Knowledge Creation in a Community-Based Organization: A Case of Urban Village Infrastructure Development in Batam City, Indonesia

Nafis Laelatullaena, Wayu Eko Yudiatmaja iD, Ramadhani Setiawan

Department of Public Administration, Universitas Maritim Raja Ali Haji, Indonesia

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ABSTRACT

Knowledge creation is critical in development projects as it drives innovation, supports continuous learning, and improves performance outcomes. Despite its importance, limited studies have examined the process of knowledge creation within self-management programs, particularly in the context of the PSPK program. This study investigates the dynamics of knowledge creation in implementing urban village infrastructure development in Batam City, Indonesia. A qualitative method with a case study approach was employed, using documentation and in-depth interviews with urban village management and community members actively involved in the program. The findings demonstrate that knowledge creation is embedded in the implementation activities of the program, emerging through multiple aspects such as social interaction, coordination, socialization, documentation, training, technical guidelines, and personal experience. These elements collectively contribute to generating new knowledge that supports program sustainability. Furthermore, the process reflects the dimensions of the SECI model—socialization, externalization, combination, and internalization—highlighting how tacit and explicit knowledge are continuously transformed and integrated. This study contributes by broadening the understanding of knowledge creation in community-based development projects, reinforcing the applicability of the SECI model, and offering insights into how knowledge processes strengthen participatory governance and local development initiatives.

Keywords: Knowledge Creation; Community-Based Organization; Project Development; Knowledge Management

Introduction

The development of urban and rural areas in Indonesia shows increasingly complex dynamics, especially in the context of equitable development (Anggara & Sumantri, 2016). Inequality in access to resources, infrastructure, and technology between urban centers and peripheral areas remains a major challenge (Delo et al., 2022). As the smallest administrative unit, villages strategically implement development based on local community needs. However, institutional capacity and resource constraints are major obstacles to sustainable development (Repette et al., 2021).

One of the main challenges of development is inequality of access, whether to economic resources, infrastructure, or information. This gap is evident between highly advanced urban areas and subdistricts or peripheral areas that often lag in socio-economic development (Jain & Espey, 2022; Schlunegger et al.,

2024). Therefore, subdistricts must become centers for community empowerment based on local potential capable of designing and managing growth in a self-managed and sustainable manner.

The government encourages community participation in development through a participatory approach. One form of this is the implementation of self-management programs, such as the urban village infrastructure development program (PSPK), which is designed to strengthen community participation in self-managed development. Knowledge creation in self-managed development helps improve the efficiency of decision-making capabilities of organizations consisting of individuals, teams, or organizational processes in implementing the PSPK program.

Participatory development has become an important approach in efforts to achieve equitable development outcomes and empower communities at the local level. One form of implementation of this approach in Indonesia is the PSPK, which is implemented through self-management by the local community. This program encourages active citizen participation in designing, implementing, and monitoring small-scale development projects in their areas. In its implementation, PSPK requires technical skills, social skills, and shared knowledge that grow from interactions among community members.

Knowledge is central to every development process, especially in community-based self-management (Vasantan, 2022). The knowledge used by local development actors is not always formal or structured. Still, it often comes from experience, skills, and local values and practices passed down from generation to generation. Therefore, knowledge creation is essential in supporting the success of community-based development programs.

Nonaka and Takeuchi (1996) argue that knowledge creation occurs through a dynamic process involving the interaction between two forms of knowledge: tacit knowledge and explicit knowledge. Tacit knowledge is personal, intuitive, and difficult to communicate, while explicit knowledge can be documented and disseminated systematically. The interaction between these two forms of knowledge is summarized in the SECI model, which consists of four dimensions: Socialization, Externalization, Combination, and Internalization. This model explains how new knowledge is created continuously through social processes within organizations or communities.

Non-governmental organizations play an important role in addressing many development challenges. Non-governmental organizations (NGOs) have begun to play a role in politics in most countries, although these organizations initially focused on social welfare (Omukuti et al., 2021). At the same time, academic interest in NGOs has grown significantly. Between 1987 and 1997, numerous empirical studies on NGOs were conducted, focusing on governance, democratization, civil society formation, and NGOs within the global system (Abiddin et al., 2022).

Non-governmental organizations in various countries have different characteristics. In Malaysia, civil society organizations are non-communalistic and universalistic, such as consumerism, environmentalism, and feminism (Abiddin et al., 2022). In Tanzania, the role of NGOs is more open and focused on issues related to the fact that NGOs have limited public space where they can be subject to monitoring, harassment, intimidation, arrest, injury, death, and closure of civil space (Rugeiyamu & Nguyahambi, 2024).

