



CHALMERS
UNIVERSITY OF TECHNOLOGY



Making Sense of Digital Transformation in Construction

How Different Interpretations of Digitalization Shape Digital Transformation in Construction

Master's thesis in Design and Construction Project Management

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Abstract

The construction industry is often described as progressing more slowly in adopting and fully integrating digital technologies. However, assessments of digital progress remain highly divergent, suggesting that digitalization is not understood or experienced uniformly across the industry. This study therefore examines why project managers in the construction industry differ in how they interpret and position themselves in relation to digitalization. Furthermore, the study examined how these differences can be leveraged to foster greater engagement in digital transformation.

The study was conducted as a qualitative case study at a construction consultancy firm, using semi-structured interviews with 16 project managers. An abductive research approach was applied, combining sensemaking theory, professional identity, and conceptual distinctions of digitalization as analytical lenses.

The findings demonstrate that digitalization is not a uniform phenomenon in practice, revealing three interrelated dimensions explaining interpretive differences: the conceptual ambiguity surrounding digitalization, the work context through which digital maturity is assessed, and the professional identities through which it is filtered and evaluated. These differences should not primarily be understood as barriers, but as complementary resources that can support digital transformation. Two mechanisms emerged as particularly important: internal knowledge networks and reverse mentoring.

The study concludes that the ability to manage and leverage differing perspectives may therefore become increasingly important as the industry continues to navigate digital transformation. Supporting transformation therefore requires organisations to simultaneously develop competencies, create arenas for shared sensemaking, and actively bridge the gap between digital knowledge and organisational mandate.

Keywords: Digitalization, Digital Transformation, Sensemaking, Professional Identity, Construction Industry, Project Management, Digital Maturity.

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1

Introduction

This chapter establishes the foundation of the thesis by introducing the context in which the study is situated. It begins with a background outlining the ongoing digitalization of the construction industry. The chapter then presents the aim of the study, followed by the research questions.

1.1 Background

Over the past few decades, numerous industries have undergone profound transformation driven by technological innovation (World Economic Forum [WEF], 2016; World Business Council for Sustainable Development [WBCSD], 2021). These changes have led to more efficient workflows and the development of new products and services. The construction sector, however, is often described as progressing more slowly in adopting and fully integrating digital technologies and has yet to experience transformations comparable to those seen in other sectors (Samuelson & Stehn, 2023). Although digital tools such as Building Information Modeling (BIM), Artificial Intelligence (AI), and Internet of Things (IoT) have become more common (Deloitte, 2025a), digitalization remains a complex and debated phenomenon within the construction industry. There is no clear agreement regarding how far the industry has come in the journey towards digitalization or what digitalization actually entails in practice (Löwstedt & Sundquist, 2022; Ragan, 2025). Some actors argue that the industry has made significant progress in adopting digital tools and developing new ways of working (Deloitte, 2025b; Infobric, 2022). Others claim that progress remains fragmented and limited in relation to the potential of available technologies (Bosch-Sijtsema et al., 2021), while some even suggest that digitalization has only just begun (Wibeck, 2024). These differing views suggest that digitalization is not understood or experienced uniformly across the industry (Löwstedt & Sundquist, 2022).

One explanation for this ambiguity lies in the characteristics of the construction industry. Construction projects are typically organized as temporary, multi-actor collaborations involving several organizations and professional roles (WBCSD, 2021; Vrijhoef & Koskela, 2000). While this structure enables flexibility and specialization, it can also reinforce established routines, professional norms and locally embedded ways of working (Yang et al., 2026). Strong professional identities, project-based structures, and risk-sensitive environments could create stability, therefore create organizational conditions where digitalization unfolds unevenly across projects and

actors (Chen et al., 2023; Yang et al., 2026). These structural characteristics limit the extent to which digital initiatives lead to deeper change. As a result, digital tools may be introduced without fundamentally changing how decisions are made or how projects are managed in practice (Marnewick & Marnewick, 2022; Samuelson & Stehn, 2023).

Within this context, the project manager occupies a key position. Project managers operate at the intersection between strategic initiatives and the practical realities of project execution (PMI, 2018). They are responsible for coordinating actors, managing resources, and ensuring project performance (PMI, 2021). At the same time, project managers encounter digitalization under different project conditions, organizational settings, and professional expectations (Marnewick & Marnewick, 2022). In a fragmented and project-based industry, digitalization is therefore not understood or experienced in a uniform way (Löwstedt & Sundquist, 2022). Different perceptions of what digitalization entails, how far it has progressed, and what role it should play in project work coexist simultaneously. Understanding these differences becomes particularly relevant in an industry where the development of digitalization remains uncertain and debated.

1.2 Aim

The purpose of this study is to develop a deeper understanding of why project managers differ in how they interpret and position themselves in relation to digitalization in the construction industry. The study examines how these interpretations vary across individuals and what shapes them. By exploring these differences, the study further aims to understand how they can be leveraged to foster greater engagement in digital transformation. By doing so, the study contributes to insights into how digitalization unfolds in practice. It highlights how differences in interpretation among project managers can function not only as barriers, but also as potential resources in the ongoing digitalization of the construction industry.

1.3 Research Questions

The aim forms the basis for the following research questions.

- Why do project managers differ in how they interpret and position themselves in relation to digitalization in the construction industry?
- How can these differences be leveraged to foster greater engagement in digital transformation?

2

Theoretical Framework

This chapter outlines the theoretical framework of the study and introduces the perspectives used to understand why project managers interpret and engage with digitalization differently. It begins by outlining the characteristics of the construction industry and distinguishing between digitization, digitalization, and digital transformation. The chapter then introduces digital maturity as a lens for evaluating digital progress. Finally, sensemaking theory and diffusion of innovation are used to explain how project managers interpret, respond to, and act in relation to digital change.

2.1 Characteristic of the Construction Industry

Digital transformation is increasingly discussed in the construction industry, yet major changes of the kind seen in other sectors, such as manufacturing, are still uncommon (Samuelson & Stehn, 2023). To understand digital development in the construction sector, it is necessary to consider the industry's fundamental characteristics. These conditions shape how change is introduced, interpreted, and enacted across the industry.

A key characteristic of the construction industry is its fragmented structure, where many different companies work together in project-based contexts (McKinsey, 2020; Nawi et al., 2014; Vrijhoef & Koskela, 2000). Construction projects typically involve a high number of interrelated processes and actors (Oesterreich & Teuteberg, 2016; Vrijhoef & Koskela, 2000) organized as temporary constellations that dissolve once the project is completed (Sandberg et al., 2021; Vrijhoef & Koskela, 2000). This temporary and complex structure makes it difficult to create long-term learning processes and establish standardized ways of working across projects. The fragmented structure also makes coordination and integration between stakeholders more complicated (Nawi et al., 2014). This is seen in the sharp separation between design and production (Samuelson & Stehn, 2023). In many other industries, design and production are closely connected. A related issue is discontinuity, where knowledge, responsibility, and information are passed between phases and actors without continuous collaboration (Hughes & Stehn, 2019).

Furthermore, a defining characteristic of the construction industry is that innovation does not occur in a single location (Erikson et al., 2026). It can emerge within projects, within organizations, or at the industry level, where it is all shaped by different conditions and constraints. As a consequence, what is developed in

one project rarely becomes embedded in the organization as a whole (Erikson et al., 2026). While projects provide opportunities for experimentation, the knowledge generated is rarely systematically transferred or embedded (Nyallu et al., 2025). As a result, knowledge transfer is often weak, inefficiencies persist, and broader systemic change becomes difficult to realize (Samuelson & Stehn, 2023). Learning often therefore, depends on informal networks and individual experience (Erikson et al., 2026). This limits the accumulation and scaling of innovation over time.

Transformation in the construction industry is further complicated by unclear ownership of processes and improvement efforts (Samuelson & Stehn, 2023). These challenges are closely linked to the relationship between clients and project managers. Construction projects are often described as hybrid arrangements combining product and service elements (Egemen & Mohamed, 2005), in which project managers, serve as agents of the client and are responsible for planning, coordination, and project delivery (Oladiran & Njoku, 2026). Within this structure, the client plays a decisive role in setting priorities and defining value. Although clients frequently influence key decisions related to design and production, they do not necessarily possess the knowledge or capacity required to drive industry-wide change (Samuelson & Stehn, 2023). As a result, responsibility for transformation remains distributed and partially undefined. This has important implications for digitalization. Consequently, the direction and scope are not determined solely within construction organizations but are shaped by external demand.

Within this context, the project manager occupies a central role. In construction projects, project managers are responsible for coordinating multiple actors, aligning project objectives, and managing performance within constraints of time, cost, and quality (PMI, 2021; Egemen & Mohamed, 2005). Studies indicate that project managers have a significant positive impact on these outcomes, particularly in terms of accurate cost estimation and strict budget control during the construction phase (Oladiran & Njoku, 2026). By acting strategically in the role of cost controllers, consultants can minimize the number of change orders and ensure that projects are delivered within financial constraints. However, beyond these formal responsibilities, their role is shaped by the client-dependent and fragmented nature of the industry.

2.2 Conceptualizing Digitalization

Digital developments are often categorized using the concepts of digitization, digitalization, and digital transformation (Verhoef et al., 2021). While these concepts are widely used in both research and practice, the distinctions between them remain debated. Clarifying these concepts is important for the present study because project managers may interpret digital development differently. Rather than imposing fixed definitions, this conceptual distinction serves as an analytical lens to examine variation in interpretations and how these relate to existing theoretical perspectives. The same term may carry different meanings for different individuals, depending on their experiences and context. This highlights the need not only to define concepts, but to understand what individuals actually refer to when they use them.

A commonly cited definition of digitization is provided by Gassman, Frankenberger and Csik (2014) and Gobble (2018) , who define digitization as the conversion of analog data into digital format. It can be understood as the technical process of transforming physical or manual information into digital data that can be stored, processed, and transmitted electronically. In practice, this may involve scanning paper documents, or collecting user input directly through web-based forms so that information flows directly into digital systems. Importantly, Bloomberg (2018) emphasizes that digitization applies to information only and does not extend to process change. In other words, while information can be digitized, organizational processes themselves cannot. Digitization does not redesign workflows, alter strategic direction, or introduce new business models. Rather, it improves the efficiency, accuracy, and accessibility of existing routines (Gobble, 2018).

The further process, digitalization, refers to the application and integration of digital technologies into business operations (Gobble, 2018). Digitalization builds upon digitization, which involves converting information into digital formats that can be processed by computers and technological systems (Liao et al., 2017). Through this conversion, information becomes structured data that can be stored, analyzed, and shared efficiently across platforms. By integrating digital tools into operations, organizations can connect processes across departments (Matt et al., 2015). This integration enables production and service systems to become more automated, flexible, and adaptable (Matzler et al., 2018). As a result, companies can develop new services and improve existing business models.

Lastly, digital transformation, as the most advanced stage, can not be understood as the introduction of technology alone (Vial, 2019). When digital technologies are integrated into organizations, they become part of a broader process of organizational change that affects how work is organized, how value is created, and how different parts of the organization interact. From this perspective, digital transformation extends beyond technological implementation and entails changes in organizational structures, business models, and practices. To address this complexity, organizations often develop digital transformation strategies. The strategies provide direction for how digital changes are coordinated, prioritized, and implemented across the organization while also seeking to align digital initiatives with broader organizational goals (Matt et al., 2015). Continuous technological development creates an environment in which organizations must constantly adapt to new conditions. This ongoing change can alter business landscapes, reshape value creation, and challenge established ways of working. Consequently, digital transformation should be understood as an ongoing and evolving process rather than a one-time shift with a clearly defined endpoint (Vial, 2019).

Based on the definitions presented above, this study distinguishes between the three concepts as follows:

- Digitization refers to the conversion of analog information into digital form.

- Digitalization concerns the use of digital technologies to modify and improve business operations.
- Digital transformation involves a broader organizational shift, where digital technologies reshape business models, strategies, and organizational structures.

2.3 Digital Maturity as Discourse and Assessment

Given the lack of consensus regarding how far the construction industry has progressed in its digital development (Löwstedt & Sundquist, 2022), it becomes important to consider how such progress is assessed. In this context, digital maturity provides a useful lens for evaluating how digital technologies are embedded in organizational structures, processes, and ways of working. It helps identify current capabilities, existing gaps, and areas for further development. Digital maturity is therefore included in this study as an analytical perspective and as a concept through which project managers interpret the digital development of the construction industry.

There are several methods and models for examining how far organizations have progressed in their digitalization journey (Kalender & Žilka, 2024). One common way to conceptualize digital transformation is through the concept of digital maturity. Digital maturity can be understood as an analytical tool used to assess its progression towards a more integrated and digital way of operating. Rather than focusing solely on the implementation of new technologies, digital maturity reflects the gradual integration of digital technologies into business processes, organizational structures, and human competencies. From this perspective, digital maturity extends beyond technological adoption and encompasses the alignment of strategy, culture, workforce, and organizational processes. It involves the continuous adaptation of organizations to evolving digital conditions, where transformation is seen as an ongoing and iterative process rather than a one-time implementation.

In order to systematically assess and position organizations along their digital development trajectory, a structured framework is required. One of the earliest and most influential frameworks is the digital maturity matrix developed by MIT Sloan School of Management and Capgemini (Westerman et al., 2012; 2014). This model describes digital maturity as a function of digital intensity and transformation management intensity, (see figure 2.1). Digital intensity refers to the extent to which technologies are adopted and utilized across operations, business models, and customer engagement. It captures how well these technologies are integrated into everyday practices and value-creating processes. In contrast, transformation management intensity concerns the leadership capabilities required to drive digital transformation. This includes the ability to formulate a clear vision, establish governance structures, allocate resources, and foster a culture that supports continuous learning and digital skill development (Westerman et al., 2012; 2014).

