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Knowledge and Technology Resources for Knowledge Management Practices of Nonprofit Organizations in Thailand

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ABSTRACT

Knowledge and technology resources are the most crucial sources for the achievement of sustainable development in competitive advantage. Meanwhile, few empirical studies have clarified the types of knowledge and technology resources that nonprofit organizations (NPOs) use and develop. This study aims to categorize knowledge and technology resources in NPOs that both researchers and practitioners can use to develop the nonprofit sector further. A qualitative research method was used for the study. Data were collected from 31 interviews with senior and founding members of NPOs in Thailand. Analysis of qualitative data identified five critical categories of knowledge resources: human resources, organizational practices, partnership or stakeholder involvement, operational practices, and other resources. This study also illustrates both internal and external technology resources, which are used in sample organizations. The study's findings contribute to developing a body of knowledge management literature related to the knowledge and technology resources of NPOs.

Keywords: knowledge resources, technology resources, knowledge management, nonprofit organizations, Thailand

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1. INTRODUCTION

1.1. Research Background

In Thailand, as in other countries, the nonprofit sector originated in religion and a very long historical establishment (Pongsapich, 1993). Various forms of the Thai nonprofit sector include foundations, associations, social development, health and social services, advocacy, and cultural activities (Pongsapich, 1993). In Thailand, nonprofit organizations (NPOs) gained more than 136 million Thai Baht (approximately US$4.3 million) in 2013 (National Statistical Office, 2014). According to the National Statistical Office survey, there were as many as 76,685 NPOs that employed 923,198 people in the whole country. However, 65,457 NPOs, or 85.4 percent, used information and communications technology and computers in their operation. Beyond their economic contributions, NPOs also contributed to their communities through qualitative social value and cultural efforts (Lettieri et al., 2004). To achieve the mission of social contribution, NPOs need to identify their knowledge needs and develop organizational capabilities and resources. Although NPOs have significantly contributed to the community and society, knowledge management-nonprofit organizations (KM-NPO) have not gained much attention from researchers (Rathi et al., 2016) and in published papers, especially in Asia.

1.2. Need for the Study

According to Ragsdell et al. (2014), KM studies on the for-profit sector provide a theoretical foundation for investigating KM-NPO domains. However, there are many distinctions between for-profit organizations (FPOs) and NPOs, such as organizational design, management structures, and legal status (Hume et al., 2012). Unlike FPOs, NPOs concentrate on creating societal value rather than maximizing financial gains (Lettieri et al., 2004). The nonprofit sector strives to secure various funding, donations, volunteers, and community support (Rathi et al., 2016). NPOs must also manage their assets and resources effectively and efficiently in the context of the competitive marketplace.

When investigated empirically, there were various ways to define nonprofit sectors regarding their inputs, such as income or labor supply. The nonprofit sector is defined as an "important economic actor" having a significant contribution to national economic development and providing voluntary activities (Lyons & Passey, 2006, p. 90) and employment activities (Rathi et al., 2016). This sector can also be called the third sector or voluntary sector. Following the Johns Hopkins University project's definitions, NPOs consist of five essential characteristics: organized, private, nonprofit-distributing, self-governing, and voluntary (Salamon & Anheier, 1997). This structural-operational definition, which encompasses NPOs, can fulfill diversity functions such as improving public goods and offering positive externalities for society (Salamon & Anheier, 1997). Therefore, the nonprofit sector has strived to donate its efforts to develop the community and society where it has implemented its activities. The KM literature also confirmed that KM could facilitate NPOs to have better products for their partnerships or stakeholders (Lettieri et al., 2004). However, Rathi et al. (2016) revealed that KM and its application had been limited in NPOs. Both KR and technical resources must be identified and documented to support organizational success. This investigation presents a categorization of knowledge and technology resources for the KM practices of NPOs in Thailand. From the practical side, this categorization of KR and technology resources can help NPO leaders make decisions regarding organizational design and investment.

1.3. Scope of the Study

During the "Industry 4.0" revolution, valuable knowledge resources (KRs) and technology resources are vital for dynamic competitive advantage (Karia, 2018), especially in the for-profit sector. Recently, KRs have become a research interest in various fields, such as information technology (Chuang et al., 2013), operation (Vivares-Vergara et al., 2016), and logistics (Ding et al., 2015). However, given the significant role of organizational resources, including technology and human resources, it remains unclear how organizations can optimize KRs and technology resources to create organizational development to gain a competitive advantage. Recently, studies on KM for the nonprofit sector have been conducted from various perspectives. In terms of KR studies, most investigations have focused on FPOs; hence, a lack of researchers attend to this field for NPOs. For instance, the study conducted by Huck et al. (2011) shows that NPOs combined Web 2.0 technology and low-tech solutions to reach knowledge needs within tight resource constraints. This study did not concentrate on how to group and clarify KRs in the nonprofit context. From the practical perspective, developing KRs to shape processes for the dissemination, creation, and attainment of organizational knowledge has a rich history in FPOs. However, the reality indicated that NPOs encountered limitations with KRs and budget allocations.

