final number of respondents stood at 91. Most of the respondents were the parents of patients (63.74%) and lived on Java island, with 82.76% for parents of patients and 81.82% for hemophilia patients. The response rate for the Regional Chapter Manager questionnaire after the first delivery was 9.52%. This increased to 20% after the second delivery. Of the 29 respondents, 66% were laypersons. The respondents consisted of 12 Regional Chapter Managers whose tenures varied from 1 to 17 years.

5.2. FINDINGS

Based on IHS's Article of Association, one of its goals is to improve the quality of life of PWH in Indonesia. In the medium term, IHS seeks to improve both access to and the quality of hemophilia services in Indonesia through nationwide improvements to the implementation of hemophilia care guidelines. As stated by the IHS Coordinator for Donation and Foreign Affairs:

“PNPK has been approved by the Minister of Health as a Minister of Health Decree. PNPK is a hemophilia care protocol national guideline. Hopefully, the PNPK can be implemented in various provinces nationally so that there are no longer any healthcare discrepancies between regions. So the healthcare is uniform based on the appropriate protocol.”

IHS recognizes that beneficiaries want it to improve the healthcare system and regulation for hemophilia care and provide youth programs to help hemophilia patients in their careers and business. According to the IHS Coordinator for Home Affairs:

“Actually, what PWH want is generally simple. IHS is expected to improve [hemophilia] health care... IHS is also expected to improve the quality of life of PWH. Some PWH drop out of school and do not have a formal job. Well, there is hope from PWH for IHS to be able to support this issue as well. For example, job training or capital to fund [PWHs'] business...”

Table 1. IHS Member Questionnaire Descriptive Statistics

Item	Mean	SD	Min		Max	
			Theory	Result	Theory	Result
Information & education to access healthcare services	3.560	0.542	1	2	4	4
Information & education on home care treatment	3.505	0.565	1	2	4	4
Information & education on new therapy and development	3.527	0.584	1	2	4	4
Services to access medications	3.560	0.600	1	2	4	4
Youth program for school & education	3.462	0.620	1	2	4	4
Youth program for career and entrepreneurship	3.560	0.581	1	2	4	4
Stakeholder advocacy	3.659	0.542	1	2	4	4

Based on the results of the questionnaire in Table 1, members most expect IHS to advocate for improving the quality of hemophilia services to governments and hospitals (3.66). This is followed by providing information and education about hemophilia health services (3.56), drug assistance services (3.56), and a youth program to prepare for careers and entrepreneurship (3.56). In third place, members expect information and education about the latest treatment and development of hemophilia (3.53). Next, members expect information and education about hemophilia care at home (3.51), followed by youth programs to help patients' education and schools (3.46).

The results obtained from our open-ended question show that patients are most concerned with issues related to increasing access to medicine, whether through donation outreach or better advocacy. Patients and the families of hemophilia patients expect IHS to advocate for a better referral process and reduce inequality in hemophilia services throughout the region. Patients and the families of hemophilia patients also expect IHS to improve education and socialization for patients, especially for newly diagnosed patients. Patients also wish to see increased awareness of hemophilia among doctors and the community. IHS patients argue that doctors and medical personnel do not understand how to treat hemophilia patients.

Similarly, IHS's largest donor, WFH, expects IHS to contribute to achieving WFH's targets on a global scale. IHS is enrolled in WFH's Path to Access to Care and Treatment (PACT) program. As part of this program, WFH expects IHS to contribute to WFH's global goals, which include diagnosing new hemophilia patients, improving health services, and increasing government support for developing hemophilia health programs. To improve health

services, WFH expects NMOs to improve training and education for patients, patients' families, medical personnel, and IHS managers. The topics of training and education include outreach, diagnosis, management of blood disorders, and evidence-based advocacy. Although WFH does not set specific performance targets for IHS to achieve, it nevertheless expects IHS's strategy to be in line with WFH targets. In addition, WFH expects IHS to make progress in each period in terms of its outputs. This was expressed in an interview by a representative of WFH:

“So with the PACT program, there are seven areas that we want them to more or less develop objectives around. It does not mean that they have to address those seven areas every year. But, they need to be strategic about it. They need to develop some objectives around it. So, one is patients' bleeding disorders, which means the identification of patients with a bleeding disorder. So the number from zero to whatever... So to see whether there is a change in government support, like if more or less, an increase in procurement, for example, for factors or treatment products in general... there's also one area in relation to care delivery. In other countries, for example, they wanted to either develop new Hemophilia Treatment Centers (HTCs) or to develop the existing HTC... How they would improve their data collection and registry... Also, one another area is NMO strengthening.”