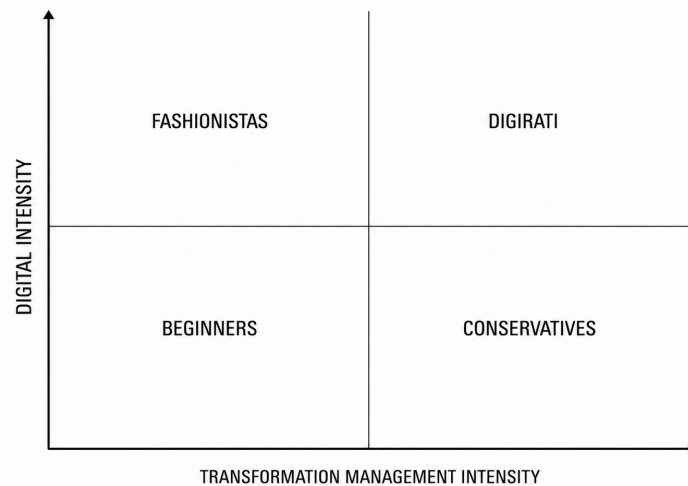


Figure 2.1: Digital maturity matrix developed by MIT Sloan School of Management and Capgemini (2012; 2014).

Based on digital intensity and transformation management intensity, organizations can be positioned within a four-quadrant digital maturity matrix consisting of Beginners, Fashionistas, Conservatives, and Digirati (Westerman et al., 2012; 2014). Beginners exhibit low levels of both digital intensity and transformation management intensity, where digital initiatives are often fragmented, ad hoc, and lacking strategic coordination. Fashionistas, in contrast, display a high level of digital intensity through the adoption of multiple digital tools and applications, yet lack a coherent transformation strategy and governance structure. As a result, digital initiatives may exist in silos and generate limited organizational value despite a strong motivation for digital change. Conservatives are characterized by strong transformation management intensity but relatively low digital intensity. These organizations typically emphasize governance, strategic vision, and careful investment decisions, but may adopt a cautious approach towards new digital technologies. Finally, Digirati represents the highest level of digital maturity, with strong digital capabilities with effective transformation management. These align digital investments with strategic objectives, foster a digital culture, and systematically coordinate digital initiatives to enhance long-term competitive advantage (Westerman et al., 2012; 2014).

Overall, the MIT digital maturity matrix highlights that successful digital transformation is not solely dependent on technological implementation, but rather on the interaction between technological capabilities and leadership-driven organizational change. This makes the framework particularly suitable for assessing organizational digital maturity in complex and project-based industries. This is because both technological adoption and managerial capabilities play a central role in driving digital development.

2.3.1 Digital Maturity in Construction

While general digital maturity frameworks such as the MIT digital maturity matrix provide a useful analytical lens, several construction-specific frameworks highlight how digital maturity manifests differently in project-based industries. Wernicke et al. (2023) introduce a digital maturity assessment framework for construction site operations that emphasizes the temporary, fragmented, and context-dependent nature of construction projects. Their framework demonstrates that digital maturity in construction is often uneven across projects and organizational levels, shaped by site-specific conditions, coordination challenges, and varying managerial capabilities.

A central contribution is that digital technologies rarely create value in construction on their own (Wernicke et al., 2023). Instead, value emerges only when technologies are aligned with site-specific processes, organizational structures, and improvement practices. Digital maturity is therefore understood as an organization's capability to systematically evaluate, align, and institutionalize digitally enabled improvement initiatives, rather than as the mere presence of digital tools. The authors also critically reflect on maturity models themselves, cautioning that linear and standardized maturity paths are poorly suited to dynamic and temporary project environments.

Similarly, Perera et al. (2023) show that digitalization in design and construction has often been chaotic and ad hoc, driven by isolated initiatives rather than coherent long-term strategies. Their findings highlight a lack of shared understanding of maturity stages within the industry, reinforcing the view that digital development in construction cannot be understood solely through standardized models. Their study highlights how digitalization is frequently driven by isolated projects, technological experimentation, and external pressures, resulting in uneven maturity profiles and weak strategic alignment. As a consequence, organizations may experience a tension between visible technological progress and limited organizational transformation.

Digital maturity in construction should be understood as a contextual and interpretive phenomenon shaped by industry structure, project organization, and managerial interpretations (Perera et al., 2023; Wernicke et al., 2023). This perspective supports viewing digital maturity not as a measurable condition, but as something that is assessed, interpreted, and negotiated by organizational actors. While digital maturity frameworks provide structured ways of assessing transformation at the organizational level, they do not explain how such assessments are interpreted and enacted by individual actors. These frameworks are typically based on general and collective criteria for evaluating digital development. However, project managers do not necessarily interpret digital maturity through such overarching frameworks. In the construction industry, where digital initiatives are often implemented across fragmented project settings, the meaning of digital transformation may therefore vary across actors. To understand how project managers interpret the digital development of the industry, a theoretical perspective that focuses on interpretation processes is required. For this reason, the concept of sensemaking is introduced.

2.4 Sensemaking and Interpretation of Change

As the increasing presence of digital tools does not necessarily lead to substantial changes in work practices (Samuelson & Stehn, 2023) digitalization can not be fully understood by examining technologies alone. Although organizations may implement similar technologies, digitalization is often understood and enacted differently across projects and individuals. This suggests that digitalization is not a purely technical or objective process, but also an interpretive one shaped by how actors understand ongoing changes in their work environment. Perspectives that primarily emphasize technological capabilities or organizational strategies therefore risk overlooking how digitalization is interpreted and translated into practice in everyday work. To explain these differences, attention must therefore be directed toward how individuals interpret digital change.

Sensemaking provides a relevant theoretical lens for understanding these interpretive processes as it explains how individuals and organizations construct meaning in situations characterized by ambiguity and uncertainty (Weick, 1995). Rather than assuming that environments are stable or fully knowable, it emphasizes how actors continuously interpret their surroundings in order to create a “workable level of certainty” that enables action. In this perspective, knowledge is not treated as objective or fixed, but as something constructed through action and interaction (Weick, 1979), making interpretation inherently retrospective. This perspective becomes particularly relevant in relation to technological change, where new systems and digital tools often introduce uncertainty regarding their purpose, consequences, and implications for work practices (Zulu & Saad, 2023). Such ambiguity may become especially pronounced in project-based environments, where actors continuously navigate changing conditions, temporary organizational structures, and multiple professional perspectives (Vrijhoef & Koskela, 2000; Zulu & Saad, 2023). As a result, digitalization can be understood as an ongoing process in which meaning is constructed in relation to evolving work practices, rather than as a predefined transformation with a clear and uniform outcome.

Despite its broad influence, the sensemaking perspective has also received criticism from a limited number of scholars. Sandberg and Tsoukas (2015) argue that sensemaking suffers from conceptual vagueness, as its core concepts are defined in broad terms that resist clear operationalization. Central concepts such as “process” and “sense” remain conceptually vague and lack precision. Helms Mills et al. (2010) further argue that Weick’s original conceptualization underemphasizes structural and power-related conditions that shape whose interpretations are heard and enacted within organizations. Despite these critiques, the core assumptions of Weick’s original conceptualization remain widely used in the literature (Cristofaro, 2022). Its flexible and process-oriented nature makes it suitable for analyzing how interpretations of digitalization vary across individuals, roles, and projects, while acknowledging that such interpretations are situated within broader organizational contexts. To address some of the limitations identified in previous critiques, this study complements sensemaking with perspectives on professional identity and

agency, enabling a more contextually grounded analysis of how project managers interpret digital transformation in the construction industry.

2.4.1 Identity and the Interpretation of Digitalization

Within sensemaking theory, identity plays a central role in shaping how individuals interpret events and ongoing changes (Weick, 1995). This means that individuals interpret situations through their understanding of who they are and what role they occupy. Identity therefore functions as an interpretive filter through which changes and events are understood. At the same time, sensemaking does not primarily aim to produce accurate representations of reality. Instead, individuals construct interpretations that appear plausible and meaningful for the actor involved. Weick (1995) emphasizes that the goal of sensemaking is plausibility rather than accuracy. Plausible interpretations provide actors with a coherent understanding of ambiguous situations and allow them to act. Because interpretations are shaped by identity and prior experience, different actors may therefore construct different but equally plausible understandings of the same phenomenon (Pereira, 2002). Sensemaking thus involves reaching an explanation that appears reasonable and meaningful for the sensemaker in a given situation.

This relationship between identity and plausible interpretations becomes particularly relevant in situations characterized by uncertainty and change. When individuals encounter new developments, such as technological innovations or organizational transformations, they must interpret what these changes mean for their work and their role within the organization (Pereira, 2002). In such situations, individuals often construct interpretations that align with their existing self-understanding and experiences. For example, feedback on work performance may not only be interpreted as information about a specific task but also as an evaluation of one's competence or professional identity. As a result, individuals may interpret organizational changes in ways that reinforce their understanding of themselves and their role in the organization (Weick, 1995). Because plausible interpretations may be based on incomplete or uncertain information, the sense that individuals construct is not necessarily a belief about what will happen if a technology is adopted. Instead, it reflects an understanding of what could happen. This distinction is important because many technology acceptance models focus on beliefs about expected outcomes, whereas a sensemaking perspective emphasizes interpretations of possible outcomes.

One way to further understand this relationship between identity and interpretation is through the concept of professional identity. Professional identity refers to how individuals understand themselves in relation to their profession, including the knowledge, values, and competencies that define their role (Alvesson et al., 2008; Brown & Phua, 2011). It concerns questions such as who one is at work, what constitutes legitimate expertise, how one differs from others, and how one wishes to be perceived by colleagues and stakeholders. Professional identities are not fixed but continuously constructed and reconstructed through interaction and reflection at work. Individuals develop shared understandings of what it means to belong to

a profession, and these understandings influence how they interpret new developments. Professional identity can therefore be particularly relevant in contexts of digitalization, where technological change may alter both work practices and assumptions about what constitutes valuable expertise.

Alvesson et al. (2008) describe this ongoing process as identity work, referring to the activities through which individuals attempt to maintain an understanding of themselves. Identity work often becomes particularly visible during periods of uncertainty or change, when established understandings of professional roles are questioned. Brown and Phua, (2011) similarly argues that identities in organizations are shaped through discourse and interaction with others. Individuals construct narratives about their work and their role in the organization, which influence how they understand their responsibilities, expertise, and contribution. At the same time, individuals are not passive recipients of these identities but actively negotiate and adapt them through everyday interactions. Professional identity can also be understood as a filter through which individuals interpret organizational change, as new technologies may be assessed in relation to whether they strengthen or threaten established role understandings.

In the construction industry, professional identity is often closely connected to practical experience, technical competence, and established work practices (Löwstedt & Räisänen 2014). Shared routines, tools, and professional language reinforce these identities. When digital technologies are introduced, actors may therefore interpret these changes differently depending on how they affect their understanding of professional expertise and their role within the project environment (Mantere et al., 2012). Studies have documented that it affects the uptake of new processes and technologies amongst project managers in the construction industry (Löwstedt & Sandberg 2020). Professional identity thus helps explain why digital transformation is not only a technical process, but also a social and symbolic one. It does involve changing definitions of what it means to be a competent project manager.

2.4.2 Experience, Cues, and Retrospective Interpretation

Sensemaking is often described as a retrospective process in which individuals construct meaning by interpreting present situations in relation to past experiences (Weick, 1995). Central to this process is cue extraction, which refers to how individuals identify and interpret signals from their environment. Rather than fully understanding events as they occur, actors make sense of situations by looking back at earlier actions and experiences in order to interpret what is happening in the present. Weick (1995) describes cues as small and familiar signals that individuals notice in their surroundings and use as starting points for interpretation. By relating such cues to previous knowledge and experiences, individuals categorize situations as similar to, different from, or extensions of events they have encountered before (Pereira, 2002). Retrospective interpretation and cue extraction are therefore processes through which actors link past experiences with present observations in order to construct meaningful understandings of ongoing events.

The cues individuals extract are not neutral or objective signals. Because actors may attend to different signals, the same situation can be interpreted in different ways. Kramer (2017) argues that individuals focus on cues that confirm their existing understanding while overlooking information that challenges it, which can reinforce earlier interpretations. Similarly, sensemaking often involves directing attention toward certain elements of a situation while ignoring others in order to maintain a coherent interpretation of events (Helms Mills et al., 2010). The process of cue extraction is therefore shaped not only by prior experiences but also by the technological and organizational environments in which actors operate.

These dynamics become particularly visible in relation to technological change. Because individuals often lack direct experience with new technologies at the introducing moment, interpretations of these technologies are frequently shaped by earlier experiences. As Pereira (2002) argues, behavioral intentions toward technology may be unreliable indicators of long-term adoption if individuals have not yet gained practical experience with the system. Instead, attitudes toward technology tend to evolve retrospectively as actors experience and reinterpret earlier expectations. Previous successes or failures with technology can therefore influence individuals' confidence in their ability to adopt and use new systems, shaping beliefs about their own technological capabilities (Zhang, 2023). Over time, as individuals interact with digital tools in practice, their interpretations of both the technology and their own work practices may change.

Empirical studies also illustrate how retrospective sensemaking shapes interpretations of digital technologies. Klos and Spieth (2021), describe how older managers referred to their experiences from the introduction of the first computers in the organization. Initially, many managers believed that digital technologies did not influence the quality of their work because their tasks were highly specialized. However, when reflecting on earlier experiences, the discussion shifted toward recognizing the time-saving benefits of digital technologies. While some managers maintained their original views, others began to reconsider their earlier evaluations and acknowledged that digital technologies contribute to improvements in productivity and work quality. This illustrates how interpretations of technology may shift as individuals reinterpret past experiences in relation to new cues emerging from their present environment.

In construction environments, project managers may similarly interpret digitalization by drawing on earlier experiences with technologies, organizational change initiatives, or project practices. At the same time, they observe cues in their project environments, such as changes in workflows, communication patterns, coordination practices, or the increasing use of digital tools within projects. By linking such cues to prior experiences, project managers construct interpretations of how digital technologies relate to their own work practices and to the broader development of the construction industry.

2.4.3 Sensemaking as a Social and Ongoing Process

Sensemaking processes are inherently social and ongoing (Weick, 1995). It rarely occurs as isolated moments of interpretation but instead unfolds continuously through interaction and communication with others. As actors discuss events, exchange interpretations, and reflect on emerging developments, meanings are gradually shaped and reshaped over time.

