Knowledge Sharing in Organizations: A Present and Futures Study

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ABSTRACT

In recent years, organizations have faced a magnitude of changes that have impacted their day-to-day activities and the way they conduct them. Knowledge management practices are now becoming imperative for business success and for maintaining competitive advantage. This research project explores knowledge sharing in organizations and discusses leadership, methods, behaviours and attitudes, and how these factors might affect knowledge-sharing practices. We also look at the force of change that will impact knowledge management in the future. Our research findings are gleaned by utilizing strategic foresight, systems thinking, and design methodologies as well as a set of interviews with knowledge management experts across the globe. The research results in strategic recommendations designed to help leaders and managers in overcoming the barriers to knowledge sharing and enable them to create a culture of learning in their organization.

ACKNOWLEDGMENTS

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STATEMENT OF CONTRIBUTIONS

We, Maxim Rakov and Justine De Ridder, co-authors of this research project, declare the collaborative nature of this research and acknowledge equal contributions to this research. Collaborative efforts were involved in conceptualizing and defining the research, conducting the literature review, interviewing experts, researching future trends, developing scenarios, formulating strategies, synthesizing findings, and writing this report.

1. INTRODUCTION

The primary goal of this research project is to examine the process of knowledge sharing in organizations, to identify current knowledge-sharing methods, and to explore the potential futures that might emerge, based on the current forces of change that affect knowledge sharing and knowledge management. We will focus specifically on tacit knowledge-sharing practices and examine the challenges that groups and individuals within organizations generally face when engaging in knowledge-sharing activities. The identified challenges will be analyzed and used to develop an intervention strategy that has a system-wide application for organizations.

The secondary goal of this research project is to develop an intervention strategy that can enable organizations to implement and promote knowledge-sharing practices. It is our goal to design a set of strategic recommendations applicable to a wide range of organizations that will strengthen their resilience to any incoming disruptors.

Finally, we will explore the value of storytelling for knowledge sharing, particularly for tacit and contextualized knowledge sharing; elaborating on known narrative structures, and concluding with a set of strategies to socialize the potential of storytelling for the purposes of knowledge sharing within organizations.

The assessment of knowledge-sharing methods led us to a hypothesis on the efficiency of the storytelling approach in promoting and facilitating knowledge-sharing practices and enabling knowledge-sharing behaviours within organizations.

1.1. CONTEXT

The rapid pace of change has made it imperative for organizations not only to be innovative, but also to respond rapidly to the frequent changes in technology, to evolving regulations, political instability, and increased competition. There is a need for organizations to continuously generate knowledge that can be utilized for organizational improvements and enable them to sustain their competitive advantage. By becoming a learning organization able to leverage knowledge assets, while viewing knowledge as a strategic advantage, its decision-making will improve, repeated errors will be reduced, and the organization can forge a learning culture that permeates all departments and levels (Tessier, 2021). Successful organizations of the future will be able to leverage such an internal capacity to navigate challenges, and to learn and adapt quickly in the face of any major disruption.

We have seen how the Covid-19 pandemic has drastically impacted not only organizations, but entire industries as well as societies. The possibility to work-from-home that emerged has led to significant changes in how employees work, with ripple effects throughout the organizations concerned. Whether the future will see a return to the office, a hybrid model, or a fully remote and distributed workforce, each mode will come with its particular set of challenges in a post-pandemic world, as issues of employee engagement, retention, onboarding, and relationship building emerge.

Contemporary innovations have transformed the way we manage knowledge. Instead of transmitting knowledge by telling stories around the campfire, we now rely on sophisticated information technology (IT) systems. The rapid adoption of technological solutions and the subsequent digital transformation in the way of working for most people has meant that employees have needed to develop new skills. Finding relevant information became a challenge at first, slowing down productivity (APQC, 2021). Now, as organizations move to new levels of digitally-enabled work, creating a strong culture of learning is becoming crucial. Efficient knowledge management and the enablement of intra-organizational knowledge-sharing behaviours, will therefore be key in allowing and encouraging employees to feel connected to the organization and its culture of learning and continuous improvement.

1.2. RESEARCH QUESTIONS

The primary research question guiding our inquiry is as follows:

How might we improve knowledge sharing to accelerate innovation in organizations?

This question is informed by the following secondary research questions:

- What are the barriers and enablers of knowledge sharing in organizations?
- What are emerging trends affecting knowledge sharing and their implications?

1.3. METHODOLOGY

This paper was developed using a mixed methods approach that drew on aspects of design thinking, systems thinking, and strategic foresight. Information was gathered both through primary and secondary sources of information.

The first phase of the literature review was conducted to explore the fields of knowledge and knowledge management. At the outset of the research, our interest was to better understand how to enable knowledge exchange within organizations and in the relevant context. This exploration led to an initial narrowing-down of our scope, and we rephrased our research question to reflect our inquiry more specifically on knowledge sharing. This literature review enabled us to build a solid foundational

knowledge base on the subject, which in turn allowed us to develop a set of questions for our interviews.

We subsequently conducted a set of semi-structured interviews with experienced knowledge-management practitioners and academics specialized in organizational innovation, knowledge management and knowledge sharing. These interviews allowed us to contextualize our understanding and gain a first-hand perspective on the subject area through a practitioner and academic lens. Each interview participant was asked a set of predetermined questions about the current stage of knowledge management, as well as the barriers to knowledge sharing, and on the disruptors to knowledge management. Finally, each participant was asked to envision the role of knowledge sharing ten years hence.

The insights gained from the interviews led to the second phase of the literature review, which was centered on the key challenges and opportunities that knowledge sharing presents, and on the existing methods that enable knowledge sharing within an organization. Additionally, a horizon scan was done to gather evidence of any possible future developments that could impact knowledge sharing and knowledge management (Cuhls, 2020).

Signals of change were collected from various mediums such as blogs, social media platforms, news, literature, interviews, and auto-ethnographic research. These signals were aggregated to form a set of forces that may disrupt knowledge sharing in the future, and which informed the scenario-making process that elaborated on how those forces might impact knowledge sharing in the future.

Simultaneously, insights from the interviews and from primary and secondary literature were analyzed and synthesized using a Causal-Layered Analysis (CLA) (Inayatullah, 2008). This framework helped us unpack and deepen our understanding of knowledge sharing from a systemic perspective. By examining the role of metaphors and worldviews, we were better able to contextualize our view of the challenges organizations experience when attempting to enable knowledge sharing.

We subsequently developed four future scenarios using a 2x2 scenario matrix method (Curry & Schultz, 2009). These scenarios explore four different future scenarios that might emerge, based on insights gained from the horizon scan, the interviews, and the literature review. Creating those scenarios enabled us to challenge existing assumptions about the future of knowledge management and shed light on how the current forces of change may later impact knowledge sharing. We used these scenarios to stress-test, or wind-tunnel (van der Heijden & Sharpe, 2007), existing knowledge-sharing methods in each scenario to assess how resilient they are in the face of the changes that organizations may experience in the future.

Lastly, we dove deeper into the subject of storytelling, the most robust knowledge-sharing method that emerged from the wind-tunnelling exercise. In the final literature review round, we examined existing storytelling structures, and developed an intervention strategy for organizations. The insights required to build the strategy were

drawn from expert interviews, the literature review and the Systemic Design Toolkit (Systemic Design Toolkit, 2022). Finally, this strategy is contextualized in the face of emerging change, and its resilience is assessed.

1.4. THE AUDIENCE OF THIS REPORT

This report is based on the assumption that knowledge sharing is a communications activity and knowledge management is a human-centered process. We understand that technology is a driving force in promoting knowledge-sharing behaviours, but the focus of our interest is on people and how they can connect with each other. Without putting people at the front and at the center of knowledge management strategy, little can be achieved in an organization. With this perspective in mind (and at heart), we identified three primary audiences that may potentially be interested in this report:

1. Senior leaders tasked to promote knowledge-sharing behaviours within their organization, where the lack of knowledge management processes or the need for knowledge-sharing behaviours has been identified.
2. HR Managers focusing on building a culture of collaboration and trust for organizations seeking to transform their knowledge exchange or innovation practices.
3. Communications leaders and managers seeking to design a corporate communications strategy focusing on employee experience and engaging internal communications.

