Conditions of project knowledge transfer events: A qualitative exploration of configurations

International Journal of Managing Projects in Business

Conditions of project knowledge transfer events: a qualitative exploration of configurations

Cornelis Cristo van Waveren
Department of Engineering and Technology Management, Faculty of Engineering Built Environment and IT, University of Pretoria, Pretoria, South Africa
Leon Oerlemans
Department of Organization Studies, Tilburg School of Social and Behavioral Sciences, Tilburg University, Tilburg, The Netherlands and Department of Engineering and Technology Management, Faculty of Engineering Built Environment and IT, University of Pretoria, Pretoria, South Africa, and
Marthinus W. Pretorius
Department of Engineering and Technology Management, Faculty of Engineering Built Environment and IT, University of Pretoria, Pretoria, South Africa

Received 19 February 2025
Revised 7 July 2025
10 October 2025
13 October 2025
Accepted 13 October 2025

Abstract

Purpose – Transferring project knowledge is challenging due to the temporary nature and the intense focus on deliverables and milestones. Existing transfer models often overlook the various conditions for project knowledge transfer and the configurations of conditions that shape these transfer events. This exploratory study seeks to deepen understanding of these conditions and their configurations. To achieve this, we address the following research questions: which conditions influence project knowledge transfer and which configurations of conditions can be observed in project knowledge transfer events?

Design/methodology/approach – A literature review revealed a lack of systematic theoretical and empirical knowledge regarding specific conditions and configurations that affect project knowledge transfer events. To address this gap, 20 project knowledge-sharing events were examined using an exploratory, qualitative research design.

Findings – A range of conditions for project knowledge transfer could be identified, which were grouped into three clusters: characteristics of the relationship between the actors involved in project knowledge transfer, tools and techniques and facilitators such as co-location. By applying the principle of equifinality, three configurations of conditions emerged: a formalistic, authoritative and interactive configuration of conditions of knowledge transfer events.

Originality/value – This paper contributes to advancing a configurational approach to project-related knowledge transfer. Such a holistic perspective helps researchers and practitioners understand how different elements interact to produce outcomes. It is particularly valuable in complex, real-world contexts, such as project-based knowledge transfer.

Keywords Projects, Project knowledge transfer, Conditions, Configurations of conditions

Paper type Research article

1. Introduction

Consider the following scenario. An IT project team is rolling out new software. The senior developer possesses tacit knowledge about debugging under time pressure and pattern recognition, gained through years of experience and intuition. To transfer this knowledge to a junior colleague who will be working on a subsequent project, she can either write instructions or have the junior sit with her during live debugging. In the latter case, she verbalizes her

International Journal of Managing Projects in Business

e-ISSN: 1753-8386
p-ISSN: 1753-8378
DOI 10.1108/IJMPB-02-2025-0057

thought process and highlights subtle cues and patterns, enabling the junior to truly benefit from the knowledge.

This simple example tells the story of this study in a nutshell. First, the junior developer must receive the knowledge in a form that can be accepted and used. Second, to enable acceptance, the transfer of this knowledge type is *conditional* on the usage of a communication mode that eases the flow between senior and junior, in this example, social (face-to-face) learning (Sense, 2011). A close relationship between the two colleagues would further smooth the knowledge transfer event. It also demonstrates that knowledge transfer events are influenced by a specific set of conditions (here, co-location and a high-trust relationship). We will label these *configurations of conditions* and argue that different configurations of conditions can lead to the same outcome. A condition is generally defined as a factor that enables, constrains, or limits the operation of relationships proposed. It helps explain when, where, and under what circumstances the relationship between concepts holds (Wu and Zumbo, 2008).

The example illustrates that the project organizational form is fertile ground for innovation and learning due to the unique nature of its tasks, which require diverse innovative activities (Hobday, 2000; Eikelenboom and van Marrewijk, 2024). However, these forms are less effective when it comes to coordinating resources and capabilities across projects, handling routine production activities, or achieving economies of scale. As a result, knowledge transfer to and learning in other organizational units often suffer.

This transfer problem and its possible solutions caught the attention of scholars in the fields of organizational learning (Scarbrough *et al.*, 2004), knowledge management (Prieto *et al.*, 2009), project management (Bakker *et al.*, 2011; Ayat *et al.*, 2022) and temporary organizations (Sydow and Windeler, 2020). Recent reviews on the topic (van Wijk *et al.*, 2008; Røvik, 2016; Rivera, 2022) reveal that these studies predominantly adopt a sender-receiver or communication knowledge transfer model in tandem with an additive modeling approach. Examples are studies by Ajmal and Koskinen (2008) (dimensions of organizational culture impacting transfer success), Zhao *et al.* (2015) (project task characteristics, project governance, project team capabilities influencing knowledge transfer success), Ren *et al.* (2018) (project similarity, project urgency, and communication influencing transfer success), or (Zhou *et al.*, 2022) (project to project-based organization knowledge transfer).

While the combination of the sender–receiver communication model and an additive modeling approach provides a parsimonious framework for examining knowledge transfer, it is ultimately ill-suited for capturing the complexities of the knowledge transfer in a project context. By reducing knowledge transfer to the sum of independent factors, this combination obscures the interactive, iterative, and socially embedded dynamics that underpin project knowledge transfer, particularly in contexts involving the transfer of tacit or experiential knowledge, as was illustrated in the example. The linear, one-way assumptions of the sender–receiver model neglect feedback, co-construction, and relational processes, while the additive logic implies that changes in isolated variables straightforwardly enhance outcomes. Such oversimplification not only risks producing misleading conclusions but also reinforces an overly mechanistic view of knowledge transfer that underestimates its conditional and complex character. Consequently, reliance on this tandem may hinder theoretical understanding by preferring analytical convenience over explanatory richness and complexity.

To do more justice to the conditional and complex nature of project knowledge transfer, this study takes two important steps. First, we redefine the sender-receiver model and go beyond the tacit/codified knowledge dichotomy by introducing a more fine-grained conceptualization of knowledge. Furthermore, we replace the knowledge transfer success variable, which is dominant in the knowledge transfer literature, with the acceptance of transferred knowledge. The former concept assumes a static and sender-focused conception of transfer, whereas the latter better captures the dynamic, context-dependent, and recipient-centered nature of knowledge in project settings. This reformulation brings the first contribution of this study.

As a second step, this study adopts a configurational approach by first identifying conditions shaping project knowledge transfer and, secondly, examining which configurations of conditions promote project knowledge transfer and lead to the same outcome (i.e. knowledge acceptance). A configurational perspective maintains that "organizations are best understood as clusters of interconnected structures and practices, rather than as modular or loosely coupled entities whose components can be understood in isolation" (Fiss, 2007, p. 1180). This approach enables researchers to understand how diverse conditions combine to support or hinder the generation of an outcome. It is especially valuable in complex, real-world settings, such as project knowledge transfer. Recent project studies on conditions of knowledge transfer recognize the importance of such configurations. Excellent, but rare examples are the studies by (Bakker *et al.*, 2011; Bacon *et al.*, 2019; Zhou and Deng, 2025).

The configurational approach adopted in this study is also inspired by practice-based theoretical perspectives [1] on organizational learning (Gherardi *et al.*, 1998; Cook and Brown, 1999). This perspective maintains that organizational learning is better understood if different knowledge types (e.g. explicit, tacit) at different levels of analysis (e.g. individual, project, organization) are treated as relevant aspects of knowledge and knowing. Additionally, the practice-based perspective emphasizes that learning is not a separate, formalized activity, but is ingrained in mundane organizational experiences. This learning is not an individual activity but is embedded in social interaction between organizational actors.

Since there is little systematic knowledge about which *configurations of conditions* are used in projects and by their members to influence project knowledge transfer, this exploratory study aims to find and increase our insight and understanding of which conditions can be identified and which form configurations. Empirically identifying the constituent parts of and, analyzing observed configurations of conditions is the second and most important contribution of this study. To accomplish this research aim, we answer the following research questions: (1) Which conditions influence project knowledge transfer, and (2) which configurations of conditions can be observed in project knowledge transfer events?

The remainder of this paper is organized as follows. The next section presents the theoretical background, where the main elements of knowledge transfer in project-oriented environments are defined and discussed. These include the nature of project knowledge transfer events, the characteristics of the knowledge being transferred and accepted, the conditions under which transfer occurs, and the possible configurations of these factors. Given the exploratory nature of this study, we do not propose specific theoretical expectations regarding these configurations. The subsequent section details the research methodology, followed by the section presenting the empirical results, identifying conditions, and analyzing three observed configurations of conditions. Lastly, the conclusions and implications of the study are discussed.

2. Theoretical background

2.1 Project knowledge transfer events

Organizational Learning and Knowledge Management literature commonly define knowledge transfer as "the process through which one unit (e.g. group, department, or division) is affected by the experience of another." (Argote and Ingram, 2000, p. 151). It involves transferring knowledge and experience gained in one organizational context to another context where it can be effectively utilized. This process aims to ensure that valuable information and skills are not lost or remain confined to a single individual or project, but instead, are shared, stored, and applied more widely for the benefit of or across the organizational unit. Knowledge transfer is, therefore, a subprocess of organizational learning (Argote, 2024).

Essentially, knowledge transfer is a communication process in which a sender sends a message to a recipient. The transferred knowledge (the message) can take different forms, levels of detail, and types of content, although most studies use the distinction between tacit and codified knowledge (Prencipe and Tell, 2001). It reaches a recipient in whom or through whom a change takes place.

For both theoretical and methodological reasons (the latter will be discussed in Section 3.1), this study adopts a knowledge transfer event lens rather than a process lens (Peterson, 1998). A knowledge transfer process can be understood as an ongoing sequence of activities and interactions that unfold over time. Such processes often lack clear boundaries and are typically iterative or cyclical in nature. They involve a chain of interactions, including sharing, interpreting, adapting, applying, and providing feedback, that extends beyond the initial delivery until the knowledge is absorbed and embedded in practice. The emergence of effects often takes time. A project knowledge transfer event is a discrete occurrence in time and space, with a clear start and end. It is bounded and, often, one-off. It is, therefore, considered to be done at the moment of delivery. Consequently, an event is more visible.

2.2 Acceptance of the transferred knowledge

Once knowledge has been communicated, it is received and processed by the recipient. The literature has defined this outcome in various ways, with knowledge transfer success being the most commonly cited measure (Müller and Jugdev, 2012; Albert *et al*., 2017). This concept manifests in different forms. Cummings and Teng (2003) described four different approaches to the success of knowledge transfer. At the most basic level, it is described as the number of knowledge transfers within a certain period. A second project management approach defines successful transfer as one that is completed on time, within budget, and satisfying the recipient. A third definition, common in technology and innovation management literature, relates to how much the knowledge is re-created in the recipient, such as through new product designs, and the fourth approach, inspired by institutional theory, considers the internalization of knowledge by the recipient. Recently, scholars (Tumpa *et al*., 2025) have broadened the concept by pointing at the social value and outcomes of projects, referring to the societal impact (e.g. public health, well-being) of projects.

