



Activating and Integrating Multiple Routes of Psychological Ownership through Design Thinking in Family-Owned SMEs

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ABSTRACT

This study examines how design thinking (DT) implementation in family-owned small and medium-sized enterprises (SMEs) activates and links multiple routes of psychological ownership (PO) formation. While prior research has identified various antecedents of PO, these have largely been examined in isolation, leaving limited understanding of how different routes of PO formation interact in practice. This gap is particularly salient in family-owned SMEs, where centralized decision-making often constrains employees' opportunities to engage with organizational targets, requiring integrative approaches that enable multiple forms of engagement. Drawing on a multiple-case study, the findings reveal that DT creates mechanisms that facilitate multiple routes of PO formation by enabling employees to simultaneously engage in practices that foster control, intimate knowledge, and self-investment. More importantly, these routes operate as a recursive and mutually reinforcing system, through which PO emerges and is continually reconstructed over time. This study contributes to the PO literature by offering a process-oriented explanation of how multiple routes interact while extending existing understandings of individual routes. Moreover, the findings further suggest the potential relevance of DT for understanding the emergence of collective PO.

Keywords: Psychological ownership, Design thinking, Family-owned small and medium-sized enterprises, Collective psychological ownership

Introduction

Psychological ownership (PO) has received growing attention as a key psychological factor that motivates individuals' commitment and proactive engagement toward their organizations (Van Dyne & Pierce, 2004; Dawkins *et al.*, 2017; Yu, 2021). PO refers to a mental state in which individuals develop possessive feelings toward a target (Pierce *et al.*, 2001, 2003). While PO theory has outlined three major routes of PO formation at a conceptual level (e.g., Pierce *et al.*, 2001), empirical research has yet to fully explain how concrete organizational practices activate these routes in organizational contexts. Consequently, recent studies have called for further exploration of the organizational mechanisms that enable employees to develop PO (Feldermann & Hiebl, 2022; Kim *et al.*, 2024). Existing studies have identified various organizational antecedents of PO, such as employee participation and job autonomy (e.g., Dawkins *et al.*, 2017; Zhang *et al.*, 2021; Almadah, 2025).

However, these factors are often examined in isolation (e.g., Dawkins *et al.*, 2017; Zhang *et al.*, 2021), which limits our understanding of how different routes of PO formation interact, despite prior theoretical suggestions that such interactions may occur (Pierce *et al.*, 2001). Additionally, while some studies have begun to examine organizational antecedents that influence multiple routes simultaneously, they have not clearly articulated how such factors link these

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routes (Brown *et al.*, 2014; Gardner *et al.*, 2023; Juel *et al.*, 2023). As a result, the literature lacks a clear theoretical explanation of how multiple routes of PO formation are jointly activated and linked in practice.

This limitation becomes particularly relevant in family-owned small and medium-sized enterprises (SMEs). Family-owned SMEs are characterized by highly centralized authority and decision-making (e.g., De Massis *et al.*, 2013; Rondi *et al.*, 2019; Eggers, 2020), which can constrain employees' opportunities to meaningfully engage with the organizational target. This limits the development of employees' PO, as limited avenues for engagement prevent the formation of possessive feelings toward the target (Pierce *et al.*, 2001; Van Dyne & Pierce, 2004). This challenge highlights the need to create a broader set of ways for organizational members to engage with their target. In such contexts, relying on isolated mechanisms is insufficient, and family-owned SMEs are more likely to require practices that enable the joint activation and interaction of multiple routes of PO formation.

This study considers design thinking (DT) as a promising organizational practice that may contribute to addressing this challenge by providing diverse forms of engagement with the target. DT practices emphasize collective problem framing, iterative reflection, and active involvement (e.g., Vetterli *et al.*, 2016; Elsbach & Stigliani, 2018; Dunne, 2018; Schlott, 2024), which has the potential to create conditions that facilitate the activation and interaction of multiple routes of PO formation (Pierce *et al.*, 2001). In this sense, DT is not merely a toolkit for innovation but a strategic practice that reshapes how organizational members engage with shared problems, goals, and future directions (Buchanan, 2015; Magistretti *et al.*, 2020; Goto, 2024). Despite this potential, the role of DT in enabling the integrated activation and interaction of multiple routes of PO formation remains underexplored. Therefore, this study aims to theorize how DT implementation in family-owned SMEs activates multiple routes of PO formation and how these routes interact in practice.

