



From storage to (re)use: factors affecting the (re)use of organisational information

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DOI: <https://doi.org/10.47989/ir31356427>

Abstract

Introduction. This paper explores what affects the information-seeking behaviour of project managers when navigating the challenges to satisfy their need for information to perform work tasks, solve problems, and achieve organisational goals.

Method. In a qualitative case study, fifteen semi-structured interviews were conducted with project managers at a large public authority in Sweden.

Analysis. The interviews were analysed using thematic analysis, followed by an analytical discussion connected to the analytical framework of the information use environment (IUE).

Results. The findings suggest that project managers rely on the experiences and knowledge of co-workers to find the information they need, even though this information is stored in a shared information system. The lack of the system's search functionality and unclear information structure make an independent, informed search difficult.

Conclusions. In the context of project managers, several mandatory and cultural elements affect information behaviour. A limiting factor is restricted information access, primarily due to systems' lack of search functionality and their design focus on supporting work processes rather than facilitating the retrieval of comparable project information. Additionally, individual information structures hinder effective searching, leading project managers to rely on colleagues to locate necessary information. A robust work process does not equal the ability to (re)use information within systems.

Introduction

In the performance of work, information in various forms is produced and used as an input or an outcome of activities or to facilitate the work process. Organisational or workplace information that is created through various activities is closely linked to the organisation's goals and visions and is created based on the needs of information valuable to the organisation. Workplace information can be considered a social phenomenon, and different people and groups within the organisation may interact with and value the same information differently, which may be due to different positions, work tasks, or different shared traditions or tacit agreements within the groups. Other influential factors in how workplace information is managed and how employees carry out their work are based on the expertise, skills, experience, norms, and values of the employees, ultimately influencing the information processes and information behaviour (Byström, Heinström, & Ruthven, 2019).

Information has been described as a strategic resource for an organisation (Choo, 2002). With descriptive words like *fuel*, *glue*, and *currency*, information can be considered highly valued (Svård, 2014), and organisational information is considered a key factor for organisational growth and prosperity (Durugbo, Tiwari, & Alcock, 2013). As the amount of information is increasing, so is the amount of information stored in systems that need to be navigated for decision-making (Svarre, Lykke, & Bygholm, 2024).

The ability to enhance administrative efficiency and effective information management in organisations is closely tied to digitalisation and electronic government (e-government) initiatives. The narrative of e-government does not only focus on increased external public services and public inclusion, but also on the development of internal processes (Setyarto et al, 2025). As the implementation of digitalisation and e-government aims to fundamentally reshape governmental structures, its success does not only lie in the implementation and use of new technologies, but also in the change of organisational structures, strategies, processes, and culture (Mahraz, Benabbou, & Berrado, 2019). However, digitalisation has a long history in Swedish public administration (e.g., Ilshammar, 2002; Kaiser et al., 2024), which has generated layers of several generations of technological platforms and system solutions with different characteristics. This highlights the importance of a holistic environment in which information structures integrate organisational routines, legal requirements, and defined management roles. Such environments are expected to support collaboration, system integration, staff training, process orientation, and the reuse of information (Svård & Zimic, 2021). These ambitions and expectations are reflected in many public sector organisations, where digitalisation goals coexist with practical challenges in everyday work. As modern organisations and modern work are considered information-intensive, they also heavily depend on diverse information systems (Saastamoinen & Järvelin, 2017). Previous user studies argue for the importance of considering and identifying different information needs and domain-specific information needs to avoid investments in deficient technical solutions (Schoegje, de Vries, & Pieters, 2022).

Against this background, the present study aims to explore the information behaviour of project managers in a large Swedish public agency when navigating the challenges to satisfy their need for information to perform work tasks, solve problems, and achieve organisational goals.

The research questions

The objective of the case study is to examine the information environment, specifically the information-seeking practices of project managers when creating new projects in a large public authority in Sweden. The research questions formulated to address the research objective are:

- How is information accessed and (re)used in the continuing performance of work?
- What factors impact the project managers' (re)use of information?

Literature review

The information that is created in an organisation is seen as a key to an organisation's prosperity and growth (Durugbo et al, 2013). As organisations are beginning to include more information-intensive work tasks, information use, specifically information seeking, plays an increasingly important role (Byström & Hansen, 2005).