Most definitions of knowledge transfer success are problematic due to theoretical, measurement, and internal validity issues (Lundmark *et al*., 2023). For example, the actual use of transferred knowledge and the added value it provides to recipients (such as a new design) are influenced by many other factors that may not be related to knowledge transfer itself, such as resource availability, organizational policies, procedures, and time constraints. Moreover, the process of knowledge transfer is rarely immediate; time often elapses between receiving knowledge, accepting and applying it, and finally witnessing its tangible effects on project and organizational outcome (Argote *et al*., 2022). Therefore, it is difficult to argue that knowledge transfer success can be directly and causally attributed to the knowledge transferred. To avoid these theoretical, measurement, and internal validity issues, we refrain from using the success concept and suggest that the initial acceptance of transferred knowledge by a recipient is a relevant concept, as it represents the initial step in the process that leads to project knowledge transfer outcomes in project-oriented environments.

Knowledge acceptance occurs when the recipient perceives the knowledge acquired as both valuable and easy to use. This concept is inspired by the Technology Acceptance Model, commonly applied in the field of information systems (Davis, 1985). Perceived value relates to the uniqueness of the knowledge (Han *et al*., 2016), its relevance to the current situation (Ford and Staples, 2006), and the comprehensiveness of the content and context (Zahra *et al*., 2000). To further boost perceived value, the knowledge should help project managers and team members to make relevant technical and management decisions, and it should come from a credible or knowledgeable source. Perceived ease of use pertains to how understandable the knowledge is expected to be, how quickly it can be transferred, and understood (Zahra *et al*., 2000), and the resource costs involved in the transfer (Hansen *et al*., 2005). A similar approach is seen in a study by Weidner *et al*. (2023).

2.3 Knowledge features: characteristics of knowledge transferred

Scholars have indicated that the characteristics of the knowledge transferred can influence how it is transferred and its outcomes (Bacon *et al*., 2019). The most commonly used

knowledge characteristic is Polanyi's distinction between tacit and codified knowledge, which later informed Nonaka and Takeuchi's SECI Model (Nonaka and Takeuchi, 1995). The main differences relate to their nature, accessibility, and transferability. Tacit knowledge is personal, experiential, and often hard to communicate, whereas codified knowledge is formalized, documented, and more easily transferred through written or structured formats.

Although this distinction is useful in a knowledge transfer context, it treats knowledge as a dichotomous concept. Van Waveren *et al.* (2014) argue that a more fine-grained conceptualization might be helpful. They maintain, for instance, that knowledge pertinent to projects can be grouped into *knowledge objects*, describing the subject matter of the related knowledge: business, technological, and project management knowledge.

Business knowledge provides an understanding of the business environment in which the project operates and includes knowledge of customers, suppliers, and competitors (Karlsen and Gottschalk, 2003). It assists in aligning the project to the benefit of the performing organization as well as the customer of the project, and can lead to innovation by recognizing, creating, and exploiting business opportunities (Bartsch *et al*., 2013).

Technological knowledge is the scientific knowledge that relates to the underlying product or service that the project produces (Di Maio, 2013). It includes details about the project scope, requirements, lessons learned, technical details, and product or service development (Gomes *et al*., 2018).

Project management knowledge is the knowledge about project management tools and methods used to execute and manage the organization's project management processes, project milestones, schedules, and progress (Bartsch *et al*., 2013). It also concerns knowing how to run a project and the ability to integrate different concepts, activities, capabilities, and products in a multi-disciplinary way (van Donk and Riezebos, 2005).

Within the three main knowledge types, different sub-categories exist, which relate to the content and context of the knowledge transferred (Makani and Marche, 2010). These are declarative, causal, and procedural knowledge.

Another important aspect is timing. For example, the work breakdown structure (WBS) is only needed after the project scope and initial deliverables are defined, and it must be updated as soon as the deliverable specifications are finalized. Knowledge about proper timing includes dates for creating, updating, editing, and using knowledge, as well as when such knowledge becomes obsolete and can be deleted (Di Maio, 2013). It also connects knowledge experts with the right timing for providing that knowledge (Makani and Marche, 2010). Timing knowledge, therefore, involves understanding when to create, update, edit, transfer, and apply relevant knowledge objects.

The project knowledge transfer is also affected by the *distance* knowledge has to travel in terms of the extent to which the knowledge crosses organizational boundaries. We label this knowledge reach, which also includes the number of people affected by the knowledge. It is important to note that all these main and sub-categories take the form of either tacit and/or explicit knowledge.

2.4 Conditions of project knowledge transfer and their configurations

The introduction of this paper presented the concept of *configurations of conditions*. This section provides a more detailed discussion of the concept and its constituent components.

2.4.1 Conditions of project knowledge transfer. Project knowledge transfers can be supported or hindered by a range of factors, like frequent (in)formal interactions, social networks, tool use, cultural differences, or trust. We label these factors conditions. In social science theories, conditions refer to specific circumstances, assumptions, or factors that influence how or when a theory applies. They define the scope, boundaries, or triggering criteria for a theoretical relationship to hold. The literature (Busse *et al*., 2017) distinguishes, for example, causal, boundary, and moderating conditions. This study uses the basic idea of the latter type of condition, which refers to a condition that affects the strength or direction of a relationship described in a theory.

It is unlikely that every condition has the same impact on project knowledge transfer. Specifying in which directions different conditions affect project knowledge transfer can, therefore, be helpful. For this purpose, Howell *et al.* (1986) developed useful distinctions. They propose a typology that categorizes conditions according to the effects they produce.. The first category is labeled *enhancers*. It concerns conditions that elevate the relationship between, in our study, knowledge features and knowledge acceptance in project knowledge transfer. An example would be a high level of trust between actors, which eases the willingness of a sender to share relevant knowledge. The second category is *neutralizers*. It concerns conditions that weaken the relationship just mentioned. For instance, the geographical location of the sender and recipient can have this effect, as larger geographical distances complicate knowledge transfer. Enhancers and neutralizers are two sides (positive/negative) of the same coin, and it is important to note that enhancers and neutralizers do not meaningfully affect the dependent variable, i.e. knowledge acceptance. Howell *et al.* (1986, p. 88) distinguished a third category: "substitutes". A condition is a substitute if it makes the effect of an independent variable on a dependent variable impossible and/or unnecessary. A requirement is that the substitute must meaningfully influence the dependent variable, with increases in the substitute leading to increases in the dependent variable's value. In our context, a substitute would replace the independent variable *knowledge characteristics*, which would be impossible because only knowledge that is transferred can be accepted, so the model cannot do without it.

2.4.2 Configurations of conditions. Informed by Van Wijk *et al.* (2008) meta-analytical study on organizational knowledge transfer, two relevant observations can be made. First, with a few exceptions (Bakker *et al.*, 2011; Hartmann and Dorée, 2015; Bacon *et al.*, 2019; Zhou and Deng, 2025), studies predominantly focus on the effects of a single condition, underestimating the fact that, in practice, project knowledge transfer is influenced by specific configurations of conditions. For example, transferring tacit knowledge using an online expert system is probably a less productive combination. In summary, there is a lack of systematic insight into the configurations of conditions that influence project knowledge transfer.

A configuration is commonly defined as "any multidimensional constellation of conceptually distinct characteristics that commonly occur together." (Meyer *et al.*, 1993, p. 1175). Configurations may be represented in typologies that are developed conceptually or derived empirically (taxonomy) and can be situated at multiple levels of analysis (Oerlemans and Knoben, 2010). They represent a holistic perspective, where the system can only be understood by examining the interaction of its parts as a whole, rather than in isolation. It is this interaction that gives rise to specific outcomes.

The configurational approach in organization studies was a reaction to the limitations of linear, variable-centered, additive analyses that dominated early research. Drawing on systems and contingency theory, this approach emerged in the 1970 and 1980s, as scholars began to recognize that organizations are complex entities that cannot be fully understood by analyzing isolated elements, such as structure, strategy, or leadership. Instead, the configurational perspective emphasizes that organizational outcomes result from the synergistic alignment, or *fit*, among multiple interconnected internal and external elements. Jay Galbraith's star model (Galbraith, 1977), Chandler's structure-follows-strategy thesis, and especially Miles and Snow's typology of organizational strategies, exemplify early influential contributions to this line of thinking at the organizational level (Miles and Snow, 1978).

Over time, the configurational approach [2] matured by integrating insights from multiple theoretical domains, including institutional, resource-based, and strategic management theory. Furthermore, configurational thinking has diffused in several management fields. Illustrative examples are the adoption of management practices (White *et al.*, 2021), digital innovation (Cheng and Wang, 2022), strategic management (Howell *et al.*, 2022), public management (Lazzarini *et al.*, 2020), human resource management (Tasoulis *et al.*, 2024), or project management (He *et al.*, 2025).

A central tenet of the configurational approach is equifinality, "which refers to a situation where a system can reach the same final state, from different initial conditions and by a variety

of different paths" (Fiss, 2007, p. 1181). This notion challenges the "one-best-way" assumptions of earlier organizational theories. It enables a more nuanced, context-sensitive understanding of organizational forms and their activities. Configurations are not merely additive collections of individual traits; rather, they function as synergistic systems in which the whole is greater than the sum of its parts.

3. Research methodology

The theoretical background indicates a lack of systematic understanding of the conditions and their specific configurations that affect project knowledge transfer. This informs the application of an exploratory research design in which qualitative data are collected [3].

3.1 Unit of analysis: project knowledge transfer events

In a previous section it was noted that an event lens was adopted instead of a process lens. The units of analysis in this study are, therefore, project knowledge transfer events. While theoretical arguments support this choice, there are also methodological reasons. Viewing knowledge transfer as a process entails examining a sequence of activities and interactions that unfold over time. Methodologically and ideally, this requires a longitudinal research design to capture such dynamics. This is a desirable but difficult approach to implement in practice. By contrast, a project knowledge transfer event can be defined as a structured activity designed to facilitate the transfer of information, insights, expertise, and experiences between individuals or project teams within or across organizations, communities, or industries in project-oriented environments. The primary goal of a knowledge-transfer event is to disseminate potentially valuable knowledge and promote collaborative learning among actors. It is a discrete occurrence in time and space, with a clearer start and end. It is bounded and often one-off. From a methodological and comparative viewpoint, such events are easier to observe and demarcate.

The events were part of projects that were executed in engineering, construction, and information technology sectors. They took place in new business, operational improvement, maintenance, and statutory projects. An initial analysis of the collected data showed that project type neither influenced the transfer of specific knowledge features nor affected the selection and use of particular knowledge transfer mechanisms. Most events consisted of knowledge transfer between projects within the same organization, although some inter-organizational knowledge transfers were also included. A total of twenty project knowledge-transfer events were captured (see Table 1). Eleven events had a positive outcome (high knowledge acceptance) while nine events had a negative outcome (low acceptance). The duration of the events varied, ranging from several days or weeks to, in some cases, several months. Many of the transfer events also included multiple interactions using a variety of knowledge features and transfer mechanisms. It is important to note that the specific knowledge transfer event objective did not change; therefore, all interactions are related to the same objective, as Table 1 indicates.