2. ON KNOWLEDGE

Scholars have long been examining how firms can build and sustain competitive advantage. With the emergence of the knowledge-based economy as a socio-economic phenomenon, knowledge is seen as one of the critical factors of business success and as the very foundation of competitive advantage. This shift in perspective means that knowledge is one of the most important strategic resources. The production, retention, and overall organizational learning of this invaluable commodity, is therefore critical in achieving organizational goals. By creating knowledge, companies that are dedicated to continuous innovation can become adept at adapting to drastic environmental movements, such as shifting markets, proliferating technologies, emerging competitors, and products becoming outdated almost instantly. These companies are consistently creating new knowledge and disseminating it widely throughout the organization, while also incorporating it into their new products and technologies (Nonaka, 2008). Such innovative organizations usually have an effective knowledge-management system that centers on creating, embodying, and disseminating knowledge.

2.1. DEFINING KNOWLEDGE

Although the meaning of the word 'knowledge' may seem obvious, it isn't easy to find a consensus of opinion in defining it. The term could loosely be defined as 'what is known', or 'justified personal belief', perhaps. Probst et al. (2000) give the following description, which is slightly more comprehensive: "the whole body of cognition and skill which individuals use to solve problems" (p.24). Knowledge, they aver, is based on data and information, and is always shaped by people; it is constructed by individuals and expresses their beliefs and causal relationships. While knowledge is rooted in descriptive information derived from past and present data, it is also eminently predictive, providing a basis for imagining the future, based on the current information at hand (Alipour et al., 2011).

In recent decades, various taxonomies of knowledge have emerged, accompanied by discussions on the definitions and types of knowledge. Knowledge has, for example, been dichotomized as hard and soft, or formal and informal. Blackler (1995, pp. 1022–1026) identifies five images of knowledge:

- Embraced knowledge: Knowledge that is dependent on conceptual skills and cognitive abilities
- Embodied knowledge: Knowledge that is action-oriented and depends on peoples' physical presence

- Encultured knowledge: The process of achieving shared understandings through, for example, socialization
- Embedded knowledge: Knowledge residing in systematic routines
- Encoded knowledge: Knowledge shared as information conveyed in signs and symbols such as in books and manuals

Blackler (1995) suggests that rather than regarding knowledge as something people *have*, knowing is better regarded as something that people *do*. This coincides with the view shared by a knowledge-management expert who said that knowledge itself is in people's heads, whereas information or the artifacts of knowledge are its physical manifestations.

Nonaka (1994), furthermore, proposes a distinction between 'explicit' and 'tacit' knowledge. Accordingly, explicit knowledge is that which is "codifiable" and can be transmitted through language, whereas tacit knowledge is more intuitive, is not articulated, and is therefore harder to formalize and communicate. This type of knowledge is usually developed through learning by doing. At an organizational level, explicit knowledge exists in a codified form that can be stored, managed, and searched for through data mining or other electronic means. Assuming that the data has been stored and tagged in a systematic manner, explicit knowledge is therefore easily accessible. Tacit knowledge, on the other hand, is more complex and is acquired only through experience. Hence Nonaka (2008) describes the difficulty of disseminating and transferring tacit knowledge within an organization, since this form of knowledge is hard to articulate and requires a shared understanding of the context in which it was acquired. Smedlund (2009) goes even further to argue that this dichotomous view of knowledge is not sufficient to explain the varied nature of knowledge and how it should be utilized throughout innovation processes. He proposes 'potential knowledge' as an additional knowledge construct. He defines this as "knowledge assets either in a codified or experience-based form that has not yet been utilized in value creation" (Smedlund, 2009, p. 79). In organizations, potential knowledge is therefore an asset available in either a codified or tacit form that has not yet been utilized.

Contemporary knowledge management experts also suggest considering 'experiential knowledge', a type of knowledge gained through experience within organizations that is a combination of tacit and explicit components (see Figure 1). This form of knowledge is also presented in the World Bank's handbook on becoming a knowledge-sharing organization, where experiential knowledge is described as knowledge residing in people's minds that can be converted into explicit knowledge through documentation or other processes to capture it. Many researchers refer to knowledge being the product of experience. Davenport and Prusak (2000) define knowledge as a fluid mix of framed experience, values, contextual information, and expert insight.
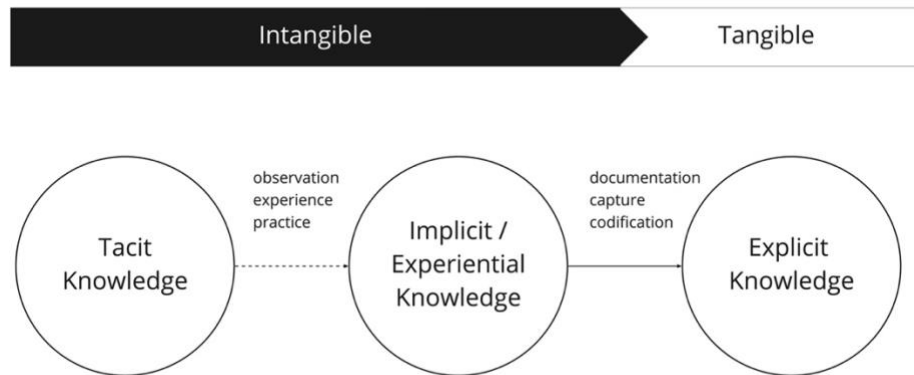
FIGURE 1: TACIT, EXPERIENTIAL, AND EXPLICIT KNOWLEDGE

Adapted from Janus (2016, p. 5)

These various descriptions of knowledge and its intricacies show an increasing tendency to view knowledge as psychological rather than technical. Knowledge must be embedded within individuals; otherwise, it will remain as data or information.

2.2. A DYNAMIC VIEW OF KNOWLEDGE

While these relatively "static" definitions of knowledge are important, researchers have taken a more dynamic perspective by emphasizing the creation, transfer, and absorption of knowledge (Pérez-Luño et al., 2018). Whereas the creation of knowledge refers to its generation, typically in the form of ideas or product invention; transferring knowledge refers to the effort of an individual to share certain information and knowledge with a receiver, and the receiver's reciprocal effort to acquire and absorb it. Knowledge absorption refers to the decision and ability to combine, use, or implement elements of knowledge which often takes the form of a product or practice.

Nonaka and Takeuchi (1995, p. 61) describe a dynamic model of knowledge creation based on the assumption that knowledge is created through social interaction between tacit and explicit knowledge, what they define as "knowledge conversion". They elaborate on four types of knowledge conversion:

- From tacit knowledge to tacit knowledge, or socialization
- From tacit knowledge to explicit knowledge, or externalization
- From explicit knowledge to explicit knowledge, or combination
- From explicit knowledge to tacit knowledge, or internalization

They explain organizational knowledge creation as a "continuous and dynamic interaction between tacit and explicit knowledge" that is "shaped by shifts between different modes of knowledge conversions" (Nonaka & Takeuchi, 1995, p. 70) and introduce the concept of a knowledge spiral, or SECI knowledge dimension model, in which the interactions between tacit and explicit knowledge become larger in scale as knowledge creation moves from the individual level through communities of

interactions, ultimately crossing organizational boundaries (see Figure 2). In this spiral, the process of creating knowledge begins with the sharing of the tacit knowledge possessed by an individual, thus transforming it into explicit knowledge so it can be shared and enriched by their individual context. A larger group of individuals then internalizes this knowledge as new and richer knowledge, which can become the basis for starting another cycle of knowledge creation.
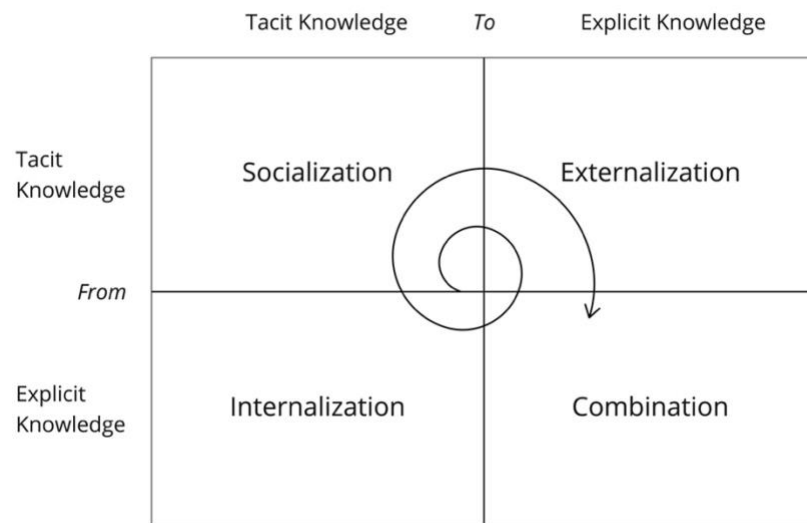
FIGURE 2: THE SECI KNOWLEDGE DIMENSION MODEL

Adapted from Nonaka and Takeuchi (1995, p. 72)

Nonaka's research has been key in determining that implementing an effective and efficient knowledge management system plays a vital role in fostering innovation; it encompasses and harnesses all knowledge-related activities to create significant organizational value (Cavusgil et al., 2003). The concept of a knowledge-creating organization and of patterns in relation to knowledge dynamics, while not very new, has played a significant role in understanding knowledge and organizational learning.