Literature Review

Psychological Ownership

PO develops through three primary routes: controlling the target, coming to intimately know the target, and investing the self into the target (Pierce *et al.*, 2001, 2003). Control over a target fosters a sense of ownership by enabling individuals to influence it (e.g., Csikszentmihalyi & Rochberg-Halton, 1981; Pierce *et al.*, 2001). Another route to PO is intimate knowledge of a target, which can strengthen ownership by fostering familiarity and association toward it (e.g., Beggan & Brown, 1994; Pierce *et al.*, 2001). Finally, self-investment into a target promotes PO by integrating personal resources such as time, effort, and attention into it (e.g., Csikszentmihalyi & Rochberg-Halton, 1981; Pierce *et al.*, 2001).

Building on this framework, prior research has identified a range of antecedents that activate these distinct routes of PO formation. For example, antecedents related to control emphasize organizational conditions that enable employees to exercise control over a target, such as autonomy, participation in decision-making, and transformational leadership (e.g., Mayhew *et al.*, 2007; Han *et al.*, 2010; Bernhard & O'Driscoll, 2011). With regard to intimate knowledge, information accessibility and long tenure enhance employees' familiarity with a target, thereby strengthening this route (e.g., Pierce *et al.*, 2001; Zhang *et al.*, 2021). For self-investment, employees' opportunities to invest their substantial time and effort into a target—such as through nonroutine work or creation—encourage employees to embed themselves more deeply in a target (e.g., Pierce *et al.*, 2001; Zhang *et al.*, 2021). These antecedents capture different aspects of employees' relationships with their target and highlight the role of organizational practices in shaping PO.

While prior studies have shed light on individual routes of PO formation, they have predominantly examined these antecedents separately, providing limited insight into how different routes of PO formation interact with one another in practice. Although PO theory suggests that these routes may operate in combination (Pierce *et al.*, 2001, 2003), empirical studies have rarely explored how they are linked through organizational practices. Some studies have identified organizational antecedents—such as job complexity, person-job fit, and co-design—that may influence multiple routes simultaneously (Brown *et al.*, 2014; Gardner *et al.*, 2023; Juel *et al.*, 2023); however, they largely stop short of theorizing how such factors link these routes. Consequently, existing research offers limited theoretical



explanation of how organizations can foster PO through the integrated activation and interconnection of multiple routes. This gap highlights the need for a process-oriented perspective that explains how multiple routes of PO formation are jointly activated and linked in organizational contexts.

Theoretical Framework

This study adopts the three routes framework for PO formation (Pierce *et al.*, 2001) as a theoretical lens, which has been widely used to explain how individuals develop PO toward a target. Prior research suggests that these routes are not mutually exclusive; rather, they may operate in parallel or interactively, reinforcing one another in the process of PO formation (Pierce *et al.*, 2001, 2003). Building on this perspective, this study focuses on the potential for these routes to operate interactively and positions DT as a mechanism that enables their simultaneous activation.

DT fosters collective problem framing, iterative reflection, and active involvement, thereby enabling organizations to deliberately promote participation and shared understandings of their goals (e.g., Vetterli *et al.*, 2016; Elsbach & Stigliani, 2018; Dunne, 2018; Schlott, 2024). In this regard, DT may provide structured opportunities for employees to exercise control, to develop an intimate understanding of organizational goals and contexts, and to invest themselves in organizational change processes. Thus, DT can be understood as a process that structures employees' experiences and interactions with the target. This suggests that DT provides a suitable context for examining how the three routes are jointly activated and interact in practice.

Accordingly, this study proposes a conceptual framework that links DT to PO through the three routes of PO formation (**Figure 1**) and focuses on explicating the underexplored link between organization-level DT implementation and the activation of these routes at the individual level. Specifically, this study examines how specific DT practices activate each route and how these routes interact with one another.