3.2 Data collection

Data were collected via interviews. Respondents were selected by applying convenience sampling using the authors' professional networks. This non-probability sampling technique is used because it is easy to implement, cost-effective, often has high response rates, and is especially appropriate for exploratory research, as it helps researchers to gather preliminary insights before conducting large N studies. The latter advantage is important to this research. The technique also has downsides. The most important ones are a lack of generalizability, a high risk of sampling bias, and difficulty in reproducibility.

Interviewees were selected based on sufficient experience in technical, engineering, and IT-related projects, ensuring their ability to provide relevant insights. In exploratory qualitative

Table 1. Project knowledge transfer events

Event code[1]	Knowledge-sharing event	Boundary	Project category
E1R1N	Implementation of an Agile method	Intra	Improvement
E2R1P	Training on an Agile method (Scrum)	Intra	Improvement
E3R2P	System testing, standard, and test case information	Intra	New Business
E4R2N	Knowledge transfer from retiring person to younger employee	Intra	Maintenance
E5R3P	Design scoping for a new open-pit mine and infrastructure	Inter	New Business
E6R3N	Transfer of project scoping information	Intra	New Business
E7R4P	Incident investigation, recommendations, and re-design	Inter	Statutory
E8R4N	Understanding of design information and specifications	Inter	New Business
E9R5P	Pre-feasibility study for a new mine	Inter	New Business
E10R5P	RCA to improve blasting pattern	Intra	Improvement
E11R6P	Knowledge retention from a retired person	Intra	Maintenance
E12R6N	Capturing of lessons learned	Intra	Improvement
E13R7P	Technical and business concept evaluation for mine expansion	Intra	New Business
E14R7N	Project portfolio classification	Intra	Improvement
E15R8P	Technology transfer of Hybrid solar systems	Inter	New Business
E16R8N	System design and integration of a solar plant	Inter	New Business
E17R9N	Implementation of a capital excellence program	Intra	Improvement
E18R9P	Integration of an acquired business unit	Inter	New Business
E19R10 N	Implementation of new regulations	Intra	Statutory
E20R10P	Off-shore transfer of a client onboarding system	Inter	Improvement

Note(s): Event Code = Sharing Event No (E1-E20), Respondent No (R1-R10), Sharing Event Outcome (P/N). E.g. E5R3P

Source(s): Authors' own work

research, the acceptable sample size is generally small because the goal is depth over breadth, and to gain a rich, contextual understanding rather than generalize findings to a population. To determine the sample size, we followed Creswell (2007) and Guest *et al*. (2006), who suggested sizes ranging from 5–25 participants for this type of research. Ten participants were identified who had sufficient knowledge and experience in both positive and negative knowledge transfer events within project-oriented environments. Although a specific number of years of experience was not a requirement, a minimum of 5 years of working experience, of which half must be in project-based environments, was set as a guideline for this research. The respective respondents, their work and project experience, as well as their current job descriptions, are detailed in Table 2.

All respondents have been involved in project knowledge transfer events. They had experience with projects conducted inside and outside South Africa. An information document was compiled and sent to each interviewee a few days before the planned interview to assist in identifying suitable transfer events and to explain particular concepts and definitions important to the study and the interview. Interviewees were asked to describe knowledge transfer events that led to both successful and unsuccessful knowledge acceptance, as perceived by the knowledge recipients. At the start of each interview, the information document was briefly reviewed before moving on to the main and follow-up questions. Each interview was recorded and lasted about one hour, after which the interview recordings were transcribed and prepared for data analysis.

3.3 Interview questions

Two main open interview questions were formulated, followed by various possible follow-up prompt questions to assist the interviewer in staying on track, while at the same time allowing for any unexpected response to emerge as typically found in semi-structured interview approaches. These two main questions were:

Table 2. Respondent experience and job description

Respondent	Years working experience	Years project experience	Current job description
R1	20	15	Software Development Manager
R2	32	17	Principle Engineer
R3	25	20	Program Director
R4	35	30	Business Unit Manager
R5	36	10	Principal Mining Engineer
R6	20	8	Lead Estimator Projects
R7	7	5	Project Manager
R8	16	16	Project Manager
R9	33	15	Group Manager
R10	7	3	Client Manager/Client Lead

Source(s): Authors' own work

(1) Please tell me about a knowledge transfer event on one of your (more recent) projects where you felt that the knowledge that was transferred was accepted or welcomed because you or the receiving project member(s) felt that the knowledge had value or was easy to use.

(2) Please tell me about a knowledge transfer event on one of your (more recent) projects where you felt that the knowledge that was transferred was not generally accepted or welcomed because you or the receiving project member(s) felt that the knowledge had little or no value or was not easy to use.

Follow-up questions were asked about additional items related to knowledge features and transfer conditions.

3.4 Data preparation, coding, and analysis

Transcribed text files were imported into ATLAS.ti, a computer-assisted qualitative data analysis software application. The transcriptions were thereafter coded using various coding techniques, such as structural-, descriptive-, initial-, magnitude-, and in vivo coding techniques (Saldaña, 2013). Table 3 provides descriptions of the main code themes or code families applicable to this study.

Once the first round of coding was completed and following Friese's (2014) recommendations for qualitative data analysis, the codes were used to delve deeper into the data segments using the query tool in ATLAS.ti. The first round of coded segments was followed by a second round of inductive codes based on actual words or phrases (In Vivo codes) and whether knowledge acceptance increased or decreased (Magnitude coding). Next, combined occurrences of codes were examined by using the code co-occurrence tool in ATLAS.ti. It must be noted that the qualitative data relating to knowledge characteristics and acceptance were (deductively) coded using the dimensions as introduced in the theoretical background section. Put differently, abductive coding was applied (Gupta, 2024) which are indicated in the first two rows of Table 3. In the next section, the focus is on finding and systematically categorizing conditions. The findings are presented and discussed in a 2-step fashion. First, the data allowed for the identification of three coherent clusters of conditions of project knowledge transfer. Second, it turned out that it was possible to establish specific configurations in which knowledge characteristics and clustered conditions are combined.

To minimize researcher bias, all text fragments that were used to illustrate emerging conditions of project knowledge transfer were independently assessed for validity by multiple

Table 3. Code family descriptions

Code family	Code description
Knowledge features	Features and characteristics of the knowledge that was transferred and included codes on the knowledge object, the tacitness vs. explicitness of the knowledge, where the knowledge was embedded as well as the content, context, and urgency of the knowledge
Knowledge acceptance feature and rating	Knowledge acceptance and whether the uniqueness of the knowledge, its usefulness, comprehensiveness, usability, speed of transfer, and economics of transfer were perceived as high or low
Knowledge mechanism identified	Codes related to the knowledge transfer mechanisms that were identified and used as part of the knowledge-sharing events
Knowledge mechanism uses	How the knowledge transfer mechanisms were used, e.g. in combination with each other, properly structured, lacking details, or applied at a high level, etc.
Mechanism effectiveness	Effectiveness of the knowledge transfer mechanism and whether the mechanism had an increase or decrease in the knowledge distance between actors, the amount and quantity of the knowledge shared, the creation of a common value between actors, the amount of knowledge overlap, participation and collaboration, and speed
Additional factors	Factors having effects on the knowledge transfer process, e.g. the attitude and willingness to learn, commitment, accessibility, conflict, trust, etc.
Nature of Actors	Actors in the knowledge transfer process, e.g. individuals, teams, management level, location, sender vs. receiver, etc.

Source(s): Authors' own work

authors. Although researcher bias is inevitable to some extent, we acknowledge it and try to manage it to improve the trustworthiness of our qualitative data.

3.5 Epistemological and ontological positioning of the study

This study adopts a configurational approach to examine which configurations of conditions influence project knowledge transfer events.

The research is grounded in a complex realist ontology, which maintains that reality exists independently of human perception but is structured, layered, and composed of interdependent elements. It does not seek linear or universal causal relationships, but acknowledges that multiple configurations can lead to a similar outcome (equifinality) and that causality is conjunctural and asymmetric.

To answer the question of whether causality is plausible given the applied cross-sectional design, it is noted that to establish a causal relationship, three conditions must be met: (1) the presumed cause and effect are empirically associated, (2) the cause precedes the effect in time, and (3) alternative explanations for the relationship are ruled out. We maintain it is plausible because (1) respondents connect cause and effect, (2) knowledge can only be accepted after it is transferred, and (3) the probability of a spurious effect decreases due to the focus on acceptance and not on transfer success, as the former occurs earlier in time, lowering the probability that other variables interfere.

Epistemologically, the study aligns with critical realism and pragmatic inquiry. It recognizes that knowledge is context-dependent and partial, and aims to uncover the underlying causal mechanisms that shape observable patterns.

4. Results

In line with the research question**s**, the results section is divided into two parts. The first part identifies and clusters individual conditions of project knowledge transfer as they emerged from the abductive analysis. The second part analyzes several configurations of conditions impacting project knowledge transfer events all leading to knowledge acceptance.

4.1 Project knowledge transfer conditions

4.1.1 Conditions cluster I: dyadic characteristics. From the analysis, relational elements in project knowledge transfer events emerged. To capture these, the dyad concept of Social Network Analysis was used (Borgatti *et al*., 2009) to categorize them. The basic elements of any dyad are two actors, their tie, and the characteristics of both elements. The analysis of respondent statements within the knowledge transfer events led to the identification of six dyadic conditions, namely (1) commitment and motivation, (2) cultural distance, (3) cognitive distance, (4) trust, (5) access to specialized knowledge sources, and (6) the leader-follower relationship. These are discussed briefly and supported by statements by various respondents.

(1) Commitment and motivation (Actor characteristic)

The attitudes and commitment of the individuals involved constitute critical conditions for the effectiveness of project knowledge transfer and the acceptance of knowledge. Generally, higher levels of commitment from both parties enhance the extent of knowledge transfer as well as its acceptance. The subsequent statements derived from knowledge transfer events illustrate this relationship

> Precisely, the guys worked with a high focus because if we make a mistake, more people can die. So, we selected the guys because they needed to be focused and committed. (E7R4P082)[4]

> They were very committed but also had the same values. The person's father was at water affairs, he was at water affairs, and his son also. (E11R6P043)

> He did not come and ask much, and he was not much open to the knowledge transfer. He stuck to his own experience. (E4R2N118)

(2) Cultural distance (Tie characteristic)

Knowledge transfer is harder when project members lack shared beliefs, values, or cultural norms. Research indicates that cultural distance can substantially hinder the transfer of knowledge between organizational units. (Bhagat *et al*., 2002).