2.3. KNOWLEDGE AS ACTIVITY

Other scholars argue that knowledge should be viewed as an activity within and among individuals, an intangible asset that is developed as a result of social or mental activities undertaken by an individual or group. Terms such as knowledge creation, knowledge acquisition, knowledge dissemination, and knowledge transfer are used to describe such activities, sometimes interchangeably. Beesley and Cooper (2008) speculate that part of the confusion surrounding knowledge management and its practices is due to the lack of precision and consensus in the terminology. **Error! Reference source not found.** provides an incomplete taxonomy of some of the knowledge activities present in literature, and is a visualization of knowledge activities focusing on the value chain of knowledge. This process of exploration enabled us to narrow down the scope of the research on knowledge sharing. Moreover, the visualization provides an overview of the

multifaceted field that we encountered while exploring this subject, and gives insight into the rationale used to narrow down the field of research.

Term	Definition	Source
Knowledge absorption	The capability to transfer, integrate, and utilize new knowledge obtained from external and/or internal sources.	Percia David et al., 2020, p. 1
Knowledge acquisition	The result of a successful knowledge transfer	Cooper, 2008, p. 55
Knowledge adoption	When transferred, knowledge leads to the generation of new ideas and concepts	Beesley & Cooper, 2008, p. 53
Knowledge application	The process of integrating knowledge into an organization's products or services	Tessier, 2021, p. 102
Knowledge codification	The representation of knowledge to make it easily available and transferable.	Ermine, 2013, p. 88
Knowledge creation	The deliberate and purposeful collation of observations, data, or facts to generate new or novel ways of understanding a particular phenomenon	Beesley & Cooper, 2008, p. 55
Knowledge development	The conclusion of KM activities that lead to the production of new knowledge bases	Manninger, 2012, p. 30
Knowledge dissemination	The active process of communicating knowledge to people so it may be used	Beesley & Cooper, 2008, p. 55
Knowledge distribution	The distribution of already existing knowledge throughout an organization	Manninger, 2012, p. 31
Knowledge embodiment	The embodiment of knowledge within an organization through a process of social exchange	McAdam, 2000, p. 234
Knowledge exploitation	The value creation of existing knowledge	Manninger, 2012, p. 31
Knowledge exploration	The generation of knowledge based on research activities	Manninger, 2012, p. 30
Knowledge generation	The process by which knowledge is acquired, either from outside an organization or generated internally	King, 2009, p. 115
Knowledge identification	The process of identifying which knowledge already exists within an organization, and which knowledge is needed to attain certain goals	Newk-Fon Hey Tow et al., 2012, p.
Knowledge presentation	The displaying of knowledge to members of an organization	Tessier, 2021, p. 101

Knowledge reciprocity	The mutual and fair exchange of knowledge, justifying the time spent on knowledge sharing	Ganguly et al., 2019, p. 1114
Knowledge refinement	The process of selecting, filtering, refining, and optimizing knowledge Often for inclusion in various storage media	King, 2009, p. 17
Knowledge retention	The conservation of knowledge through the utilization of different storage media	Manninger, 2012, p. 31
Knowledge sharing	The exchange of knowledge between and among individuals, teams, and organizations	Ganguly et al., 2019, p. 1106
Knowledge transfer	When information has been reasoned over and incorporated into the receiver's existing knowledge structures	Beesley & Cooper, 2008, p. 55
Knowledge validation	The evaluation of knowledge for its effectiveness in the current environment	Tessier, 2021, p. 100

The value chain of knowledge activities starts during the input phase, where knowledge is sought through external sources (knowledge exploration) or from sources already present within the organization (knowledge exploitation). The chain of knowledge-developing activities gives knowledge added value through a process of validation, application, and refinement; ultimately leading to knowledge retention within an organization, and preserving and storing it for potential future use. Visually, knowledge sharing stands at the center of the knowledge activity value chain; it encompasses a process of more extended learning than that of simple communication, as the relevant knowledge needs to be made applicable in order for it to be adopted and successfully implemented within an organization. It thus stands at the crux of organizational learning. The knowledge that is not shared remains within the boundaries of the individuals or teams who hold it and thus, never travels across the knowledge value chain.

Knowledge development

Knowledge embodiment

Knowledge retention

Knowledge codification

Knowledge refinement

Knowledge adoption

Knowledge dissemination

Knowledge application

Knowledge acquisition

Knowledge sharing

Knowledge distribution

Knowledge transfer

Knowledge presentation

Knowledge validation

Knowledge creation

Knowledge absorption

Knowledge generation

Knowledge exploration

external

Knowledge exploitation

internal
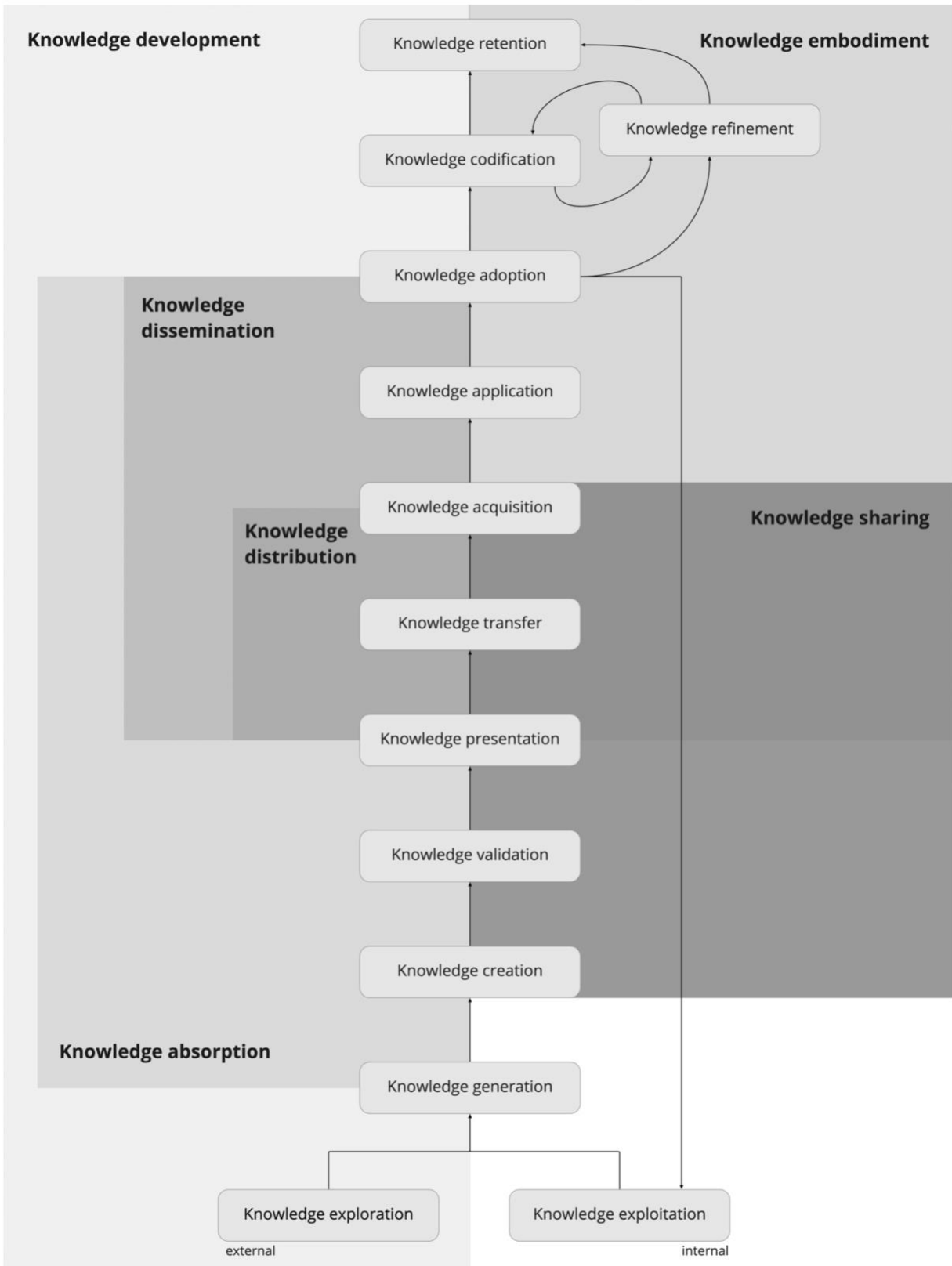
The perception of knowledge as an activity is pivotal because this factor determines how knowledge is accessed and managed. While 'objects' such as data and information are easy to store and access, knowledge can only be shared if those who have it are willing to share it (Beesley & Cooper, 2008). Moreover, this value chain of knowledge activities indicates the need for intentionality at each step, both from the side of the 'sharer' and from that of the 'receiver'. For example, a researcher may have created new knowledge, but if they are not intentional about how this knowledge can be or should be received by others, it will never be acquired, let alone adopted within an organization. The knowledge has to be processed, contextualized, and incorporated into the receiver's existing ways of knowing.