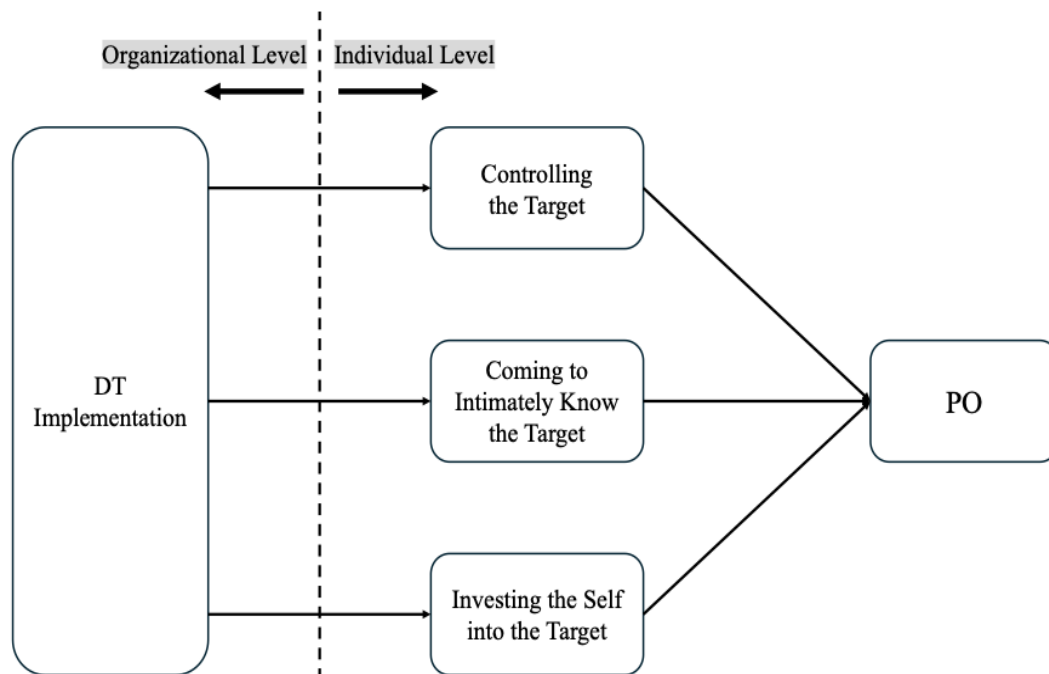


Figure 1. Proposed Framework

Materials and Methods

Research Design

This study aims to develop a deeper theoretical understanding of how DT implementation in family-owned SMEs activates multiple routes of PO formation and how these routes interact with one another. To address this objective,

this study adopts a multiple-case study approach based on a theoretical replication logic (Yin, 2018). This approach allows the study to test and refine the proposed theoretical framework by assessing whether similar patterns of route activation and interaction emerge across different cases (Yin, 2018). Furthermore, case selection follows the principle of theoretical sampling, which prioritizes cases that provide rich insights into the mechanisms under investigation rather than statistical representativeness (Yin, 2018; Eisenhardt, 2021). Overall, this research design enables the study to clarify how DT implementation activates and links multiple routes of PO formation in organizational contexts.

Empirical Setting

This study focuses on two DT support programs for SMEs in Japan: “VALUE” launched by the Wakayama Prefectural Government and “FUXION” launched by the Nagoya City Government, both of which are operated by Mitemo Co., Ltd. These programs provide relevant empirical contexts by offering access to SMEs implementing DT in Japan, where such cases are otherwise difficult to observe. In addition, the programs are designed for organizational leaders, such as CEOs or senior managers, who participate directly and subsequently transfer the acquired knowledge and practices within their organizations. These characteristics allow DT practices to be implemented and shared across the organization, creating a context in which employees can engage with DT practices.

In both programs, participating companies engage in an approximately nine-month process in which they learn the principles of DT, practice them through workshops, and apply them to their own business challenges. The process consists of an initial phase focused on learning and practicing DT concepts and methods, followed by a subsequent phase in which participants apply these practices within their organizations. This extended process supports the diffusion of DT practices across the organization, rather than limiting them to one-off learning experiences.

Among the participating companies, five family-owned SMEs were theoretically sampled as research cases (**Table 1**). All case firms were small-sized organizations with approximately 15 employees. Case selection focused on family-owned SMEs that had engaged in sustained DT-related activities, ensuring that DT practices were sufficiently embedded within organizational contexts and allowing the mechanisms associated with PO formation to be observed.



Table 1. Case Overview

Company	Main Products	Firm Generation	Program	DT Experience
A	Work Gloves and Socks	3rd	VALUE	1 year
B	Cosmetics and Food	8th	VALUE	3 years
C	Scissors for Hairdressers	3rd	VALUE	1 year
D	Rainwear and Apron	3rd	FUXION	4 years
E	Retail Signage	2nd	FUXION	3 years

Source: Created by author

Data Collection and Analysis

This study gathers primary data through semi-structured interviews (**Table 2**). A total of 11 interviews were conducted across the participating companies, including 5 interviews with CEOs or directors who were responsible for implementing DT and 6 interviews with middle managers and frontline employees who experienced the effect of DT implementation. This multi-level approach allowed the study to capture both the intentions and perceived outcomes of DT implementation from the perspectives of organizational leaders, as well as the experiences and perceived effects among employees.