In this study, all transfer events that involved cultural differences occurred within international projects. These cultural differences led to communication challenges and a limited understanding of the knowledge being transferred. A few statements taken from interviewees demonstrate this.

> Because there is this perception that guys coming from Africa will be at a much lower level and that their understanding will be very low. (E15R8P075)

> Something I picked up was that the people from India always greet with an exclamation mark like "Hallo!". Within the South African context, this is not appropriate to communicate like that. (E20R10P141)

> People from Arabia, people from India, English guys, someone from Poland. Within the initial group of eight people with a lot of diversity, very few or none had a background in the South African context (of the legislation and new regulations). I think it was the way of communication that was different. (E19R10N051)

In summary, cultural differences between project participants and their different backgrounds and perceptions can hinder project knowledge transfer.

(3) Cognitive distance (Tie characteristic)

Knowledge gaps between actors (cognitive distance (Nooteboom, 2000)) can cause problematic interaction in general, and knowledge transfer in particular, as the sender may not be aware of the initial knowledge base and experiences of the receiver and would therefore not know the details of the content and context that needs to be provided at the start. This may

affect their willingness to accept the knowledge. This phenomenon is illustrated by the statements below.

> There was one of the client's representatives. He could not contribute to the technical questions posed to him, he could not answer and he regularly said that he had to go and find out from others. This did not help us much. (E9R5P058)

> It happened that the lower-level guys were not doing what they were supposed to do as specified in the standards. We recognized that our procedures were written in overly sophisticated English. These guys only have a high school qualification and they just do not understand the documents. We started to use visual 3-dimensional computer models and provided a story with it, with pictures. They started to understand and things started to run smoother. (E11R6P272)

> How can you convey 17 years of experience in three months, especially to a young (30-year-old) inexperienced person. Now we also sit with a person who was only in the military for a short period and who is a mechanical engineer, and we are mostly electronic and information systems engineers. This also caused a mismatch. (E4R2N110)

A larger cognitive distance between the sender and receiver more severely limits project knowledge transfer. Hence, it can be regarded as a neutralizer.

(4) Trust (Tie characteristic)

Trust is an important condition as it helps foster communication between parties and the willingness to share (more) knowledge (Yahiaoui *et al*., 2016; Iftikhar and Lions, 2022). The following statements illustrate that trust between participants played a key role in the knowledge transfer, particularly during workshops, meetings, and face-to-face discussions.

> Yes, we were more open to each other, so say, I have made a mistake there, but will fix it. There was no blaming culture. It opened up the communication, and even some inexperienced people from the client's side were not afraid to ask questions. We did not force anything down on to them. (E5R3P064)

> . . . and they do not want to talk because they are afraid and feel threatened, and this BEE [Black Economic Empowerment] factor plays a big role. The young people are fighting for survival compared to the past. So, they are scared of putting themselves in a position where they become obsolete and can be replaced. (E11R6P051)

> During the meeting, the vice president who was new to this mining operation wanted to bring in more of the western ways of doing and therefore wanted to start with a clean sheet. So, they used a new metallurgical company with whom he had previous ties and whom he trusted, and subcontracted them. (E9R5P030)

In summary, trust acts as an enhancer in project knowledge transfer events.

(5) Access to specialized knowledge sources (Tie characteristic)

As project knowledge becomes more specialized, it develops unique terminology understood mainly by specialists. Limited access to these specialists can restrict knowledge transfer. Identifying who holds such expertise is a prerequisite for transfer, which also depends on the expert's power, willingness to share, and the receiver's absorptive capacity. Our data showed that easy access to experts strongly facilitated knowledge acceptance. It also facilitated communication and enhanced collaboration, as illustrated below.

> This guy [retired person available for answering questions], almost physically sat in our office to help us to understand the different processes of construction so that we could get a better integration and better efficiency between the schedule and cost parameters of the project. (E11R6P007)

> Even when we missed something because we have met the people and have direct access to them, it was easy to identify who to talk to. (E15R8P023)

> I think what was important was the access to the individual experts. She had the opportunity to either directly contact me or the expert of the partnering organization and ask for help. We were readily available to assist as we both benefited from the work she was doing, and this improved our collaboration and support in providing her with the required information. (E3R2P056)

In conclusion, the availability and accessibility to specialized knowledge sources are important tie characteristics and act as enhancers.

(6) Leader-follower relationship (Tie characteristic)

Different leadership styles exist, of which transformational and transactional leadership styles are the two most common ones. In a transfer event where a transactional leadership style was applied, characterized by clear structures, rewards, and punishments to achieve performance goals, the project team responded with resistance, as members withdrew rather than actively participating and sharing their knowledge:

> He (the project manager) puts the people in the corner and said they should talk about what went wrong and why? He used a root cause analysis technique to facilitate the discussion. The guys wanted to hide away; it was intimidating! The feedback was extremely negative . . . (E1R1P099)

Later, a new project manager used a transformational leadership style, a style that inspires, motivates, and empowers followers to exceed expectations by focusing on vision, values, and personal development, which improved the performance of the team by opening up direct communication channels:

> The new director was much more transparent. He assisted in putting aside the stuff that did not work and indicated the important stuff to work on. He opened a discussion forum for questions to provide assistance where needed. We have now accomplished more. (E2R1P178-182)

The leadership style applied can, therefore, facilitate or impede project knowledge transfer. It can be an enhancer (transformational) or a neutralizer (transactional) of project knowledge transfer.

4.1.2 Conditions cluster II: Tools and techniques for project knowledge transfer. The choice of tools and techniques to transfer knowledge between organizational units is important, as some are better suited for transferring certain types of knowledge than others. From the data, it could be identified that participants have specific tool preferences but also use these tools in different combinations.

(1) Tool preferences

The data analysis showed the use of the following tools and techniques: (1) Frequent, formal or informal face-to-face discussions; (2) occasional use of databases or document repositories; (3) electronic networking systems, such as email, used for explanatory purposes; (4) computer systems and modeling tools such as building information modeling (BIM) providing digital representations of the physical and functional characteristics of a facility. Two examples are provided, indicating a tool preference that enhanced and limited knowledge transfer.

Example 1. The impact of face-to-face interaction to enhance knowledge transfer is illustrated by the following quote: "*When we first sent the documentation to them, they had many queries. We realized that these queries are going to delay the project and that we are not going to progress as expected. We immediately recommended that we fly in their project manager and two technical guys on our account so that we can all talk to them and show them where we are heading.*" (E8R4N174)

Example 2. The limited ability to translate the content during face-to-face discussions, and mainly using emails to communicate, led to low understandability of the

message by the recipient, as illustrated by the following quote: "*So, I would say 90% of his communication was via email. At first, I didn't understand why he is doing that? He would send an email, and you would struggle to even understand what he tried to say. But later it came to our attention that this guy writes in German, uses Google Translate, and then sends the email to you.*" (E19R10N051)

The examples demonstrate that the preferred tools do not always enhance knowledge transfer and that the use of a single tool will not always clarify the knowledge sufficiently.

(2) Tools and technique combinations

Tools and techniques supporting project knowledge transfer are often used in combination. Examples from the data were:

(1) On-site workshop combined with written templates: "*To make them understand better, I did a dummy case with them [discussion as part of a workshop]. If it included any client information, I wrote them some templates to follow [documentation]. Not that it was compulsory to use, but at least it provided a framework to guide them.*" (E20R10P141).

(2) Software code, documentation, and discussion (to understand and solve bugs in outsourced software): "*I think, why it worked well is that she physically had to do the work herself [learning by doing]. She had to populate the database and run the test cases to see if they worked. Every time there was an error, she had to go into the details [software and documentation] to understand why. If that was still a problem, she could go to the technical person and ask, and then the technical person could explain to her what she did wrong or whether there was a bug that still needed to be corrected [discussions].*" (E2R2P20).

(3) Site visit and documentation to detect design problems: "*Yes, we had workshops with every small group. This gave us a clearer picture of the situation. We even went to the plant and monitored the operators [site visit]. This allowed us to identify the trends. We could see where the technical problems concerning the design [documentation] were.*" (E7R4P28).

It is concluded that the combination of tools overall strengthened project knowledge transfer, as it provided multiple ways of linking different knowledge components, leading to a more comprehensive understanding.

4.1.3 Conditions cluster III: facilitators. A facilitator is a type of condition that helps the transfer run more effectively and efficiently without being a carrier of knowledge. It ensures the transfer flows smoothly and that participants collaborate productively. From the analysis of the data, three types of facilitators emerged.

(1) Frequency of engagements

A respondent (E7R4P038) described a project that related to an incident investigation where a person was fatally injured due to a technical design error and the incorrect use of equipment. Regular workshops that encouraged *high levels of interaction* were held to gain a comprehensive understanding of the situation and develop a solution through redesign. Therefore, frequent interaction serves as an important enhancer.

(2) Visuals and the use of visualization techniques

Visual representations present complex or abstract information in a format that is easier to understand and interpret. (Whyte *et al.*, 2008). They assist in improving the transfer of knowledge and could lead to an increase in the speed and quality of it.

The use of building information modeling (BIM) provided a digital and visual representation of the physical and functional characteristics of a mining facility in multiple dimensions.

> We all sat together, and what was nice was that we could all, on a large screen, see the whole three-dimensional model of the plant, indicating the total project. The project scope was modeled, step by step, as it progressed, and we could go into the detailed elements such as the overland conveyors, the silos, etc. The visual representation was very effective and much better than going through a lot of written documents. (E13R7P007)

In sum, visuals and visualization techniques support project knowledge transfer and act as enhancers.

(3) Co-location of participants

Our data revealed project knowledge transfer events showing the impact of co-location. A software engineer and a principal engineer were required to discuss their team's progress and issues. Over a period the project outcomes did not improve, and the causes could not be identified. When the interviewee was asked how they solved this problem, he replied:

> The first thing! Co-location! We brought them together. We fetched them out of that corner and moved them here. Of course, with a lot of resistance, but they became part of this floor. (E2R1P164)

Similarly, for another transfer event:

> People were brought together. The first thing we recognized was a people issue. We were not sitting with a homogeneous group. There were different nationalities, different cultures, and different time zones, and therefore 24/7 should be the way we look at the integrated business. Knowledge must be shared, and this had to be facilitated. The German needs to look the Italian in the eye and the Dutch the South African. (E18R9P080)

The co-location of people and having them work together in a coherent and integrated way will leverage the clarity, understanding, and acceptance of the transferred knowledge. This is especially the case when tacit knowledge needs to be exchanged, and where quick learning and fast transfer are required for the project. Co-location is here an enhancer of project knowledge transfer.

Figure 1 summarizes the three clusters of conditions. These conditions will be further explored in the next section to identify configurations of conditions that can support project knowledge transfer.