2.4. MANAGING KNOWLEDGE

Explicit knowledge, or codifiable knowledge, can be effectively managed and shared through knowledge-management platforms. Thus, explicit knowledge sharing occurs when this knowledge is made available for sharing between entities (Bukowitz, 1999). Fortunately, the global rise of cloud-based services for data storage (Ikink, 2021) and communications platforms for knowledge sharing have created incredible opportunities to enable explicit knowledge sharing. The expansion of communication platforms such as intranets, Teams, or Zoom as a response to Covid-19 has facilitated an increased usage of cloud capabilities as companies compete to thrive in this new remote work environment. Cloud has become essential to business activities, and is the key to unlocking organizational growth (Ikink, 2021).

Once explicit knowledge in global organizations is communicated, recorded, and stored, this knowledge can be easily accessed from other units or employees in remote locations without the need for human interaction. However, the new ways of recording and storing knowledge also create higher security and retention risks. This requires companies to develop strategies that ensure the physical safety of sensitive data and the human safety of knowledge transfer between global units (Bain & Company, 2016). On the other hand, tacit knowledge sharing is a more complex task that is performed through various types of social interactions between individuals.

Knowledge needs to be treated as a valuable strategic resource and should, as such, be perceived as one of the key components of any project, along with the factors of time, people, and resources (Shelley, 2016). The ability to recycle, share, and pass on the knowledge gained through implementing projects improves the performance of the organizations in the long term, and creates a sustainable platform for organizational growth. On the other hand, the loss of knowledge can severely damage an organization and can negatively impact the chance of success for future projects. With the rise of the knowledge economy, organizations need to recognize the value of knowledge in its various form, as assets that are rapidly becoming their most precious source of competitive advantage. With this realization comes the need to better manage these assets by developing strategies to manage both tacit and explicit knowledge. As an example, we will explore the current knowledge-management practices at NASA.

2.4.1. Knowledge management at NASA

Scientific research teams are currently facing increasing competition and a higher demand for innovation. Notably, knowledge has become a core resource for the survival of scientific research teams, gradually replacing the former priorities of research funds, advanced equipment, or venues. At the same time, knowledge sharing among research teams leads to a significant increase in the efficiency of scientific research (Liu et al., 2020). For NASA, key knowledge imperatives and tools have been developed over the years to help project teams achieve the best possible outcomes. Catastrophic events have shaped the agency, forcing a re-learning of lessons from case studies, a shift in focus from individual to team capabilities, and a more disciplined approach to include better testing, as well as bringing changes to governance and policy (Hoffman & Boyle, 2015). The ongoing knowledge-searching and knowledge-sharing activities ranges from typing a query in a search box, to seeking for explicit knowledge, to tacit knowledge sharing through social interactions at meetings. As a result, the NASA knowledge community has identified a set of knowledge categories addressing knowledge gathering and sharing activities:

- Creation of online tools such as portals, document repositories, video libraries, and forums as part of a digital archive system that is accessed through a dedicated search engine for knowledge
- Development of efficient search and tag tools that enable the organization to adopt a common system across the community
- Indexation of knowledge for easy recovery from knowledge repositories
- Emphasis on knowledge processes where knowledge is identified and captured through effective communication about expectations on knowledge sharing or on knowledge-recognition programs
- Creation of knowledge networks with communities of practice and mass collaboration activities, or workspaces designed to enable knowledge exchange and collaboration
- Facilitation of social exchange through activities that bring people together such as lunch and learns, forums, and workshops
- Enablement of extra-organizational learning from the lessons learned and shared by domestic and international organizations, academia, and government

NASA has thereby created a learning organization with an intricate knowledge-sharing system composed of search tools, communities of practice with peer and expert interaction, the sharing of lessons learned, and the utilization and transformation of case studies into teaching and training material. Scientific research teams, better described as knowledge-creating groups, act like small organizations, with the same needs to establish culture, structure, and environment. These teams allow each member to thrive and to carry the lessons and best practices learned from project to project – contributing to the overall achievement of established goals. The routine established to capture and share tales of failures and successes through case studies

and the 'pause and learn' moments that are embedded into the project allows for knowledge to take root both in projects and project members, regardless of the context in which it originated. This elaborate process has helped establish NASA as a strong learning organization.

3. ON KNOWLEDGE SHARING

Just as there is no universal definition for the concept of knowledge or for many knowledge-related activities, none exists for knowledge sharing either. Chau (2018) argues that this lack of consensus is due to the different contexts and studies in which knowledge sharing is conducted, since sharing can be on an interpersonal, intra-organizational, or inter-organizational level. *Interpersonal knowledge sharing* involves sharing between individuals, whereas *intra-organizational knowledge sharing* refers to that between groups or units, or among members of a collective within an organization (such as a team or division). *Inter-organizational knowledge sharing*, on the other hand, is that conducted between organizations. To narrow down the scope of this research, our focus will be placed on inter-organizational knowledge sharing, where knowledge sources may reside either within or outside the boundaries of the organization.

An organization's success depends, now more than ever, on its ability to create and share knowledge effectively. Knowledge sharing is crucial as much of the knowledge may be confined to the minds of individuals. Thus, as one knowledge-management expert explained, most of an organization's knowledge resides in the head of its employees. If it hasn't been shared by the end of each day, the organization loses the possibility of codifying and preserving it. Moreover, organizational knowledge and de facto organizational learning will only grow when individuals within organizations are willing to share their insights, experiences, and wisdom with each other (Chau, 2018).

Cummings (2003), in addition, identifies five factors that influence successful knowledge sharing, including "the relationship between the source and the recipient, the form and location of the knowledge, the recipient's learning predisposition, the source's knowledge-sharing capability, and the broader environment in which the sharing occurs" (p. 1). Chau (2018), furthermore, specifies four major factors at the individual level that influence knowledge sharing, namely "self-efficacy, organization commitment, interpersonal trust and attitude" (p.158). Additionally, Son et al. (2020) state the need for a new style of leadership to encourage knowledge sharing in order to enhance organizational performance. Tessier (2021) makes the distinction between people, processes, tools, and technology. On the people side, the researcher argues, is the need to discuss motivators, behaviours, leadership roles and responsibilities as well as the individual and organizational culture. At the process level, there is the need for certain practices, processes, and strategies to implement knowledge-sharing practices within organizations. Lastly, Tessier states that utilizing the appropriate tools and technologies enables effective knowledge management, and thus knowledge sharing within organizations. An interviewed knowledge management expert, moreover,

proposes a similar breakdown into people, process, and technology, and argues that the distribution of effort required to make knowledge management successful lies at 70 percent on the people side, 20 percent on the process side, and only 10 percent on the IT side. Ceci et al. (2021) find a similar result in their study investigating IT-based and face-to-face interactions for knowledge-sharing activities; while underlining the importance of IT-based interactions, they conclude there are no real differences between these two forms of communication.