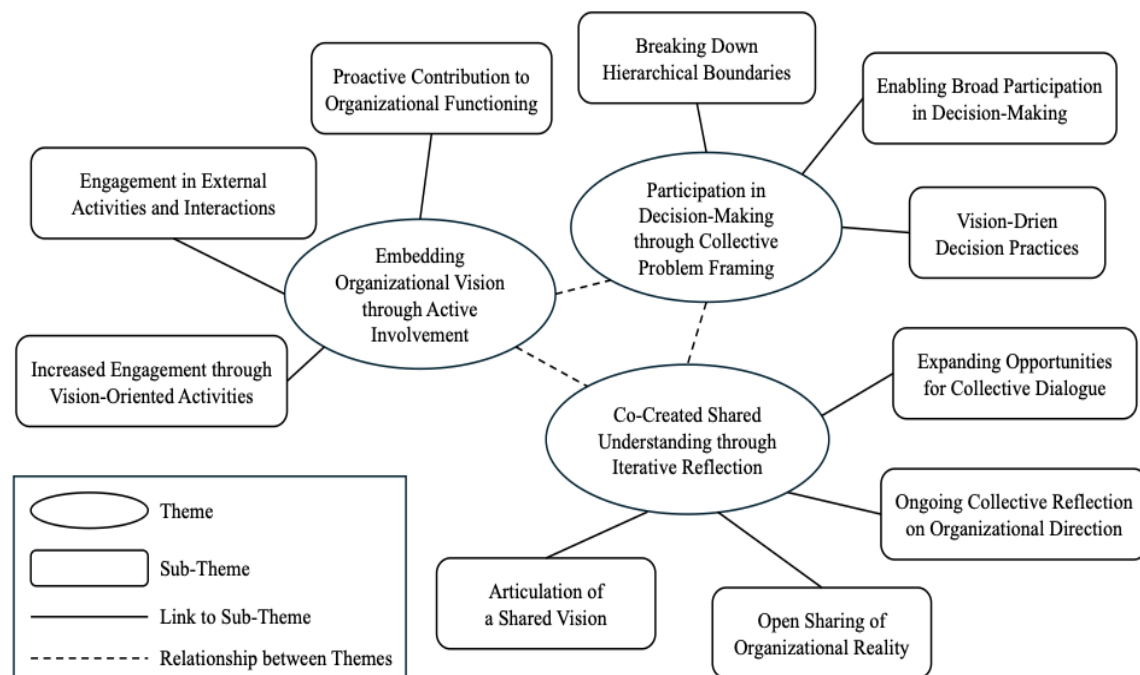
The interview protocol focused on participants’ engagement in specific DT-related practices and how these practices shaped their perceptions and feelings toward their work and organization. The interviews were conducted in July and August 2025, either online or in-person depending on participants’ availability. Each interview, which lasted between 45 and 90 minutes, was audio-recorded with participants’ consent and transcribed verbatim. Participants were informed about the study and assured of confidentiality.

Table 2. Data Collection

ID	Position	Interview Date	Duration	Format
A	Managing Director of Company A	July 2025	60 mins	Online
B	Production and Quality Staff of Company A	August 2025	60 mins	Online
C	Director of Company B	July 2025	90 mins	In-person
D	Administrative Officer of Company B	August 2025	60 mins	In-person
E	Manufacturing Staff of Company B	August 2025	75 mins	In-person
F	3rd gen CEO of Company C	July 2025	60 mins	In-person
G	Craftsperson of Company C	July 2025	60 mins	In-person
H	3rd gen CEO of Company D	July 2025	75 mins	Online
I	Executive Managing Director of Company D	July 2025	45 mins	Online
J	2nd gen CEO of Company E	July 2025	90 mins	Online
K	Production Staff of Company E	August 2025	60 mins	Online
L	Production Manager of Company E			
M	Accounting Officer of Company E			

Source: Created by author

This study adopts reflexive thematic analysis (RTA) as the analytical method (Braun & Clarke, 2019, 2022). RTA is a flexible approach that emphasizes the researcher's active and reflexive role in generating themes, rather than relying on inter-coder agreement or procedural standardization (Braun & Clarke, 2019, 2022). The analysis followed an iterative and recursive process aligned with thematic analysis procedures (Braun & Clarke, 2006; Byrne, 2022). The analysis was conducted across cases, enabling the identification of consistent patterns in how DT practices jointly activated and linked the three routes of PO formation. In this study, 3 themes and 10 sub-themes were identified through this process (**Figure 2**).