Through such interactions, actors interpret situations collectively and negotiate meanings that guide their actions. Social interaction therefore plays a central role in sensemaking, as actors exchange informational cues that shape their mental models and influence how they interpret new situations (Pereira, 2002). Communication is particularly important in enabling actors to question existing assumptions and refine shared understandings of ambiguous situations (Maitlis & Christianson, 2014). At the same time, sensemaking unfolds as a continuous and dynamic process in which individuals repeatedly reinterpret their past experiences as new information emerges and circumstances change (Weick, 1995). Rather than occurring as a single event, interpretations evolve over time as actors adjust their understanding of ongoing developments (Pereira, 2002). Because interpretations are shaped by existing frames of reference, different and sometimes competing understandings of the same phenomenon may coexist within an organization depending on actors' professional roles, experiences, and positions (Mantere et al., 2012).

These dynamics become particularly visible in the context of technological change. Klos and Spieth (2021) show that individuals rarely evaluate new technologies independently but instead rely on discussions with colleagues and supervisors when forming their interpretations. Through such interactions, perceptions of technologies are continuously shaped and reshaped as individuals gain new experiences or encounter changing work conditions. As technological systems and their surrounding contexts evolve over time, the meaning attached to these technologies may also shift (Pereira, 2002). As a result, technology adoption does not necessarily follow a linear process (Klos & Spieth, 2021). Instead, different patterns of use may emerge, including postponed adoption, re-adoption of previously abandoned technologies, or periodic use in which individuals must repeatedly relearn how to work with a system. Similar dynamics have been observed in the construction industry, where digitalization involves multiple actors with different professional perspectives. Zulu and Saad (2023) argue that digitalization in construction organizations should therefore not be understood solely as a technical transformation but as a sensemaking process in which actors interpret and negotiate the meaning of digital technologies within their organizational and project contexts.

2.4.4 Enactment and Actors in Digital Transformation

Weick (1995) introduced the concept of enactive sensible environments to describe how individuals actively participate in shaping the contexts in which they operate. Rather than being passive recipients of external conditions, people influence and construct their environments through their actions and interpretations. This per-

spective highlights the relationship between people and their surroundings, where individuals both shape and are shaped by the environments in which they act. Pereira (2002) explains how one practical implication of this dynamic is illustrated by the principle of garbage in, garbage out. If users enter incorrect or incomplete data into an information system, the system may fail to meet expectations, which can negatively affect its use.

This perspective highlights that individuals do not only interpret their environments but also influence them through their actions. In organizational settings, this capacity to act and influence outcomes can be understood through an agency perspective. Bresnen et al. (2005), building on Giddens' theory of structuration, define agency as the capacity of actors to act, make choices, and influence outcomes within existing structural conditions. In construction project organizations, agency cannot be understood as fully autonomous decision-making. Instead, it is embedded within structural conditions that both enable and constrain action, such as industry norms, professional roles, and established project routines. These structures shape what actors perceive as possible, appropriate, or legitimate in a given context. From this perspective, agency is inseparable from structure. Actors draw on existing structures when they act, while simultaneously reproducing or gradually modifying those structures through everyday practices. Battilana and D'Aunno (2009) describe this tension as the paradox of embedded agency, referring to how actors can initiate change while being embedded in the very institutions they seek to transform. They argue that agency emerges through actors' engagement with institutional arrangements and can take the form of institutional work such as actions aimed at creating, maintaining, or disrupting institutions.

A practice-based perspective further highlights how agency is exercised through the use of technology in everyday work. Orlikowski (2000) argues that technology does not determine outcomes by itself. Instead, organizational structures develop through repeated interactions with technology in practice. When individuals use digital tools, they may reproduce existing ways of working by using the technology in line with established routines. Digital tools may also support adjustments in how tasks are performed, for example by influencing how information is shared or how project activities are coordinated. Over time, such adjustments may also affect how work is organized within projects.

Taken together, these perspectives highlight that project managers are not merely recipients of digital change but active participants in shaping how digital technologies are enacted in practice. Through their everyday decisions and interactions, they influence how digital tools are adopted, adapted, and integrated into project work. At the same time, their actions are embedded within existing organizational structures and project routines that both enable and constrain what is possible. This interplay between agency and structure suggests that digital transformation is continuously shaped through situated action within specific project contexts.

2.5 Individual Innovation Adoption

Differences in how individuals respond to technological innovations can be understood through research on innovation adoption. While sensemaking explains how individuals interpret technological changes in their work environment, Rogers' (1983) diffusion theory highlights how these interpretations may influence how and when individuals adopt new technologies. Rogers argue that people within a social system adopt innovations at different rates. To better understand these differences, individuals can be categorized according to their adoption behavior, which enables the identification of patterns in how innovations spread and allows change managers to tailor strategies to different groups.

Rogers (1983) distinguishes between five adopter categories: Innovators, Early Adopters, Early Majority, Late Majority, and Laggards (see figure 2.2). Innovators are characterized by their strong interest in new ideas and their willingness to take risks, often adopting innovations independently of others within their social system. Early Adopters are typically more integrated into the social system and often hold influential positions, which means that other individuals frequently look to them for guidance when evaluating new technologies. The Early Majority adopts innovations slightly before the average individual, often waiting until new ideas have been tested before committing. In contrast, the Late Majority tends to be more cautious and skeptical, adopting innovations only after they have become widely accepted within the social system. Laggards represent the final group to adopt innovations and tend to rely strongly on tradition and previous experiences, which often makes them more resistant to change.

Together, these categories can be linked to both individual characteristics and the professional role within the organization. Differences in experience, responsibilities, and position influence how individuals perceive risks, evaluate new technologies, and decide when to adopt them. In this sense, adoption behavior is not only a result of personal attitudes, but also shaped by the expectations and demands associated with the professional role. This makes Rogers' framework relevant for understanding why project managers may respond differently to digitalization, depending on both individual preferences and their role within the organization.

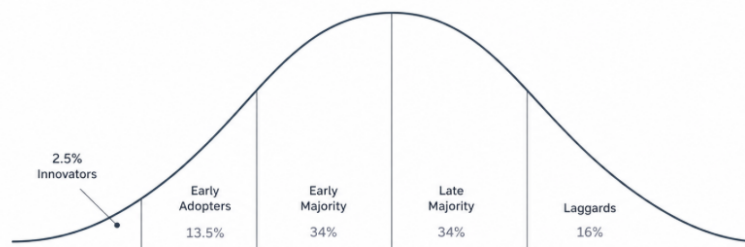


Figure 2.2: Early adopters curve (Rogers, 1983).

3

Methods

This master's thesis is conducted as a qualitative study using an abductive research approach. It combines a theoretical framework with a case study of project managers within a construction consultancy firm. Empirical data was collected through semi-structured interviews with a purposive sample of participants, complemented by iterative engagement with relevant literature.

3.1 Research Approach and Design

To conduct this thesis, several methodological alternatives were considered during the initial stages of the research process. A qualitative research design combined with an abductive research approach was ultimately selected as the most suitable for the purpose of this study. Since the thesis aims to explore why project managers in the construction industry interpret digitalization differently, a qualitative approach was considered appropriate as it enables an in-depth exploration of participants' interpretations, experiences, and perceptions (Bryman & Bell, 2017; Denscombe, 2014). Such an approach is particularly suitable when addressing broad research questions and emphasizing the participants' perspectives. In contrast, a quantitative approach was not considered appropriate, as the purpose of the study is not to test hypotheses or examine relationships between predefined variables, but rather to develop a richer understanding of how digitalization is interpreted within the professional role of project managers.

The abductive approach was chosen because it enables an iterative process between empirical data and existing theory (Bryman & Bell, 2017). Such an approach is particularly appropriate for exploratory research in contexts where theoretical understanding is still developing, as is the case with digitalization in the construction industry. Throughout the research process, empirical insights from the interviews were continuously interpreted in relation to relevant literature, while theoretical concepts were revisited and refined based on emerging findings. This iterative movement between theory and empirical material enabled a deeper and more nuanced analysis (Bryman & Bell, 2017) of why project managers interpret digitalization differently. More specifically, the theoretical framework evolved throughout the study as new empirical insights emerged. Initially, the study was guided by broader assumptions regarding digitalization in construction, but the empirical material gradually directed the focus toward individual sensemaking processes and organizational digital maturity. Consequently, the final framework came to integrate both perspectives.

The abductive process also influenced the development of the research questions and interview guide. As patterns and themes became increasingly visible during data collection, certain topics were explored further while others became less central. This flexibility made it possible to continuously refine the analytical direction of the thesis and ensure alignment between theory, empirical findings, and the overall purpose of the study. For example, the study was primarily guided by sensemaking theory, and the empirical material was continuously analyzed in relation to the core concepts. In particular, concepts such as cues and retrospective became central in understanding how respondents interpreted digitalization in relation to their experiences and work practices. During the analysis, it became increasingly evident that identity played a central role in how respondents understood and positioned themselves in relation to digitalization. As a result, identity-related aspects of sensemaking were explored further and became more central within the theoretical framework.

To initiate the abductive research process, a literature review was conducted to collect and synthesize relevant theoretical and empirical insights. The purpose of this review was, first, to develop an understanding of existing research within the field, and second, to establish a theoretically grounded framework for the study (Snyder, 2019). By engaging with prior literature, key concepts, debates, and research gaps were identified, which informed both the formulation of interview themes and the overall analytical direction of the thesis. The framework is based on definitions of digitalization, digital maturity, and the theory of sensemaking which together provide a lens for analyzing how digitalization is understood and interpreted.

Based on this theoretical foundation, the study was designed as an exploratory qualitative study aimed at generating in-depth insights into how digitalization is understood within a specific organizational context. A case study design was adopted, as it enables a comprehensive data gathering of interpretations (Denscombe, 2014). Within this design, semi-structured interviews were selected as the primary method of data collection in order to generate rich empirical material. Interviews are particularly suitable for exploring participants' experiences, reasoning, and interpretations in depth (Bryman & Bell, 2017). This was especially relevant given that the study seeks to understand why project managers interpret and make sense of digitalization differently, processes that cannot be directly observed. The interview method therefore provided nuanced insights that were central to addressing the purpose of the thesis.

3.2 Case Study

This thesis is conducted as a case study of project managers within one division of a construction consultancy organization. A case study was chosen as it allows for an in-depth exploration of a single case, making it possible to develop a comprehensive understanding of how digitalization is interpreted and experienced in practice (Denscombe, 2014). This approach enables the collection of rich empirical data and provides insights into how respondents perceive digitalization and act within their organizational context. Furthermore, a case study is limited in its nature as

it only allows for studying a narrow and single case, such as a company or a strict group. By studying a single case in depth, the research can provide a more nuanced understanding of the relationship between digitalization and the project manager role. According to Denscombe, (2014) is a case study particularly relevant when explaining why things occur, which is fulfilling the aim of the study.

A case study design is particularly suitable in relation to the sensemaking perspective adopted in this study. It allows for capturing how individuals make sense of digitalization within a specific organizational setting, rather than treating digitalization as a purely abstract or generalized phenomenon. By focusing on one organization and one professional role, the study emphasizes individual sensemaking processes rather than broader organizational generalizations. By selecting a organization as the case, the study is able to explore digitalization within a real organizational context, where both technological and organizational aspects interact. This provides a relevant setting for analyzing why project managers differ in interpreting digitalization. As it is one natural setting with boundaries for the project managers working in the organization it is suitable as a case for this study (Denscombe, 2014).

The case company selected for this study is a consulting firm operating within engineering, architecture, and project management. The company operates in several countries, with a strong presence in the Nordic region, and is involved in projects related to infrastructure, urban development, and construction. The company was selected due to its position in the industry and its ambition to be a frontrunner in digitalization. It possesses strong internal competencies related to digital development and is characterized by a decentralized organizational structure, which enables local initiatives and facilitates digitalization efforts. The organization is knowledge-intensive and project-based, where multidisciplinary collaboration is central. Projects require coordination between different technical areas, stakeholders, and digital systems, making digitalization an integrated part of daily work processes.

The organisation is divided in divisions where the study focuses on project managers within the Building Management division, which works with project management and advisory services in construction projects. Project managers represent a key function within the organization, as they are responsible for coordinating projects, managing stakeholders, and translating strategic initiatives into operational work. This places them in a position where they are directly involved in both strategic and operational aspects of digitalization. This position makes them particularly relevant for understanding how digitalization is perceived, interpreted, and enacted in everyday project settings.

Since the organization operates as a consultancy firm, the pricing model becomes an important factor in understanding how digitalization is approached in practice. Consultancy services are typically billed on an hourly basis, meaning that time is directly linked to revenue generation within projects. The company participates in tenders by submitting bids based on hourly rates, where the estimated number of hours and required competencies form the basis of the offer. This means that

project managers are responsible not only for delivering the project, but also for ensuring that the project remains within the planned time and cost frame. In this context, digital tools and systems can influence both productivity and control. On one hand, digitalization can support more efficient workflows, better coordination, and improved information management. On the other hand, the implementation of new tools may initially require time and adaptation, which can be perceived as a challenge in a time-sensitive and cost-driven environment.

3.3 Literature Review

The study began with a structured literature review aimed at establishing a theoretical foundation for the research. Literature reviews provide a systematic way of collecting, evaluating, and synthesizing previous research (Snyder, 2019). A well-conducted literature review can therefore create a strong platform for theory development. As the study followed an abductive approach, the literature review was conducted iteratively throughout the research process. In order to establish a conceptual foundation for the study and guide the development of the interviews, it was most extensive during the initial stages of the thesis.

The literature search was conducted using a range of keywords related to the core themes of the study, including “Digital Transformation”, “Digitalization”, “Digital Maturity”, “Sensemaking”, “Project Manage*”, “Professional identity”, “Work Identity” and “Construction.” These terms were combined in different ways and applied to titles, abstracts, and keywords in order to capture a broad yet relevant body of research. Searches were conducted in the databases Scopus, Google Scholar, and ScienceDirect to ensure access to peer-reviewed and well-established academic publications. Following Snyder’s (2019) recommendations, the search process was guided by transparency and relevance, where databases, keywords, and selection criteria were consciously chosen in relation to the study’s purpose. The initial search generated a substantial number of articles. A first screening was conducted based on titles and abstracts to assess relevance to the study’s focus. Articles deemed potentially relevant were then read in greater detail to ensure alignment with the research aim.