Large amounts of information are generated through work processes in contemporary public organisations, and when well organised, this information can be key to a well-functioning administration and can lead to new uses and new knowledge. The workplace information created through organisational activities is based on information needs valuable to the organisation (Byström et al., 2019). Lykke, Bygholm, Søndergaard, and Byström (2021) examined information search practices for workplace information across different organisational work areas of an international biotechnology company. The study focused on enterprise search, defined as the use of search technologies “[...] to facilitate information retrieval, sharing and re-use of organisational information supporting development, decision-making, and the creation of new knowledge” (Lykke et al., 2021, p. 1053). According to the authors, satisfaction with enterprise search is generally low due to contextual and technical factors. Based on log data analysis, surveys, and interviews with employees in different organisational areas, work roles, and geographical locations, the findings showed that employees relied on their own memory and knowledge of the work environment. Additionally, the study highlighted the importance placed on others in acquiring necessary contextual and historical knowledge (Lykke et al., 2021).

According to Byström and Kumpulainen (2020), the concept of information need is considered the most widely used and a fundamental aspect for understanding why people seek information, especially in the fields of knowledge management, information management, information literacy, and other information studies. Why people interact with information may differ across contexts. Additionally, people may interact with information for many reasons, such as to complete a task, for problem-solving, to achieve a specific goal, to assist someone, or for entertainment, among others (Byström & Kumpulainen, 2020). Tasks or work tasks are defined as an activity, connected to the accomplishment of a goal (Vakkari, 2003), and are considered highly influential for users' information-seeking and searching strategies (Soufan, Ruthven, & Azzopardi, 2021). In their conceptualisation of information needs, Byström and Kumpulainen (2020) argue that these are the result of the interplay between past events, expectations, and information-related activities, which take place within both individual and social information environments. In the context of task-based information needs, specific tasks are situated within a working environment characterised by established practices, organisational traditions, routines, and well-defined goals and values. According to Byström and Kumpulainen (2020), the social, historical, and professional conventions of a workplace influence which information sources are considered legitimate and valued as those expected to yield the best return for carrying out work, such as whether to use existing search tools or consult knowledgeable colleagues.

The role of people or colleagues in solving work tasks has been examined in various contexts (e.g., Dodson, 2024; Freund, 2015; Svarre, Lykke, & Bygholm, 2024). In a biotechnology company, Svarre, Lykke, and Bygholm (2024) examined the characteristics of users' searches for people alongside their use of an enterprise search system. Understanding how people search to solve specific tasks can help tailor systems to meet employees' information needs and information-seeking practices. Their study showed that colleagues were used as shortcuts and stepping stones to a specific desired document or piece of information. In this study, people search to obtain contact information, access specific documents, and tap into expertise and knowledge of a particular area or of previous projects. According to the authors, people contribute organisational knowledge and relationships among various pieces of information, specific situations, and previous work (Svarre, Lykke, & Bygholm, 2024). The role of people in an information use environment has been prominent in other contexts. In the context of a large Canadian university, Dodson (2024) explored the

information needs and behaviours of undergraduate engineers and how peers are used to address these needs. The study showed that when tensions and challenges emerged, such as limited access to material or restrictions on official platforms, students developed alternative ways to address these needs. These alternatives could involve accessing repositories of previous material or using online backchannels for peer support, information sharing, and learning (Dodson, 2024).

The ability to share information and the importance placed on people and human relations are also highlighted in knowledge management (KM) research. Previous KM research in various contexts has emphasised the importance of sharing lessons learned, as well as the knowledge and information that exists within an organisation. Knowledge sharing is often used synonymously with information sharing and is distinguished by the perspective that knowledge sharing involves information processed by individuals. Knowledge sharing may involve sharing via written or face-to-face communications, aiming at solving problems or developing new ideas among others (Wang & Noe, 2010). Within KM research, there is a focus on the people or the human dimension in an organisation, which is described as playing a critical role in the implementation and success of knowledge management systems (Mathew, Rodrigues, & Vittaleswar, 2012). The sharing of knowledge and information highly depends on the collaborative social networks within an organisation and represents the socialisation of knowledge (Arriagada & Alarcón, 2014).

Theoretical Framework

Workplace information behaviour and information use environments

The workplace could be regarded as an arena for information behaviour where individual employees, managers, workgroups, and teams perform defined operational and decision-making activities by creating, accessing, and using the information to achieve the goals of the organisation. The concept of information behaviour was coined by Wilson (1997; 1999) to broaden and contextualise the narrower perspective of information seeking. His classical model of information behaviour involves the need for information, the information-seeking activities including the interaction with information systems and other sources, and the use, transfer, and exchange of information (Wilson 1999). One of its significant traits is that it emphasises the relation between need and use, linked by seeking activities, such as access to information. Needs generate use, but use, or intended use, could generate new needs, requiring access to information.