3.1. KNOWLEDGE-SHARING METHODS

Several methods exist that enable knowledge sharing in organizations. Janus (2016) states that organizations learn at three levels: individually through employees, collectively through teams, and institutionally at the organizational level, and that knowledge-sharing practices are essential for organizational learning. An organization can only begin to deal with knowledge efficiently when the employees are eager to be involved in knowledge-sharing activities (Singh et al., 2021). As well as allowing for the opportunity for knowledge sharing at any time, such as during team meetings or co-creation sessions, organizations can hold a few planned activities to increase inter-organizational knowledge sharing and nurture organizational learning (see Table 2).

TABLE 2: OVERVIEW OF KNOWLEDGE-SHARING METHODS

	Description	Primary purpose	Knowledge sharing level	Type of engagement
Coaching	An interactive process through which managers aim to solve performance problems, or two people of equal status in an organization actively help each other solve a task or issue	Increasing organizational performance	Individual	Direct, one-to-one, or one-to-many
Communities of practice (CoP)	An integrated approach for transferring knowledge through formal and / or informal groups	The continuous acquisition of knowledge and expertise in a related area	Self-organized, or appointed groups/teams	Direct, many-to-many
Informal discussions	Informal in-person or virtual conversations with peers	Socialization	Individual	Direct, one-to-one
Knowledge café	A collaborative, conversational process where people at several small tables and discuss a topic	Surface group collective knowledge	Organization-wide	Direct, one-to-one, or one-to-many

Knowledge maps	A display of the different kinds of knowledge present in the organization	Providing an overview of the organization's knowledge base	Organization-wide	Indirect, individual
Knowledge repositories	A digital storehouse of expertise and documentation	Making it easier to find relevant information and resources	Organization-wide	Indirect, individual
Knowledge-sharing events (following-action reviews/lessons learned, lunch and learn)	A review, debrief, or presentation on something that was done	The circulation of information and or knowledge within the organization, providing educational opportunities	Organization-wide	Direct, one-to-one, or one-to-many
Mentoring	A formal or informal way of passing on know-how from an expert to an aspiring expert	Encouraging reflection about the job as a whole	Individual	Direct, one-to-one
Storytelling	A tool for knowledge sharing through narratives	Sharing of deeper (tacit) knowledge	Organization-wide	Direct, one-to-one, or one-to-many
Workgroups	A task-oriented group working towards a specific goal	The achievement of a set goal	Self-organized or appointed groups	Direct, one-to-one, or one-to-many

Knowledge maps and knowledge repositories
Knowledge maps provide employees with access to the organization's knowledge base. They enable the viewer to get a quick overview of the available knowledge and capacity within the organization and where to find specific knowledge experts within it. These maps do not include the knowledge itself; but provide links to the sources of knowledge (Manninger, 2012). Similarly, knowledge repositories are internal platforms where expertise and documentation are stored. They can be considered as a form of online self-help as they allow employees to find the information and resources they seek (Mazorodze & Buckley, 2020).

These tools are essential when creating an inventory of knowledge. They can then be used to show where people need to gain expertise, where knowledge is at risk, or which activities impact the flow of knowledge in organizations.

Communities of practice (CoPs)
Communities of practice can be defined as groups —either formally established, or spontaneously self-organized —that posit common interests, a goal to achieve, or a set of problems to overcome. The groups continue to jointly gain knowledge and expertise

together in the related area (Uden et al., 2018). They are a powerful means of informal learning. Most CoPs are built by employees; thus the community members are not determined by management, which results in an environment with high levels of trust and very personal, informal relationships (Manninger, 2012). A study by Mazorodze and Buckley (2020) on knowledge transfer within knowledge-intensive organizations concludes that communities of practice, in encouraging and promoting teamwork through discussions and knowledge sharing among employees, are in fact the most effective means of knowledge transfer.

Knowledge Cafés
Knowledge cafés involve a simple, yet flexible conversational method that brings groups of people together to have a conversation on a given subject. The café setting is also seen as a mindset that brings people together to share experiences, learn from each other, build relationships, and make better sense of the world to improve decision making and enhance innovation (Anyacho, 2021).

Storytelling
Storytelling is about using a range of communication techniques to engage, inspire, and involve people in organizational learning, as opposed to more traditional forms of communication that can tend to be somewhat dry and uninspiring. People have been telling stories for thousands of years as a way of exchanging information and generating a common understanding, but storytelling has only recently been adopted as a specific tool for knowledge sharing within organizations – and has now become a favoured technique that effectively enables the storyteller to transfer knowledge in a contextual way and is also easy to understand (Mazorodze & Buckley, 2020).

Knowledge sharing events
To successfully learn from past projects, knowledge-sharing events such as "lessons learnt" provide the opportunity to discuss the knowledge gleaned from a project, while also allowing for the learned experiences to be used in later projects. These events require a high level of trust between employees and management, as well as a high tolerance for errors, to enable employees to freely share their experiences (Manninger, 2012). In the same vein, after-action reviews enable individuals to learn what happened, why it happened, what went well, what needs improvement, and what lessons can be learned from that experience. The spirit of these knowledge-sharing events needs to be one of openness and learning, and shouldn't be about fixing problems or assigning blame.

Mentoring and coaching
Mentoring is a method of teaching and learning where an experienced or senior individual teaches or trains someone in a given area. Coaching, on the other hand— especially when done in a collegial style— can be utilized to share ideas, teach one another, or solve problems in the workplace. It is centered on the collaborative sharing and refinement of knowledge and skills (SDC Knowledge and Learning Processes Division & Agridea Lindau, 2013).

Many types of knowledge-sharing activities can be performed within an organization, and can be pursued on a case-to-case basis. However, the essence of these activities lies in creating a process and an environment for sharing knowledge that promotes knowledge-sharing behaviours. No single solution will fit every organization, however, since an organization can be perceived as a complex system with a unique culture and set of problems, and situated in a high level of flux and unpredictability in response to the taken measures (Snowden, 2007). Nonetheless, experts agree on certain basic elements and principles that organizations should follow when developing and implementing a knowledge-sharing system. Once these principles are considered, they can be used to create unique tools that may enhance the organization's capacity to share knowledge. In doing so, it is important to better understand the behavioural aspects of knowledge sharing and how those behaviours are promoted within organizations.

3.2. KNOWLEDGE-SHARING BEHAVIOURS

Knowledge-sharing behaviours can be perceived as an attitude, an action, or an ability to share knowledge within organizations. Yi (2009) suggests that, similar to knowledge and knowledge sharing, the relevant literature shows that no clearly defined concept for knowledge-sharing behaviours exists. Appel-Meulenbroek et al. (2018) describe these behaviours as a cognitive and behavioural process that cannot be controlled or enforced. Knowledge sharing is essentially voluntary, and the sharer will control how much he/she wants to share. Even though organizations and individuals usually understand the potential benefits of knowledge sharing, putting this activity into practice is still a challenge. Identifying the most appropriate tools and strategies that can enable organizational leadership to engage and inspire employees to share knowledge is therefore of paramount importance.

Many organizations struggle with a plethora of perceptional and attitudinal factors that create roadblocks to knowledge sharing, however. Szulanski (2005), in elaborating on some of these factors, mentions cross-departmental competitiveness or jealousy, a lack of incentives or confidence, insufficient work priorities, a lack of buy-in, resistance to change, and a lack of commitment. Even though many organizations are working to eliminate the impact of those factors on organizational performance and culture, very few have a strategy in place to specifically address their relationship with knowledge-sharing behaviours. Yi (2009) suggests that organizations seeking to encourage knowledge-sharing behaviours, should explicitly recognize those behaviours as part of the individual performance domain. A lack of defined KPIs, appraisal practices and measuring instruments around knowledge sharing behaviours results in an ineffective performance evaluation of those behaviours in organizations. Managers often lack the tools and leverage to encourage and inspire employees to share knowledge with each other.