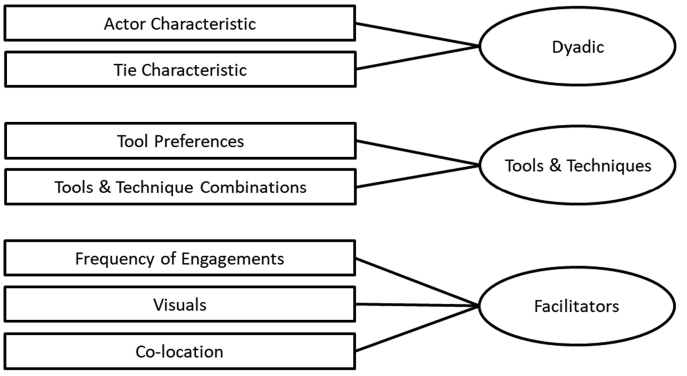

Figure 1. Three clusters of conditions. Source: Authors' own work

4.2 Configurations of conditions

Analysis of the knowledge transfer events and the three identified clusters of conditions revealed that certain conditions tend to combine in different ways. This insight motivated the researchers to conduct a deeper exploration of which specific configurations of conditions occur together.

4.2.1 Exploring configurations. The elements of the earlier identified clusters of conditions (see Section 4.1) were used to explore configurations of conditions, that is, dyadic elements, tools and techniques, and facilitators that led to a positive knowledge transfer event and knowledge acceptance. A review of the transcripts resulted in the selection of three project knowledge transfer events in which configurations of conditions were observed. The researchers extracted different respondent statements from each event to identify the use of various cluster elements and how their interactions supported and enhanced the knowledge transferred during the transfer event. The support of the knowledge transferred was judged on (1) the type of knowledge, such as technical or project management knowledge, (2) the characteristics of the knowledge shared, such as its tacitness, and (3) the specific needs or requirements of the transferred knowledge by the recipient, such as urgency or number of people involved, or the specific need for detail or background information. The analysis identified multiple configurations of conditions that led to the acceptance of transferred knowledge. The three selected transfer events and their corresponding configurations are discussed in the following sections, with appropriate labels assigned to each.

4.2.2 Observation 1: the authoritative configuration and knowledge features supported. In this project knowledge transfer event, time constraints and the knowledge gap between the sender and recipient shaped the formation of this configuration. A software application needed to be tested against a technical standard. As the person performing the task had no prior knowledge of the application and standard, it required the person to collaborate closely with technical experts to quickly grasp knowledge of the standard and the application's functionality. Informed by the knowledge characteristics distinguished in Section 2.3, it was observed that project management and technical knowledge of a procedural nature was predominantly transferred and subsequently accepted by the individual working on the project task. Furthermore, this knowledge was mainly of a tacit nature as it was embedded in experts and did not cross organizational boundaries.

Although not explicitly stated during the interview, the discussions revealed that the project manager, who was also one of the technical experts, demonstrated a supportive leadership style. Below are combined statements from the interview illustrating how specific conditions were grouped into a configuration that benefited the project, supported the urgency and content of the knowledge, and ultimately led to its acceptance by the person responsible for the work. Items in square brackets have been added for clarification.

> The reason why it [the knowledge transfer event] went well is that there was a deadline. The work had to be finished by that time; there was no time to let her play around with the software extensively [learning by doing] . . . We sat down with her and gave her hands-on training [face-to-face discussion and coaching] for a day . . . I was both the project manager [leadership role] and the technical expert [knowledge source] on the standard [document]. She had easy and direct access [allowance for frequent engagements] to myself and the other person [access to the knowledge sources] of the other company responsible for the coding of the application [multiple face-to-face and direct discussions]. To be available and providing her with the correct information quickly, was not only beneficial to her, but was also an incentive for us [commitment and motivation] and the project. (E3R2P32-64)

It can be inferred that a specific mix of different tools and techniques was used (face-to-face discussions and direct communications, coaching, documentation) together with dyadic elements such as the project manager's leadership style, easy access to the knowledge source (s), and commitment and motivation of the participants. Furthermore, the availability of the experts increased the frequency of engagements, which all supported the urgency for the knowledge as well as its clarification. The knowledge acceptance was therefore enhanced.

This configuration, depicted in Figure 2, is labeled as an authoritative configuration due to the direct access to and the importance of experts as a knowledge source.

This configuration of conditions primarily facilitates the acceptance of tacit knowledge, which is inherently rooted in experience, intuition, and practical know-how. Because tacit knowledge is difficult to articulate, its transfer depends heavily on social interaction, trust, and relational dynamics. Trust-based relationships among experts, leaders, and recipients lower resistance and foster openness to both transmitting and adopting knowledge. Direct, face-to-face interaction further enhances transfer by clarifying, contextualizing, and validating the knowledge. These relational characteristics also encourage informal, information-rich exchanges that reinforce trust. Moreover, the high level of commitment shared among actors cultivates a collective sense of purpose, thereby increasing the likelihood of integrating new knowledge into practice. Supportive leadership plays a complementary role by signaling that the exchange of project knowledge is aligned with broader organizational goals, which legitimizes and encourages participation. Collectively, these conditions reduce uncertainty regarding the relevance and value of the knowledge, enhance motivation by demonstrating organizational support, provide opportunities for clarification and demonstration, and strengthen social capital that sustains knowledge-sharing behaviors.

4.2.3 Observation 2: the formalistic configuration and supported knowledge features. Another configuration arose from an event where a large volume of technical project-scoping knowledge and information needed to be transferred from the owner company to the design firm responsible for a new mining infrastructure project, thus crossing organizational boundaries. This declarative knowledge and information served as critical input for the construction design. The primary knowledge transfer tool was (codified) documentation, supplemented by scheduled workshops held to verify, clarify, and update the content. From the combined statements of the interviewees, a distinct set of conditions emerged. Square brackets indicate the use of a condition.

> Yes, we were an experienced team [prior knowledge of participants]. At least two-thirds of the team was experienced. The project manager (of the owner company) knew her story [prior knowledge of participants] and was very particular that everything had to be done correctly and must follow the correct processes [commitment]. Everything we needed to know [documentation] to develop the design tender was made available to us [commitment]. We had a month, and during this time we went through all the documentation and the processes we needed to follow, and we had a couple of workshops [multiple face-to-face interactions and workshops to discuss documentation] to ensure we

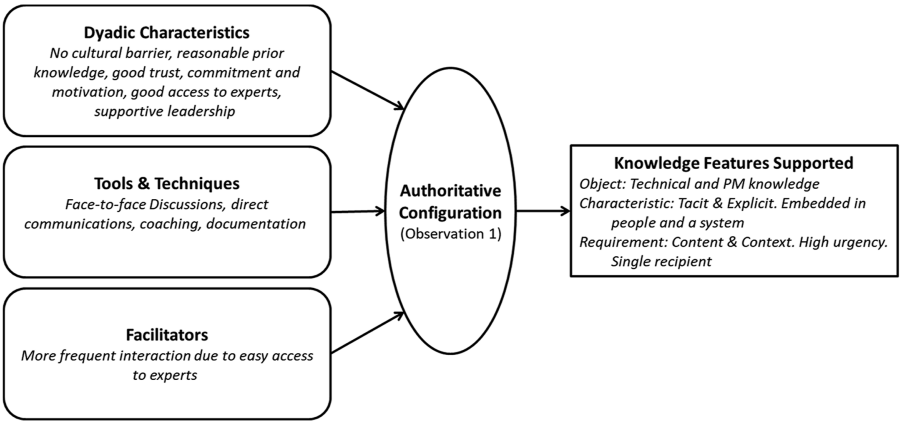

Figure 2. Authoritative configuration and knowledge features supported. Source: Authors' own work

> were all on the same wavelength. Certain specifications [documentation] that were very particular to the owner company were highlighted and discussed [access to the knowledge source]. (E5R3P12-18)

From the respondent's statement, it is derived that the prior knowledge and experience of participants in this design field co-occurred with the use of documentation. Limited discussions were required to clarify the knowledge transferred, which was unique to the owner company and which was important for the design team to understand. There was sufficient time available for the knowledge transfer; therefore, the urgency for the knowledge was not high. This configuration is named the formalistic configuration, as documentation served as the primary transfer tool, supported by formal, but limited, discussions to aid understanding. Figure 3 illustrates this observed configuration, along with the associated knowledge features.

Compared to the first configuration, this second one shows that using documentation as the main communication tool leads to knowledge acceptance when both parties have sufficient prior formal knowledge and experience with the project's scope and content, and when more time is available. In contrast, face-to-face communication and direct discussions are more effective when the recipient's prior knowledge and experience differ significantly and when the knowledge is urgently needed.

Codified knowledge in the form of documentation can be formally recorded, structured, and shared. The form ensures that the knowledge is clear, consistent, and accessible to multiple recipients, reducing ambiguity. Even if codified, technical knowledge still needs contextual interpretation and verification. Recipients may encounter gaps, ambiguities, or unique local conditions under which the documentation is not self-explanatory. Direct access to the knowledge source and the use of workshops allow recipients to clarify, validate, and adapt the documented knowledge. Sufficient levels of trust and commitment help to believe the knowledge is reliable, legitimate, and applicable, whereas well-prepared documentation helps to convey this. To summarize, the interactions of structured documentation, access to the knowledge source behind it, and trustful and committed relationships create the conditions where codified knowledge is not only transmitted but also internalized and accepted by recipients in another organization.

4.2.4 Observation 3: interactive configuration and supported knowledge features. A third observed configuration of conditions relates to a project knowledge transfer event dealing with the embedding of an agile software development technique in a newly established software development team. It concerned the transfer of mainly tacit, technical knowledge of a procedural nature. The knowledge was transferred across boundaries as project team members from different teams frequently met under the guidance of an expert.

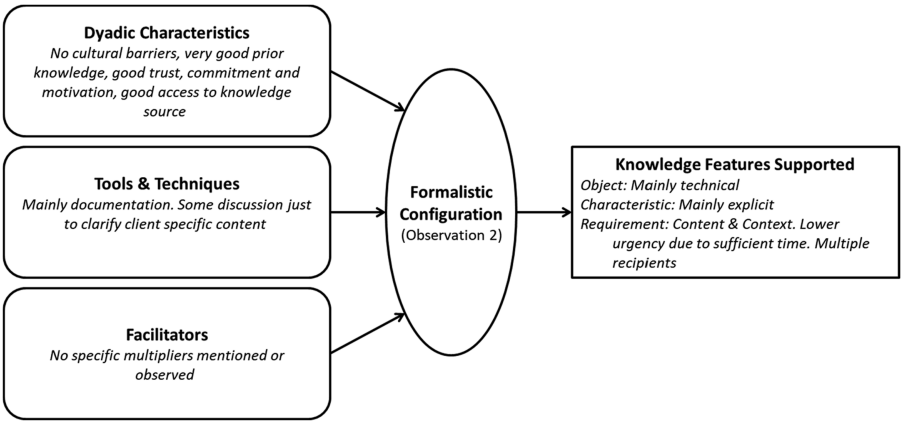

Figure 3. Formalistic configuration and knowledge features supported. Source: Authors' own work

The event showed the co-location of teams and frequent interaction between participants. Furthermore, face-to-face discussions, coaching, and hands-on application were primarily used. A supportive leadership style was applied. The use of specific tools and techniques, as well as the multiplying effect of frequent interaction and the importance of co-location, can be derived from the following combined interviewee statements.