A useful framework for exploring information behaviour and practices in workplaces is Taylor's (1991) framework of the *information use environment* (IUE). The framework addresses the interaction between individuals and their environments and the factors influencing information behaviour. The framework has continuously been used in different settings of information seeking and use behaviour (e.g., Agada, 1999; Berryman, 2008; Durrance et al., 2006; Olatokun & Ajagbe, 2010). According to Taylor, information use environments are 'the context within which a user lives and works,' consisting of 'the set of those elements that a) affect the flow and use of information messages into, within, and out of any definable entity; and b) determine the criteria by which the value of information messages will be judged' (Taylor, 1991, p. 218).

The generic information use environment consists of four components: *Sets of people, problems, settings, and resolution of problems* (Taylor, 1991). The composition of those depends on the actual environment that is subject to study, but in his seminal work, Taylor addresses the information behaviour of professional groups, that is, workplace environments. Taylor identifies four classes of *people*, namely, professions, entrepreneurs, special interest groups, and special socioeconomic groups; each with different demographic characteristics like sex, age, family situation, socioeconomic situation, education, et cetera, and different non-demographic characteristics, for instance, media use, social networks, attitudes towards technology, et cetera. These variables can, to varying degrees, be assumed to impact information use. *Problems* in Taylor's model constitute information needs. Conditions in the life situation or professional activity of people require information to be handled. Different sets of people have 'different kinds of problems over varying

time frames, different ways of resolving those problems, and consequently differing information-seeking behaviors' (Taylor, 1991, p. 220). The problems also have different dimensions concerning, for instance, structuring, complexity, underlying assumptions, and familiarity. *Settings* are, in this case, the workplaces where the problems arise. Certain traits of the settings have a particular impact on information behaviour: organisational structure and style; domain of interest, what kind of business is performed; access to information; and history and previous experience (Taylor, 1991). Legal and institutional restrictions, organisational structure, socio-cultural features, as well as the physical premises and available systems, are components of the settings that can be assumed to impact the actual use of information. The final element of the framework, the *resolution of problems*, has two aspects. The first concerns *how* information is used, its application, or outcome. In a study of workplace information use, the problems of interest are related to the fulfilment of work tasks (Byström et al, 2019). However, the problems do not have to be straightforward and simply solved by answering a single question or by inputting of data into a computing process. Problems could be multi-dimensional, having different ranges and longitudes, and being more or less strategic, thus posing 'different requirements on the type of information perceived as necessary, and hence different uses to which information is put in the process of resolution' (Taylor, 1991, p. 229). The second aspect concerns the information itself, its content, and the 'traits inherent in information, beyond subject matter, that can be related to the dimensions of problems and to the needs of people' (Taylor, 1991, p. 231). Those refer to qualities such as quantifiability, temporality, specificity, level of aggregation, et cetera.

Although *information* use is the focal theme of this framework, the concept of information is not explicitly defined, but rather taken for granted. There is an attempt to limit the use of the term to *formal information*, which could be both oral and recorded in physical form, but is characterised by the fact that 'it responds, and is perceived as—and is intended to be—relevant to a particular problem' (Taylor, 1991, p. 220). Perhaps it is most accurate to say that it is formalised due to certain expectations. Still, the actual meaning is indefinite. Information is something that has certain qualities, as stated above, and could thus be regarded as a *thing* in a wide sense, with the purpose of being informative, that is, resulting in a change of knowledge status (Buckland, 1991). The thing is a material manifestation that represents, mediates, or could be perceived as knowledge. Notably, is that the manifestation of information and its effect on usability is rather underplayed in the framework, but could be related to the component *information access*, which is included in the settings.

Both the model of information behaviour and the framework of information use environments might primarily be used as analytical frameworks, helping to identify and structure the components of environments. However, they also have an explanatory potential by eliciting the underlying motivations behind and the environmental factors influencing information behaviour. Hence, it could contribute to the understanding of *how* and *why* information is accessed and used in circumstances.