The initial phase of the literature review focused primarily on the construction industry, digitalization and digital maturity, serving as a foundation for defining the scope of the study. In later stages, the review shifted towards identifying a suitable theoretical lens. In this process, the theory of sensemaking was selected, as it provides a way to understand how project managers interpret digitalization and relate it to their experiences. The literature search related to sensemaking was partly of a snowball character, where relevant articles were identified through references in previously selected studies. Additional searches were also conducted combining “sensemaking” and “construction” to identify research relevant to the specific industry context. Furthermore, the theoretical framework was expanded by including literature on professional identity and agency theory, in order to better understand how digitalization may be interpreted. In addition, the diffusion of innovation the-

ory was included to provide a perspective on how digital tools and practices are adopted and spread within organizations. Together, these perspectives complement the sensemaking approach by connecting individual interpretations to broader organizational and industry-level dynamics.

To ensure contemporary relevance, the review primarily focuses on articles published from 2015 onwards with exceptions for older established theories and a few relevant articles. Given the rapid development of digital technologies, more recent research is considered particularly important for understanding current discussions on digitalization and digital maturity within the construction industry. In addition to topical relevance, the quality of the publications was considered. Priority was given to peer-reviewed articles published in established academic journals, and journal rankings were used as a supporting criterion to ensure the credibility of the theoretical foundation.

3.4 Interviews

To understand project managers' interpretations of digitalization and fulfill the aim of the study, semistructured interviews were conducted. Semi-structured interviews were selected because they allow respondents to elaborate freely while still ensuring that all interviews follow a similar thematic structure (Kvale & Brinkmann, 2014). This balance between flexibility and consistency facilitates comparison across interviews and enables subsequent analysis. While participants may emphasize different aspects based on their experiences, the shared thematic framework ensures analytical coherence across the dataset. An alternative method could have been questionnaires, where respondents provide written answers (Denscombe, 2014). However, such a method would limit the possibility for follow-up questions and would not generate the same depth of data, which is central to this study in understanding why.

The semi-structured interview approach was considered particularly suitable given the study's focus on sensemaking. Since sensemaking theory emphasizes how individuals interpret and construct meaning in relation to their experiences and contextual cues, the flexible interview structure allowed respondents to elaborate on their own understandings and interpretations of digitalization. Rather than strictly following predefined categories, the interviews allowed new themes and meanings to emerge throughout the conversations. The questions were designed to be open and broad, allowing respondents to interpret them freely in line with the sensemaking perspective. Participants were encouraged to provide examples and develop their answers, supported by follow-up questions. This openness was especially important given the broad and varying understandings of digitalization identified both in the literature and among respondents during the interviews. The interview guide used in the study is provided in the Appendix.

As semi-structured interviews were used, the interviews were organized into four sequential phases to ensure enough data. The interviews began with a brief explo-

ration of the participants' professional context, including their role, responsibilities, typical tasks, and position within projects. This introductory phase served both as a conversational warm-up and as a way of establishing contextual understanding for later interpretations. As perceptions of digitalization are likely influenced by professional experience and organizational position, this context was considered important to early identity and how differences could be connected to the respondents background. The second phase focused on digitalization in the construction industry. Participants were invited to reflect on their experiences of digital development and their understanding of digital maturity. This phase was closely connected to the research questions as it provided both how the interviews interpreted digitalization but also made the differences in interpretations clear. The third and fourth phases examined conditions influencing the ability to drive digital development, including organizational, structural, cultural, and strategic factors that enable or constrain digitalization efforts. These two phases also clarified differences but also established the respondents' surroundings and could be used to answer how to leverage digitalization.

The selection of the interview participants was made using a purposeful sampling strategy (Bryman & Bell, 2017), with a clear idea of which individuals could provide the most relevant insights. The participants are project managers at the case company, within the Building Management division. They were chosen based on their expertise in both construction and project management, as well as their experiences with the ongoing digitalization. Additionally, the selection includes a broad range of ages and levels of professional experience. This diversity was intended to capture as many different insights, perspectives, and reflections as possible. All respondents were contacted via email, resulting in a high response rate. In total, 16 interviews were conducted, as presented in table 3.1.

The interviews were conducted both in person and online via Microsoft Teams, depending on the respondents' preferences. Potential limitations of online interviews, such as reduced ability to observe body language and technical issues, were considered but did not significantly affect the data collection. All interviews were conducted in Swedish, as it is the native language of both the participants and the researchers. The interviews were carried out over a three-week period, with one to three interviews conducted per day. During the interviews, efforts were made to create an open and conversational atmosphere, allowing respondents to speak freely and reflect on their experiences. At the same time, the interviewer maintained a neutral position to avoid influencing responses. This is important in qualitative research, as it can lead to more nuanced and detailed responses.

All interviews were recorded with participants' consent and transcribed in full. Microsoft Teams was used as a support tool for transcription, after which the material was manually reviewed and corrected to ensure accuracy. Notes and initial reflections were also written shortly after each interview, while the full analysis was conducted at a later stage. Although transcription is time-consuming, it facilitates a more detailed and systematic analysis of the material (Denscombe, 2014). It

enables careful comparison across interviews and a closer engagement with the data.

Towards the final interviews, no substantially new information emerged, indicating that a level of saturation had been reached. According to Kvale and Brinkmann (2014), the appropriate number of interviews depends on the purpose and scope of the study, but saturation is a useful guiding principle. Based on this, 16 interviews were considered sufficient for this study. The conducted interviews are presented in the table below:

Table 3.1: List of participants, length of interview and years of experience

ID-code	Length	Years of experience as project manager	In person or not
R1	50 min	10	In person
R2	70 min	>5	In person
R3	55 min	5	In person
R4	50 min	>5	Teams
R5	55 min	10	Teams
R6	60 min	25	In person
R7	55 min	30	Teams
R8	60 min	25	In person
R9	55 min	10	In person
R10	55 min	5	In person
R11	65 min	>5	In person
R12	60 min	5	In person
R13	65 min	7	In person
R14	55 min	5	In person
R15	60 min	10	Teams
R16	55 min	25	In person

The table presents an overview of the participants, including ID-coding, interview length, years of project management experience, and whether the interview was conducted in person or via Microsoft Teams. As all participants are project managers the ID-coding is based on the order in which the interviews were conducted and R as respondent.

3.4.1 Analysis of Interviews

The empirical material was analyzed using a thematic analysis approach. This method was chosen as it enables the identification of patterns across qualitative data while remaining close to participants' own expressions and interpretations (Braun & Clarke, 2006). The analysis was conducted using abductive logic, building on the research approach outlined in chapter 3.1, where empirical observations and theo-

retical concepts were continuously related to one another.

The analysis followed a structured but iterative process (Braun & Clarke, 2006). First, all interview transcripts were read multiple times to gain an overall understanding of the material. During this phase, initial reflections and observations were noted, forming early ideas about recurring patterns in how project managers described and interpreted digitalization. According to Denscombe (2014), this type of data analysis process is common and follows a logical straightforward process.

In the next step, the material was coded manually in a data-driven manner where segments of text were highlighted. Similar statements and ideas were grouped together, and the coding remained closely tied to the respondents' own language. This resulted in a set of initial codes that captured how participants themselves described digitalization, their work practices, and their experiences. At this stage, the analysis was intentionally kept open, without imposing predefined theoretical categories. As patterns began to emerge, the analysis moved to a more interpretive level. The initial codes were compared across interviews and grouped into themes based on similarity in meaning and underlying patterns across interviews. It was during this stage that the abductive process became more explicit. Recurring patterns in the data, such as differences in how digitalization was understood, the role of experience, and the influence of work context, led to a refinement of the theoretical focus.

Following this, the material was revisited and re-analyzed in light of the sensemaking perspective. This involved examining not only what respondents described, but how they constructed meaning around digitalization. Specific attention was given to how respondents drew on past experiences, how they interpreted cues from their work environment, and how they positioned themselves in relation to digital change. Through this process, the themes were further refined and more closely connected to theoretical concepts.

The analysis involved a continuous movement between empirical data and theoretical interpretation. Initial observations from the data influenced the development of the theoretical framework, which in turn guided a deeper interpretation of the material. This abductive process enabled a more nuanced understanding of why project managers interpret digitization differently and how the differences could be leveraged.

3.5 Research Quality

During the research process, the authors were aware of reflexivity and potential influence on the study (Denscombe, 2014). Given the educational background and knowledge within the construction industry, there was a risk that pre-understandings could shape the interpretation of the data. To mitigate this, the analysis was conducted with an open and critical approach, where own interpretations were continuously questioned and reflected upon. Reflexivity was applied throughout the study through ongoing discussions between the authors, where different perspectives and

assumptions were critically examined. This process enabled the authors to challenge each other's interpretations and reduce the risk of individual bias influencing the results.

The credibility of the study has been strengthened through a systematic and transparent research process. All interviews were recorded and transcribed in full, and the transcripts were carefully reviewed to ensure accuracy. This enabled a close engagement with the empirical material and reduced the risk of misinterpretation. The credibility of the literature was assessed based on factors such as author expertise, the purpose of the study, and the context in which it was produced (Denscombe, 2014). In addition, priority was given to peer-reviewed publications in established academic journals. To enhance reliability, a clear interview guide was used to ensure consistency across interviews, while still allowing flexibility for participants to elaborate on their experiences. In addition, the research process, including data collection and analysis, was carefully documented to increase transparency and allow for a clear understanding of how the findings were developed.

3.6 Method Limitations

A common limitation of qualitative studies is their limited replicability (Bryman & Bell, 2017; Denscombe, 2014). Since case studies and interviews are often flexible and adapted to the specific context, they lack a fully standardized structure, making them unique to the particular study. This also means that the results are difficult to generalize, as they are based on a relatively small number of subjective statements collected at a specific point in time. Furthermore, the study is based on a single case company, which may limit the transferability of the findings to other organizational contexts. To address these weaknesses, the authors have sought to enhance the study's reliability by following a clear interview guide, carefully documenting the research process, and applying a systematic coding method in the analysis.

The study relies on semi-structured interviews and therefore captures participants' interpretations rather than objectively measured digital practices. In addition, the selection of participants may have influenced the findings, as individuals with a particular interest in or experience of digitalization may have been more inclined to participate, which could result in certain perspectives being overrepresented. The study also focuses exclusively on project managers, meaning that other professional roles within the organization may interpret and experience digitalization differently, which are not captured in this analysis. Furthermore, the analysis is based on the authors' interpretation of the empirical material, which introduces a degree of subjectivity.

Finally, the study captures perceptions at a specific point in time. As digital transformation is an ongoing and evolving process, these interpretations may change as technologies develop and organizational practices adapt. Including participants from multiple organizations and over a longer time period could have provided a more nuanced understanding and strengthened the transferability of the findings.

3.7 Ethical Aspects

The study was conducted in accordance with established ethical research principles (Denscombe, 2014), including compliance with the General Data Protection Regulation (GDPR) (Integritetsmyndigheten, 2025). All participants provided informed consent prior to participation and before any recordings were made. To ensure anonymity, all interviewees have been anonymized, allowing them to speak freely without the risk of being identified. All respondents were assigned pseudonyms to ensure that their identities could not be linked to their statements.

All interview data and sensitive company-related information have been treated confidentially and the access to the data was restricted to only the authors. Audio recordings were conducted only with participants' approval and were stored securely for the duration necessary to complete the study. Thereafter, the recordings will be deleted in accordance with GDPR requirements. The study involves minimal risk to participants, as it is based on voluntary interviews focusing on professional roles and experiences. No significant ethical concerns related to the research aim or methodology have been identified.

3.8 The Use of AI

AI was used as a supportive tool in this study, primarily for transcription, translation, and language refinement. It was not used to generate original analysis or research findings.

The interviews were transcribed using AI-based tools within Microsoft Teams. All transcripts were reviewed and manually corrected to ensure accuracy, with attention to terminology and contextual meaning. Furthermore, ChatGPT was used to translate selected quotations into English, as the interviews were conducted in Swedish. These translations were carefully revised to ensure that the original meaning and nuances were preserved.

In addition, AI-based writing tools were used to support language editing, mainly for improving grammar and clarity. However, all final decisions regarding wording, structure, and content were made by the authors.

4

Results

This chapter presents the empirical findings based on the interviews and is organized around the main themes identified in the data. It examines why project managers interpret digitalization differently in practice and how these interpretations vary. The chapter highlights why differences in work context, professional identity, positioning and knowledge shape how digitalization is understood and evaluated differently.

4.1 Conceptual Ambiguity

The interviews show that project managers do not interpret digitalization in a uniform way. Rather than describing a shared and stable understanding, their descriptions reflect different ways of understanding and approaching digitalization in practice. Distinctions between digitization, digitalization, and digital transformation were not explicitly made by the respondents themselves. For this reason, the term digitalization will be used consistently throughout the following sections, while these conceptual distinctions are addressed later in the report.

These differences shape what is recognized as progress, how far development is considered to have come and why digitalization is understood differently. A common pattern across the interviews is the association of digitalization with concrete tools and practices rather than with organizational transformation. When asked what comes to mind, respondents most often referred to document management, BIM models, digital project platforms, and AI-based support tools. Some have further nuanced the interpretation:

“I’m mainly thinking about document management / . . . / I am also thinking about the transition to model-based projects and model-based drawings, and more generally that an efficiency improvement is underway. It may be lagging somewhat, but it is still progressing as we move away from doing everything, perhaps not on paper, but at least in traditional Excel and Word documents, toward more systematized ways of working.” (R3).

“I think about efficiency. The first thing that comes to mind is probably how you work with models.” (R10).

Although respondents consistently used the term digitalization, their descriptions

primarily referred to the use of digital tools to support and streamline existing processes. These descriptions did not indicate a fundamental transformation of work or organizational structures. This perspective is reflected in the following statement by one interviewee:

“It is probably more about supporting existing ways of working and storing all information in a better way. Revolutionize is probably a slightly too strong word for what digital tools actually do for construction project management. I would say it is more about information flows and how information can be stored in a better way. It is more of a support tool than a revolutionary tool. We are not really there yet.” (R2)

The respondents largely perceive the construction industry as having adopted a range of digital systems. However, this development is mainly understood as an enhancement of existing ways of working rather than a shift toward new ones. This reflects a view of digitalization as supportive rather than transformative.