To further understand the disruptors and enablers of knowledge-sharing behaviours within an organization, we conducted a Causal Layered Analysis (CLA), a tool used to analyze how the structures of a system are connected to deeper worldviews and

metaphors (Inayatullah, 2004). As depicted in Figure 4, the framework describes four levels: litany, causes, worldview, metaphors and myths.
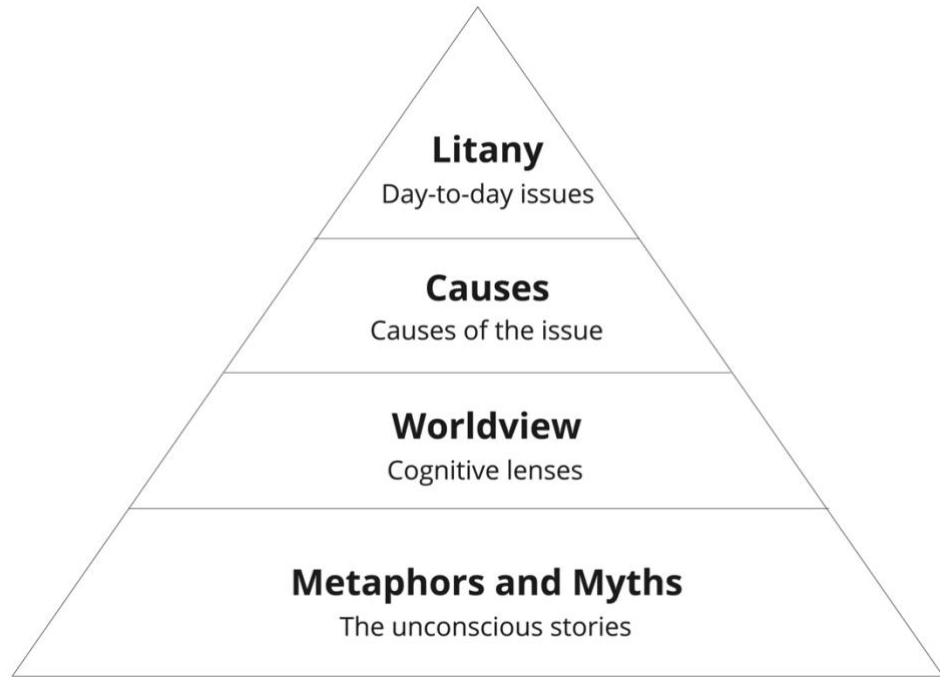
FIGURE 4: CAUSAL LAYERED ANALYSIS STRUCTURE

Source: Derived from Inayatullah (2008, p. 12)

PROBLEM

Multiple research studies and some of our interviewees concluded that employees often demonstrate reluctance and resistance in sharing the knowledge that can support organizational development and innovation.

CAUSES

Knowledge can be understood as an intangible asset that is unique, path-dependent, casually ambiguous, and hard to reproduce or substitute. These specific characteristics make this commodity a potential source of competitive advantage, and consequently, a logical target for managerial attention and a source of professional and personal advantage (Cabrera, 2002; Boisot, 1998; Johannessen, 2018). Following that perspective, one may rationally conclude that knowledge sharing might cause a loss of competitive advantages in organizational cultures that can be perceived as highly competitive. In their article "Knowledge-Sharing Dilemmas", Cabrera and Cabrera describe this obstacle as a social dilemma, comparing it with *the tragedy of commons*. This term refers to a paradoxical situation in which individual rationality — simply trying to maximize individual pay-off —leads to collective irrationality. In other words, groups do not benefit from the outcomes of individual decisions that may seem rational to those making them. If everyone acted 'rationally', according to their best self-interests,

no one would cooperate, and everyone would suffer consequences (Cabrera & Cabrera, 2002, pp. 6 –7). To illustrate this dilemma, we can imagine an organization where employees hold onto their knowledge and avoid sharing it with the other team members, making a 'rational' judgement about the knowledge being a strategic advantage in their work or even in their professional growth. That attitude creates an environment of mistrust and leads to a poor performance within the team overall, especially in tasks where collaboration and knowledge exchange are key to success.

Nonetheless, knowledge management experts argue that a collaborative team environment can enable knowledge-sharing behaviours, although opinions on the best strategies for fostering these collaborative behaviours vary. Supporters of a reward system within organizations suggest that more collaborative knowledge-sharing behaviour might become the dominant strategy if such behaviour is rewarded, and the reward maximizes or exceeds the individual gain (Kalman, 1999). Later research conducted in a Chinese software company supported this hypothesis: higher levels of knowledge sharing occurred in an environment where knowledge was evaluated and rewarded (Wang et al., 2011).

In their article "Self-Determination Theory and Work motivation", Gagne and Deci disagree with that perspective and suggest that rewards, especially tangible rewards and evaluations, should be selected carefully, as they tend to diminish feelings of autonomy and undermine intrinsic motivation (Gagne & Deci, 2005). Another research conducted among 154 managers from 27 Korean organizations found that the anticipated reciprocal relationships affect individuals' attitudes toward knowledge sharing and that any anticipated extrinsic rewards negatively affect the individuals' knowledge-sharing attitudes (Bock et al., 2005). That perspective aligns with the one of Appel-Meulenbroek et al. (2018), who states that knowledge sharing is an activity performed voluntarily, and those engaged in it should feel it is purely their decision to share the knowledge with others.

However, Kehr (2004) believes that rewards will not negatively impact intrinsic motivation if there are other intrinsic factors at play such as task enjoyment. Non-monetary and other intangible rewards can be particularly effective if they are public, infrequent, credible, and meaningful within a particular culture (Lawler, 2000). Insights from interviews support the latter; intrinsic motivation and intangible rewards can be extremely effective methods of promoting knowledge sharing as well as extrinsic rewards, providing these are introduced strategically.

WORLDVIEW

Applying a CLA to understand the worldview of key stakeholders can help identify factors that impact employees' attitudes towards knowledge-sharing behaviours, which in turn can provide better perspectives on the changes in attitude required to achieve a change in behaviours.

Trust

Regarding the idea that the same individuals tend to demonstrate more collaborative behaviours within one-on-one interactions rather than in group interactions, Cabrera and Cabrera found that collaboration declined as groups became larger. In this interesting conclusion to their research, these authors suggest that this effect may be due to a lack of the technology that would allow codifying, recording, and transferring the knowledge between organizational clusters (Cabrera & Cabrera, 2002). Later studies refer to a lack of trust as a significant factor contributing to ineffective knowledge sharing within organizations. This is particularly relevant in global organizations where many departments work remotely and struggle to achieve interpersonal trust (Mortensen, 2012). The pandemic has contributed to the problem. Remote working has empowered the accelerated evolution of information and communication technology, making global organizations shift their corporate cultures and form virtual remote communities (Olaisen & Revang, 2017; Alexander et al., 2020).

Relatedness

Trust is not the only factor that impacts employees in the move toward knowledge sharing. Many researchers suggest that establishing a group identity and a sense of belonging is equally important in promoting knowledge-sharing (Cabrera & Cabrera, 2002). Gagne & Deci (2005) support that conclusion in their self-determination theory analysis. They argue that the need for relatedness is as crucial for employee motivation as the need for competence and autonomy. Promoting the satisfaction of those psychological needs within organizations would enhance both the intrinsic and extrinsic motivation of employees and yield an effective performance, particularly in tasks requiring creativity, cognitive flexibility, and conceptual understanding (Gagne & Deci, 2005).

Understanding the importance of trust and relatedness as motives that impact employees' perceptions and attitudes can lead organizations to developing strategic tactics that support leadership in promoting the desired behaviours among employees.

Myths & Metaphors

Knowledge is power

The belief that "knowledge is power" describes how highly knowledge is valued. Such a scarcity approach to knowledge, as something that is valued for its rarity (Shelley, 2016), may explain the emergence of knowledge-hiding behaviours. The "psychological ownership" that individuals tend to hold over their own knowledge, combined with their held beliefs that knowledge is power, may impact their willingness to share it, due to the assumption that, as a result, only the receiver of the knowledge will benefit from it (Abril & Harwell, 2021).

This Causal Layered Analysis highlights that many factors affect knowledge-sharing behaviours and attitudes, including personal beliefs held by the knowledge bearer, alongside factors including collaboration, trust, and relatedness within groups and

organizations, and the idea of reciprocity. Undoubtedly, without any extrinsic or intrinsic motivation drivers to share it, individuals tend to hide the knowledge they possess (Asrar-ul-Haq & Anwar, 2016). In addition, leadership behaviour and support, as well as organizational culture and group and individual values and norms, also play an essential role in defining behaviours and attitudes.

4. THE FUTURE OF KNOWLEDGE SHARING

With the global economy becoming increasingly knowledge-driven, knowledge management will become a critical challenge for many organizations. The era of disruption in which we live is influencing the way we live and work, and thus the way knowledge will be managed and shared in the future. Whilst complex systems have been built in order to store information, to monitor the flow of knowledge, and maintain central databases and sharing practices across global companies, the rapid spread of technology also offers considerable new opportunities. By embracing some of the innovative new methods in the field of knowledge management, organizations can advance their expertise in this vital area. The rise of automation and the adoption of artificial intelligence in the workplace will also demand a change in occupations and the need for a workforce with new skills. Organizations will therefore require efficient knowledge management to thrive in an ever-changing workspace. Technology alone will not be enough to leverage the value of knowledge management. A favourable knowledge management infrastructure and organizational culture of learning can be sustained only if employees deem it valuable and necessary for their personal growth and that of their organization.