Research Context and Approach

This paper is based on empirical data from a qualitative case study carried out with project managers at the Swedish Transport Administration (STA). The STA is a public authority responsible for the long-term planning, operation, and maintenance of Sweden's transport infrastructure, including all types of traffic, public roads, shipping, aviation, and railways in Sweden (SFS, 2010:185). Governed by the Ministry of Rural Affairs and Infrastructure, the STA should, 'from a community building perspective, create conditions for a socioeconomically effective, internationally competitive and long-term sustainable transport system' (SFS, 2010:185). According to the STA, their goal is to run an effective 'asset administration' which involves 'using the organisation's assets to achieve the values or benefits that are necessary to achieve the goals of the organisation' (Swedish Transport Administration, 2017). An effective asset administration advocates sufficient and efficient information based on the need for information. The assets, described as information

and data, are needed to effectively plan, project, build, procure, operate, lead, maintain, and dismantle constructions throughout the entire life cycle of constructions. Striving to enhance the digital management of constructions is assumed to entail increased information quality, increased access to information to be reused, and an increased amount of correct and structured information for decision-making and control (Swedish Transport Administration, 2019). In a recently published report, the STA argues that they need to strive for improved *internal efficiency* where the resources need to be used effectively throughout the entire life cycle of construction regarding information and system solutions (Swedish Transport Administration, 2024). To realise the value of resources that workplace information represents, it is necessary to use and reuse the information for new and continuing purposes. The ability to retrieve and reuse information can streamline the work process, leading to significant savings in both costs and time. However, previous studies (Hellmer, Hasselblad, and Sundqvist, 2024; Sundqvist, 2009) show that the reuse of information necessary in construction projects is challenging, partly since the need for information shifts over time, and those changing needs are not supported by the functionalities of the information technology (IT) system in use. The specific IT system in that study is designed to support an accountable construction process, which involves the creation and storage of information, but not to facilitate future reuse (Hellmer, Hasselblad, & Sundqvist, 2024). Still, those systems are the main resources for recurrent work, involving mandatory requirements for the reuse of previous construction information.

Research Strategy

This case study is part of a larger study that involves various research approaches and data collection methods, conducted within the context of the Swedish Transport Administration (STA). This case study specifically focuses on exploring the information-seeking behaviour of project managers in their specific context. The choice of a case study approach was made since it provides in-depth knowledge of a specific context or phenomenon (Pickard, 2013). The data collection consists of fifteen semi-structured interviews and document studies. Since project managers have the overall responsibility for a project's entire life cycle, they were chosen as research participants. Interviews were chosen as an appropriate data collection technique to explore the work processes and information needs of project managers, enabling them to perform their work tasks and solve problems (Gilham, 2008). Fifteen project managers were selected based on different geographical locations. To be included in the selection, the projects had to be either ongoing or newly completed, and each project needed to have a clear plan description, preferably a completed TKI-säkring, a time-cost-content-document (TCC document). Creating a TCC document involves gathering information from specialists to find a solution that is as time- and cost-efficient as possible. Depending on *where* (in which area) and the size of the project, different specialists will be involved in the project. A specialist is an expert in a specific area, such as geo technique, road design, road technique, environment, cultural environment, communication, hydrology, drainage, calculation, et cetera. In the STA, different project type exists, from large-scale projects like tunnel construction to smaller projects like bus stop improvements. In this study, a specific project type has been in focus: the creation of pedestrian and bicycle lanes. Regardless of the project size, the same work process and a specific IT system are used. The motivation for focusing on one project type is to enable comparisons across different regions and to explore potential variations.

Most of the respondents shared similar engineering backgrounds, such as civil and environmental engineering, transport, production, and construction engineering. The number of years respondents had been employed at the authority varied from a minimum of two years to a maximum of 30 years. The majority had been employed for five to six years. The gender distribution consisted of eight women and seven men. By following an interview guide, the respondents were first asked to describe their information process in a typical work process as project managers. The following question was whether they used existing information from other, previous or contemporary projects at any point in time of their typical work process. If they looked at earlier

created information, how did they search and find that information, and if they used different systems to search and find the information that they needed in their process? Information needs and what they consider important aspects of information from their perspective as project managers. The duration of the interviews ranged from forty-five minutes to one hour and fifteen minutes. All interviews were transcribed verbatim, in a total of 197 pages, and the respondents were anonymised by giving each a number (e.g., Respondent 1). The interviews were conducted via a video-conferencing tool. The transcribed interviews were analysed using an inductive thematic analysis as described by Braun and Clarke (2012).

Since the building of roads or railroads affects people and the environment close to the building area, STA publishes open digital information on its website. This information is connected to the geographical location, and citizens can search for information on planned, ongoing, or finished projects within a selected geographical area. The specific documents have been used as background research for the creation of interview questions. The specific documents that were used in this study were road plans, which are documents on how a project will be carried out, consultation documents that contain project descriptions, project goals, boundaries, dialogues with people living in the area, prerequisites, and other important information connected to the landscape, et cetera. Other documents that have been studied also include guidelines for the management of digital information and strategies for digital maturity.

The research findings were then analysed using the information use environment (IUE) as an analytical lens (Taylor, 1991).