IHS also aims to improve collaboration with its stakeholders, including the government, hospitals, and medical professional organizations. According to the IHS Medical Vice Chairperson:

“We hope or the mission is of course... we can get support from other stakeholders, especially the government in this case and also, of course, the community so that they make national policies that support the achievement of these goals, both in health service policies and especially in financing. Support from other stakeholders is also important, such as professional organizations here, is very important... we have a good relationship with [medical] professional organizations, because indeed at IHS there is a medical field whose members are also members of the medical professional organization... through this professional organization we can work together to be heard more by the government, namely one for advocacy and secondly with this good collaboration we can carry out activities such as education, then registry and also research.”

Table 2. Regional Chapter Manager Questionnaire Descriptive Statistics

Item	Mean	SD	Min		Max	
			Theory	Answer	Theory	Answer
Sufficient human resources	2.806	0.960	1	1	4	4
Sufficient financial resources	2.222	0.875	1	1	4	4
IHS National Chapter should provide organizational management training to improve the management capabilities of Regional Chapter Managers	3.306	0.830	1	1	4	4
IHS uses budgets and performance assessments to identify CPVs (i.e., the factors that indicate the achievement of the current strategy)	2.667	0.775	1	1	4	4
IHS uses budgets and performance assessments to set targets for CPVs	2.667	0.769	1	1	4	4
IHS evaluates the results achieved and the expected results	2.833	0.805	1	1	4	4
I know the performance targets that Regional Chapter Managers must achieve	2.722	0.786	1	1	4	4

Differences were noted in the results obtained from the IHS National Chapter interview and the Regional Chapter questionnaire. The national chapter stated that IHS has limited resources and does not yet have a management control system. According to the IHS Finance Vice Chairperson, “IHS currently does not have a reporting mechanism from Regional Chapter to the National Chapter.” However, the average score for resources and diagnostic control systems ranges from 2.00 to 3.00, with a minimum value of 1 and a maximum of 4 (Table 2). The fact that certain respondents gave a score of 4 indicates that they strongly agreed that IHS has resources and management control systems. To confirm the disparity between the interview results of the IHS National Chapter and the Regional Chapter questionnaire, an interview was held with two Regional Chapter Managers.

Both of the Regional Chapter Managers agreed with the National Chapter Managers that IHS currently lacks resources:

“Actually, we have a lot of volunteers. However only a few can fully commit to helping the organization... We also don’t have any fundraising activities, so we rely on a sponsor for our events.” (Chairperson of Regional Chapter A)

“We did some kind of strategic planning for our region, but none of the work programs are realized... There is nobody available to be responsible for the program.” (Chairperson of Regional Chapter B)

Similar to the National Chapter Manager interview result, the two Regional Chapter Manager interview results indicated that IHS does not have a structured diagnostic control system:

“We do not set any specific target; we just strive to improve access to care in our region... I don’t think I know what the work programs from the National Chapter are. We just do what we think is best for our condition and for our region... Our financial statement and activity report are only disclosed internally [in our Regional Chapter]. Before the pandemic, our regional chapter’s treasurer performed bookkeeping, but it’s stopped because we have no activities during the pandemic... However, we do not submit the reports to the National Chapter.” (Chairperson of Regional Chapter A)

“There are no specific targets from the National Chapter... We are not asked to submit a financial report, but we usually submit an activity report. Usually, we submit it annually so the National Chapter can report it to the WFH... There is no template or any specific requirement for the reports, so we just disclose what are the things we have done for that period.” (Chairperson of Regional Chapter B)

5.3. DIAGNOSTIC CONTROL SYSTEM DESIGN

Adopting Simons’ (2014) work, IHS’s organizational strategy must be translated into plans and goals. CPVs must then be identified to select the appropriate strategic measurement. The measurement must also relate to the satisfaction of the beneficiary, donor, and input factors. In the case of IHS, the strategic measures must link with the members, WFH, and volunteer satisfaction. IHS’s diagnostic control system must also tie in with its mission (Kaplan, 2001; Niven, 2008). Therefore, our proposed diagnostic control system design for IHS is presented in Table 3.