4.2 Variation across Work Context

The findings show that differences in why project managers interpret digitalization differently are closely related to the contexts in which they work. A key finding is the high variability between work contexts. Respondents consistently describe digitalization as something other than a uniform progression. Instead, it is described as varying significantly depending on project conditions, client characteristics, and ways of working. As one respondent explains, the level of digital maturity can vary:

“It depends very much on which projects you are in, how far you have come, and how you use digital tools. It also depends on the client we are working with, how advanced they are, and what type of project it is. I would say that there is a huge difference in which digital tools are used and how far you have come. It really ranges from zero to a hundred, there is enormous variation.” (R16)

This variation suggests that digitalization is primarily experienced through local and project-specific conditions. Rather than referring to the organization or the industry as a whole, respondents’ descriptions are grounded in their immediate work context and everyday practices. Project managers primarily engage with digital tools within individual projects, which shapes their understanding of digital development. As a result, what appears as significant progress in one context may be perceived as limited change in another. Digital maturity therefore does not emerge as a stable or objectively observed condition, but as something shaped by experience, expectations, and professional perspective. This tendency is also explicitly acknowledged by two respondents:

“I want to say that this answer will be based a bit on the projects and experiences I’ve had so far, and I wouldn’t swear that it reflects exactly the overall picture across the entire industry.” (R13)

“I think it’s very /.../ not personal, but everyone has their own projects and doesn’t really have the bigger picture of what all projects are doing together and how far we’ve come overall.” (R2)

These localized interpretations are further reinforced by respondents’ limited insight into other parts of the organization. Several respondents explicitly describe this lack of organizational overview:

“I think people have very little insight into what others actually do.”(R11)

As a result, assessments of digital maturity differ significantly between respondents. When asked to position the industry on a scale from one to ten, some respondents described the industry as being around 7 or 8, while others placed it closer to 3 or 4. These differences were not random, but closely related to the respondents’ own project environments and experiences. For instance, one respondent explains how their assessment is influenced by exposure to a more advanced project:

“I would probably say it is around a six or seven if we are talking about the most advanced projects, but overall I think the construction industry is perhaps closer to a four. /.../ I would not have given the same rating if I were not working on (Project X) I have been involved in two other projects, and they are nowhere near as far ahead as X.”(R6)

The interview material illustrates a consistent pattern. Respondents involved in advanced, model-based projects describe significant progress, while still recognizing that other projects rely on more traditional practices. Others, who are more skeptical, argue that little has fundamentally changed and compare the construction sector unfavorably to other industries.

In addition to project-specific variation, interpretations are further shaped by where project managers are positioned within the project process, particularly in relation to design or production. Respondents working primarily on construction sites describe digitalization in terms of its impact on on-site work processes. Their accounts emphasize practical aspects such as improving workflows, reducing errors, and the introduction of new tools, while also highlighting challenges related to implementation and user competence.

“It is mainly about making the work on site easier, smoother, and reducing errors. It is supposed to make it possible to distribute new information quickly. It is very much about technology, mainly.” (R4)

By contrast, respondents working closer to design and coordination more often emphasize digital tools that support individual efficiency, improved coordination, and information exchange. These differences indicate that digitalization is not only used differently across roles, but also evaluated according to different criteria depending on work context.

Beyond these differences, the type of client further affect how digitalization is expe-

rienced and interpreted. Several respondents describe how projects driven by public clients, such as authorities and municipalities, are often characterized by more rigid processes, stricter regulations, and a stronger reliance on established systems. These conditions can limit the extent to which new digital tools and working methods are adopted:

“I think the problem is that the infrastructure sector is driven by public clients. While on the building side /.../ you work much more with private companies /.../ and then it is driven in a different way.” (R14)

This perception is reinforced by other respondents who highlight how regulatory frameworks and procurement requirements create structural constraints that shape how digitalization is interpreted:

“Authorities are almost like a norm, or even a law. There are natural barriers in the development of digitalization which mean that even if you want to, you still need to produce things in a traditional way.” (R3)

In contrast, projects with private clients are described as allowing greater flexibility and openness to new solutions. Respondents working in such contexts perceive more room to experiment with digital tools, which in turn influences how they assess the industry’s level of digital maturity. This suggests that digital maturity is not only interpreted through the immediate project, but also through the institutional conditions set by the client. Consequently, respondents working primarily with public clients tend to experience digitalization as slower and more constrained, whereas those working with private actors are more likely to encounter more advanced digital practices.

Taken together, these findings indicate that interpretations of digitalization are shaped by individual rather than a comprehensive view of the industry. Project managers primarily draw on their own work contexts, while having limited insight into others. As a result, digital maturity is not assessed against a shared standard but constructed through situated experiences of specific projects and clients. Differences in interpretation should therefore not be understood as contradictions, but as reflections of how digitalization is experienced from different positions.

4.3 Professional Identity and Motivation

Not only the work context itself explains why project managers interpret digitalization differently. Clear differences also emerge in their professional identity, particularly in how they perceive themselves along with how they interpret and value their work tasks. Project managers differ in how they understand their role, what they consider important, and how they believe they should act as professionals. Rather than being neutral recipients of digital initiatives, they actively interpret digitalization in ways that align with their professional identity and values. Furthermore, this chapter integrates motivation and perceptions of responsibility into a broader understanding of work identity.

4.3.1 Digitalization Within Professional Identity

The findings reveal a clear distinction between project managers who incorporate digitalization into their professional role and those who perceive it as optional or external. These differences are closely linked to how individuals understand themselves as professionals, which in turn shapes how they interpret digitalization and assess its relevance. One respondent describes how the understanding of digitalization is shaped by individual experiences and frames of reference.

“I think it’s very individual, and it probably also depends partly on one’s own experience. I believe there is quite a wide range between those who are younger or have an interest in this, and those who do not have that interest and prefer to work the way they always have. So I think there are differences. /.../ It also always depends on what frames of reference you have.” (R1)

This suggests that digitalization is not evaluated against a common standard, but interpreted through individual frames shaped by experience and professional identity. For some project managers, digital initiatives are not perceived as an inherent part of their work, but rather as something contingent on personal interest and engagement. For others, digital initiatives are not merely an interest, but a necessary component of how they interpret their work tasks. At the same time, some respondents describe how digital development can be both a personal interest and an integrated part of their professional identity. Differences in interpretation therefore reflect not only external conditions, but also how individuals define what is relevant and meaningful within their professional role.

This becomes particularly visible in how respondents describe engagement with digital tools. A lack of interest is described as a barrier to involvement, making it difficult to adopt new tools or change established ways of working:

“If you’re not interested in it, it’s not particularly easy to become involved in it, be influenced by it, or even try to engage with it. That’s always the case. If someone isn’t interested, you can talk as much as you like, but if their ears are closed, it doesn’t make a difference.” (R5)

However, these differences are not only about interest, but also about how professional competence is defined. The findings indicate that project managers position digitalization differently depending on what they consider to constitute expertise. For some, expertise is closely tied to personal knowledge, judgment, and experience, where digital tools are viewed as secondary or even unnecessary. This perspective is reflected in the following statements:

“Because at the end of the day, my tools are my eyes and my knowledge.” (R7)

“I think I prefer to think for myself. I like writing my own reports. I think that’s very good. It’s not super efficient in terms of time /.../. I

mean, that people actually work with their tasks instead of just feeding them into AI and get output. I don't know. I probably have a certain resistance to that. I'm a bit doubtful that it would fully help me.” (R12)

In these cases, digitalization is positioned as potentially conflicting with core aspects of professional identity. For some project managers, digitalization is not perceived as an inherent part of their work, whereas for others it constitutes a necessary component of how work tasks are understood and performed. Accordingly, digital tools are deeply embedded and increasingly central in some project managers' practices, while remaining peripheral in others. These contrasting perspectives illustrate how different understandings of expertise shape whether digitalization is incorporated into the role or positioned as secondary. Digitalization is therefore not only a technical issue, but also closely linked to how professional competence is defined and enacted.

These findings suggest that professional identity functions as a filter through which digitalization is interpreted. Depending on how project managers define their role, digitalization is either incorporated into everyday work or something peripheral. When digitalization aligns with what is perceived as relevant and meaningful tasks, it becomes easier to engage with. When it does not, it is more likely to be positioned as external and therefore deprioritized. This helps explain why project managers exposed to similar technologies may still interpret and engage with digitalization in fundamentally different ways.

4.3.2 Motivational Logics of Digitalization

The findings show that differences in why project managers interpret digitalization are closely linked to differences in motivation. Motivation reflects how individuals relate to digitalization in practice and how individuals translate their orientation into engagement. Rather than being uniform, motivation varies in both form and underlying logic, shaping how they understand and evaluate digitalization. In this sense, motivation functions as a key explanatory factor for why digitalization is interpreted differently across individuals.

A central distinction in the findings concerns whether motivation is internally driven or externally imposed. These two forms of motivation represent fundamentally different ways of making sense of digitalization, which helps explain why project managers interpret its progress differently. For some project managers, engagement with digitalization is driven by personal interest, curiosity, and a desire to improve their own work. For others, the motivation is externally imposed by the pressure of digitalization with the risk of being marginalized.

Internally driven motivation contributes to a more positive interpretation of digitalization, where progress is recognized in everyday work and linked to personal development. When digitalization aligns with personal interest and is seen as meaningful and valuable, respondents describe how engaging with digital tools allows them to

improve their performance and development within their role. In this sense, digitalization is not only about technological change, but also about professional growth and increased control over one's role. As one respondent describes:

“That’s also where the motivation lies, if I do a good job, I’ll get more to do, more freedom, and be able to work even more with what I enjoy. That’s really a big part of what drives me, that I get to do what I think is fun.” (R2)

At the same time, this perspective is often grounded in practical outcomes, where digitalization is valued for its ability to improve efficiency and create value in projects. Rather than focusing on the technology itself, respondents emphasize its usefulness in improving communication, coordination and client satisfaction. In these cases, motivation reinforces an interpretation of digitalization as something that contributes to meaningful progress.

In contrast to the interest-driven motivational view of digitalization, others describe it primarily as something they must adapt to rather than actively engage with. In these accounts, digitalization is not framed as an opportunity, but as an unavoidable condition of the work environment. Rather than expressing curiosity or enthusiasm, respondents emphasize the necessity of adjusting to ongoing technological development in order to remain relevant within the industry. As one respondent explains:

“We’re in this digital world, so it is just to adapt. We have to do that.” (R7)

From this perspective, digitalization is not perceived as optional, but as a condition that shapes the context within which project managers operate. Engagement is therefore driven less by personal interest and more by the perceived need to keep pace with industry change. In this way, motivation contributes to a different interpretation of digitalization, where it is approached as something individuals must respond to rather than actively shape.

This perspective becomes particularly evident when respondents discuss future relevance and employability. Several respondents associate digital competence with the ability to remain competitive within the industry:

“You have to be able to adapt and keep up with development. There’s a lot of positive aspects to it, and you just have to embrace it. Otherwise, you’ll probably be left behind pretty quickly.” (R9)

In these accounts, digitalization is interpreted through the potential consequences of failing to adapt. Engagement is therefore shaped by a defensive logic aimed at avoiding exclusion or professional irrelevance rather than pursuing new opportunities. This perspective is further reinforced by how technological development is described as rapid and difficult to influence, reinforcing a reactive orientation toward digitalization. As one respondent explains:

“I try to keep up as much as I can. But like I said earlier, so many things are coming, and it’s moving incredibly fast.” (R7)

Digitalization is experienced as something that evolves beyond the individual’s control, reinforcing a position where the individual becomes reactive rather than proactive. Engagement is therefore directed towards maintaining a sufficient level of competence, rather than actively shaping or driving development. These accounts reinforce a perception of digitalization as something one must engage with to avoid negative outcomes, rather than something one is drawn to.

These findings show that differences in motivation help explain why project managers interpret digitalization differently. When motivation is internally driven and linked to perceived value, digitalization is more likely to be interpreted as meaningful and progressive. In contrast, when motivation is shaped by external pressure and the perceived need to adapt, digitalization is more often associated with risk, pace, and professional relevance. These differing motivational logics shape whether digitalization is approached proactively as an opportunity for development or reactively as a condition that must be managed. Motivation therefore influences not only the extent to which project managers engage with digitalization, but also how they make sense of the industry’s ongoing digital transformation.

4.4 Positioning Toward Digitalization

Project managers encounter and engage with digitalization in different ways depending on their roles, responsibilities, and experience within projects. This section outlines the main differences identified in the findings and how these shape why interpretations of digitalization differ in practice.

4.4.1 Roles and Digital Competence

The interviews reveal clear differences between junior and senior project managers in how digitalization is understood and enacted in practice. These differences are not only related to generational experience, but also to how project work is organized, distributed, and enacted through different professional roles. Junior project managers refer to individuals with fewer years of experience in the project management role, who also tend to be younger. In contrast, senior project managers refer to individuals with more extensive professional experience and longer experience within the role. As a result, project managers encounter digitalization in different ways in their everyday tasks, which shapes how they interpret its significance and progress within the construction industry.

A recurring theme in the interviews is that younger project managers are perceived as having a more natural relationship with digital technologies, shaped by growing up in a digitalized environment. Two respondents explain this:

“I think that, as someone relatively new to the industry [...], you have quite a significant advantage in that you’ve had the chance to try out many different systems and learn them. Which means that, no, I might not be able to use every system immediately when I encounter it. I also have a learning curve, but I think mine is shorter.” (R10)

“We in our generation have grown up with computers and digital technologies, so it becomes something of a given.” (R2)

These accounts suggest that digital competence is not only related to technical knowledge, but also to familiarity, confidence, and ease of use. For younger project managers, digital tools are often closely integrated into everyday work practices, making digitalization more visible and central in their daily activities.