Research Findings

The work process of the project managers

Project managers have the overall responsibility for a project's entire life cycle, where they create, manage, use, and store information. Initially, the respondents were first asked to describe their information process in a typical work process as project managers. All respondents described the work process as being based on the pre-defined GÅ-process, which stands for Realisation (G) and Procedure (Å). This process is a framework for project guidance that project managers use throughout the life cycle of a project. In a shared IT solution, which project managers use daily, the work process is managed and viewed as visual representations where different steps in the process show when and what information and documents need to be created and managed.

In the following analysis of the informants' information needs and use of information during the work process, four conspicuous themes emerged (see Table 1). Combined, the themes formed a cohesive narrative, reflecting the interpretation of the dataset.

Theme	Definitions
1	<i>The uniqueness of the projects:</i> Focuses on the search for existing comparable project information based on specific information needs of project managers to operate projects as time- and cost-effectively as possible.
2	<i>Humans as information resources:</i> Outlines the respondents' information-seeking behaviour in search of comparable existing project information.
3	<i>Individual structures versus searchability and understandability:</i> Elucidates how respondents perceive how the information is structured, as well as the searchability of the system to find, understand, and use existing project information.
4	<i>Social networks and processes:</i> Maps what project managers consider important aspects to carry out the process throughout the life cycle of a project.

Table 1. Selected themes and definitions.

Theme 1: The uniqueness of projects

All respondents described that they searched for similar and comparable projects at the beginning of their project. Comparing projects is described as a mandatory requirement in the work process of project managers. It is mandatory in that sense that the project managers are obliged to find and compare with similar projects as part of their work process. Respondent 1 argued that it is a necessity to compare with other projects '[...] since the projects must be built at the right cost and within the right time' (Respondent 1). Project managers described that each project is considered unique due to geographical aspects of the environment, such as considerations of mud soil, precipitation of snow, ground frost, marshlands, or surrounding streams, et cetera. This increases the need to be able to compare with previous risks in a specific area that, if not considered, could increase costs and time later in the building process of a project. Respondent 3 described that they usually search for experiences from other projects regarding: 'How much time will this project take, and how much will it cost? We collect information about how other projects like this have previously worked out' (Respondent 3).

Respondent 5 stated the importance of gaining knowledge of other project managers' way of thinking to solve specific problems in comparable situations. Each project has specific challenges, and Respondent 8 asserted that it is important to find experiences of how to handle these challenges.

'Every project has unique challenges, and it is not possible to just copy another project; you'll have to pick out parts here and there to make your own project as accurate as possible' (Respondent 8).

These different parts that the project managers pick out and value as important are based on the uniqueness of each project. The need for information reflects the geographical aspects of the environment. This was further described by Respondent 10:

You need to get to know the place and what you will come across. There are probably a lot of mountains in the area, which is good to know in an early stage. Or that you have a lot of ancient remains, which can affect the time in the project. (Respondent 10)

The specific information is related to being able to perform a project in the most time- and cost-effective way possible. Gathering local-specific information on different potential risks in a certain area could reduce unwanted surprises that might increase time and costs. According to Respondent 11, local-specific information is valuable since it reveals something about what can be expected, and each project manager needs to create their own opinion based on that information.

'You need to create your own opinion on what ground and soil we are talking about, what kind of streams are nearby, and how that will affect the process' (Respondent 11).

When a project has ended, a lot of information and documents created during the construction are delivered to the part of the organisation that will manage the finished construction. Upon project completion, final reports and final calculations are produced, but are usually retained within the internal project work system. These reports are described as something interesting for other project managers to consult, where lessons learned are often described. A final report often contains not just how much a project cost or how much time it took but also contains information on what went wrong and how it was corrected. These lessons learned are described as valuable since they can aid other project managers in the same geographical area. As Respondent 13 declared: 'We have come across things in the project that we have had to solve that could perhaps have been avoided. [...] because every place is unique, there are different levels of pollution, of water, of surrounding traffic [...]' (Respondent 13). The project managers search for experiences of specific challenges that lie in the specific environment. As Respondent 14 described it:

You think that all the projects that you have are so unique, and the environment...it is the environment, regardless of whether you are building a roundabout or a bicycle lane, it is the place you're at. What does it look like? Are there many houses nearby? Is it crowded, is it surrounded by mountains, or is it high groundwater? (Respondent 14)

Project managers need to avoid increasing costs or time extensions, so they need to find information that is unique to each project.