**Figure 2.** Thematic Map of the Findings

Results and Discussion

Results

Consistent with the theoretical framework, the results are structured around the three routes of PO formation (Pierce *et al.*, 2001). Rather than providing exhaustive accounts of all cases, this study focuses on representative examples that illustrate how each route emerged in practice (Table 3).

Table 3. Overview of PO Formation Routes across Cases

	Company A	Company B	Company C	Company D	Company E
Control	☐	☐	☐	☐	
Intimate Knowledge	☐	☐	☐	☐	☐
Self-Investment	☐	☐	☐	☐	☐

Note: A check mark (☐) indicates the presence of references to each route.

Source: Created by author

Controlling the Target

Company B exemplifies the establishment of structural conditions for employees' exercise of control. Prior to DT implementation, decision-making authority was largely concentrated at the managerial level, with employees expected to execute predefined roles. Through DT practices, organizational change was reframed as a collective problem, leading to the inclusion of regular employees in decision-making processes. The company began involving employees in product development projects, where they participated in discussions grounded in a shared organizational vision and contributed to important decisions.

"In the past, we rarely involved regular employees in product development. However, we now believe that regular employees should also be involved as project members. ... Within the project, we're working together to align our vision with the direction of product development." (ID: C)

In Company D, employees decided to take on a highly uncertain and risky assignment that would typically have been rejected prior to DT implementation. This involved collective problem framing, through which they defined the task as an issue they needed to address in alignment with their organizational vision. Rather than simply deferring the decision upward, they took concrete actions such as visiting the worksite and interacting with users. Such practices gradually spread among younger employees.

"The development team traveled to the worksite, observed the conditions, and interviewed workers. After that, they considered the work as something they had to do and took it on. ... I was glad we could make a bold decision based on our vision." (ID: H)

"When we first saw the product sent by the client, we thought we could never undertake the job. However, as we discussed it further, we concluded that our company had to take on this project. ... Such a spirit of challenge is beginning to spread among our younger employees as well." (ID: I)

These examples illustrate that DT implementation facilitated employees' exercise of control through their own decisions and actions based on their shared vision. Central to this process was collective problem framing, through which employees jointly defined organizational challenges in alignment with the organizational vision.

Coming to Intimately Know the Target

Through DT implementation, Company A created opportunities for iterative reflection, where the company's situation was openly shared and discussed. This reflective process led employees to develop a shared awareness of how they should approach their everyday work, and the quality of their work was reported to have improved. At the same time, the process also strengthened management's ability to convey what they were trying to achieve.



"I told everyone that this company might go bankrupt if we keep doing things this way, and I made sure they understood the gravity of the situation. I think this helped them grasp the importance of reducing losses." (ID: A)

"Workers have begun to work more carefully, and the quality of their work has improved somewhat. ... I believe the biggest change for this company was a shift in everyone's mindset and clearer communication of management's goals." (ID: A)

In Company C, DT implementation supported the discovery of shared values, which deepened employees' understanding of the shared philosophy underlying their work. Prior to DT implementation, employees carried out their work routinely, with little opportunity to collectively reflect on the meaning of their work and their shared values. DT practices provided a setting for such reflection and articulation, through which shared values emerged and were continually refined, promoting a more vision-driven approach to their work.

"We've never had a chance to ask what we're working for. That's why having a place to express our feelings about our work was really valuable. ... At a deeper level, we've started to perceive that we share a similar spirit." (ID: F)

"Discovering our shared value has helped motivate me at work. ... Putting my thoughts into words has made me realize that I need to work with strong conviction." (ID: G)

These cases demonstrate that DT implementation fostered intimate knowledge through collective iterative reflection on the organization's current situation and their shared values, enabling their continual reinterpretation of their vision. These processes were accompanied by increased motivation and observable improvements in how employees engaged in their everyday work.

Investing the Self into the Target

In Company D, DT implementation led to the emergence of playful and participatory practices designed to internalize the organizational vision. Specifically, team-based quizzes centered on the company's vision and philosophy encouraged employees to collectively recall and discuss the organizational values. Through repeated engagement, these values were internalized in their daily work, leading to more proactive involvement with users and on-site problem solving.

"We organized a quiz competition centered on things like our company logo and mission statement, and teams worked together to answer the quizzes. ... By repeating such activities, our vision becomes like a catchphrase — something that's simply taken for granted." (ID: H)

"Previously, our sales approach was largely limited to simply taking orders. But now, guided by our internalized vision, many of us visit clients on-site and focus on identifying latent needs. ... A sense of ownership is taking root, with each of us feeling that we are building our own company." (ID: H)

Through DT practices, Company B encouraged employees to embody their organizational vision even in external settings. Management created opportunities for employees to participate in external events, where they publicly presented their work and engaged with new audiences. Although this was initially perceived as a significant challenge, such experiences fostered employees' willingness to take initiative beyond assigned roles.