In this section, we will explore the potential disruptors to knowledge sharing in the near future, and how these may play out in future scenarios. It is important to note that these scenarios do not aim to predict the future, they are speculative explorations of directions that might emerge, based on the identified disruptors.

4.1. FORCES SHAPING THE FUTURE OF KNOWLEDGE SHARING

Through a process of environmental scanning, external forces of change have been identified that may affect the future of knowledge sharing. These forces act to push forward change, and to shape organizations, societies, and markets (Stucki, 2022).

4.1.1. A DISTRIBUTED WORKFORCE

The Covid-19 pandemic has brought about rapid changes in the way people and organizations work. The shift to remote work and the introduction of virtual interactions have made it possible for most of the workforce to work from home during the pandemic. This move has been supported by a rapid deployment of new digital solutions such as video conferencing, online whiteboards, document-sharing tools, and the expansion of cloud-based solutions. While much can be done remotely, work that technically can be performed online may still be more effective in person. Such is the

case with negotiations, critical business decisions, brainstorming sessions, and the onboarding of new employees (Lund et al., 2021).

The choice of where to work may be a decision left to the employees, depending on their preferences in terms of either centralized workplaces or decentralized remote organizations, or an 'in-between' hybrid solution. A survey of Canadian office workers found that half of them preferred a mostly, or fully, remote workplace. Furthermore, if prospective employers mandated full-time in-person work, more than half would be hesitant to accept a job offer (Saba, 2022). Offering this flexibility opens up bigger talent pools, where candidates for fully remote positions are not limited by location. At the same time, a more distributed workforce will require support in the form of procedures and technologies for productivity and connection, and for the employees' personal wellbeing.

Impact on knowledge sharing
The nature of remote work adds complexity to the flow of knowledge. People and information become scattered, both physically and digitally, making it difficult for others to capture them. As a consequence, teams that are fully remote miss out on opportunities to engage in unplanned, informal conversations which could lead to collaboration and knowledge sharing – thereby making a dent in organizational learning. Additionally, the absence of any casual conversation can cause employees to disengage with the organization, which could affect trust and productivity in the long term.

4.1.2. THE WAR FOR TALENT AND THE NEED FOR UPSKILLING

The term "war for talent" was coined by McKinsey & Co. in the late 1990s. It was a time when competition was becoming increasingly global, people switched jobs more often, and the workforce was aging (Guild Education, 2021). These forces have now intensified, especially as technology reshapes the nature of work. The demand for new and emergent skills, including user-experience design, artificial intelligence, robotics, cybersecurity, and data science, is growing, and labour markets are struggling to keep up (Harris & Schwartz, 2020). In every industry and sector, a conversation must occur on how best to adapt, as upskilling and reskilling become the new norm (Christensen, 2020). Whilst some organizations try to fill a widening skills gap by recruiting from the outside, there is tremendous opportunity in looking within, and exploring the resources and potential already present within the existing workforce. The need for effective and efficient internal training is heightened by the shortage of skilled workers. Meanwhile, the skilled talent an organization has invested in could always move to a competitor.

The pandemic has allowed recruiters to leverage technology to access a larger, global talent pool. So long as they have access to the internet, employers can source the best talent from anywhere in the world. This also means that individuals with the skills most in-demand are aware they can live where they choose and work where they see the best fit.

Impact on knowledge sharing

With the ebb and flow of employees in organizations, knowledge sharing and the effective transfer of knowledge such as skills, insights, and working practices from employees who may be leaving, becomes critical. Without knowledge sharing, organizations run the risk of losing valuable wisdom and information. Moreover, employees need to share knowledge with new hires, as they upskill to perform the job requirements.

4.1.3. TOWARDS DATA-DRIVEN ORGANIZATIONS

As the world becomes increasingly digitized, unfathomable amounts of data are being generated by people, products, organizations, governments, and many other players. The ability to utilize data will be key in creating a competitive advantage. The emergence of big data analytics is providing numerous prospects to boost the performance and profitability of organizations. Similarly, cloud computing enables the generation of data and innovative solutions levering that data. These innovations require organizations to transition from legacy data sourcing and integration systems to a more scalable data architecture that can enable data capture in real-time, thereby reducing the processing time and accelerating the outcomes (Accenture, 2019).

Becoming a data-driven organization is no longer a choice, but a necessity. The transition requires an organizational focus on cultural change (Bean, 2022), as the challenge is not about the technology but about the willingness of people and organizations to adopt new ways of thinking and working. Here, effective knowledge management plays a crucial role in harnessing the potential of data, to streamline the essential information exchange and the data analytics involved.

Impact on knowledge sharing

With big data and the constant production of facts and information, employees must be able to differentiate between valuable knowledge and mere information. Otherwise, the constant proliferation of data and, subsequently, of data-related analytics and insights may lead to an overwhelming workload, and relevant information may easily be overlooked.

4.1.4. THE FOURTH INDUSTRIAL REVOLUTION

The fourth industrial revolution describes a post-digital revolution world where the lines between the physical, digital, and biological are blurred (Xu et al., 2018). This is an environment where individuals move between digital domains and offline reality with the use of connected technologies. Emerging technology breakthroughs in the fields of artificial intelligence, robotics, the Internet of Things (IoT), autonomous vehicles, 3D printing, and quantum computing, to name a few, lead to billions of new innovation opportunities. These technologies are enabling entirely new ways of serving existing needs but are also bringing increased competition with the emergence of agile and innovative competitors who utilize digital platforms for research, development, marketing, sales, and distribution (Schwab, 2016). Moreover, AI, robotics and

automation are stepping into the workforce and taking over human jobs by utilizing deep-learning approaches.

Additionally, in a constantly connected environment, substantially more unstructured data and information are produced, which may congest the information system (Fakhar Manesh et al., 2021).

Impact on knowledge sharing
Technological advancements have the potential to boost the flow of knowledge within organizations, to be utilized for knowledge creation and sharing, where smart and connected products, networked systems, and AI are empowering the knowledge worker. However, the inevitable integration of technology, both in the private and work environments, could diminish essential human capacities such as empathy and cooperation. For this reason, finding tools and methods that can help organizations to preserve these human qualities within the teams and between individuals is crucial for long-term success.

4.1.5. DIVERSITY, EQUITY, AND INCLUSION AS BUSINESS IMPERATIVES

Certain events in the past few years have highlighted the importance of bringing equity to the forefront, especially in the workforce. People around the world have simultaneously faced a global pandemic, witnessed a global movement to end systemic racism and police brutality, and seen the emergence of war, all whilst acclimating to a new work-from-home setting. The weight of these combined events has motivated company leadership to consider more closely the toll these events may take on employees (Creary et al., 2021). The shifting focus from hitting diversity metrics to building inclusion programs in the workplace allows for organizations to create an environment where diverse views are encouraged and valued (Mortazavi, n.d.). Focusing on skills and (lived) experience rather than academic degrees provides opportunities to drive diversity within organizations. Creating an inclusive culture is no longer a "nice to have" for organizations but a business imperative, especially in the current era deemed "the great resignation", a wave of walkouts across industries as unhappy employees rethink their life purpose and express discontent with their working conditions (Rothbard & Creary, 2021).

Impact on knowledge sharing
Employees from diverse backgrounds can contribute to organizational knowledge building by sharing different perspectives and ideas and by improving problem-solving skills. At the same time, individual behaviour and cultural reciprocity may also play a role in effective knowledge sharing, especially as different cultures conceptualize knowledge differently, and the value attached to personal knowledge may vary.

4.1.6. (POLITICAL) POLARIZATION INFILTRATING THE WORKPLACE

Political polarization is on the rise and is seeping into non-political domains, including the workplace, with consequences for employees and employers alike (Chow & Lees, 2021). Workplace conversations on controversial issues and polarizing topics such as vaccination, politics, religion, or the economy are almost inevitable. Whether intended or not, employees at all levels bring political ideologies into organizations, and with politics becoming more polarized and divisive, the perception of political differences may create hostility between coworkers or even increase employee turnover. Moreover, individuals tend to have a social circle where the others share similar political views and they are also likely to live near others whose politics are similar to their own, reducing the exposure to other views (Swigart et al., 2020). Further, the intersection of digital technologies and political polarization leads to the emergence of echo chambers where one-sided views are amplified because individuals are mostly exposed to like-minded peers and content reinforcing their political views—a consequence of ranking algorithms—leaving them isolated from others with opposing views. The growth of digitalization, polarization, and disinformation is, in fact, likely to deepen mistrust between societies, businesses and governments (World Economic Forum, 2022).