Several studies analyzed the role of non-governmental organizations. Some studies have focused more on non-governmental organizations such as community-based organizations (CBOs) (Fuseini et al., 2022; Valero-Amaro et al., 2021; Hashim et al., 2020; Sisaye, 2021; Moya-Colorado et al., 2021). Overall, previous research has employed quantitative approaches to test hypotheses based on existing theories (Fuseini et al., 2022; Valero-Amaro et al., 2021; Hashim et al., 2020), while others have employed qualitative approaches to generate more detailed and comprehensive descriptions aligned with their theoretical frameworks (Sisaye, 2021; Moya-Colorado et al., 2021).

Previous studies have focused more on analyzing non-governmental organizations, specifically community-based organizations (CBOs) with a broader organizational scope (Geiyono et al., 2018; Fuseini et al., 2022; Valero-Amaro et al., 2021; Hashim et al., 2020; Sisaye, 2021; Moya-Colorado et al., 2021). NGOs

are receiving more attention from the government because they serve as a platform for public participation in government affairs. However, previous research has focused on large-scale non-governmental organizations such as NGOs. In village-based development, the main self-management actors are the community through local institutions such as community empowerment institutions (LPM), community leaders, and community groups (Pokmas) (Juliyanti et al., 2021). They do not come from professional backgrounds, yet they remain key facilitators in creating knowledge and implementing programs.

Previous studies have highlighted the role of non-governmental organizations such as community-based organizations in development (Fuseini et al., 2022; Valero-Amaro et al., 2021). However, the scope of these studies tends to be broad and has not specifically examined the dynamics of knowledge creation in the context of program implementation at the village level. These studies have emphasized organizational governance and community participation in general, rather than the concrete mechanisms of knowledge exchange in the field.

Knowledge creation in community-managed development is important because most program implementers do not come from professional backgrounds but are community members of Community Empowerment Institutions (LPM), community leaders, or Pokmas. In implementing PSPK in Air Raja urban village, Galang district, Batam City, various social dynamics indicate the existence of knowledge exchange and creation processes. Therefore, this study aims to explore how knowledge is created, shared, and transformed within the PSPK implementation, and to understand its role in strengthening the effectiveness of community-driven infrastructure development.

Methods

In this study, the researcher used a case study approach. This type of case study approach is used to investigate and understand an event or problem that has occurred by collecting various kinds of information, which is then processed to obtain a solution to resolve the problem. According to Creswell (2014), qualitative research is a method that explores and understands the meanings of individuals or groups facing social issues (Stutterheim & Ratcliffe, 2021). The data sources for this study are primary data obtained from in-depth interviews with the Head of the community empowerment institution (LPM), the head of development, the community empowerment agency (BKM), the community working group (Pokmas), the village head, and the community members involved in the 2024 PSPK program in Air Raja. This study utilized NVivo 14 software to systematically manage interview data, simplify, and organize raw data into more structured and easily understandable information.

Results and Discussion

The findings indicate that the researcher aimed to understand the knowledge creation process in the PSPK program in Air Raja in 2024, which shows that the knowledge creation process can also be observed in implementing the PSPK program. The researcher identified aspects of the knowledge creation process, such as deliberation, coordination, socialization, documentation, training, technical guidance, personal experience, and the creation of new knowledge, as a description of the knowledge creation process that shows a strong relationship with the SECI model dimensions as follows:

Socialization

The socialization stage describes converting tacit knowledge into other tacit knowledge through direct interaction between individuals, such as discussions, observations, and practical guidance. This stage emphasizes the importance of shared experiences and informal communication as the basis for knowledge creation within an organization (Delo et al., 2022; Jain & Espey, 2022). In the 2024 PSPK program implemented in Air Raja, the Socialization stage was realized through various forms of social interaction between residents, RT/RW, LPM, and village officials. Tacit knowledge was shared among individuals through development planning meetings known as musrenbang forums. These forums served as strategic spaces to unify understanding, convey community aspirations, and determine priorities and locations for

development. Within this forum, an organizational structure for implementing the PSPK was established, comprising a chairperson, secretary, treasurer, and members who form the Community Group (Pokmas).

Additionally, informal interactions further strengthen the knowledge transfer process. Casual discussions among residents, RT/RW, and community leaders in the surrounding area, such as at neighborhood watch posts or residents' homes, serve as platforms for sharing information about field conditions, technical challenges, and past experiences in development implementation. This practice demonstrates that knowledge creation is not limited to formal forums but occurs naturally within the community's social fabric (Yudiatmaja et al., 2024).