> We did it by co-location. We also brought in people with experience in the new technique [use of experts] and focused on regular interaction [high frequency of engagements]. The whole story-writing issue. We checked, gave feedback, they had to go back and make the changes and then we got together again to discuss [learning by doing] . . . The user stories developed into epics or themes, which led to new [more comprehensive] requirements . . . If there was an issue, help was brought in quickly [access to knowledge source] by moving a more experienced team member into the team [learning by doing, coaching] . . . We still did not document any of the learnings, although the documentation of the user stories improved a lot. The knowledge transfer was still face-to-face communication and hands-on application [learning by doing]. (E2R1P226-242)

Although team members had sufficient technological knowledge, there was a low level of prior knowledge and experience on the development techniques among the participants in the newly established team. In this case, the co-location of participants, the frequent face-to-face communications and discussions, as well as coaching, supported the knowledge transfer. This configuration of conditions is named the interactive configuration due to the close and frequent interactions between participants. The observed configuration and supported knowledge features are depicted in Figure 4.

Tacit knowledge is context-specific, and transferring it to teams usually requires demonstration, practice, and observation. To make such knowledge transfer work, appropriate channels are needed, such as face-to-face interaction, coaching, and learning by doing. Face-to-face interaction enables rich communication, demonstrations, and social learning. Co-location and frequent contact also build trust and create opportunities for observation, both of which support tacit knowledge transfer. Coaching provides step-by-step guidance, immediate feedback, and correction of misunderstandings. Learning by doing allows recipients to practice skills directly, which is essential for internalizing tacit knowledge. For those in other teams with little prior experience, this hands-on approach is especially critical, since tacit knowledge cannot be absorbed from documentation alone. Together, these conditions foster knowledge acceptance because: (1) guided, hands-on practice ensures real understanding, (2) demonstration and observation help recipients adapt knowledge to their own work, (3) Frequent interaction with knowledge sources builds confidence and reduces

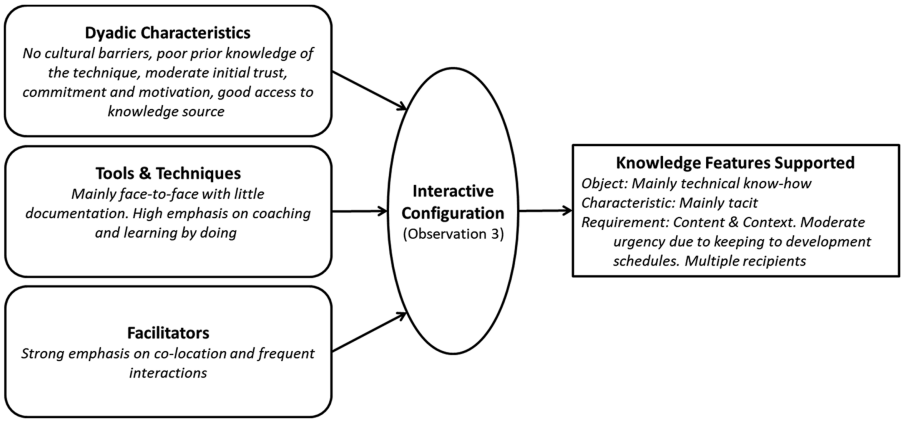

Figure 4. Interactive configuration and knowledge features supported. Source: Authors' own work

uncertainty, and (4) Co-location and quick feedback support adaptation to the recipient's specific context.

5. Conclusions, implications, and future research

This study had a few starting points. First, the proliferation of projects is a growing phenomenon, characterized by high levels of task fragmentation, temporariness, and heterogeneity in technologies, practices, processes, and structures. These factors contribute to the complexity and difficulty of transferring knowledge. Second, research on knowledge transfer has largely relied on a sender–receiver model that conceptualizes specific independent factors as either barriers to or enablers of successful project knowledge transfer. Third, and relatedly, although these sender-receiver models do consider conditions, they tend to treat them largely in isolation.

This paper argues that project knowledge transfer is more complex and calls for an approach that considers multiple conditions more holistically. This research aimed to develop a deeper and more comprehensive understanding of the (configurations of) conditions that influence knowledge acceptance. While extensive literature exists on individual conditions affecting project knowledge transfer, little is known about how different configurations of these conditions interact in such events. Therefore, an exploratory study was conducted to answer two research questions: (1) Which conditions influence project knowledge transfer, and (2) which configurations of conditions can be observed in project knowledge transfer events?

To answer these questions, twenty project knowledge transfer events were investigated by interviewing ten experienced (project) managers in technical, engineering, and IT-related fields. The exploratory analysis of the qualitative data revealed a range of conditions, which were grouped into three overarching clusters: characteristics of the dyadic relationship between the actors involved in the project knowledge transfer event, tools and techniques, and facilitators like co-location. Interestingly, a relatively large proportion of the conditions identified pertain to relational characteristics. This result emphasizes that project knowledge transfer is a social process. This is not a new finding (Wei *et al.*, 2011), but its relative importance is striking.

Besides showing which conditions influence project knowledge transfer, the data analyses also showed the influence of each condition (enhancing or neutralizing) on project knowledge transfer. The majority of conditions in the event studied could be qualified as enhancers. This study's first, modest theoretical contribution lies in replicating key factors that affect knowledge transfer in project-based environments.

Further analyses of the transfer events and the identified clusters of conditions revealed that certain configurations of conditions could be observed. By applying the principle of equifinality (Gresov and Drazin, 1997), it was investigated which configurations of conditions led to the acceptance of transferred project knowledge. Three configurations of conditions emerged from our data. These are summarized in Table 4.

A reflection on the configurations described in Table 4 reveals several commonalities. First, the authoritative configuration operated in a time-pressured context, a situation absent in the other two configurations. This difference may explain why decision-making pressure was lower in the latter cases. Second, the configurations highlight the importance of the knowledge gap width between sender and recipient. The larger the gap between what the sender assumes the recipient knows and the recipient's actual knowledge, the greater the need for close social interaction. A related point concerns the critical role of face-to-face interaction. Even in a digital world where much knowledge is highly codified, personal interaction remains essential, as transferred knowledge almost always requires adaptation to the local context.

The configurational thinking used in this study provides several theoretical contributions compared to additive models. First, it emphasizes that synergies among conditions can produce outcomes that are qualitatively different from the sum of individual conditions.

Table 4. Emerging configurations of conditions and acceptance of knowledge transferred

Conditions clusters	Moderator configurations		
	Formalistic	Authoritative	Interactive
Dyadic characteristics	Small knowledge gap High prior knowledge High commitment Low cultural distance Moderate trust Low access to sources	Medium knowledge gap Moderate prior knowledge High commitment Low cultural distance High trust Moderate access to sources	Large knowledge gap Low prior knowledge Moderate commitment Low cultural distance Low initial trust High access to sources
Tools & Techniques	Mainly documentation Discussions to clarify content	Workshops Face-to-face discussions Documentation in support	Mainly face-to-face, learning by doing, coaching
Facilitators	Limited need for the use of facilitators due to prior knowledge and experience of participants	Frequent interaction with experts	Strong need for the use of visual tools Frequent interaction Co-location of participants

Source(s): Authors' own work

Second, it incorporates the concept of equifinality, recognizing that organizational units and their activities can achieve satisfying results through different pathways. In summary, there is no single way to achieve an outcome. Third, the approach maintains that knowledge acceptance is a result of internal coherence rather than isolated practices.

Several practical implications can be derived from the study's findings. The relative importance of dyadic characteristics impacting project knowledge transfer emphasizes the social side of knowledge transfer. An implication is that project and knowledge managers could (further) develop their skills and competencies, enabling the development of high-quality interpersonal and organizational relationships. This relationship development is an underdeveloped area in project management, as recent review studies show (Daboun *et al*., 2023; Theyel and Theyel, 2023). Examples of practical implications for projects are facilitating early and continuous interaction between key dyads through kickoff meetings, one-on-one check-ins, or co-working sessions; allowing time in the project schedule for informal conversations and trust-building; matching people with prior positive collaboration history or compatible communication styles for key knowledge transfer tasks in projects; and including structured relationship-building (e.g. personal intros, role-sharing, expectation setting) in the onboarding of new team members or project partners. Concurrently, one has to be aware that project managers cannot do such jobs alone. Knowledge-exchanging project members need certain tools and skills as well. Examples are trust-building skills and being knowledgeable about the applicability of knowledge transfer tools and techniques (Lundmark *et al*., 2023).

A second practical implication is that managers responsible for knowledge transfer in projects must be sensitive to the conditions under which transfer takes place. They must be aware that there is no one best way to support project knowledge transfer. Our analyses showed that one can use several configurations combining relational elements, tools and techniques, and facilitators, all leading to the acceptance of the knowledge transferred. Several concrete, practical implications of this finding can be formulated. For instance, pay attention to flexibility in knowledge transfer design by using relational elements for high-trust projects,

and stronger tools or facilitation for low-trust projects. A second implication concerns enabling adaptive combinations rather than fixed templates. One could build a modular toolkit of knowledge transfer practices (e.g. mentoring, digital platforms, peer reviews, workshops) that teams can mix and match.

Beyond practical implications for managing project knowledge transfer, this study may also have relevance for policy and broader society. One possible outcome is that the findings help determine which configurations best align with specific policy objectives. For example, in infrastructure or sustainability projects, knowing whether an authoritative or interactive configuration is more effective can help select the right governance structure for partnerships and improve outcomes. Regarding wider society, grand challenges, such as climate change and public health crises, demand different types of collaboration at various stages. For instance, when rapid responses are needed, the authoritative configuration can facilitate timely, expert-driven knowledge sharing. In contrast, the interactive configuration is better suited for knowledge transfer in efforts aimed at long-term systemic change. Such change involves structural transformation across multiple societal layers, including shifts in behaviors, institutions, cultures, and power dynamics, all of which require frequent interaction.

This research has several limitations. First, it is exploratory, making it neither exhaustive nor generalizable to other settings. The study's external validity is limited by its small sample size and the use of convenience sampling. While convenience sampling was practical, it may introduce respondent biases. However, selecting participants through the researcher's formal and informal networks also had the advantage of fostering trust, leading to more open discussions. Future research could address these limitations by increasing the sample size, broadening the scope to other sectors, and using random sampling techniques.