Theme 2: Humans as information resources

The final reports, final calculations, and all locally specific information are linked to the specific project, and all projects are gathered in the same IT system. So, how do project managers seek and find information they consider valuable from their perspective as project managers? When asking project managers how they undertake the process of searching for the information that they need, the majority responded that they ask colleagues. Even though all projects are in the IT system, it is not the system that is used first and foremost. The project managers rely primarily on the knowledge and experiences of colleagues who can point out which projects are comparable. As Respondent 3 described it: 'You try to hear from those you know who have done roughly the same thing, and you don't always know that, but you try, has anyone done this before?' (Respondent 3).

Respondent 10 argued that you first need to gain knowledge of a project's existence, which is usually gained via colleagues. Or as Respondent 6 stated: 'You try to collect information and experiences, and it is not by using a tool, it is from using the human contacts' (Respondent 6). The human contacts or colleagues serve as a search engine for the system, pointing to the specific and unique information that the project managers need to secure for each project. 'You need to get in touch with people because there is no way to find it [the information]. You don't have a chance to search the system yourself' (Respondent 5)

Some respondents with more project and organisational experience described that they often used information from projects they had managed, typically stored in personal folders or directories. Sometimes they use the system to go back in time and search for specific information, or as Respondent 7 argued: 'I don't think I use the system for that, it is probably in my head, my own bank of experience, I am afraid' (Respondent 7). In addition to drawing on their own experiences, several respondents emphasised the value of strong interpersonal connections. Respondent 12 stated that: '[...] there is a lot of knowledge transfer that takes place outside of written documents, it is more effective to talk and have a close dialogue with colleagues' (Respondent 12). Respondent 12 further declared that the nuances of decisions are difficult to interpret through written documents. How problems have been solved and how assessments have been made can best be

understood through human contact. 'The selection of comparable projects starts with human contacts, and then I use the search engine of the IT system' (Respondent 12).

The colleagues are often other project managers and specialists in specific areas such as geotechnics, road design, hydrology, cultural environment, lighting, drainage, archaeology, land negotiation, bridge specialisation, communication specialisation, et cetera. Respondent 15 explained that the search process for a comparable project usually starts with a dialogue with specialists who direct them to a specific project, often by the name of the responsible project manager. Respondent 15 explained that this project manager is then contacted and adds: 'If I have the name of the project manager, I can search in the system, but it usually gives more to talk to someone' (Respondent 15). Engaging in meaningful dialogues with colleagues is considered important. However, as Respondent 8 described, it may serve as a potential solution to resolving problems:

I think that it is a good thing that we talk to each other, but why we do that is probably because it is the easiest way [...] the information is surely there (in the system), but there is too much...when you want to enter something in the system...it is easier to call someone, to get it that way. (Respondent 8)

Theme 3: Individual structures versus searchability and understandability

The IT system contains the information that the project managers need. However, colleagues or specialists are used to gain knowledge of a comparable project within the system. According to most of the respondents, the system and information structure impede the system's searchability. Respondent 4 complained about the infeasibility of searching and finding in the system, and Respondent 6 compared the system's searchability to the difficulty of finding something hidden in a jungle.

A couple of years ago, according to the respondents, the organisation decided to structure the project information using a metadata structure instead of the former folder structure. The former folder structure allowed for more individual structure and nomenclature based on each project manager's understanding of the work process. Even though a couple of years have passed, several respondents revealed that many still structure their information through folders.

I still work with the folders even though I am not allowed to do that, or should at least not do that, but it is impossible to do otherwise. The metadata tagging does not correlate with how we work; it is completely worthless. I tried, but everyone is using their own metadata tags, which makes the whole idea worthless. (Respondent 10)

Other respondents also argued that they felt that the folders simplified the work process, and when looking at other projects, the folders were easier to understand. Since the main function of the IT system is to manage workflows and offer visual representations, and since each project closes after it is finished, it does not respond to the need to search for and find comparable projects. Respondent 11 stated that even though a metadata structure might be the best way to create searchable projects, there is no uniform view of the nomenclature to be used. 'We don't have the same nomenclature; we have different names for the same things, which is a problem' (Respondent 11). Respondent 12 also believed that a metadata structure is better than a folder structure but acknowledged the carelessness of the nomenclature and added: 'If people are careless with the information in, the information out will also be of poor quality' (Respondent 12). According to Respondent 13, the metadata tags are predetermined, but there is also a possibility of individual structure within that structure. Respondent 13, who believed that the transition to metadata structure is good and necessary, argued for the increased searchability with metadata in a long-term perspective. Respondent 15 claimed that even though the metadata tags are predetermined, there are different tags to choose from, which leads to a deterioration in the understanding of the intended structure of the information.