Collaboration between Pokmas, village officials, and other stakeholders during the implementation of physical projects, such as the construction of neighborhood roads or drainage channels, also reflects the practice of socialization. Field workers, artisans, and facilitators exchange information and work experiences through direct guidance and technical improvisation in the field. Spontaneous discussions about work methods or construction problem-solving are part of informal learning that is not formally documented but plays an important role in the program's success.

The socialization process in the 2024 PSPK in Air Raja shows that tacit knowledge is shared through intense social interaction. Both through formal forums, such as community development planning meetings and informal conversations in the community, a shared learning space is created that enables the formation of a common understanding and increased local capacity. This reinforces the notion that the success of community-based development programs is highly dependent on the strength of social interactions in transferring practical and contextual knowledge.

Externalization

Tacit knowledge is externalized, meaning that the knowledge possessed by individuals is documented and disseminated. Before development is carried out, socialization is conducted to convey information from the public works agency to the community groups regarding the implementation rules. Then the results of the PSPK implementation deliberations are compiled into documents such as the RKA, RKM, RKPD, BA, and SPJ, forming a systematic knowledge process where workers apply these documents in project implementation and program administration. Not only documents are used, but workers also apply the design drawings provided by technical staff from the urban development agency of Batam. The process of knowledge creation through socialization and documentation complements each other in creating and preserving ideas or experiences in the form of documentation within the PSPK 2024 program for Air Raja n the externalization dimension.

Combinations

Explicit knowledge to explicit knowledge: This process is reflected in documentation and coordination activities that combine various written knowledge sources to form new knowledge from explicit sources, such as the implementation of the PSPK program, where Facilitators document photos, attendance, and RKM as requirements for the report to secure funding, as data is systematically integrated into the administrative process to create new knowledge in the implementation of the PSPK program. In the implementation, it also shows a formal organizational structure and explicit coordination system among actors, indicating that the previously scattered or separate elements in the Combination dimension are integrated into a cohesive coordination system in implementing the PSPK program in Air Raja in 2024. This aligns with the SECI model in the Combination dimension, which combines various written knowledge sources to form new knowledge.
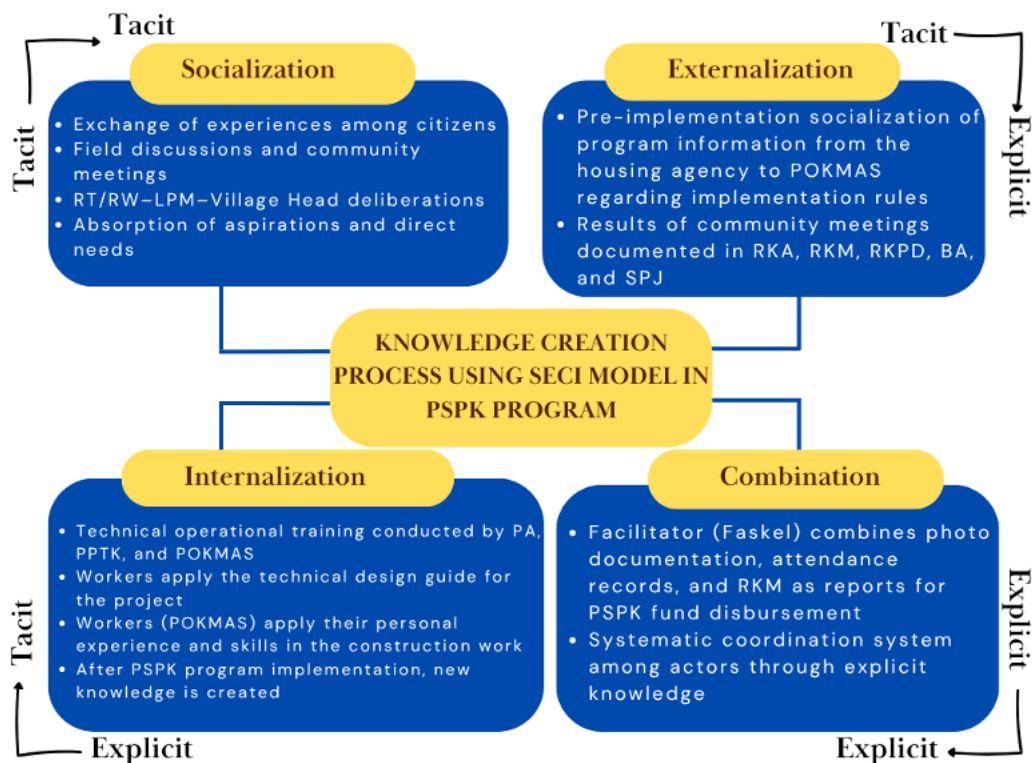
Internalization