As a hemophilia PAO, IHS's primary concern is to improve the quality of life of PWH. This aligns with the results of the interview, questionnaire, and archival analysis, wherein the most important CPV was identified as the need to provide relevant and effective programs to improve the quality of life of PWH. To support this, IHS must successfully improve the quality of hemophilia treatment, increase diagnosis, provide relevant and effective education for PWH and their families, manage effective donation outreach, and deliver a relevant and effective youth program. IHS measurement must relate to PWH's quality of life and satisfaction with the IHS program (Kaplan, 2001; Niven, 2008; Simons, 2014). The strategic measures include the average Hemophilia-Specific Quality of Life (Hemofilia-QoL) score, the percentage of hospitals providing low-dose prophylaxis treatment, the number of newly diagnosed PWH, the beneficiaries' satisfaction with the IHS education program (workshops, seminars, etc.), the number of beneficiaries receiving donations, and member satisfaction with the youth program. To gather the required data, the IHS national chapter can administer questionnaires to its members and regional chapters. Increased awareness of hemophilia among the general public and medical personnel can increase the diagnosis and treatment of hemophilia. Therefore, IHS also requires increased awareness of hemophilia as its strategic objective from the perspective of its customers. IHS can conduct a survey on hemophilia awareness.

From the internal process perspective, IHS has four strategic objectives. The first is strong collaboration with stakeholders. IHS must have strong support from the government and hospitals to implement PNPk Hemophilia. This is important to ensure patients receive the best possible treatment. IHS must also maintain a strong and impactful collaboration with medical associations. As our interview results suggest, collaboration with medical associations can help IHS increase the likelihood of success in its advocacy, education, and research initiatives. This objective can be measured by the number of successful audiences and collaborations.

Table 3. Proposed Diagnostic Control System

Diagnostic Control System for the Indonesian Hemophilia Society			
<p>Mission: The Indonesian Hemophilia Society is a non-profit society dedicated to improving the well-being and quality of life of people with hemophilia (PWH) in Indonesia by advocating for quality health services for all hemophilia patients, educating patients, patients' families, medical personnel, and the public about hemophilia, providing and distributing assistance to hemophilia patients, supporting research that can contribute to improving the well-being of PWH, and providing support for PWH to thrive through collaboration with volunteers, employees, partners, and other stakeholders. We uphold high cooperation, care, and integrity.</p>			
<p>Vision: To be a trusted and highly capable association to advocate for the welfare of PWH in Indonesia.</p>			
Perspective	Strategic Objectives	Critical Performance Variables	Strategic Measurement
Customer	Improve the quality of life (QoL) of PWH	Provide relevant and effective programs to improve the QoL of PWH	Average of Hemophilia-Specific Quality of Life (Hemofilia-QoL) score
		Improve the quality of hemophilia treatment	% of hospitals providing low-dose prophylaxis treatment
		Increasing diagnosis	Number of newly diagnosed PWH
		Providing relevant and effective education for PWH and family	Member satisfaction with education program
		Effective donation outreach	Number of beneficiaries receiving donations
		Relevant and effective youth program	Member satisfaction with youth program
		Increasing awareness of hemophilia among the general public and medical personnel	Awareness score of hemophilia
Internal Process	Strong collaboration with stakeholders	Obtaining strong support from the government and hospitals	Number of successful audiences
		Maintain a solid and impactful collaboration with medical associations	Number of collaborations
	Evidence-based advocacy	An effective data collection process for the national registry database	% of complete data collected
	Improve operating procedures	Establish an effective code of ethics and internal control policy	% of procedures completed
		Effective education and publication program	Number of education materials published
			Social media engagement
	Improve the quality and standard-compliance of donation outreach management	Improve the quality and standard-compliance of donation outreach management	% of compliance with WFH Donation Guideline and Indonesian National Agency of Drug and Food Control (BPOM) Guideline
			% of Regional Chapters providing timely reports
	Improve coordination and reporting system	Create an effective, efficient, and easy-to-use reporting system	Timeliness of National Chapter published report

Table 3. Proposed Diagnostic Control System (continued)

Perspective	Strategic Objectives	Critical Performance Variables	Strategic Measurement
Internal Process	Improve coordination and reporting system	Effective and efficient meeting platform	Number of meetings
			% attendance rate of Regional Chapters
Learning and growth	Improve human resources	Strategic job descriptions covered	% of job descriptions covered
		Full-time human resources availability	Number of full-time employees (headcount)
	Capable human resources	Relevant, efficient, and effective training	Number of training programs
Financial	Improve funding	Increasing cash	Cash balance
		Diversifying funding sources	Number of funding sources