Our study focused on identifying conditions and configurations of these, leading to the acceptance of transferred knowledge by other internal or external units. It is logical to consider negative interactions and trade-offs among relational elements, tools and techniques, and facilitators. After all, certain configurations may undermine rather than enable knowledge acceptance. For example, a strong reliance on relational trust may lead actors to ignore formal knowledge transfer mechanisms, resulting in ambiguity or loss of critical knowledge. Similarly, when sophisticated tools are introduced without adequate facilitation or relational alignment, they may reach the cognitive capacities of recipients, leading to disengagement or resistance. By researching both enabling and constraining configurations, we gain a more nuanced understanding of the conditions under which knowledge is either accepted or rejected within project settings. Ideally, such research is conducted using a longitudinal research design. This design might be helpful because there are indications that knowledge transfer practices vary over time, that is, vary across the project life cycle (Gasik, 2011; Haass and Azizi, 2020).

The projects in our study are partly carried out in South Africa, while some are located in other countries. Although the project management principles (e.g. PRINCE2) are universal, the South African context introduces specific factors that might hinder comparisons between projects. These include unique regulatory requirements (such as Black Economic Empowerment regulations), differences in infrastructural quality (like electricity load shedding), the structure of stakeholder involvement, and shortages of skills in specialized fields that may necessitate insourcing project workers. Repeating this research in other settings could be a valuable extension of our study.

From our data, project size did not emerge as a condition. It is, however, likely that project size does matter for the ability to achieve more complex configurations. Projects of a smaller scale often lack resources and consequently need to emphasize relational conditions and informal facilitation. Large-scale projects could consider a modular approach in which sub-units are allowed to adopt different configurations for knowledge transfer within a common framework. Future research might investigate this line of thinking.

Implementing these research recommendations also opens up the possibility of bringing more methodological rigor to the table. More specifically, and depending on larger sample

sizes, Qualitative Comparative Analysis (QCA; for midsize [N = 10–50], (Rutten, 2023)) or Latent Class Cluster analysis (Patel *et al*., 2013). This can help identify other or similar configurations of factors affecting knowledge transfer in project environments and contribute to achieving greater generalizability.

In light of the exploratory, small-scale nature of this study, further validation of the empirical results can be aimed for. Several methods can be proposed to achieve this, namely triangulation, peer debriefing, external audit, or negative case analysis.

Notes

1. We thank one of the reviewers for pointing out the similarities between both approaches.
2. Methodologically, the configurational approach gained traction through the development of set-theoretic methods, especially Qualitative Comparative Analysis (QCA), which allows for the systematic comparison of multiple cases to identify configurations of conditions associated with specific outcomes.
3. The Research Ethics Committee of the Faculty of Engineering, Built Environment & IT of the University of Pretoria approved the research design. Reference number: EBIT/94/2019.
4. Event Code = Transfer Event No (E1-E20), Respondent No (R1-R10), Transfer Event Outcome (P/N). E.g. E7R4P082 = Transfer event 7, Respondent 4, Positive outcome.

References

Ajmal, M.M. and Koskinen, K.U. (2008), "Knowledge transfer in project-based organizations: an organizational culture perspective", *Project Management Journal*, Vol. 39 No. 1, pp. 7-15, doi: 10.1002/pmj.20031.

Albert, M., Balve, P. and Spang, K. (2017), "Evaluation of project success: a structured literature review", *International Journal of Managing Projects in Business*, Vol. 10 No. 4, pp. 796-821, doi: 10.1108/IJMPB-01-2017-0004.

Argote, L. (2024), "Knowledge transfer within organizations: mechanisms, motivation, and consideration", *Annual Review of Psychology*, Vol. 75 No. 1, pp. 405-431, doi: 10.1146/annurev-psych-022123-105424.

Argote, L. and Ingram, P. (2000), "Knowledge transfer: a basis for competitive advantage in firms", *Organizational Behavior and Human Decision Processes*, Vol. 82 No. 1, pp. 150-169, doi: 10.1006/obhd.2000.2893.

Argote, L., Guo, J., Park, S.S. and Hahl, O. (2022), "The mechanisms and components of knowledge transfer: the virtual special issue on knowledge transfer within organizations", *Organization Science*, Vol. 33 No. 3, pp. 1232-1249, doi: 10.1287/orsc.2022.1590.

Ayat, M., Malikah, , Ullah, A. and Kang, C. (2022), "An analysis of research published in the international journal of managing projects in business from 2008 to 2019", *International Journal of Managing Projects in Business*, Vol. 15 No. 3, pp. 522-547, doi: 10.1108/IJMPB-04-2021-0098.

Bacon, E., Williams, M.D. and Davies, G.H. (2019), "Recipes for success: conditions for knowledge transfer across open innovation ecosystems", *International Journal of Information Management*, Vol. 49, pp. 377-387, doi: 10.1016/j.ijinfomgt.2019.07.012.

Bakker, R.M., Cambré, B., Korlaar, L. and Raab, J. (2011), "Managing the project learning paradox: a set-theoretic approach toward project knowledge transfer", *International Journal of Project Management*, Vol. 29 No. 5, pp. 494-503, doi: 10.1016/j.ijproman.2010.06.002.

Bartsch, V., Ebers, M. and Maurer, I. (2013), "Learning in project-based organizations: the role of project teams' social capital for overcoming barriers to learning", *International Journal of Project Management*, Vol. 31 No. 2, pp. 239-251, doi: 10.1016/j.ijproman.2012.06.009.

Bhagat, R.S., Kedia, B.L., Harveston, P.D. and Triandis, H.C. (2002), "Cultural variations in the cross-border transfer of organizational knowledge: an integrative framework", *Academy of Management Review*, Vol. 27 No. 2, pp. 204-221, doi: 10.2307/4134352.

Borgatti, S.P., Mehra, A., Brass, D.J. and Labianca, G. (2009), "Network analysis in the social sciences", *Science*, Vol. 323 No. 5916, pp. 892-895, doi: 10.1126/science.1165821.

Busse, C., Kach, A.P. and Wagner, S.M. (2017), "Boundary conditions: what they are, how to explore them, why we need them, and when to consider them", *Organizational Research Methods*, Vol. 20 No. 4, pp. 574-609, doi: 10.1177/1094428116641191.

Cheng, C. and Wang, L. (2022), "How companies configure digital innovation attributes for business model innovation? A configurational view", *Technovation*, Vol. 112 No. October 2021, 102398, doi: 10.1016/j.technovation.2021.102398.

Cook, S.D.N. and Brown, J.S. (1999), "Bridging epistemologies: the generative dance between organizational knowledge and organizational knowing", *Organization Science*, Vol. 10 No. 4, pp. 381-400,doi: 10.1287/orsc.10.4.381.

Creswell, J.W. (2007), "Five quality approaches to inquiry", in *Qualitative Inquiry and Research Design*, Sage Publications, Thousand Oaks, pp. 53-84.

Cummings, J.L. and Teng, B.-S.S. (2003), "Transferring R&D knowledge: the key factors affecting knowledge transfer success", *Journal of Engineering and Technology Management*, Vol. 20 Nos 1/2, pp. 39-68,doi: 10.1016/S0923-4748(03)00004-3.

Daboun, O., Md Yusof, A. and Khoso, A.R. (2023), "Relationship management in construction projects: systematic literature review", *Engineering Management Journal*, Vol. 35 No. 2, pp. 120-143, doi: 10.1080/10429247.2022.2041962.

Davis, F. (1985), "A technology acceptance model for empirically testing new end-user information systems: theory and results", PhD Thesis - Massachusetts Institute of technology., doi: 10.1016/S0378-7206(01)00143-4.

Di Maio, P. (2013), "Knowledge objects as shared system representation", *Knowledge Management Research and Practice*, Vol. 11 No. 1, pp. 23-31, doi: 10.1057/kmrp.2012.45.

Eikelenboom, M. and van Marrewijk, A. (2024), "Tied islands: the role of organizational members in knowledge transfer across strategic projects", *International Journal of Project Management*, Vol. 42 No. 3, 102590, doi: 10.1016/j.ijproman.2024.102590.

Fiss, P.C. (2007), "A set-theoretic approach to organizational configurations", *Academy of Management Review*, Vol. 32 No. 4, pp. 1190-1198, doi: 10.5465/amr.2007.26586092.

Ford, D.P. and Staples, D.S. (2006), "Perceived value of knowledge: the potential informer's perception", *Knowledge Management Research and Practice*, Vol. 4 No. April 2005, pp. 3-16, doi: 10.1057/palgrave.kmrp.8500079.

Friese, S. (2014), *Qualitative Data Analysis with ATLAS.ti*, 2nd ed., Sage Publications, London.

Galbraith, J.R. (1977), *Organization Design*, Addison-Wesley, Boston.

Gasik, S. (2011), "A model of project knowledge management", *Project Management Journal*, Vol. 42 No. 3, pp. 23-44, doi: 10.1002/pmj.20239.

Gherardi, S., Nicolini, D. and Odella, F. (1998), "Toward a social understanding of how people learn in organizations: the notion of situated curriculum", *Management Learning*, Vol. 29 No. 3, pp. 273-297, doi: 10.1177/1350507698293002.

Gomes, F., Oliveira, M. and Chaves, M.S. (2018), "An analysis of the relationship between knowledge sharing and the project management process groups", *Knowledge and Process Management*, Vol. 25 No. 2, pp. 1-12, doi: 10.1002/kpm.1578.

Gresov, C. and Drazin, R. (1997), "Equifinality: functional equivalence in organizational design", *Academy of Management Review*, Vol. 22 No. 2, pp. 403-428, doi: 10.2307/259328.

Guest, G., Bunce, A. and Johnson, L. (2006), "How many interviews are enough?: an experiment with data saturation and variability", *Field Methods*, Vol. 18 No. 1, pp. 59-82, doi: 10.1177/1525822X05279903.

Gupta, A. (2024), "Codes and coding", in *Qualitative Methods and Data Analysis Using ATLAS. Ti: A Comprehensive Reseachers' Manual*, Springer, p. 427.

Haass, O. and Azizi, N. (2020), "Challenges and solutions across project life cycle: a knowledge sharing perspective", *International Journal of Project Organisation and Management*, Vol. 12 No. 4, p. 346, doi: 10.1504/ijpom.2020.10033025.

Han, J., Jo, G.S. and Kang, J. (2016), "Is high-quality knowledge always beneficial? Knowledge overlap and innovation performance in technological mergers and acquisitions", *Journal of Management and Organization*, Vol. 24 No. 2, pp. 1-21, doi: 10.1017/jmo.2016.35.

Hansen, M.T., Mors, M.L. and Lovas, B. (2005), "Knowledge sharing in organizations: multiple networks, multiple phases", *Academy of Management Journal*, Vol. 48 No. 5, pp. 776-793, doi: 10.2307/20159697.

Hartmann, A. and Dorée, A. (2015), "Learning between projects: more than sending messages in bottles", *International Journal of Project Management*, Vol. 33 No. 2, pp. 341-351, doi: 10.1016/j.ijproman.2014.07.006.