Moreover, no specific studies emphasize both KRs and technology resources for KM activities from nonprofit perspectives in Thailand. Thus, identification of the KR-NPOs is necessary. This present study, therefore, aims to fill this gap.

1.4. Research Objectives

This investigation is part of a study on developing the KM model for the nonprofit sector in Thailand. The objectives of this study were to identify the types of both KRs and technology resources and categorize them using evidence-based findings from nonprofit perspectives.

2. LITERATURE REVIEW

2.1. KM-NPOs

NPOs primarily encounter real competition, such as seeking funding in complex and uncertain environments (Ragsdell, 2013), and KM plays a critical role in these functions (Huck et al., 2011). In these contexts, NPOs must manage their resources and capabilities to create different approaches to organizational and KM practices and to provide better services to communities (Grant, 1996; Rathi et al., 2016). Organizational KRs emerge, along with human resource development and retention processes, through the development of skills, knowledge, and expertise (Hu et al., 2015; Karia, 2018).

Zapata Cantu and Mondragon (2016) noted that there were three critical aspects of studies of KM and its contribution to an organizational competitive advantage. First, Nonaka and Takeuchi (1995) demonstrated that firm employees play an essential role in knowledge creation processes at organizations. Second, at the organization level, knowledge will be created and shared among the organizational members, so that it may be known to all. Third, generated knowledge will be combined and integrated into existing knowledge-based platforms among organizations (Zárraga & Manuel García-Falcón, 2003). Huck et al. (2011) mentioned that both large NPOs and FPOs have exact operational needs, such as technology and human resources, IT needs, and customer services.

Moreover, NPOs primarily adopted critical management practices from FPOs (McAdam & Reid, 2000) and then later adopted them from other NPOs and public organizations (Cong & Pandya, 2003). Therefore, the literature on critical KM-FPOs provides the foundation for investigating studies in the nonprofit sector (Ragsdell et al., 2014). The investigation of KM-NPOs was conducted from a different point of view; moreover, it received less attention than NPOs from KM scholars (Huck et al., 2011; Lettieri et al., 2004; Zapata Cantu & Mondragon, 2016). For example, Zapata Cantu and Mondragon (2016) identified individual and organizational components that enable NPOs to share and create knowledge. Rathi et al. (2016) clarified the types of knowledge needed within NPOs. This study created significant contributions in KM-NPOs and identified the specific requirements of knowledge in the nonprofit environment. Furthermore, the effectiveness of KM practices in NPOs was evaluated in a study by Downes and Marchant (2016). This study demonstrated that the extent and effectiveness of KM are moderate, although KM is more extensive with a formal framework in Australian NPOs. NPOs lack organizational resources or technical capabilities. Therefore, they use alternative solutions, both technical and nontechnical, aiming to retain implicit knowledge (Sébastien Matzkin, 2008). From the academic context, there was a research gap in the KM-NPO literature on KRs from the nonprofit perspective.

2.2. Knowledge and Technology Resources

In general, the theory of resource-based views in an organization is confirmed by scholars. Song et al. (2005 p. 26) mentioned that it is "a unique bundle of tangible and intangible resources and emphasizes the protection of firm core competencies comprising these resources." Therefore, the resources include all strengths and advantages that enable the improvement of the organization's effectiveness. KRs have been identified and declared in the literature. In nature, the KRs are described as durable, inimitable, and nontransferable. Thus, KRs can sustain their advantage over time (Hu et al., 2015; Karia, 2018). In this way, the KRs approached and rationalized the human-specific skills and experiences of staff in the organizations (Reuber, 1997).

There are two related KR definitions, involving knowledge assets and intellectual property. Regarding knowledge assets, organizational assets consist of tacit knowledge and explicit knowledge relating to expertise, know-how, best practices, and intellectual property (Hu et al., 2016; Li & Chang, 2009). According to Wilkins et al. (1997), intellectual property includes human intellect such as innovative ideas, business processes, and unique methods that create valuable sources for the marketplace. Hu et al. (2016) also revealed that intellectual property is a subset of knowledge assets, indicated as a carrier of KRs. KRs are referred to as a type of organizational resource embodying tacit and explicit knowledge from the two perspectives mentioned above. Tacit knowledge was defined

by Nonaka et al. (2000) and is deeply rooted in the actions, working procedures, emotions, ideas, and values within an organization. This knowledge involves comprehensive cognizance of the human mind and body, which makes it hard to share and transfer to others.

On the other hand, explicit knowledge is the information or data that can be easily captured, systematized, or shared in the form of manuals, documents, and scientific formulae (Nonaka et al., 2000). This knowledge can be shared, combined, and transformed among organizations (Hu et al., 2016). Furthermore, Karia (2018) determined that KRs were rationalized as human skills and experiences. This can be viewed as human capital in the organization. This capital involves more intangible resources in nature (Kong & Prior, 2008). This study adopted the above approach; KRs are mainly composed of intangible organizational resources in NPOs.