The second strategic objective from the internal process perspective is evidence-based advocacy. This is very important to increase the success of audiences with stakeholders. The most important CPV is to have an effective data collection process for the national registry database so that IHS can obtain all relevant data for research purposes. This CPV can thus be measured by the percentage of complete data collected. Third, to achieve the improve operating procedures objective, IHS has several CPVs. It must have an effective code of ethics and internal control policy that achieve compliance, as measured by the percentage of procedures completed. IHS must also have an effective education and publication program, as measured by the number of materials published and social media engagement. In addition, IHS must have high-quality donation outreach management that complies with WFH guidelines and the Indonesian Food and Drug Authority regulation. IHS can measure the percentage of requirements with which it successfully complies. Lastly, for an effective and efficient coordination and reporting system, IHS must create an effective, efficient, and easy-to-use reporting system and an effective and efficient meeting platform.

From the learning and growth perspective, IHS aims to improve human resources by ensuring that strategic job descriptions are covered and full-time human resources are available. IHS also aims to increase human resources capability by ensuring that its volunteers and employees receive relevant training. The CPVs in the learning and growth perspective will ensure IHS has sufficient human resources, which in turn will ensure success in meeting the CPVs for the internal process perspective and, ultimately, the customer process perspective. From the financial perspective, IHS's strategic objective is to improve its funding. Funding is crucial to the ability to obtain sufficient resources, particularly to employ full-time employees. IHS will achieve this objective by increasing its income and diversifying its funding sources. The CPVs in the financial perspective enable IHS to acquire and develop its human resources and also fund the strategic initiatives related to the internal process and customer perspectives.

This diagnostic control system design measures CPVs relating to financial and non-financial performance. Similar to a previous study by Gamble, Thorsen, and Black (2019), the CPVs for IHS are interdependent. The use of the balanced scorecard provides a dashboard view of the CPVs for IHS's strategy from all four perspectives (Bryson, 2017; Kaplan, 2001; Moxham, 2014; Niven, 2008). In line with Simons (2014) and Ferreira and Otley (2009), this proposed diagnostic control

system enables all CPVs to be measured with a strategic measure. Therefore, IHS managers can set quantifiable targets and monitor the success of its CPVs. Moreover, this diagnostic system uses only minimal resources as the data can be collected using surveys and input manually. Thus, in line with the findings from Daff and Parker (2020) and Moxham (2014), this diagnostic control system can be used effectively in IHS.

For each strategic objective, IHS can plan a strategic initiative and establish its associated cost. To properly monitor the success of its intended strategy, IHS can set a periodic target for each of the proposed strategic measurements. Furthermore, the IHS national chapter must communicate the strategic performance targets to the regional chapters. Although the national chapter does not set specific targets for each regional chapter, it must still ensure that the regional chapter plans and targets are aligned with the direction it sets.

6. CONCLUSION AND RECOMMENDATION

This research aimed to analyze how a diagnostic control system can be used to control the intended strategy in IHS. By using the case study method, our research demonstrates how a diagnostic control system based on the four balanced scorecard perspectives can be used to control the implementation of strategic transformation. The performance measurement system can be used to set targets and measure the achievement of CPVs throughout the IHS strategic transformation plan.

In the discussion section, our research recommends that in operating the diagnostic control system, IHS uses data sourced from questionnaires as well as data that can be entered manually. This study recommends that IHS takes advantage of an online questionnaire creation service to enable the data collection process to be carried out quickly. IHS can also take advantage of data analytics software that can display descriptive statistics interactively to facilitate the analysis of organizational performance results. In the long term, as the scale of the IHS organization increases, it may require more complex cybernetic controls. When the IHS information system is more mature, it can also use software to automate the data collection process.

Despite the research implications, our study has two major limitations. First, the study did not use a longitudinal view. Thus, it is not possible to observe the implementation of the diagnostic control system. We suggest that future research

should evaluate how diagnostic control systems affect the success of the intended strategy in PAOs by extending the research period. Second, our study had a low questionnaire response rate due to the dispersed population and limited internet access. Future studies may seek to employ different data collection methods from those used in this research.

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