Theme 4: Social networks and processes

As previous themes have outlined, in the mandatory process of searching and finding comparable projects due to both geographical aspects and to plan for a project as time- and cost-effective as possible, the project managers turn to their social networks within the organisation to gain that knowledge. According to the respondents, the system lacks searchability due to individual structures both in the former folder structure and in the current use of metadata tagging. There are also shortcomings in the use of consistent nomenclature, which complicates the retrieval of information within the system. When asking the respondents what they consider important aspects of information from their perspective as project managers, a majority answered that it is dialogue with colleagues and having good knowledge of the work process. The system contains a visualisation of the work process, and Respondent 1 argued that it is important to follow the process as stated.

Respondent 2 explained that when new project managers are hired, they are informed about whom they can turn to for the information they need. Respondent 4 described that even though the prescribed work process is robust, there is always a concern about overlooking something, so it is reassuring to have someone to turn to for support. Respondent 8 also considered the work process to be solid but noted that understanding what is expected within it is learned through assistance from others.

Respondent 9 stated that when hired as a new project manager, you do not have the experience yet, and 'you need all the help you can get, and you must take that help. So that's my advice. There are no systems that can do this; you need to have some people around you, actually' (Respondent 9). Respondent 7 described this way of relying on each other as something inherent to this organisation, stating that it is a part of its culture. Respondent 7 further stated that it is important to find experiences, but adds, 'If you are new, you are new, how can one find experiences?' (Respondent 7). Respondent 5 offered a similar description, emphasising the importance of understanding the work process, yet highlighting the need to dare to reach out and ask questions: 'You quickly learn that you need to build a network within your organisation' (Respondent 5). Respondent 13 also described the importance of the work process as such but added that it is also a matter of personality and that the work process is also about collaborations with others. This aligns with the views of most respondents, who believe that while the work process is robust and thorough, learning the process requires effective communication with others.

Analysis and Discussion

The study aimed to explore the behaviour of project managers when navigating the challenges to satisfy their need for information to perform work tasks, solve problems, and achieve organisational goals in a large public authority in Sweden. With the help of the analytical lens of Taylor's (1991) model of information use environments, certain factors that impacts on the respondents' use of workplace information have been identified.

The people

This study covers the information behaviour of a rather homogenous group of professionals, project managers. It could not be concluded from the findings whether demographic aspects, geographical location, or organisational affiliation impacted their information behaviour. It was rather the work-process that conditioned their needs for information and search behaviour.

The problem

The project managers were dealing with similar problems, construction and maintenance of roads, using a particular system according to a pre-defined work process. It could thus be assumed that their behaviour would be rather streamlined and conform to established rules, and their information needs would be predictable and well-structured. To some extent, this was confirmed as they were required to follow a pre-defined procedure, including the use of certain

information. The reality seemed, however, to be more complex. All respondents emphasised the importance of comparing similar projects, as this is a mandatory step in the work process for project managers. Such comparisons are crucial to ensure projects are planned within the right cost and time frame. However, adding to the complexity was that each project was considered unique due to geographical factors such as soil conditions, snow, ground frost, marshlands, or surrounding streams, which heighten the need to review previous risks and solutions to avoid delays or cost increases. The problems could be regarded as well-defined and structured according to the purpose of the work process, and what kind of information was needed was, to a certain extent, known. Still, the problems were rather complex, and every project had its individual and unique traits. Hence, it was not possible to use a previous project as a blueprint. It was necessary to search for and compare several projects and identify the bits and pieces of information that could be useful for the current project.

The setting

Perhaps the most significant result of the study was the importance of humans, other co-workers, as information resources. All project-related information was stored in a shared IT system, but project managers relied primarily on colleagues to locate valuable information. This is in line with previous research that has emphasised the importance of people when searching for and finding workplace information (Lykke et al, 2021; Sundqvist, 2009; Svarre, Lykke, & Bygholm; Dodson, 2024). The importance of human intermediaries is also in line with knowledge management research, where people or the human dimension plays a critical role (Mathew, Rodrigues, & Vittaleswar, 2012). As prior research has highlighted, human relations and collaborative social networks are important factors in the sharing of information, as a socialisation of knowledge (Arriagada & Alarcón, 2014).