At the same time, the findings show that these differences cannot be understood solely in generational terms. They are also connected to how work is structured within projects. Junior project managers are more often involved in operational tasks and direct interaction with digital tools, while senior project managers tend to focus on coordination, client relations, and overall project management. Consequently, digitalization becomes embedded in different parts of the work process depending on role and responsibility. One respondent describes this division clearly:

“I don’t need to know it in detail, because the juniors do, but I need to have an overview.” (R6)

This suggests that digital competence is distributed unevenly not only across generations, but also across professional roles. Junior project managers position themselves closer to the technical and practical aspects of digitalization, whereas senior project managers position themselves at a more strategic and coordinating level. As a result, digitalization becomes associated with different meanings depending on professional position. For some, it is experienced as a practical necessity embedded in everyday production work, while for others it is perceived more as a managerial support function or organizational requirement. Several senior project managers also describe challenges related to technical knowledge and long-established work routines:

“I lack the basic knowledge needed to really drive it... I’ve become more of a generalist. It also has to do with my age.” (R6)

“I would love to have AI writing my protocols... but I still write them by hand. That’s the generational thing.” (R8)

These reflections indicate that the issue is not necessarily resistance to digitalization, but rather a combination of limited foundational digital knowledge and established professional routines. For individuals who have built their professional practice around non-digital methods, adopting new tools may require greater effort and adjustment. In such cases, digitalization may be perceived as more demanding or less central, rather than as an immediate improvement.

At the same time, the findings suggest that positioning toward digitalization is not static, but evolves over time in relation to changing roles and responsibilities. One respondent describes how their engagement with digital technologies shifted as their role changed within the organization:

“I used to be a tech enthusiast and liked being at the forefront. But I think your focus shifts over time [...]. Now I’ve moved more from a producing role to a reviewing role, and I do not know, I guess you just get a bit more tired.” (R5)

This suggests that interpretations of digitalization are shaped not only by generational background, but also by how professional roles develop over time. As project managers move from operational and production-oriented work toward more coordinating and reviewing responsibilities, digital tools may become less central in their everyday tasks. Consequently, engagement with digitalization may decrease, not because of active resistance, but because digital technologies are no longer perceived as equally relevant to the demands of the role.

The findings do not suggest that one group is more capable than the other rather, the interviews point to different forms of competence within project organizations. Junior project managers contribute hands-on technical skills and familiarity with digital tools, while senior project managers contribute experience, coordination capabilities, and an understanding of the broader project context. Rather than reflecting a simple divide between digitally skilled and less digitally skilled individuals, the findings indicate that project managers position themselves toward digitalization differently. These differences are shaped by how professional roles influence exposure to digital technologies, perceptions of relevance, and understandings of expertise.

4.4.2 Mandate and Influence

While the previous section highlighted differences in roles and digital competence, the interviews also show that project managers relate to digitalization differently depending on their mandate and influence within projects. Building on these differences in how digitalization is engaged with in practice, the findings suggest that mandate and client relationships shape not only who is expected to drive digitalization, but also how digitalization is interpreted and prioritized within projects.

Senior project managers, who typically carry greater responsibility, tend to enter projects at earlier stages and maintain direct relationships with clients. This provides them with a stronger mandate to influence strategic decisions, including how digitalization is framed and implemented. One respondent explains:

“I think that in larger projects, juniors tend to take on more of a supporting role [...]. Typically, it’s the more senior person who has direct contact with the client and drives the work forward. In that context, there isn’t really much room for a junior to propose solutions. That’s just how things tend to be.” (R10)

This shows that influence over digitalization is closely linked to role and position within the project. Senior project managers are more often involved in shaping decisions and adapting digitalization to project and client needs. Consequently, they tend to position themselves as decision-makers and are more likely to view digitalization as something that can be adjusted depending on project conditions and client requirements. In contrast, junior project managers are more likely to experience digitalization as something already decided within projects, which they are expected to implement and work with rather than influence.

The findings also show that influence is not only connected to formal authority, but also to trust and experience. Several respondents highlight that clients are more likely to listen to someone with experience:

“If a very young person suggests fully digitalizing a project, people might question their understanding. But if someone experienced says the same thing and can relate it to how things were done before, they listen more.”
(R6)

“If you have a strong client relationship, they usually listen to what you suggest.” (R16)

This suggests that senior project managers hold greater legitimacy in discussions concerning digitalization, as experience and client relationships increase the credibility of their suggestions. They therefore influence not only decisions regarding digitalization, but also how digitalization is understood and framed within projects and in relation to clients. Mandates therefore reinforce differences in who can shape digitalization and how it is interpreted.

The findings reveal a gap between knowledge and mandate. Junior project managers are often described as having strong technical skills, but they lack the authority to introduce new solutions. Senior project managers, on the other hand, have the authority to make decisions, but are not always directly involved in the technical work. As a result, the individuals closest to the practical use of digital technologies are not always those with the strongest influence over strategic decisions regarding digitalization. This creates two different ways of relating to digitalization in practice. Junior project managers tend to engage with digitalization through tools and everyday implementation, whereas senior project managers relate to it at a more strategic and coordinating level.

This shows that digitalization becomes more effective when technical knowledge and decision-making power are combined. Overall, the findings suggest that differences in mandate and influence play an important role in explaining why project managers interpret and position themselves differently in relation to digitalization.

4.4.3 Reverse Mentoring

While differences in knowledge, work, and identity explained variation in interpretations, the interviews also indicate that these differences could be mobilized productively. The findings indicate that differences in how project managers interpret digitalization are not only a source of variation, but also a potential resource for driving digitalization forward. In particular, a recurring theme across the interviews is how differences between junior and senior project managers can be actively leveraged through what can be understood as reverse mentoring. This involves creating collaboration between individuals who possess complementary competencies, where junior project managers contribute technical knowledge and digital proficiency, while senior project managers contribute experience, mandate, and client relationships.

A few respondents describe how such pairings are already used in practice as a way to facilitate mutual learning. For example, one respondent explains how senior professionals are intentionally paired with younger colleagues in project work:

“We work by pairing two people together. For example, an inspector who is 60 plus with a younger junior colleague who is quicker and has a better grasp. Then you learn from each other.” (R16)

“We work quite a lot like that in our team, pairing people who are skilled in digital tools with those who are a bit slower, so they can learn from each other within the project.” (R5)

In these collaborations, knowledge flows in both directions. The junior project manager supports the senior in the use of digital tools, while the senior provides guidance in professional judgment, communication, and interaction with clients and contractors. As another respondent describes, this learning takes place directly in the work context:

“The junior can then join inspections /.../ At the same time, you contribute with your digital knowledge and show the inspector: ‘This is how we do it now, here I note remarks, I take photos, I enter it directly into the tool.’ (R8)

This illustrates how digitalization can be embedded in everyday practice rather than something that needs to be learned separately. By integrating support and help with digital competence into ongoing work tasks, the threshold for adoption is lowered, particularly for those who may lack time or confidence to engage with new tools:

“That’s why it’s so damn good to have two different generations working together /.../ Together, it becomes strong.” (R6)

This points to a clear asymmetry between technical capability and decision-making power. On their own, neither group is fully able to drive digitalization. When combined, their respective strengths reinforce each other. This dynamic becomes particularly important in client interactions. One respondent described how digital

solutions are more effectively introduced when technical expertise is combined with senior mandate. Rather than relying solely on their own knowledge, senior project managers may involve digitally skilled colleagues in client meetings:

“I could bring a junior project manager to the client instead of me sitting there talking about it in a vague way.” (R8)

In this way, the senior project manager acts as a gatekeeper who opens access to the client, while the junior or technically skilled colleague demonstrates the practical value of digital tools. This not only increases credibility, but also makes digitalization more tangible and easier to understand for the client.

Respondents highlight that such collaboration also addresses one of the main barriers to digitalization: lack of time. Rather than expecting all project managers to independently develop digital competence, learning is embedded in collaboration with others who already possess the necessary skills:

“Many say they don’t have time for digitalisation /.../ The key might be to team up with someone who already knows how it works.” (R16)

Taken together, these findings indicate that differences in how project managers interpret and engage with digitalization can be actively leveraged through collaborative practices. Reverse mentoring enables the integration of technical knowledge and organizational mandate, thereby reducing the gap between understanding and implementation. By combining complementary competencies, digitalization becomes not only more accessible, but also more actionable within projects. This suggests that leveraging differences, rather than attempting to eliminate them, can play a key role in supporting engagement in and driving digitalization forward.

4.5 Knowledge Sharing Networks

A central challenge lies in managing the gap between individuals at different stages of digital maturity. One respondent describes this as a “rubber band”, illustrating the tension between those who are at the forefront of digitalization and those who are still developing their basic understanding:

“My focus is also on raising the minimum level in the organization /.../ so that we do not stretch the rubber band too far between the frontrunners testing the latest tools and those who have only recently learned the basics.” (R15)

This metaphor captures how the differences identified can enable transformation. While frontrunners contribute with new ideas and push development forward, a gap too large between individuals risks creating fragmentation. Therefore, coordination risks become more difficult and collective progress slows down. Instead, digital is described as a balancing act, where the organization must continuously reduce these gaps in order to enable further development.

From this perspective, the key is not to eliminate differences, but to actively manage them. Respondents emphasize that organizational efforts should focus on engaging the broader group of project managers, rather than only supporting those already at the forefront. Internal competence networks emerge as a central mechanism for achieving this. These networks create a structure where differences in experience and interpretation can be translated into shared knowledge. Respondents describe them as important arenas for testing new tools, exchanging experiences, and making digitalization more accessible across projects. Through these networks, knowledge developed by more digitally advanced individuals is spread horizontally to others, reducing the need to “reinvent the wheel” and lowering the threshold for engagement.

This also has practical implications for everyday work. Access to shared templates, tools, and support makes it easier for project managers with less experience in digital tools to engage with digitalization in a meaningful way:

*“It helps a lot that you can get quick help and good templates /.../
if I’m interested in scheduling, there is a network for that with lots of
templates.” (R14)*

Importantly, the findings show that these networks enable a shift from top-down to more distributed forms of development. While organizational strategies set the direction, much of the actual development is driven by individuals who share their experiences across projects. This highlights how engagement in digitalization increases when project managers are not only recipients of change, but active contributors to it.

Taken together, the findings suggest that the differences can be leveraged by creating structures that enable knowledge to circulate across the organization. Internal networks act as a connecting mechanism between project managers with different interpretations and levels of experience, reducing gaps while maintaining momentum. In this way, digital transformation is driven not by uniformity, but by the ability to translate diversity in perspectives into collective learning and action.

5

Discussion

This chapter discusses the findings in relation to the theoretical framework presented in chapter 2. The discussion is structured around the two research questions guiding the study. Section 5.1 addresses the first research question by examining why project managers differ in how they interpret and position themselves in relation to digitalization. Section 5.2 addresses the second research question by exploring how these differences can be leveraged to foster engagement in reaching digital transformation.

5.1 Understanding Differences in Interpretations

This section addresses the first research question by examining why project managers differ in how they interpret and position themselves in relation to digitalization. The findings point to three interrelated dimensions: the conceptual ambiguity surrounding digitalization itself, the local work contexts through which digital maturity is assessed, and the professional identities through which digitalization is filtered and evaluated. These dimensions are discussed separate before being brought together.

5.1.1 Conceptual Ambiguity in Digitalization

A central starting point for understanding why project managers differ in how they interpret digitalization in the construction industry is the nature of the concept itself, (see definitions). The findings show that project managers consistently use the term digitalization, but refer to fundamentally different phenomena. While some emphasize document management and efficiency, others describe model-based coordination, and a few refer to broader organizational change. What is striking is not that these descriptions differ, but that they are all offered under the same label. This indicates that the concept functions as a shared linguistic frame of reference without representing a shared understanding.

This variation can be understood in light of the conceptual ambiguity surrounding digitalization. As previous research has shown, the boundaries between digitization, digitalization, and digital transformation remain blurred in both research and practice (Verhoef et al., 2021). When the concept that anchors a shared discourse is undefined, individuals are left to fill that gap with their own interpretations. From a sensemaking perspective, this is expected. Weick (1995) argues that sensemaking is not a process of uncovering objective reality, but of constructing plausible accounts based on local contexts and experiences. In the absence of a shared con-

ceptual framework, there is no stable framework against which interpretations can be anchored. Each project manager therefore constructs their own plausible account.

This helps explain why assessments of digitalization in construction, as Löwstedt and Sundquist (2022) observe, remain so divergent. If the concept of digitalization itself carries different meanings, then assessments of the industry's progress will inevitably vary. Not only due to different experiences, but because they are not assessing the same phenomenon. A project manager who interprets digitalization as efficient tool use may genuinely experience the industry as mature, whereas one who understands it in terms of organizational transformation may perceive progress as limited. Both are responding rationally to the concept as they understand it. The divergence in assessments is therefore not merely a reflection of different experiences, but of differences in what is being assessed in the first place. As such, it cannot be reduced to a communication issue, but reflects a more fundamental lack of conceptual clarity at the level of the concept itself.

It is worth clarifying why the theoretical distinctions were established in the thesis in the first place. The answer lies precisely in the gap between language and meaning. The definitions are not introduced to evaluate whether respondents are correct in their interpretation, rather, they make it possible to examine what respondents are actually describing when using the term digitalization. Without such distinctions, systematic analysis would be difficult, as the same term is used to refer to fundamentally different processes. This also makes it possible to identify where their descriptions diverge from one another without those divergences being visible to the respondents themselves.

The consequences of this become visible when the respondents' descriptions are examined through the conceptual distinctions. Despite using the language of digitalization, respondents' most frequently describe digitization, the conversion of analog information into digital form (Gassman et al., 2014), and digitalization, where digital tools modify existing processes without fundamentally transforming them (Gobble, 2018). What Vial (2019) defines as digital transformation refers to a deeper organizational process that is largely absent from how project managers describe their experience of digital development. In several cases, respondents explicitly acknowledged that this level of change had not yet been reached.

This gap between the language used and the practices described is analytically significant. When digitalization is equated with the adoption of digital tools, the presence of technology risks being interpreted as evidence of transformation. It suggests that project managers may interpret digital development as more advanced than it structurally is. As noted by Perera et al. (2023), this creates a tension between visible technological progress and limited organizational change. The findings of this study indicate that this tension is not only structural, but also cognitive, embedded in how project managers make sense of digitalization.