Technology resources encompass advanced technologies and equipment, such as IT and information systems, web-based systems, corporate databases, etc. Technology resources in the for-profit sector have been identified in the literature. For instance, Karia (2018) found that both KRs and technology resources created cost advantages for logistics firms, which moved the era of digital and technology innovation in the context of developing countries. This study illustrated that technology resources comprise new or technologically advanced equipment, web-based knowledge or information systems, and facilities. For this study's purpose, technology resources have been investigated intensively from technology-oriented perspectives in NPOs. In short, this paper considers organizational resources as encompassing human-oriented and technology-oriented aspects in NPOs, both of which may be considered for tangible and intangible perspectives.

2.3. Knowledge Resources in the NPOs

Polanyi (1962) noted that knowledge has been conceptualized, such as explicit and tacit knowledge in organizations. For the nonprofit sector, tacit knowledge occupies the workforce. It is mainly composed of voluntary staff, who give their passion for addressing social issues and development (Zapata Cantu & Mondragon, 2016). Moreover, NPOs have encountered a challenge in developing organizational memory, because the turnover rate among the staff in such organizations is very high. This challenged the nonprofit sector to create an environment to develop knowledge-based resources within organizations. Therefore, KM is critically concerned for these organizations in terms of the generation and sharing of knowledge.

In the nonprofit context, the study of Huck et al. (2011) clarified both internal and external knowledge sources. External knowledge sources are workshops and societies in the nonprofit community. Meanwhile, internal knowledge sources are volunteers, society members, and clients. This study also identified workshop events as a potential resource for NPOs. Interestingly, this finding demonstrated that society members are critical information sources as a type of tacit knowledge for organizational activities and policy decisions. Lettieri et al. (2004) proposed six main knowledge taxonomy groups in NPOs: administrative knowledge, managerial knowledge, training knowledge, marketing knowledge, operational knowledge, and miscellaneous. A KR is tacit knowledge at both the individual and organizational levels. Furthermore, Granados et al. (2017) emphasized the importance of tacit knowledge among NPOs. There is experiential knowledge, including organizational and individual experiences, skillsets, reputation, and conceptual knowledge.

In summary, both KRs and technology resources are the most important for KM in for-profit firms, but nonprofit scholars have ignored it; consequently, there is a lack of both theoretical and empirical research confirmation to recognize either how KRs and technology resources support KM practices or the extent to which organizational resources are categorized. Therefore, there is an urgent demand for research to examine and identify critical KRs and technology-specific resources in the nonprofit context.

3. RESEARCH METHODOLOGY

3.1. Research Design

To explore the KRs in NPOs, this study used a qualitative approach. The study adopted a purposive sample of organizations with a snowball sampling approach. Sample organizations were selected from primary sources, including the Thailand directory of nongovernmental organizations (Wongkhomthong & Wagatsuma, 2001), the online registry system of the government, the Civil Society Organization directory of the Center for Civil Society and Nonprofit Management from Khon Kaen University, and other listings of NPOs in Thailand. The final list of investigated NPOs was identified before sending invitation letters for the interviews. The in-depth interviews were conducted with 31 senior and middle senior executives, country directors, program managers, founders, and others from NPOs in Thailand. To protect the confidentiality and anonymity of key informants' information and their

organizations, the key informants were labeled INF1, INF2, […] INF31. The list of key informants is indicated in Table 1. These organizations work in various fields, such as education and training, health care, social and community development, tourism, capacity building, refugee assistance, environmental issues, and others. The investigated organizations were from different fields, reflecting this study's aim to maximize the information yield from the key informants. Moreover, it allowed for exploring different phenomena and evidence within organizations (Pickard, 2013).

Interview questionnaires of the study were divided into four sessions. Session one indicated the key informant's understanding regarding technology and KRs. Session two investigated KRs and their categories in the NPOs. Session three consisted of questions regarding technology resources and their components. Finally, session four included the questions relating to the linkages between KRs and technology resources and how to develop them from non-profit perspectives.

The main research variables were included in two aspects: the main categories of the KRs and how existing technology resources are used within the NPOs. In detail, the interviewees stated their knowledge and awareness relating to resource-specific information and knowledge that is used for both internal and external organizational needs. The key informants clarified that categories of KRs existed within the organizations. Last, the study also concentrated on exploring what technical aspects are developed and examining NPOs in Thailand. Furthermore, to avoid confusion in the phrase "knowledge resources" during interviews, the key informants were permitted to use other words, such as "information resources" or "information sources." This allowed the interviewees to share more insights concerning the KRs within their organizations.