"We provided an opportunity for our employees to step out of their usual routine and share what we do directly with customers. ... I've received positive feedback from our employees, and I'm sure that, by repeating such experiences, their psychological barriers will gradually decrease." (ID: C)

"Meeting lots of new customers was incredibly inspiring, and it was a great experience to help more people learn about our products. I believe we need to engage more external stakeholders and actively seek out information ourselves." (ID: D)



These examples indicate that DT implementation enabled employees' self-investment through active involvement that extended from internal practices to external engagements. Through these practices, the organizational vision became internalized and embodied in employees' daily work.

Discussion

Building on the results, DT implementation established mechanisms that facilitated multiple routes of PO formation by enabling employees to simultaneously engage in practices that fostered control, intimate knowledge, and self-investment (**Figure 3**). Specifically, collective problem framing created conditions for employees to exercise control by enabling participatory and vision-driven decision-making, which contrasts with prior research that primarily focuses on providing structural conditions for control (e.g., Mayhew *et al.*, 2007; Han *et al.*, 2010). At the same time, collective iterative reflection on the organization and vision enabled not only deeper understanding of the target but also its continual redefinition, extending prior discussions focused merely on accumulating knowledge about a target (e.g., Pierce *et al.*, 2001; Zhang *et al.*, 2021). Moreover, through both internal and external engagements that embodied the organizational vision, employees increasingly invested themselves in organizational goals, highlighting a more outward-facing form of self-investment that extends beyond internally focused forms of self-investment emphasized in prior research (e.g., Pierce *et al.*, 2001; Brown *et al.*, 2014). Together, these practices create a context in which each route is activated in parallel rather than as isolated processes.

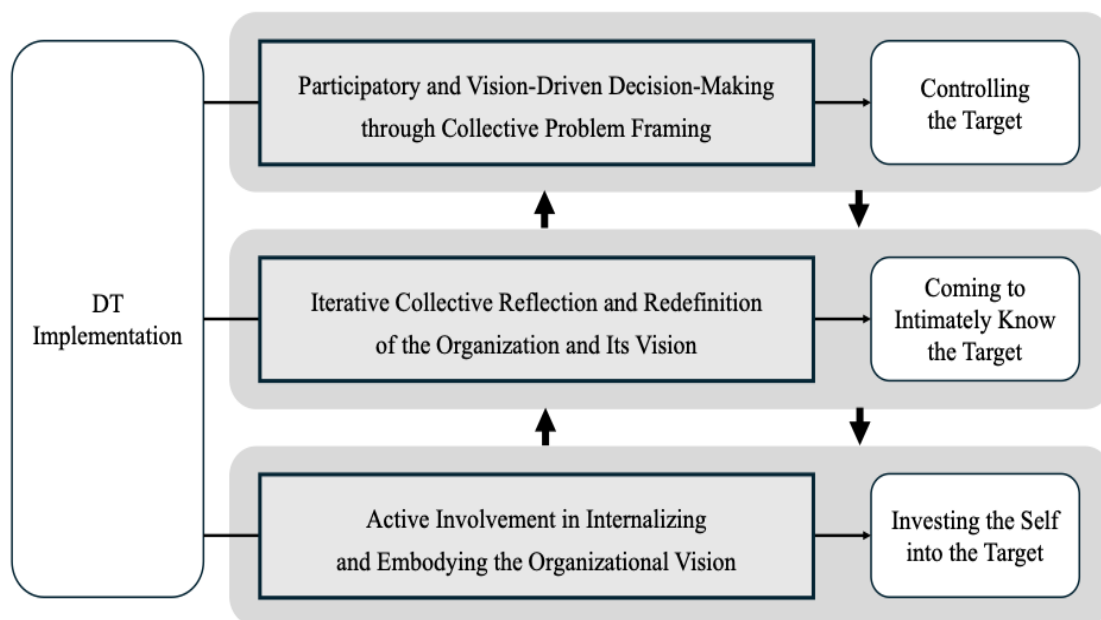


Figure 3. The Interrelated Processes of PO Formation through DT Implementation

More importantly, these processes operate in a mutually reinforcing manner. Iterative collective reflection on the organization and its vision enables the development of a shared understanding, providing a common interpretive basis for employees. This intimate knowledge, in turn, translates into self-investment, as employees actively engage in internal and external practices to embed and enact their shared vision. Through such practices, employees come to engage in collective problem framing, which enables participatory and vision-driven decision-making; and this exercise of control is legitimized by the shared understanding. Importantly, these experiences generate new insights and practical feedback, which contribute to subsequent cycles of collective reflection, leading to the ongoing reconstruction of the target itself. In this way, PO emerges and is continually reconstructed through a recursive cycle in which intimate knowledge, self-investment, and control mutually reinforce one another. These findings advance