5.1.2 Interpretations Shaped by Situated Work Contexts

The findings suggest that project managers' assessments of the construction industry's digital maturity are primarily shaped by the local contexts in which they work. Rather than evaluating digital progress through a comprehensive overview of the industry, respondents based their interpretations on their own work context. In practice, what they perceive as the industry's digital maturity often reflects their immediate project environment more than the industry as a whole. This is particularly relevant in construction, where project-based work frequently limits visibility across projects and organizational boundaries (Samuelson & Stehn, 2023; Wernicke et al., 2023).

This pattern can be understood through the perspective of sensemaking. A central argument in Weick (1995) is that individuals rarely interpret complex environments through complete or objective information. Instead, they construct plausible understandings based on cues available in their immediate context. Their interpretations are therefore not fully objective, but meaningful and reasonable from their own perspective. The findings identified several such cues, including project routines, client requirements, model usage, digital systems, and previous project experiences. Since individuals are exposed to different cues, they are also likely to develop different interpretations of digital maturity. This helps explain why project managers differ in how they assess the industry's level of digital development. Weick (1995) also describes sensemaking as a social and ongoing process, which may further explain why project managers within the same project often hold more similar views of digital maturity. Individuals operating in the same context are more likely to draw on similar cues, while also influencing each other's interpretations through everyday interaction. Consequently, assessments such as rating maturity as three or eight should not be understood as contradictions, but as plausible interpretations grounded in different local contexts.

The findings also reflect broader characteristics of the construction industry where opportunities to develop a shared understanding of digital progress across projects may be limited. Vrijhoef and Koskela (2000) highlight how construction projects are organized as temporary constellations involving multiple actors, where discontinuity between phases and roles makes it structurally difficult to maintain coherent processes of collective learning. Such fragmentation weakens the diffusion of common practices and limits the transfer of experience across projects (Nawi et al., 2014; Eriksson et al., 2026). As a result, project managers may construct highly different views of what is normal, advanced, or lagging depending on where they are positioned within the industry. Perera et al. (2023) similarly argue that digitalization in construction has often proceeded through isolated initiatives rather than coherent strategies, producing uneven maturity profiles even within single organizations. The present findings extend this observation by suggesting that the unevenness is not only organizational but also embedded in how different individuals make sense of the same development from different positions.

Importantly, these differences is shaped not only by local work contexts, but also by professional role and career stage. The findings reveal a consistent difference between junior and senior project managers in the kinds of cues they encounter and attend to in their everyday work. The difference in cue exposure has direct consequences for how each group interprets digitalization. Because junior project managers encounter digital tools as a natural part of their work, they are more likely to perceive digitalization as integrated, visible, and progressing. Senior project managers, by contrast, tend to operate at a more strategic and coordinating level, focusing primarily on client relations, project delivery, and resource management. Their engagement with digital tools is therefore often more indirect. Rather than evaluating digitalization through hands-on interaction with technologies, they may instead assess it in relation to whether it supports or challenges the professional practices and expertise they have developed over time.

As Weick (1995) argues, individuals notice what they are already attuned to noticing. The interpretive frameworks that junior and senior project managers bring to digitalization are not neutral, but closely connected to the work they perform and the professional contexts they inhabit. This also resonates with Orlikowski's (2000) argument that technologies acquire meaning through recurrent use in practice. Individuals who regularly interact with digital tools develop a fundamentally different understanding of their value and potential compared to those who encounter them only at a distance. For project managers who are not directly embedded in operational tool use, digitalization may therefore remain more of an abstract organizational initiative than a concrete everyday practice. This shapes not only what they notice, but also how they evaluate the extent and significance of digital transformation within the industry.

This also connects to the retrospective dimension of sensemaking. For senior project managers, whose professional identity and practice have been shaped over decades, new digital developments are interpreted against a backdrop of extensive prior experience. Klos and Spieth (2021) illustrate precisely this dynamic, showing how managers who had lived through the introduction of earlier technologies initially underestimated their impact, only revising their assessments retrospectively as practical experience accumulated. A transition that appears modest from outside may register as considerable progress when measured against earlier conditions. For junior project managers, that pre-digital baseline does not exist in the same way. Their interpretations are instead grounded in an environment where digital tools are already present, making the same level of development appear ordinary or insufficient. Pereira (2002) similarly argues that attitudes toward technology tend to evolve retrospectively as actors gain practical experience and reinterpret their earlier expectations in light of new cues. Two project managers can therefore look at the same organizational context and arrive at genuinely different, yet internally coherent, assessments of how far digitalization has come.

These differences in positioning are further reinforced by the limited visibility that project managers have into each other's work. Several respondents explicitly ac-

knowledge that they had little insight into what colleagues in other projects were doing or how digital tools were being used elsewhere in the organization. Zulu and Saad (2023) argue that digitalization in construction should be understood as a sensemaking process in which actors interpret and negotiate the meaning of digital technologies within their specific organizational and project contexts. When this negotiation occurs primarily within project boundaries, and when cross-project exchange is limited, the interpretations that individual experience produces are rarely challenged or broadened. Junior and senior project managers may therefore not only differ in what they notice, but also in what reference points they have available for evaluating their own observations. The absence of a shared organizational arena for comparing experiences means that each individual's local context functions as the primary, and often the only, frame of reference available.

This suggests that variation in how digital maturity is perceived is not only shaped by local project contexts, but also by how authority, knowledge, and interaction are structured within the organization. Taken together, this challenges digital maturity frameworks that primarily assess transformation at the organizational and industry level. Models such as the MIT digital maturity matrix conceptualize maturity at the organizational level, where firms are positioned according to digital intensity and transformation management intensity (Westerman et al., 2012; Westerman et al., 2014). This focus is consistent with dominant definitions of digital transformation, which emphasize organization-wide change and coordination across multiple actors (Vial, 2019). From this perspective, it is reasonable that maturity frameworks operate at higher levels of analysis. However, this differs substantially from the present findings, which indicate that project managers assess digital maturity in highly individualized ways based on their own project contexts and experiences. As a result, a gap emerges between how digital maturity is theoretically assessed and how it is perceived in practice. On the one hand, digital transformation is defined as a broader organizational and industry-level phenomenon that cannot be reduced to individual projects (Vial, 2019). On the other hand, the actors responsible for implementing and engaging with digitalization interpret progress based on localized project experiences rather than a holistic organizational perspective. Rather than suggesting that maturity frameworks should be relocated to the project level, the findings instead highlight a potential misalignment between levels of analysis.

This misalignment is further reinforced by the significant variation that exists within the same organization, where some projects display advanced digital practices while others remain comparatively traditional. The findings therefore question whether organizational-level maturity models fully capture how digitalization is experienced in project-based industries. This supports the critique raised by Wernicke et al. (2023), who argue that linear maturity paths are often poorly suited to temporary and context-dependent construction environments. Rather than representing a stable firm-level condition, digital maturity appears in practice as uneven, context-dependent, and constructed through local project experiences. This suggests that while digital transformation may be conceptualized at the organizational level, it is interpreted and enacted at the project level. Such a gap may have important

implications, as project managers' engagement with digitalization is shaped by their situated experiences rather than by an abstract understanding of organizational maturity.

5.1.3 Professional Identity Filters What Counts as Valuable

The findings suggest that professional identity functions as an important filter through which project managers interpret digitalization. Their assessments of digitalization were not based only on technical usefulness or efficiency. Instead, they were closely linked to how they understood competence and value within the project manager role. It became clear that project managers hold different professional identities and interpret digitalization differently depending on how professional competence is constructed within their identity. In these cases, digitalization is positioned as potentially conflicting with core aspects of professional identity. For some project managers, digitalization is not perceived as an inherent part of their work, whereas for others it constitutes a necessary component of how work tasks are understood and performed.

A clear difference emerged between those who considered digitalization to be part of professional competence and those who did not. Some project managers defined expertise through personal judgement, practical experience, relationship management, and "their own eyes." These respondents often positioned digital tools as secondary, optional, or external to the core of the profession. In contrast, respondents who associated competence with structured data, coordination systems, and model-based ways of working were more likely to regard digitalization as a natural and valuable part of professional practice. The findings therefore indicate that project managers may evaluate the same technology differently because they begin from different understandings of what professional excellence means.

This pattern is consistent with sensemaking theory, where identity shapes how individuals interpret change (Weick, 1995). Change is not only assessed in terms of what it does, but also in relation to what it means for the self. In this context, digitalization may be embraced when it confirms an individual's understanding of being competent, modern, or effective, but resisted when it appears to challenge valued sources of expertise. Differences in interpretation therefore seem to reflect not only attitudes toward technology, but deeper assumptions about what the role of a project manager should entail. Digital development can also be understood as a struggle over the meaning of professionalism, where competing understandings of competence coexist within the same occupational role. This helps explain why the same organizational initiative may generate enthusiasm among some project managers while creating skepticism among others.

As discussed in the previous section, junior and senior project managers often interpret digitalization from different experiential positions. The findings suggest that these differences are not only related to variation in work context and exposure to digital tools, but also to how professional competence itself is understood and

valued. While junior project managers more often incorporated digital tools into their understanding of competent practice, senior project managers more frequently emphasized experience, judgement, and relational expertise as the core of the role.

This divergence is closely linked to how professional competence is constructed and defended. Professional identity encompasses who one is, what one does, and how one's expertise is valued and interpreted (Alvesson et al., 2008; Brown & Phua, 2011). In the present study, these dimensions appeared closely connected to how project managers interpreted digital maturity. Several respondents emphasized previous knowledge, practical judgement, and experience as the most important forms of competence. In such cases, digitalization was not only seen as unnecessary, but also as misaligned with their understanding of the role itself and their professional identity. Resistance may therefore not simply reflect lack of competence or unwillingness to change but also attempts to protect established status positions, valued competencies, and familiar role boundaries. Where previously recognized forms of expertise risk losing relevance, identity defence may become a rational response.

This is particularly relevant in construction, where identities are often embedded in practice-oriented norms and operational experience (Löwstedt & Räisänen, 2014; Löwstedt & Sandberg 2020). Digitalization may be resisted not only because of usability concerns, but because it conflicts with historically valued understandings of what it means to be a competent project manager. If digital competence is framed as replacing experience rather than complementing it, resistance is likely to become stronger. This suggests that responses to digitalization are closely connected to the cultural norms that surround the role.

The findings also indicate that motivation plays a central role in whether digitalization becomes integrated into professional identity or remains external to it. However, motivation did not appear as an isolated individual trait, but rather as closely connected to how project managers interpreted the meaning and relevance of digitalization within their professional role. Respondents who perceived digitalization as interesting, meaningful, or aligned with their understanding of competent practice were more likely to engage proactively with new tools and position digitalization as a natural part of their role. In these cases, motivation appeared internally driven and closely tied to professional identity. This suggests that when digitalization becomes integrated into how individuals understand themselves and their competence, engagement becomes easier, more self-driven, and more sustainable over time. In contrast, other project managers positioned digitalization as external to their professional identity and primarily engaged with digital tools because of organizational expectations, pressure from colleagues, or fear of becoming marginalized. In such cases, motivation was more externally driven and reactive in character. Digitalization was approached mainly out of necessity rather than personal commitment, and digital tools were complied with rather than meaningfully integrated into professional practice. The findings therefore suggest that differences in engagement may not only reflect differences in technical competence, but also differences in how digitalization is interpreted in relation to professional identity and motivation.

At the same time, externally driven motivation should not necessarily be viewed only as negative. Pressure to adapt may also become a mechanism for identity change over time. Brown and Phua (2011) show that professional identities are shaped in relation to others and through social comparison. New expectations from colleagues, clients, or organizations may therefore push individuals to gradually include digital competence in their self-understanding. What begins as external pressure may later become internalized competence. This means that digitalization can trigger identity work and identity renewal. Alvesson et al. (2008) and Pereira (2002) similarly argue that identities are continuously revised in response to changing organizational conditions. This was also visible in the findings, where some respondents described how their views on digital tools had evolved over time. Professional identities should therefore not be understood as fixed. They can develop gradually through new experiences, repeated use, and changing expectations.

This can also be linked to sensemaking as an ongoing social process. Weick (1995) argues that interpretations are continuously shaped and reshaped through interaction and experience. If project managers repeatedly encounter digital tools that create value, their understanding of both the tools and the role itself may change. In that sense, digital transformation may also require identity transformation. How project managers interpret digitalization in relation to their identity is likely to shape their willingness to engage in future development. If organizations understand how different identities shape resistance and engagement, they may be better positioned to support movement toward higher levels of digital maturity. Reluctance should therefore not only be interpreted as lack of skills or motivation. It may also reflect deeper meanings attached to digitalization and the project manager role. Without such efforts, traditional understandings of competence may continue to reproduce themselves even when new technologies are introduced (Brown & Phua, 2011).

5.1.4 The Interplay Between the Dimensions

The three dimensions discussed above do not operate in isolation. Rather, their interaction helps explain why project managers differ in how they interpret and position themselves in relation to digitalization. When the meaning of digitalization is conceptually ambiguous, there is no shared standard against which interpretations can be aligned. This creates a space in which other factors become decisive. Professional identity and local project context then shape how this ambiguity is resolved in practice.

Professional identity shapes which aspects of the concept a project manager even notices. A project manager who defines competence through personal judgment and relational experience is not simply resistant to digitalization. They are applying a frame of reference that makes certain features of the concept visible and others invisible. The local project context then determines what that frame encounters in practice. Two project managers with similar identities but different project environments will draw on different cues and arrive at different interpretations. What makes the combination particularly consequential is that each dimension stabilizes

the others. Identity makes certain cues feel relevant, context makes those cues available, and conceptual ambiguity ensure there is no external standard against which to check the resulting interpretation. The differences are therefore not simply additive. They are self-reinforcing in ways that make them resistant to change through any single intervention.

This interaction also sheds light on patterns observed in relation to digital maturity frameworks. As Wernicke et al. (2023) argue, digital maturity in construction is not a fixed condition, but something that is interpreted and negotiated by actors positioned in different contexts. The findings support this view. Some respondents reflected orientations resembling a Fashionista profile in the MIT matrix, where enthusiasm for tools and experimentation was stronger than governance or strategic coordination. Others reflected more conservative orientations, where caution toward new technologies coexisted with stronger emphasis on control and established routines (Westerman et al., 2012; Westerman et al., 2014). These differences did not appear to be primarily a matter of organizational positioning. They reflected the interaction between how respondents understood their professional role, what practices were visible in their project environment, and the frame of reference they used to make sense of digital development. The fact that several respondents were uncertain whether digitalization was part of their formal responsibility further reinforces this point. When expectations are unclear and interpretations differ, engagement becomes uneven and difficult to sustain.