3.2. Data Collection

Synchronous interviews were set up, both face-to-face and online, over five months from March to July 2020. Initially, the key informants selected interview locations where they could perceive more freedom to share their knowledge relating to the research topic. Unfortunately, because COVID-19 had been spreading widely, the rest of the key informants were referred to interview sessions via online video tools such as Skype and Zoom. Each interview's duration was from 1 to 1.5 hours, and it was transcribed verbatim. Before conducting the interviews, the researchers requested the informant's permission for recording. Furthermore, the in-depth interview questions used were based on obtaining the following (see Appendix):

- A foundation of the key informant's perspectives and understanding of KRs and technology resources in NPOs;
- An examination of categories and subcategories related to KRs and technology resources; and
- An appropriate ending to the in-depth interview sessions.

Regarding validity for qualitative research, the main researcher has been well trained in the research ethics of social sciences. Furthermore, the validation process has been reinforced via an interview protocol and includes information sheets and consent letters. The interview documents were reviewed and approved by the research ethics committee of Khon Kaen University, Thailand. Additionally, Granados et al. (2017) noted that trust, openness, and building empathy during the interview sessions had been assured by the research validity.

3.3. Data Analysis

In terms of the analytical data process, qualitative data were initially analyzed in academic directions, which helped the researchers identify research themes, including acronyms and vocabulary. In the first stage, when each interview was completed and transcribed, qualitative data analysis involving initial coding produced themes relating to understanding the key informant's organizational context. These research themes served as initial deductive codes for the study. Moreover, transcription codification was conducted on a line-by-line basis, which allowed us to remove the differences and familiarities among the transcripts. All interview transcripts were recorded, uploaded, and analyzed by Atlas ti. 7.5 software. In the next stage, these deductive codes were reclarified and finalized into inductive codes. In the final stage, the inductive codes allowed the researchers to build up the main research components of the KRs and technology resources within the NPOs.

4. RESEARCH FINDINGS

4.1. Categorization of Knowledge Resources in the NPOs

The evidence-based findings of KRs illustrated in this investigation transcend existing models given the concentration, particularly in the nonprofit context. This diagram presents five vital components of the KRs discovered by elements that apply among the examined NPOs.

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Table 1. Description of interview informants

Informant's profile			NPO's profile		
Informant	Sex	Job title	Year of foundation	Sector of activity	Main activities
INF1	Female	Executive Director	2011	Education and health network	Education, research, and capacity training
INF2	Male	Country Director	1962	Education and youth development	Education and volunteering
INF3	Male	Founder and Director	2018	Social and charitable services	Knowledge dissemination and exchange, public library service, and enhancing public access to knowledge resources
INF4	Male	Director and Founder	2014	Social services and community development	Community and youth development, conservation, community-based tourism, education, and human rights
INF5	Male	Country Director	1974	Child sponsorship and emergency relief	Capacity building and small business
INF5	Female	Executive Director	2007	Refugee assistance	Legal counsel and representation to refugees
INF7	Female	Program Specialist	1997	Capacity building	Training and HRD
INF8	Male	Managing Director	2011	Human rights	Legal assistance and policy advocacy
INF9	Male	Program Manager	1983	NGO networks and supports	NGOs networking and policy advocacy
INF10	Female	O.I.C (Director)	1969	Elder care, migration, and handicap	Elder care services, schooling and education
INF11	Male	Sr. Coordinator	1997	Capacity building	Training and policy advocacy
INF12	Female	Sr. Officer	1990	Education and policy	Training and HRD
INF13	Male	Sr. Coordinator	1997	Education	Education and capacity building
INF14	Male	Program Director	2000	Education	Training, HRD, and policy advocacy
INF15	Male	Sr. Officer	1997	Capacity building	Training and HRD
INF16	Male	Regional Manager	2014	Human trafficking	Strengthen capacities, regional cooperation, and research
INF17	Female	Program Director	1980	Social services, education, livelihoods, and policy advocacy	Legal and emergency assistance, education and capacity building, and policy advocacy
INF18	Male	Executive Director	2015	Tourism	Regional collaboration, organizing tourism events
INF19	Female	Sr. Coordinator	1997	Education	HRD and educational services
INF20	Male	Program Specialist	1997	Capacity building	Training and HRD
INF21	Female	Program Manager	2000	Health care	Mobilization resources, developing and sharing of knowledge, and organizations networking
INF22	Male	Sr. Officer	1997	Capacity building	Training and HRD
INF23	Female	Foundation Manager	1986	Strengthen community organizations, career, and natural resources	Health campaign and training
INF24	Male	Sr. Officer	1993	Education and regional collaboration	Training, research, and information dissemination

Table 1. Continued

Informant's profile			NPO's profile		
Informant	Sex	Job title	Year of foundation	Sector of activity	Main activities
INF25	Female	Sr. Research Fellow	1989	Environment and capacity development	Research and policy engagement
INF26	Male	Country Director	1999	International advocacy	Donation, training, advocacy, and research
INF27	Male	M&E-KM Advisor	2006	Capacity building	HIV prevention and care services, livelihoods, and natural resources management
INF28	Male	Center Director	1989	Environment, development, and capacity development	Research and policy engagement
INF29	Male	Country Director	2016	Medical professionals	Health care, health equity and policy, and training
INF30	Male	Program Director	1984	Education and vocational training	Vocational training, refugee supports, and capacity building
INF31	Female	Executive Director	1994	Community development and livelihoods, shelter, camp management	Research, policy engagement, training, food security and sustainable livelihoods activities, and others

NPO, nonprofit organization; NGO, non-governmental organization; HRD, human resource development.