prior research on PO by revealing the mechanisms through which the three routes form a dynamically interdependent system, which has remained insufficiently theorized in prior research (e.g., Gardner *et al.*, 2023; Juel *et al.*, 2023). Furthermore, the findings point to the emergence of a collective dimension of PO facilitated by DT practices. By emphasizing collective initiatives such as collective reflection, joint engagement, and participatory decision-making, DT implementation fosters a context in which employees come to perceive organizational targets not only as “mine” but also as “ours.” Notably, this collective orientation was reflected in interviewees’ frequent use of collective terms such as “we.” This aligns with the notion of collective PO (CPO), defined as a shared psychological state in which members of a collective perceive their target as “ours” (Pierce & Jussila, 2010). CPO develops progressively from individual PO (“mine”) toward a collective cognition (“ours”), culminating in within-group consensus over the target of ownership being collectively owned (Verkuyten, 2025; Pierce *et al.*, 2026). The findings indicate that DT practices appear to support this transition toward a shared sense of “ours,” as employees develop common understanding and engage collectively in shaping and enacting organizational goals (**Figure 4**). While this study does not directly capture the recognition of others’ psychological ties or the within-group consensus associated with CPO, it suggests that DT may function not only as a mechanism for fostering individual PO but also as a context that supports the emergence of CPO, thereby advancing existing research on the emergence of CPO (e.g., Ng & Su, 2018; Kirk & Barblett, 2022; Pierce *et al.*, 2026).

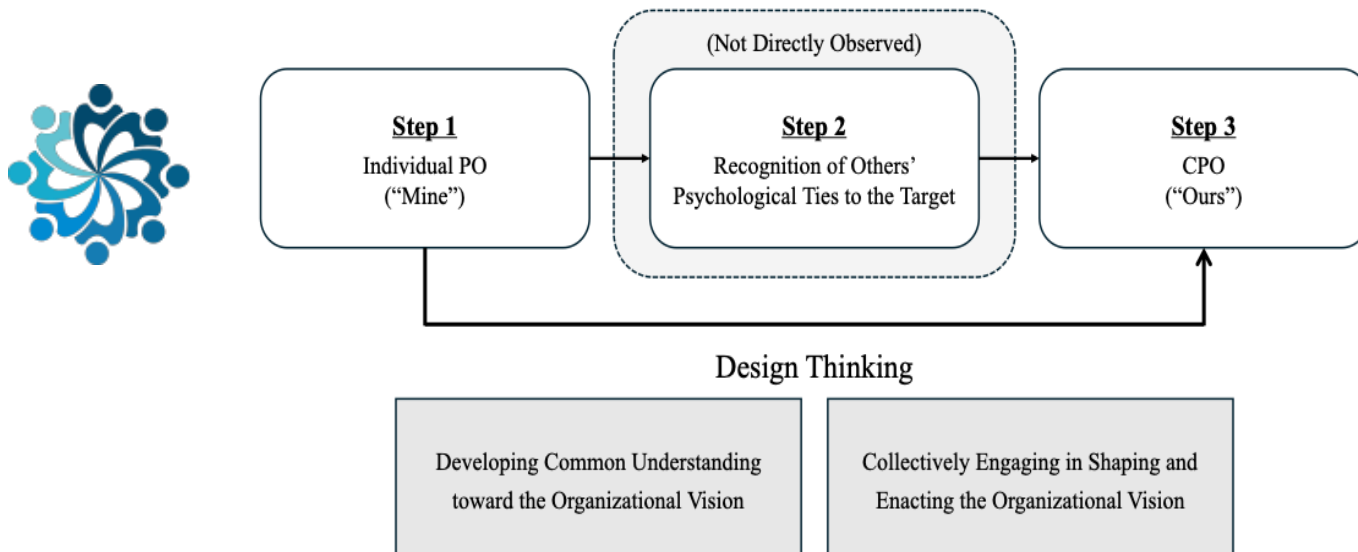


Figure 4. Potential Role of DT to CPO Formation

Conclusion

This study aimed to theorize how DT implementation in family-owned SMEs activates multiple routes of PO formation and how these routes interact in practice. The findings reveal that DT builds mechanisms through which employees simultaneously engage in activities fostering control, intimate knowledge, and self-investment. In addition, the multiple routes form a dynamically interconnected system, in which each route reinforces and enables the others. Through this recursive cycle, PO emerges and is continually renewed over time. This study also suggests that these processes may extend beyond the individual level, supporting the development of CPO among employees.