The findings showed that the system was perceived as cumbersome by the users. It was primarily designed to support project management, not information retrieval. Respondents stated that while folder structures simplified workflows and were easier to understand when reviewing projects, they failed to support long-term searchability and comparisons between projects. The implementation of a metadata structure was not considered to promote searchability, but rather contributed to dissension, while project managers continued to use concepts and metadata tags based on their own understanding. Many respondents argued that they were aware of the benefits of a metadata structure but revealed that there was a lack of an agreed-upon nomenclature based on the project manager's way of working. In a short-term perspective, the previous folder structure was described as more individually adapted to specific users, benefiting them in their work process. This had resulted in individual and, to a certain extent, idiosyncratic workarounds when storing and searching information. Thus, individuals often preferred to create their own information structures, not transparent to others, which further aggravated the problem. Individual structures possibly provided an efficient way of working from a here-and-now perspective. In a long-term perspective, individual structures resulted in a system that was difficult to search and reuse. The information system and the access options provided (or, rather, not provided) were thus a significant part of the setting that impacted the project managers' search and (re-)use of information.

The resolution of problems

As a result of the above, it became more time-efficient to ask for information directly rather than to search for it - it was quicker and more convenient to ask someone who knows than to try to identify the required information by oneself. More importantly, however, was that most respondents emphasised the significance of dialogue with colleagues and a solid understanding of the work process as critical aspects of their information use. While the work process was described as robust and well-defined, respondents highlighted the need for guidance and collaboration to fully understand and navigate it, specifically when it came to finding comparable projects. The second reason why human sources were preferred to, or rather complementary to, the system and

written documentation was thus that other co-workers would provide additional information, share experiences, and, in dialogue, help solve the actual problem. The colleagues were consulted for insights into comparable projects, as human interaction provides a more nuanced understanding than the IT system alone. Experienced project managers might draw on their own prior projects or personal knowledge, while specialists in areas such as geotechnics or drainage also played a key role in pointing to relevant projects. Written documents and the IT system were used as secondary resources after initial conversations with colleagues who had guided the search process or were used as a basis for continuing discussion. Besides being sources of information, e.g., geographical and environmental conditions, the written documentation, reports, et cetera, were primarily sources of experience and knowledge transfer. The lessons learned were emphasised by the respondents. Thus, documentary materials were means of problem-solving rather than just collections of facts, and in this process, the dialogue with other colleagues was of utmost importance. Previous research has shown that the more complex a task is, the more complex the information needs, and other people will be more important as information sources (Byström 2002). This does not mean that the written documentation was less important and could be replaced by oral communication. Rather, it functioned as a boundary object between co-workers with different experiences and expertise and as a trigger for the further development of knowledge. The resolution of problems, therefore, required access to information, but also knowledge sharing and learning.

Conclusion

The analysis above showed that project managers' information behaviour was conditioned by a complex interplay of environmental factors. Based on the framework of IUE as presented by Taylor (1991), certain features of the setting, the problems, and the problem resolutions seem significant.

In the specific setting of project managers, there were mandatory elements that affected their information behaviour due to a pre-defined work process and an IT system that was specifically intended for project management. What also affected the project managers' information behaviour was the limited information access, largely due to the system's lack of search functions and that its primary purpose was to monitor the work process rather than enabling the search for similar projects. Since the pre-defined work process was perceived by project managers as robust, the information generated and used in the process could also be assumed to be well-structured, but in fact, the structure was inconsistent, involving different nomenclatures. The insufficient search functionality induced the creation of individual information structures that further contributed to a poorer searchability, and project managers therefore needed help from other colleagues to locate the information they needed. Because each project was unique in the sense that there were different geographical aspects to consider, the problems to be solved were also, to some extent, unique. As a result, the project managers sought to fulfil their information needs and solve their problems by turning to co-workers, where they sought specific knowledge and experiences of others to learn and create new knowledge, even though the information they needed was technically stored in the system. Consequently, the project managers solved their problems by creating collaborative networks when the system did not serve their work-related needs.

One organisational goal for the Swedish Transport Administration (STA) is to run an effective *asset administration* that advocates sufficient and efficient information based on the need for information. The assets, information and data are needed throughout the entire life cycle of different constructions. As the STA declares, enhancing the digital management of constructions is assumed to entail increased information quality, increased access to information that can be reused, and an increased amount of correct and structured information for decision-making and control (Swedish Transport Administration, 2019). The value assigned to information, as well as the digital management of these assets described by the organisation, was not consistent with the way project managers did their job. To be able to create information strategies that are consistent with

organisational values, the daily practices need to be recognised. Understanding how systems were used and what factors influenced behaviour could help raise awareness of how information structures should align with actual information needs.

Acknowledgements

We would like to express our gratitude to the informants at the Swedish Transport Administration (STA) who participated in the interviews presented in this article. We are also grateful for the constructive critiques and relevant suggestions provided by the reviewers of the manuscript.

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