Qualitative data from NPOs in Thailand have been proposed to clarify five critical KR categories (Fig. 1). These categories are presented as follows:

1. KRs-NPOs from human resources. This includes all assets of organization-specific human resources within the NPOs, which are characterized mainly by the skills, abilities, and experiences of the NPO's employees.
2. KRs-NPOs from organizational practices. These resources are indicated in various forms in organizations. Many resources exist among organizations related to organizational learning activities, practices, and mechanisms in sample organizations.
3. KRs-NPOs from partnership or stakeholder involvement. This resource captures all relevant information and data related to partnership or stakeholder involvement in organizations. It is contextual as "network KRs" in which knowledge flows internally and externally.
4. KRs-NPOs from operational practices. This presents all organizational knowledge and information related to day-to-day operation, such as processes, practices, procedures, and protocols regarding both administrative and practical components in NPOs.
5. KRs-NPOs from other resources. This mainly contains all physical items and resources used for operational implementations in organizations. For instance, these resources include kinds of equipment and property.

4.1.1. KRs-NPOs from Human Resources

Human-oriented resources are defined broadly in the literature. This includes all organization-specific resources relating to the human skills, experiences, and competencies of the volunteers, staff, and workers in the organizations. These resources can be generated throughout a series of activities, such as trainings/workshops (INF01), internal learning events (INF11), reflection meetings (INF12), and direct interaction during work loading (INF13). Human resources are a critical group of organizational KRs within NPOs. The staff can attain knowledge internally and externally. As some informants shared:

"Internal reflection workshop presented what we haven't well done. [W]e looked at what are the best practices and intervention, and how to improve the best one from our program…" (INF11).

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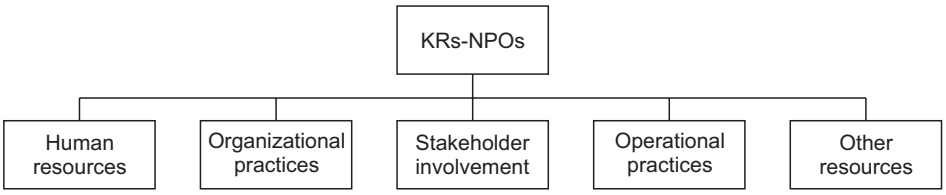

Fig. 1. Five main categories of the KRs in the NPOs. KRs, knowledge resources; NPOs, nonprofit organizations.

"…we have a human resource from outside who will help us. They are the university experts or technical experts from some NGOs that we are working together. The government official sometimes we collaborated with them…" (INF23).

"In my organization, knowledge resource is specialist in specific topics or subject. Also, there were resource persons who are associated with us to give kinds of knowledge for our training program" (INF14).

For NPOs, more specifically, KRs encompass many kinds of resources and exist in diverse forms, both formal and informal (INF30). However, as INF26 revealed, it depended on the NPO's needs in terms of using human resources for organizational purposes.

4.1.2. KRs-NPOs from Organizational Practices

This category represents resources originating through organizational activities that NPOs are practicing. In the literature, the primary concentration of many studies was undertaken before this investigation. For example, Stadler and Fullagar (2016) revealed that "staff meetings" are vital organizational practices promoting knowledge transfer in NPOs. Furthermore, it also noted that frequent informal communication, such as in the kitchen or during lunch, supported collaboration in the NPOs and enhanced staff members' understanding of how they performed their roles. From this study's findings, organizational practices were presented in many ways. For example, a technical learning lab initiated as an internal learning practice allowed the staff to access the KRs. As INF30 noted:

"[…] we have global technical learning lab which [is] identified by needs [at a broad] level. From this we have the technical group at the regional level and every single country office."

Moreover, INF28 mentioned that monitoring, evaluation, and learning feedback is an excellent opportunity for staff to speak out and gain knowledge.

"Basing on M&E and learning process which highlighted every month activities of the project what the strengths and problems are. Maybe, somebody can be provided with the answer or solutions. We also tried to encourage the staffs [to] speak-up about the project problems and mistakes that we can learn from somebody else or make somebody aware about the potential problems or issues happened during the works" (INF28).

In a few cases, particularly with examined NPOs whose essential purpose is organizational review (e.g., INF20 and INF22), intangible organizational resources such as performance appraisals or reviews were acknowledged as vital practices to NPOs. Furthermore, the study findings showed other knowledge-based practices in the organizations, including morning coffee (INF25), knowledge sharing sessions (INF22), informal gatherings (INF29), and staff retreats (INF05).