He, H., He, Q., Chen, Y., Wang, G. and Chen, X. (2025), "Multi-dimensional organizational motivations: the catalyst for interorganizational knowledge sharing in megaprojects", *International Journal of Managing Projects in Business*, Vol. 18 No. 2, pp. 265-290, doi: 10.1108/IJMPB-08-2024-0190.

Hobday, M. (2000), "The project-based organisation: an ideal form for managing complex products and systems?", *Research Policy*, Vol. 29 Nos 7-8, pp. 871-893, doi: 10.1016/S0048-7333(00)00110-4.

Howell, J.P., Dorfman, P.W. and Kerr, S. (1986), "Moderator variables in leadership research", *Academy of Management Review*, Vol. 11 No. 1, pp. 88-102, doi: 10.5465/amr.1986.4282632.

Howell, T., Bingham, C. and Hendricks, B. (2022), "Going alone or together? A configurational analysis of solo founding vs. cofounding", *Organization Science*, Vol. 33 No. 6, pp. 2421-2450, doi: 10.1287/orsc.2021.1548.

Iftikhar, R. and Lions, C. (2022), "Interorganizational knowledge sharing barriers and enablers: the case of peshawar bus rapid transit project", *International Journal of Managing Projects in Business*, Vol. 15 No. 5, pp. 769-792, doi: 10.1108/IJMPB-11-2021-0313.

Karlsen, J.T. and Gottschalk, P. (2003), "An empirical evaluation of knowledge transfer mechanisms for IT projects", *Journal of Computer Information Systems*, Vol. 44 No. 2, pp. 112-120, doi: 10.1080/08874417.2003.11647558.

Lazzarini, S.G., Pongeluppe, L.S., Ito, N.C., Oliveira, F.d.M. and Ovanessoff, A. (2020), "Public capacity, plural forms of collaboration, and the performance of public initiatives: a configurational approach", *Journal of Public Administration Research and Theory*, Vol. 30 No. 4, pp. 579-595, doi: 10.1093/jopart/muaa007.

Lundmark, C., Nilsson, J. and Krook-Riekkola, A. (2023), "Taking stock of knowledge transfer studies: finding ways forward", *Environmental Management*, Vol. 72 No. 6, pp. 1146-1162, doi: 10.1007/s00267-023-01877-y.

Makani, J. and Marche, S. (2010), "Towards a typology of knowledge-intensive organizations: determinant factors", *Knowledge Management Research and Practice*, Vol. 8 No. 3, pp. 265-277, doi: 10.1057/kmrp.2010.13.

Meyer, A.D., Tsui, A.S. and Hinings, C.R. (1993), "Configurational approaches to organizational analysis", *Academy of Management Journal*, Vol. 36 No. 6, pp. 1175-1195, doi: 10.5465/256809.

Miles, R.E. and Snow, C.C. (1978), *Organizational Strategy, Structure, and Process*, McGraw-Hill, New York.

Müller, R. and Jugdev, K. (2012), "Critical success factors in projects. Pinto, slevin, and prescott – the elucidation of project success", *International Journal of Managing Projects in Business*, Vol. 5 No. 4, pp. 757-775, doi: 10.1108/17538371211269040.

Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York.

Nooteboom, B. (2000), "Learning by interaction: absorptive capacity, cognitive distance and governance", *Journal of Management and Governance*, Vol. 4 Nos 1-2, pp. 69-92, doi: 10.1023/A:1009941416749.

Oerlemans, L.A.G. and Knoben, J. (2010), "Configurations of knowledge transfer relations: an empirically based taxonomy and its determinants", *Journal of Engineering and Technology Management - JET-M*, Vol. 27 Nos 1-2, pp. 33-51, doi: 10.1016/j.jengtecman.2010.03.002.

Patel, P.C., Thatcher, S.M.B. and Bezrukova, K. (2013), "Organizationally-relevant configurations: the value of modeling local dependence", *Quality and Quantity*, Vol. 47 No. 1, pp. 287-311, doi: 10.1007/s11135-011-9520-3.

Peterson, M.F. (1998), "Embedded organizational events: the units of process in organization science", *Organization Science*, Vol. 9 No. 1, pp. 16-33, doi: 10.1287/orsc.9.1.16.

Prencipe, A. and Tell, F. (2001), "Inter-project learning: processes and outcomes of knowledge codification in project-based firms", *Research Policy*, Vol. 30 No. 9, pp. 1373-1394, doi: 10.1016/S0048-7333(01)00157-3.

Prieto, I.M., Revilla, E. and Rodríguez-Prado, B. (2009), "Managing the knowledge paradox in product development", *Journal of Knowledge Management*, Vol. 13 No. 3, pp. 157-170doi: 10.1108/13673270910962941.

Ren, X., Deng, X. and Liang, L. (2018), "Knowledge transfer between projects within project-based organizations: the project nature perspective", *Journal of Knowledge Management*, Vol. 22 No. 5, pp. 1082-1103, doi: 10.1108/JKM-05-2017-0184.

Rivera, U.B. (2022), "Knowledge management in construction industry projects . A review of the literature", *South Florida Journal of Development*, Vol. 3 No. 3, pp. 4112-4121, doi: 10.46932/sfjdv3n3-081.

Røvik, K.A. (2016), "Knowledge transfer as translation : review and elements of an instrumental theory", *International Journal of Management Reviews*, Vol. 18 No. 3, pp. 290-310,doi: 10.1111/ijmr.12097.

Rutten, R. (2023), "Uncertainty, possibility, and causal power in QCA", *Sociological Methods and Research*, Vol. 52 No. 4, pp. 1707-1736, doi: 10.1177/00491241211031268.

Saldaña, J. (2013), *The Coding Manual for Qualitative Researchers*, SAGE Publications, London.

Scarbrough, H., Swan, J., Laurent, S., Bresnen, M., Edelman, L. and Newell, S. (2004), "Project-based learning and the role of learning boundaries", *Organization Studies*, Vol. 25 No. 9, pp. 1579-1600, doi: 10.1177/0170840604048001.

Sense, A.J. (2011), "The project workplace for organizational learning development", *International Journal of Project Management*, Vol. 29 No. 8, pp. 986-993, doi: 10.1016/j.ijproman.2011.01.012.

Sydow, J. and Windeler, A. (2020), "Temporary organizing and permanent contexts", *Current Sociology*, Vol. 68 No. 4, pp. 480-498, doi: 10.1177/0011392120907629.

Tasoulis, K., Pappas, I.O., Vlachos, P. and Oruh, E.S. (2024), "Employee reactions to planned organizational culture change: a configurational perspective", *Human Relations*, Vol. 77 No. 9, pp. 1272-1305, doi: 10.1177/00187267231183305.

Theyel, N. and Theyel, G. (2023), "Relationship management for recurrent project value creation", *Journal of Engineering and Technology Management*, Vol. 69June, 101769, doi: 10.1016/j.jengtecman.2023.101769.

Tumpa, R.J., Baker, M. and Ghanbaripour, A.N. (2025), "From diversity to social value: insights from infrastructure project professionals", *International Journal of Managing Projects in Business* October, pp. 1-27, doi: 10.1108/IJMPB-07-2024-0179.

van Donk, D.P. and Riezebos, J. (2005), "Exploring the knowledge inventory in project-based organisations: a case study", *International Journal of Project Management*, Vol. 23 No. 1, pp. 75-83, doi: 10.1016/j.ijproman.2004.05.002.

van Waveren, C.C., Oerlemans, L.A.G. and Pretorius, M.W. (2014), "Knowledge transfer in project-based organizations. A conceptual model for investigating knowledge type, transfer mechanisms and transfer success", *IEEE International Conference on Industrial Engineering and Engineering Management*, pp. 1176-1181, doi: 10.1109/IEEM.2014.7058824.

van Wijk, R., Jansen, J.J.P. and Lyles, M.A. (2008), "Inter-and intra-organizational knowledge transfer A meta-analytic review and assessment of its antecedents and consequences", *Journal of Management Studies*, Vol. 45 No. 4, pp. 830-853, doi: 10.1111/j.1467-6486.2008.00771.x.

Wei, J., Zheng, W. and Zhang, M. (2011), "Social capital and knowledge transfer: a multi-level analysis", *Human Relations*, Vol. 64 No. 11, pp. 1401-1423, doi: 10.1177/0018726711417025.

Weidner, N., Som, O. and Horvat, D. (2023), "An integrated conceptual framework for analysing heterogeneous configurations of absorptive capacity in manufacturing firms with the DUI innovation mode", *Technovation*, Vol. 121 No. September 2022, 102635, doi: 10.1016/j.technovation.2022.102635.

White, L., Lockett, A., Currie, G. and Hayton, J. (2021), "Hybrid context, management practices and organizational performance: a configurational approach", *Journal of Management Studies*, Vol. 58 No. 3, pp. 718-748, doi: 10.1111/joms.12609.

Whyte, J., Ewenstein, B., Hales, M. and Tidd, J. (2008), "Visualizing knowledge in project-based work", *Long Range Planning*, Vol. 41 No. 1, pp. 74-92, doi: 10.1016/j.lrp.2007.10.006.

Wu, A.D. and Zumbo, B.D. (2008), "Understanding and using mediators and moderators", *Social Indicators Research*, Vol. 87 No. 3, pp. 367-392, doi: 10.1007/sl.

Yahiaoui, D., Chebbi, H. and Weber, Y. (2016), "HR practices, context and knowledge transfer in M&A", *International Journal of Human Resource Management*, Vol. 27 No. 20, pp. 2415-2435, doi: 10.1080/09585192.2016.1226192.

Zahra, S.A., Ireland, R.D. and Hitt, M.A. (2000), "International expansion by new venture firms: international diversity, mode of market entry, technological learning, and performance", *Academy of Management Journal*, Vol. 43 No. 5, pp. 925-950, doi: 10.2307/1556420.

Zhao, D., Zuo, M. and Deng, X.(N.) (2015), "Examining the factors influencing cross-project knowledge transfer: an empirical study of IT services firms in China", *International Journal of Project Management*, Vol. 33 No. 2, pp. 325-340, doi: 10.1016/j.ijproman.2014.05.003.

Zhou, Q. and Deng, X. (2025), "A configuration analysis on knowledge transfer between projects: from horizontal and vertical perspectives", *Engineering Construction and Architectural Management*, Vol. 32 No. 5, pp. 3349-3374, doi: 10.1108/ECAM-07-2023-0743.

Zhou, Q., Deng, X., Hwang, B.G. and Yu, M. (2022), "System dynamics approach of knowledge transfer from projects to the project-based organization", *International Journal of Managing Projects in Business*, Vol. 15 No. 2, pp. 324-349, doi: 10.1108/IJMPB-06-2021-0142.

Corresponding author
Cornelis Cristo van Waveren can be contacted at: corro.vanwaveren@up.ac.za