Theoretical Contribution

This study makes several theoretical contributions to the PO literature. First, this study advances understanding of how multiple routes of PO formation interact in practice. While prior research has examined organizational antecedents that influence multiple routes simultaneously (Brown *et al.*, 2014; Gardner *et al.*, 2023; Juel *et al.*, 2023),

limited attention has been paid to how these routes interact. Addressing this gap, the findings suggest that DT contributes to the formation of a system in which control, intimate knowledge, and self-investment are jointly activated and mutually reinforcing. Within this system, each route assumes a distinct role while remaining closely intertwined with the others. These results provide an explicit account of the recursive processes through which PO emerges and is continually reconstructed.

Second, this study shifts the focus from explaining how control is facilitated to how it comes into being in practice. Existing studies have mainly focused on how control can be facilitated through organizational conditions, such as autonomy and participation in decision-making (e.g., Mayhew *et al.*, 2007; Han *et al.*, 2010). By contrast, this study shows that control emerges within organizational processes, as employees jointly define organizational challenges through collective problem framing. Thus, control is better understood as something that emerges through organizational processes rather than being provided by structural conditions.

Third, this study extends the scope of the intimate knowledge route beyond knowledge acquisition to include the continual redefinition of the target. Prior research has primarily emphasized the acquisition of more knowledge about the target, highlighting factors such as information accessibility and long tenure (e.g., Pierce *et al.*, 2001; Zhang *et al.*, 2021). The findings demonstrate that intimate knowledge is cultivated through iterative collective reflection, which involves both accumulating knowledge about the target and continually redefining it. In this sense, intimate knowledge depends not only on access to information but also on ongoing processes that reshape the meaning of the target.

Fourth, this study highlights a more outward-facing form of self-investment that goes beyond internally focused engagement. Prior studies have typically conceptualized self-investment in terms of individuals' involvement within organizational roles and internal activities (e.g., Pierce *et al.*, 2001; Brown *et al.*, 2014). This study reveals that self-investment also manifests through outward-oriented actions, such as actively enacting the organizational vision beyond organizational boundaries. The findings reconceptualize self-investment as a process that spans both internal engagement and outward-facing actions.

Beyond these contributions, this study offers preliminary insights into the literature on CPO. Existing research has examined various antecedents of CPO, including work-related conditions and leadership structures (e.g., Ng & Su, 2018; Kirk & Barblett, 2022; Pierce *et al.*, 2026). This study suggests that DT may represent a novel antecedent of CPO, as it facilitates the development of a shared sense of “ours” through collective engagement in defining and enacting organizational goals.

Practical Contribution

This study provides important practical implications for managers in family-owned SMEs seeking to cultivate employees' PO. The findings indicate that DT offers a structured context in which employees develop PO through interconnected practices that simultaneously foster control, intimate knowledge, and self-investment. Specifically, managers should design work practices that integrate collective reflection, participatory decision-making, and opportunities for employees to actively engage in enacting organizational goals. Importantly, managers should also recognize that PO develops through an ongoing and iterative process. By embedding such practices into everyday work, managers can support the development and continual reconstruction of PO over time, thereby enhancing employees' commitment and facilitating ongoing organizational change.

Limitations and Dimensions for Future Research

While this study reveals that PO is continually reconstructed through a recursive cycle in which the three routes mutually reinforce one another, it does not fully capture how these dynamics unfold over time. Therefore, future research should adopt a longitudinal perspective to examine how PO evolves through this recursive cycle.

Furthermore, although the findings suggest that DT may function as a context that supports the emergence of CPO, the mechanisms underlying this emergence remain partially understood. Thus, future studies should explicitly investigate the role of DT in the emergence of CPO by adopting a collective-level theoretical lens (e.g., Pierce & Jussila, 2010).



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Conflict of Interest: None

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Ethics Statement: Participation in this study was voluntary. All participants were informed about the purpose of the study and provided informed consent prior to participation. Confidentiality and anonymity were maintained throughout the research process.

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