4.1.3. KRs-NPOs from Partnership or Stakeholder Involvement

This category captures all network knowledge-based resources, including accessing external resources of sister or partner organizations and a better understanding of partnership or network knowledge. At a basic level, this consists of knowledge events for sharing expertise, updating information, and disseminating related experiences among network organizations. In other words, this category represents the knowledge from interorganizational partnerships in the nonprofit sector. There were two distinguishing attributes, directionality and formality, that were characteristic of each partnership. By sharing this knowledge, this study demonstrated that KRs would be exchanged in formal and informal ways. According to the research findings, the informants noted that NPO partnership was another knowledge-based resource among the NPOs: for example, the category related to the collaboration network between these NPOs and others necessary to share and generate new knowledge among the organization, as INF30 informed that "…we know what focal area which we worked with have the partners that we can

collaborate…." Stakeholder involvement is a fascinating knowledge-based platform on which to create and share knowledge and information. This involvement moves across and beyond multiple boundaries. It can be linked to local government or agencies (INF04), communities (INF11), enterprises (INF05), governing boards (INF01), inter-region committees (INF31), and others. The qualitative data also noted that a range of partnerships and their involvement are vital and valuable in identifying the KM practices in NPOs.

4.1.4. KRs-NPOs from Operational Practices

This category presents all knowledge and information regarding processes, practices, procedures, and protocols regarding both administrative and practical components. All of this knowledge is a vital resource for implementing projects or programs in NPOs. The findings revealed a large amount of information and data stored in knowledge-based resources within the investigated organizations. These resources allow them to retain knowledge through guidelines and manuals (INF27), standard operating procedures (SOPs) (INF25), project/program documents (INF17) (e.g., project proposal and M&E plans), policy briefs (INF19 and INF25), reports (INF20 and INF22), patterns (INF26), and others. Key informants also emphasized that web-based collaborative platforms and their application are well organized; these KRs are for organizational learning and development. These resources are salient for daily operation and might deal with information dissemination, internally or externally (INF17).

Interestingly, the findings also explored the resources relating to operational practices necessary for organization development sustainability. As INF15 mentioned, "… if NGOs can integrate knowledge with the organization knowledge, the activities can be sustainable development in the future." Furthermore, the sources of knowledge were stored in different ways in the NPOs, such as information sharing platforms, internal SharePoint systems, knowledge-intensive portals/databases, and learning portfolios. In this way, KRs from operational practices are presented in the form of a knowledge combination process in the organization. Additionally, the research findings determined that KRs related to operational practices were necessary to implement organizational tasks even with small-scale NPOs with few staff and volunteers.

4.1.5. KRs-NPOs from Other Resources

This category represents resources that were organizational equipment and other physical items in the NPOs. These resources are predominantly related to parts of the IT (INF21), finance (INF01), and logistics (INF18) units within the organizations. For instance, INF01 mentioned that "…one staff has the right to buy some equipment and items to process the money and expense printing the reports [and] document receipts."

4.2. Technology Resources in the NPOs

Technology resources are physical components such as technologies, equipment, and facilities used for operational purposes in organizations. Qualitative data have revealed that these resources can be understood as digital organization resources. The types of resources have been clarified into internal and external technology resources.

4.2.1. Internal Technology Resources

Internal technology resources involved familiar sources and represented interior goals within the organization. These resources were manifested in different ways, such as databases, systems, and web-based platforms. The findings revealed that these technology resources are necessary for project implementation in organizations. One informant explained that:

"It can be established and improved during the project implementation. The internal reporting system included the contacts, problem statement, and list of partners, expected outcomes, outputs, objectives, the activities that you want to implement. Our reports systems will be updated frequently, which was around the project frameworks" (INF16).

Another study revealed that internal technology resources digitalized the data, information, and lessons learned for the purpose of learning and accessing the information from the organization. For instance, INF27 expressed:

"Within our organization, we have an information sheet that we can access. For example, if I want to access one field. So, I can access, see their expertise and experience in that field. Selected information can be their contacts, such as where they are from or their email, organization, and others."

However, to access the data and information internally, some informants also noted that their organizations strictly allowed access levels. For example, INF28 shares that "we are strict about accessing financial information. Seniors

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can access it only. Level to access depends on the seniority of the staff and your needs for the information."

The literature of the KM field confirmed that KRs have positively affected the relationship between technology resources and cost advantages in the for-profit sector (Karia, 2018). Moreover, technology resources were also a type of organizational knowledge need regarding resource knowledge in NPOs (Rathi et al., 2016).

4.2.2. External Technology Resources

External technology resources can be categorized as network resources, which connect the data and information among and beyond the boundaries of organizations. Using digital technologies, NPOs have shared and disseminated their knowledge and expertise in various ways. This can be grouped into three levels: unilevel, bilevel, and multilevel. As one key informant explained:

"We realized on the database of United Nations (UN), International Labour Organization (ILO), Asia Development Bank (ADB), the World Bank, and the governments. We also think that need assessment, reports, and policy briefs are available from these organizations, [because] they already collected as well as they collaborated with the governments" (INF19).