From a broader perspective, the results indicate that identity, conceptual ambiguity, and work context interact rather than operate separately. Professional identity shapes what is perceived as relevant, knowledge shapes confidence and ability to act, and work context shapes which digital practices are visible in everyday life. This aligns with research showing that identities in construction are embedded in practices, routines, and social environments (Löwstedt & Räisänen, 2014). Understanding this is critical, as it suggests that digital transformation is not only a technical or organizational challenge, but also an interpretive and identity-based process. Supporting digital transformation may therefore require a more holistic approach in which organizations simultaneously develop competencies, redesign work practices, and reshape understandings of what professional excellence means. Internal networks, mentoring relationships, and visible role models may be particularly valuable because they connect these dimensions and help project managers lift their gaze beyond their immediate context.

5.2 Enabling Digital Transformation

The preceding sections have established why project managers interpret digitalization differently. Rather than treating these findings only as barriers, this section addresses the second research question by exploring how the differences identified can be actively leveraged to foster engagement in digital transformation. Two mechanisms emerge from the findings. Internal knowledge networks and reverse mentoring. Together, they suggest that digital transformation in construction depends not

on eliminating interpretive differences, but on building the organizational conditions in which those differences become a productive resource.

5.2.1 Internal Networks for Shared Sensemaking

The findings suggest that differences should not only be viewed as a challenge, but as a potential resource for further transformation. One way to leverage interpretive differences rather than merely manage them is through deliberate internal knowledge networks. Respondents describe how internal competence networks already serve as arenas where project managers test new tools, exchange experiences, access shared templates and support across project boundaries. One respondent captures the broader organizational risk through the metaphor of a rubber band. The concern is not only that some fall behind, but that the gap between frontrunners and those still developing basic digital understanding stretches to a point where coordination becomes difficult and collective progress slows. The goal is therefore not to eliminate differences but to actively manage them. Importantly, respondents describe how much of the actual development in the organization is driven not by top-down directives but by individuals sharing experiences with peers across projects.

Internal networks address the contextual isolation established in 5.1.2 by deliberately expanding the cues available to project managers beyond their immediate project boundaries. When project managers encounter peers demonstrating how digital tools function in practice within comparable project settings, new interpretations of what is possible may emerge. Interpretations are not formed in isolation but shaped continuously through interaction with others (Weick, 1995). When project managers encounter peers demonstrating how digital tools function in practice within comparable project settings, new cues enter their sensemaking process and new interpretations of what is possible may emerge. Maitlis and Christianson (2014) further argue that in ambiguous organizational environments, actors rely heavily on concrete, local experiences to construct meaning and guide action. Because colleagues working within recognizable project contexts are perceived as more contextually relevant than external consultants or generic transformation programs, their practices carry particular interpretive weight. In this sense, project managers working in digitally advanced environments function as particularly influential sources of new cues. This influence does not primarily emerge through formally championing digitalization, but through making visible in everyday practice what digitalization looks like within a familiar project context. Witnessing concrete examples within a shared organizational setting may therefore be more effective in shifting interpretations than strategic communication or top-down instruction alone.

The findings also point to a more specific mechanism through which internal networks foster engagement. Rather than requiring project managers to independently develop competence from scratch, networks distribute existing knowledge in ways that make digitalization more immediately actionable. This is particularly relevant given the identity dynamics established in 5.1.3. Resistance is often connected not to a lack of willingness but to motivation and a perceived misalignment between

digital tools and established professional expertise. When digitalization is encountered through peer interaction rather than through formal organizational mandates, it becomes less threatening to existing professional identities. It also becomes easier to incorporate gradually into everyday practice. In this sense, internal networks do not only expand what project managers know. They shape the conditions under which engagement becomes possible.

From a digital maturity perspective, the MIT model emphasizes that higher maturity depends not only on technology investments but also on governance and organizational coordination (Westerman et al., 2012; 2014). The findings suggest that internal networks may serve as a bridging mechanism between isolated digital initiatives and broader organizational transformation. Allowing successful practices developed in one project to become shared organizational capabilities rather than remaining local successes. This is particularly relevant given the construction industry's structural conditions, where knowledge generated in one project rarely becomes embedded in the organization as a whole (Eriksson et al., 2026). Internal networks represent a deliberate counterweight to this tendency. However, the findings also show that such networks do not emerge naturally at a scale sufficient to drive broader change, and their value therefore depends on being deliberately maintained. While internal networks can address the contextual isolation that shapes divergent interpretations, they do not by themselves resolve the structural tension between digital competence and organizational mandate. That requires a more targeted mechanism, which is discussed in the following section.

5.2.2 The Digital Mandate Gap

The findings establish that junior and senior project managers hold fundamentally different relationships to digitalization. As discussed in 5.1.2, junior project managers tend to incorporate digital tools naturally, while senior project managers more often position digitalization as supplementary to the judgment and relational expertise that defines their practice. Rather than understanding this as a barrier, the findings suggest it can be understood as a complementary resource. When deliberately leveraged, the generational difference enables a form of knowledge exchange that neither group could achieve independently. Several respondents describe how this already occurs informally within projects, here referred to as reverse mentoring.

The asymmetry between experience is precisely what makes the collaboration productive. Several respondents describe how intentional pairings between more experienced colleagues and younger project managers already exist within projects, where knowledge flows in both directions. From a sensemaking perspective, this mechanism works precisely. Digital tools are encountered not through abstract organizational initiatives, but align with the senior project manager's frame of reference. Weick (1995) argues that sensemaking is inherently social and individuals form and revise their understandings through interaction with others. When junior and senior project managers work together in ways that make each other's practices visible, existing interpretations can be gradually questioned and revised. The senior project

manager who observes a junior colleague integrating a digital tool encounters a cue that is unlikely to arise through their own everyday work, and one that is easier to incorporate precisely because it appears within a professionally recognizable context.

For junior project managers, the mechanism works differently but is equally significant. Engaging in collaboration with a senior colleague creates a channel through which their digital competence becomes organizationally visible and consequential. Rogers (1983) argues that innovations spread most effectively when early adopters are connected to those who hold influence within the social system. Reverse mentoring creates precisely this connection. The technical orientation of the junior project manager travels through the professional credibility of the senior, reframing digital competence as something legitimate and practically relevant rather than something confined to operational tasks.

What makes this mechanism particularly important is the structural asymmetry that underpins it, here conceptualized as the mandate paradox. The interviews revealed that junior project managers typically lack the authority to introduce or advocate for digital solutions in ways that shape project direction. Senior project managers hold the mandate to frame and prioritize digitalization in relation to clients and strategic decisions, but are often less embedded in the practical use of those tools. Weick (1995) introduces the concept of enactment to describe how individuals do not only interpret their environments but actively shape them through their actions. The capacity to enact digitalization is therefore not equally distributed across roles. Senior project managers, by virtue of their client relationships and organizational authority, are better positioned to act on the interpretations they hold. Bresnen et al. (2005), drawing on Giddens' structuration theory, describe how actors draw on existing structures when they act, while simultaneously reproducing those structures through their practices. This means that the organizational conditions which grant senior project managers their authority also reproduce the conditions under which junior project managers' digital knowledge remains underutilized. As Rogers (1983) observes, when those with the strongest digital orientation are structurally positioned in roles with limited mandate, digital knowledge tends to circulate horizontally among peers rather than spreading vertically in ways that can shape organizational direction. Orlikowski (2000) similarly argues that organizational structures develop through repeated interactions with technology in practice but when those interactions are confined to specific roles and project contexts, the learning that could otherwise emerge from them remains similarly confined. Reverse mentoring addresses this not by redistributing formal authority, but by creating informal pathways through which digital knowledge and organizational mandate can connect. The junior project manager's competence gains reach and the senior project manager's decisions gain grounding.

The absence of such pathways does not only slow down digital development in a practical sense, it actively sustains the interpretive differences that this study has sought to explain. When junior project managers' digital experiences remain largely invisible to senior colleagues, and when senior project managers' assessments

of digitalization are formed without direct engagement with the tools that junior colleagues use daily, the two groups continue to interpret the same phenomenon through increasingly separate frameworks. As sensemaking is an ongoing process interpretations are continuously shaped and reshaped through interaction with others (Weick, 1995). When structural conditions prevent meaningful interaction across generational boundaries, the conditions for interpretive convergence are absent, and differences become self-reinforcing over time. Reverse mentoring represents a deliberate intervention in this dynamic. One that does not require eliminating differences in interpretation, but creating the conditions in which those differences can become productive rather than persistent.

The findings do indicate, however, that such collaboration tends to emerge through informal pairings and individual initiative rather than deliberate organizational design. Leveraging generational difference therefore requires more than recognizing that it exists. It requires building organizational conditions in which complementary competencies can meet consistently, not only in individual projects, but across the organization. Without such structures, the knowledge and mandate that junior and senior project managers respectively hold are likely to remain separated by the same role boundaries that limit the natural diffusion of digital practices.

6

Conclusion & Recommendation

The purpose of this study was to develop a deeper understanding of why project managers in the construction industry differ in how they interpret and position themselves in relation to digitalization. Furthermore, the study examined how these differences can be leveraged to foster greater engagement in digital transformation. The findings demonstrate that digitalization in the construction industry is not a uniform phenomenon in practice, but rather shaped by individual interpretations and experiences. Differences in how project managers interpret digitalization should not primarily be understood as barriers, but as complementary resources that can support digital transformation. Two mechanisms emerge as particularly important: internal knowledge networks and reverse mentoring. The ability to manage and leverage differing perspectives may therefore become increasingly important as the industry continues to navigate digital transformation. This study demonstrates that digital transformation in the construction industry is not solely a technical or strategic challenge, but fundamentally an interpretive and identity-based process.

Based on the findings, several actions are recommended for organizations in the construction industry seeking to advance digital transformation:

Establish a shared conceptual foundation. Organizations should work to clarify what digitization, digitalization, and digital transformation mean in their specific context. Without a shared vocabulary, assessments of progress will remain divergent and strategic communication will be difficult to sustain. It is therefore important to create a common understanding and direction. Organizations may benefit from creating arenas where different interpretations can be discussed and aligned through clear communication, shared visions, and continuous dialogue.

Design deliberate reverse mentoring structures. Rather than relying on informal pairings, organizations should institutionalize collaboration between junior and senior project managers. This means actively creating project constellations where digital competence and organizational mandate are brought together. Junior project managers would have access to client-facing situations where their technical knowledge can become visible and consequential. Senior project managers can benefit from their digital competence and practical familiarity with new tools and practices.

Invest in internal knowledge networks. Organizations should maintain and actively develop internal competence networks as a structural counterweight to the

contextual isolation produced by project-based work. These networks should be designed not only to support frontrunners but to raise the minimum level of digital engagement across the organization. This would prevent the gap between the most and least digitally advanced from widening to a point where coordination suffers.

Future Studies

Several directions for future research emerge from this study. One important area concerns the mandate gap between junior and senior project managers. Although reverse mentoring was identified as one potential mechanism for addressing this, future research could explore the phenomenon in other organizational contexts and through alternative theoretical perspectives. Examining the mandate gap through theories related to leadership, organizational change, power dynamics, or professional legitimacy could provide deeper insights into how organizations can better bridge this.

A related area concerns the relationship between client dialogue and digital engagement. The findings suggest that client type significantly shapes how digitalization is prioritized within projects, still this dynamic is rarely addressed proactively. Future research could explore how and when digital ambitions are introduced in client relationships and tender processes, and what role project managers play in shaping client expectations around digitalization rather than adapting to them.

Furthermore, future research could investigate the gap between how digital transformation is conceptualized at the organizational level and how it is enacted within projects. The findings suggest that project managers primarily interpret digitalization through their immediate environments rather than through broader organizational strategies or visions. Further research could therefore examine how organizational ambitions, strategies, and digital visions are translated into everyday project practices, as well as how alignment between organizational and project-level understandings can be strengthened. Increased understanding of this relationship could contribute to more coherent and effective digital transformation processes within project-based organizations.

Finally, while this study only addressed motivation as a factor influencing engagement with digitalization, the findings indicate that project managers differ in why they choose to engage with it. Future research could therefore explore the motivational drivers behind the adoption, resistance, or promotion of digital initiatives in practice. Such studies could examine how factors such as professional identity, perceived usefulness, or organizational culture, shape engagement with digital transformation. A deeper understanding of these motivational dimensions could provide valuable insights into how organizations can foster stronger commitment and participation in digital transformation initiatives.

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A

Interview Guide

Short introduction about the study:

- Is it okay to record?

Begin the interview

Background and context:

- What is your background?
- Can you describe your role and your main responsibilities?

Digitalization in the industry:

- When you hear the term digitalization in the construction industry, what comes to mind?
- How would you describe the current development of digitalization in the construction industry?
- Do you perceive a difference between how digitalization is described and how it actually works in practice?
- Are there examples where you have implemented digital tools and their consequences?

Digitalization – individual perspective:

- How do you view your own position in relation to the ongoing digitalization?
- What kind of project manager do you see yourself as when it comes to digitalization?
- To what extent do you feel that you can influence how digital ways of working are used in your projects?
- Are there situations where you wanted to drive digital development but did not? Why?
- How motivated do you feel to contribute to further digital transformation?
- How do you view your responsibility when it comes to driving digital development?
- What would be required for you to act more as a driving force in digital transformation?

Digitalization – organizational perspective:

- What limits or slows down digital transformation?
- To what extent do you feel there is an expectation that you drive digital development?

- Do you experience that there are established norms or ways of working that hinder digital development?
- How does the temporary nature of projects (temporary teams, many actors) affect the possibility for long-term digital development?
- How are digital tools used in projects?
- What would need to change for project managers to take a more central role in digitalization?
- Looking ahead, what would be required for you to act more as a driving force in digital transformation?
- How do you think the role of the project manager will change as digitalization progresses?

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