Explicit knowledge is transformed into tacit knowledge, a process reflected in training activities, technical guidelines, personal experiences, and the creation of new knowledge. PA, PPTK, and Pokmas conducted training to provide technical operational training for implementing the program's SOPs. Pokmas

applied technical guidelines, such as project design drawings supplied by technical consultants, for project material procedures (Riyadi et al. 2025). The knowledge creation process in the internalization dimension involves the skills possessed by workers (community groups) who apply their respective skills in implementing the 2024 PSPK program in Air Raja. After implementing the PSPK program, they gain direct work experience as craftsmen, enabling them to apply the knowledge they have acquired to themselves, thereby transforming it into new knowledge.

The overall research findings indicate that the knowledge creation process in the PSPK program in Air Raja, in 2024 does not only occur through formal means such as documents and training. The knowledge they gain is not always from documents or training but also involves coordination, personal experience, and collaboration in practice. The SECI model dimensions can shape the learning process in implementing the PSPK program.

This indicates that the success of the development program is highly dependent on the ability of individuals and groups, namely PA, PPTK, LPM, Faskel, and Pokmas, to create, share, and internalize knowledge within the 2024 PSPK program in Air Raja. Therefore, understanding the knowledge creation process is reflected in implementing the 2024 PSPK program, particularly in Air Raja, which has a community-managed development system carried out by residents. This process can be described and understood using KM theory, where the aspects identified by the researcher are present in social interaction, coordination, socialization, documentation, training, technical guidelines, personal experience, and the creation of new knowledge.

Figure 1. Knowledge Creation Process in the SECI Model PSPK

Discussion

Based on the theory in understanding the knowledge creation process, such as the SECI model dimensions of socialization, externalization, combination, and internalization in KM theory introduced by Nonaka and Takeuchi (1996), which describes the organizational knowledge creation process as a process of creating, disseminating, and applying knowledge to improve the efficiency of organizational decision-making capabilities consisting of individuals, teams, or managerial processes.

This section aims to briefly describe the contribution of the research to KM theory, specifically the SECI model, in the knowledge creation process of the PSPK program in Air Raja in 2024. The knowledge creation process clearly contributes to KM theory in the SECI dimension, as in the planning and implementation of the PSPK program in Air Raja, there is knowledge acquired by each individual for the development of self-managed expertise, which is reflected in the aspects of the knowledge creation process, such as social interaction, coordination, socialization, documentation, training, technical guidance, personal experience, and the creation of new knowledge. The knowledge creation process by program implementers aims to improve the quality of planning and implementation of development programs at the village level, particularly in Air Raja.

Conclusion

Based on the research results, it can be concluded that the knowledge creation process in the 2024 PSPK program in Air Raja, Galang District, Batam City, has several aspects of activity, namely social interaction, socialization, coordination, documentation, training, technical guidance, personal experience, and new knowledge creation, which are strongly reflected in the SECI model dimensions.

Based on the socialization dimension, tacit knowledge is understood through social interactions such as informal and formal forums between workers, artisans, and village officials. Musrembang (village development planning meetings) serve as the main forum for deliberation, gathering aspirations, and determining the structure of the PSPK program. In implementation, collaboration among LPM, RT/RW, and community leaders forms the initial foundation for collective knowledge creation. The externalization dimension is evident in socialization and documentation activities, where individual experiences are documented in formal documents such as RKA, RKM, RKPD SPJ, and design drawings from the Batam Urban Development Agency. The knowledge creation process ensures that existing knowledge is organized and stored systematically. In the combination dimension, explicit expertise from various sources, such as attendance records, photos, and reports, is integrated into the PSPK program administration system, forming a comprehensive and structured coordination workflow, thereby strengthening the information management system during the implementation of the PSPK program. Meanwhile, internalization occurs through training, technical guidelines, personal experience, and the creation of new knowledge in the field. Pokmas implements SOPs and project design drawings, then absorbs work experience into new knowledge that can be reapplied individually.

Overall, the knowledge creation process in the 2024 PSPK program is formalized but also occurs through social interaction, work experience, and collaboration among program actors in the Air Raja PSPK program. The program's success heavily depends on implementers' ability to create, share, and implement knowledge at every stage of the 2024 PSPK program in Air Raja.

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