In addition to databases, external technology resources are formed as global sharing platforms or collaboration systems (INF30), learning labs (INF07), M&E systems (INF15), and others. The examined NPOs would like to use more digitalized technologies for their operational activities. However, NPOs are charitable institutions that rely on or utilize funding from donors and agencies. Therefore, several informants noted the limitations of extra budgets, which were barriers to using technology resources externally.

In short, a deeper engagement with the study results in NPOs revealed two exciting findings in identifying and categorizing both KRs and technology resources in a nonprofit context. First, the interpretation of critical components of the KRs concept map (Fig. 2) profoundly illustrates how NPOs were used as sources of knowledge and technology. Second, organizational resources were recog-

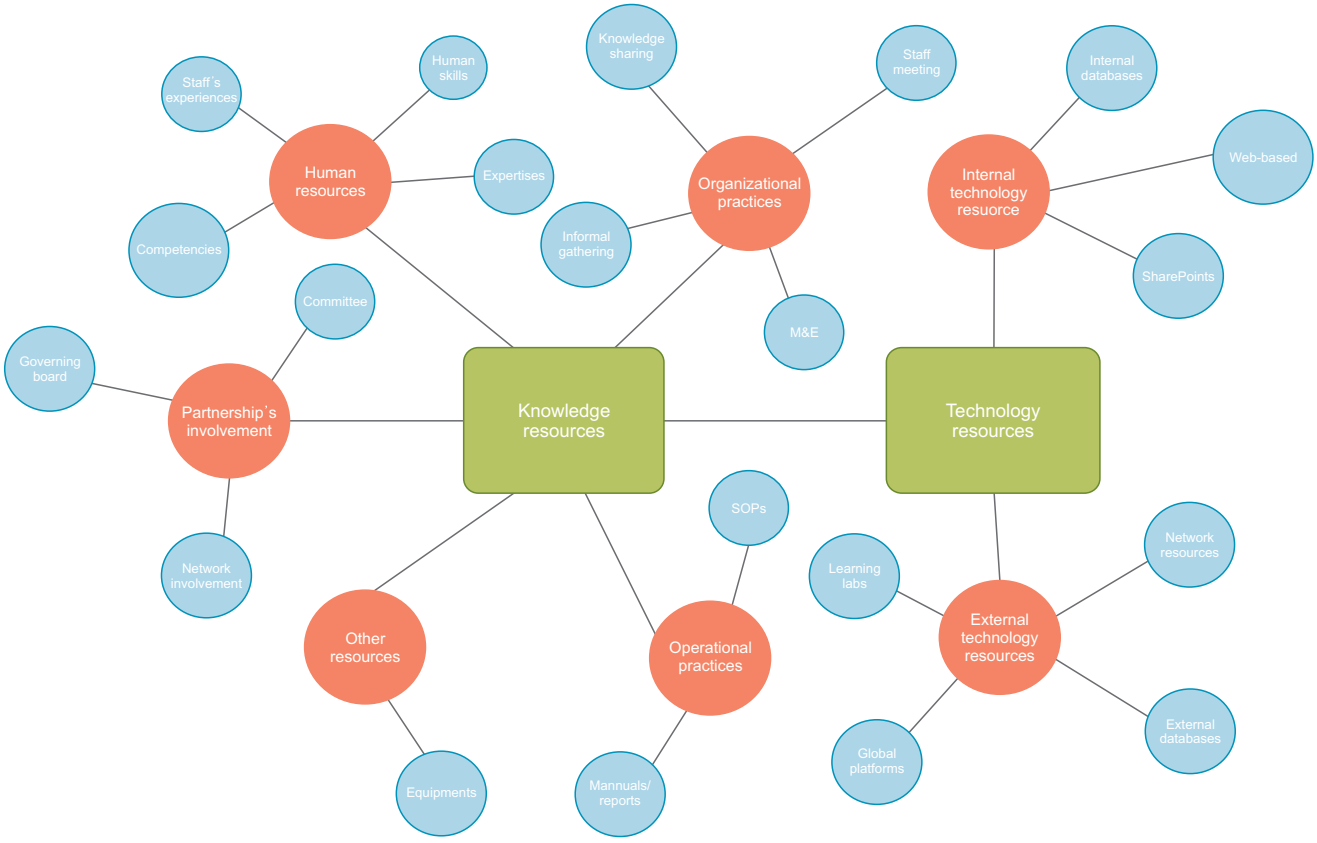

Fig. 2. Concept map depicting knowledge and technology resources in the nonprofit organizations.

nized in this study throughout the analytical data process (Fig. 1), including five critical KRs (human resources, organizational practices, partnership or stakeholder involvement, operational practices, and others) and two technology resources (internal resources and external resources).

5. DISCUSSION

The findings reveal some interesting contributions for the literature from the emergence of both KRs and technology resources for KM activities in NPOs, hence accomplishing theoretical and empirical research proofs relating to resource-based theory in organizations.

The first finding of this investigation proposes the categorization of the terms of knowledge-based resources. To date, very few examinations have identified these research components, particularly in the nonprofit environment. The study's results show that KRs can be classified into five categories: human resources, organizational practices, operational practices, partnership or stakeholder involvement, and other resources. This paper also acknowledges that technology resources are interpreted as digital organization resources for KM implementation. The analytical process undertaken in this investigation determined various linkages among KRs and technology resources. From different linkages, NPOs in Thailand have acquired and developed suitable organizational resources in both human-specific and nonhuman aspects to maintain competitive advantage. This study also advances the resource-based approach of previous studies (e.g., Karia, 2018), mainly in FPOs, further extending human capital theory, such as knowledge-based resources (Grant, 1996).

Based on the findings and analysis of the literature related to KRs and technology resources, the second finding is proposed as a concept map, a metaphorical representation indicating the relationships among the components. This consists of multiple connections of the resources in the NPOs in Thailand. The concept map of organizational resources could be perceived in terms of semantic proximity, which was discussed by Lwoga et al. (2011). The concept map is illustrated in Fig. 2. Technological resources can be internally or externally available, and other vital components are needed for organizational development and management, such as humans, partnerships, and practices in the nonprofit sector. Furthermore, the concept map is helpful as a "spatial metaphor" to understand the relevant characteristics of each component in relation to the others. This idea was discussed by Rathi et al. (2016). Moreover, the concept map can be applied to a more generalized concept regarding the clustering approach, which allowed both scholars and practitioners to understand better semantic relationships between technology resources and KRs based on their characteristics in non-profit situations. Mapping the research results in this way allows us to provide interesting connections and implications on how organizational resources existed internally and externally even beyond the organization boundary.

6. CONCLUSION

The findings revealed how each knowledge and technology resource type is defined as an organizational resource for NPOs at the conceptual level. KRs are referred to as human-oriented sources, which are concentrated on human skills, experiences, and competencies. Meanwhile, technology resources are physical-based components that combine the data, information, and knowledge into digital platforms such as databases, websites, and SharePoint systems. Moreover, the evidence of resources in this investigation presented how organizational resources are used to achieve NPOs. Interestingly, staff meetings represent a vital practice in which the staff can learn and share their knowledge in the organization. Key informants also noted meeting spaces where the employee could gain knowledge from their NPO. On the technical side, the NPOs referred to using digital technology internally and externally. Internal databases were prioritized in the NPOs.

This paper is the first step toward a holistic understanding of knowledge and technology resources in the nonprofit context. This study also contributed to identifying organizational resources in NPOs, especially in developing countries. Furthermore, the study's implications trigger other research questions about how NPOs can utilize internal and external resources for organizational development and improve KM practices within organizations. In the digital era, the nonprofit sector needs to deal with other sectors concerning how organizations innovate in the technology revolution. While an NPO's operation relies on funding or grants from donors and governments, organizations encounter the challenges of maximizing donations and organizational development in a competitive context.

The study offers ongoing quantitative research to investigate effectiveness in using KRs and technology resources in NPOs. This study also has limitations, such as a small sample size or a focus only on developing countries, particularly Thailand. Ongoing studies, such as a national online survey on how KRs and technology resources are

effective, will address this limitation and reinforce current findings on utilizing KRs and using technology resources in organizations. Based on this study, future investigations should be pursued, leading to further empirical research:

- To discover the effectiveness of using technology resources and KRs in the nonprofit context in developed and developing countries.
- To re-identify additional components of organizational resources, including resources of both knowledge and technology.
- To explore how organizational resources impacted KM practices in NPOs.

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CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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APPENDIX. In-depth interview questions

Questions	Note
Session 1: Understanding of Knowledge and Technology Resources	
1. What do you understand in terms of knowledge resources (or information resources) and technology resources?	
2. What are the knowledge resources (or information resources) at your organization?	
3. What are the technology resources at your organization?	
Session 2: Knowledge Resources	
4. What kinds of knowledge resources (or information resources) are at your organization?	
5. Could you please describe the kinds of knowledge resources (or information resources) at your organization?	
Session 3: Technology Resources	
6. What kinds of technology resources are at your organization?	
7. Could you please describe the kinds of technology resources at your organization?	
Session 4: Linkages of Knowledge and Technology Resources and Evaluating Them	
8. Could you describe the linkages between knowledge resources (or information resources) and technology resources at your organization?	
9. Is there any organizational strategy to develop knowledge resources (or information resources)/technology resources at your organization? If yes, could you explain its components and objectives?	
10. Is there any organizational strategy to evaluate knowledge resources (or information resources)/technology resources at your organization? If yes, could you explain its components and objectives?	