Impact on knowledge sharing
Trust plays a critical role in empowering individuals and teams to share knowledge and to collaborate in a way that promotes learning. With the increasing conflicts among employees over economic, cultural, and political differences, people gravitate toward like-minded peers, thus missing key opportunities to learn from those with different perspectives.

4.2. ADDITIONAL TRENDS

Other new trends will pose fresh challenges for work, the workplace, and societies. These trends differ from the previously stated forces of change as they will not impact knowledge sharing per se, but rather may disrupt the work environment or work culture as a whole. Furthermore, these trends are forces that are still being shaped by current technological and social movements, and the direction they may be taking (if any) is still unknown. Nevertheless, the potential impact is worth considering when exploring the future of knowledge sharing.

Work-life balance
Whilst most employees' lives revolved around work before the pandemic, there has been a shift in perspective on the impact that work has on one's life and vice-versa.

Gig economy
The growing number of independent workers, or "gig" workers are using digital platforms to learn, find work, showcase their work, and build networks.

Wellbeing culture

There is a growing recognition of the importance that physical and mental health plays within organizations, especially for the younger employee demographics.

Natural Language Processing

The latest model of Natural Language Processing, GPT-3, uses deep learning to understand grammar and language in order to produce human-like text. This type of technology could produce unique outputs or even create human-like papers, blogposts, or podcasts.

The metaverse

Whilst there is no set definition of the metaverse, it is, broadly speaking, a virtual space where digital representations of people are enabled to interact in all kinds of contexts.

Dis- and misinformation

The proliferation of online information and the broad reach of media provide ample opportunity for misinformation and disinformation to spread in people's lives and workplaces.

Aloneness

The pandemic has exacerbated social isolation for every age group; with social distancing, fewer social events, and an over-reliance on social media. These, among other phenomena, have played a role in the heightened sense of loneliness and social isolation experienced by people.

4.3. CRITICAL UNCERTAINTIES

Critical uncertainties are the driving forces that will probably influence the process of knowledge sharing significantly. The possibility of these uncertainties was discovered through a process of ranking a set of driving forces (of which the most relevant ones are highlighted in the previous chapter) by level of uncertainty and impact to knowledge management. An additional process of clustering and sensemaking was undertaken in an attempt to define these critical uncertainties.

They were then placed on an axis, with polar cases at each extremity (Figures 5 and 6). These two axes were combined to create a 2x2 matrix with four different quadrants of uncertainty, to create the base of four potential future scenarios that will be explored (see Figure 7).

Critical Uncertainty 1: Innovation management

Closed Innovation ———————————————————— Open Innovation

FIGURE 5: CRITICAL UNCERTAINTY 1: INNOVATION MANAGEMENT

Open innovation can be seen as a distributed innovation process based on the management of knowledge flow within and outside of organizational boundaries

(Terhorst et al., 2018). Ideas and knowledge from inside or outside the company are seen as valuable and relevant for organizational learning, thus organizations can transcend their boundaries by sourcing external input. Open innovation facilitates increased access to external knowledge and greater openness to co-creation and collaboration. While organizations may utilize open innovation to gain competitive advantage, doing so can make them vulnerable to risks emerging from a lack of protection of their own organizational knowledge. Some organizations may therefore choose not to implement open innovation, due to a fear of losing control of their proprietary knowledge (Islam, 2012) deciding to embody a closed model of innovation management instead. Thus, closed innovation lies at the opposite pole to open innovation. In this case, organizations must generate their own ideas, gain insights from internal sources, and thus pursue innovation within clearly defined organizational boundaries.

Critical Uncertainty 2: The role of technology

Tech Surveillance		Tech Synergy
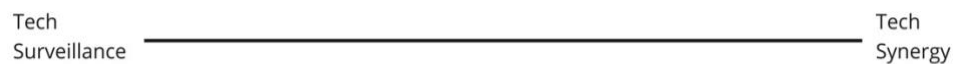
FIGURE 6: CRITICAL UNCERTAINTY 2: THE ROLE OF TECHNOLOGY

The adoption of technology in organizations coincides with an increase in the use of monitoring and tracking software (Abril & Harwell, 2021), which records employees as they work from home. This use of technology as a tool for surveillance and monitoring provides metrics such as the number of meetings, time spent on tasks, and other insights, which are gathered and used to assess productivity. From the opposite perspective, technology can also transform the workplace and through synergy, enable and augment workers to do their jobs more effectively. There is potential in combining people and technology to form "superteams", where computers and people use complementary strengths to achieve common goals (Eaton et al., 2021).

4.4. FOUR FUTURE DIRECTIONS FOR KNOWLEDGE SHARING

In this section, we will use the critical uncertainties to imagine four future directions that knowledge sharing might take, based on the forces of change already indicated. The goal of these scenarios is to 'disturb the present' by describing alternative futures that actually diverge from the present quite significantly (Curry & Schultz, 2009). The scenarios present plausible hypotheses of how the world might unfold. While most scenarios are woven into a narrative or a story (Levesque & Garvin, 2006), this approach would require us to contextualize these potential futures and restrict them to a specified time and place. Because our research question broadly encompasses organizations in general, we wish to remain as neutral as possible with our scenarios so they can be applied to the majority of organizations, regardless of the constraints of time, industry, or location.
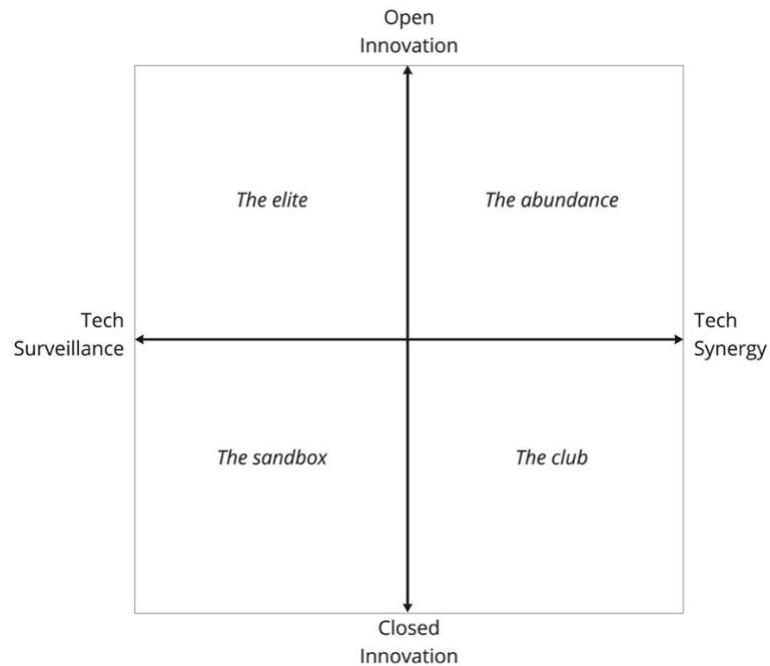
FIGURE 7: FOUR FUTURES FOR KNOWLEDGE SHARING

4.4.1. THE SANDBOX

In this scenario, innovation emerges from within organizations. Knowledge is handled carefully among workers; and a low tolerance for errors results in less experimentation, which in turn stalls innovation. Silos emerge in the workplace, while internal competition drives elitism and knowledge-hiding behaviours. Leadership and management are careful with whom they share their knowledge since low employee retention means that people 'might leave at any time' and thus, time is wasted sharing knowledge with them. This attitude is mirrored by employees who are reluctant to share their experience, particularly when it comes to error-based learning. Knowledge therefore rarely leaves individual trusted circles, such as project teams; it is seen as a competitive advantage and an asset that remains within individuals. This environment is unsustainable. In it, people are leaving and entering new positions at a rapid pace, and although extrinsic motivators such as rewards and a competitive salary attract new talents, the newcomers quickly experience a lack of connection and integration within the organization and its work teams, which leads to frustration, impacting their wellbeing and the work they produce.

The problem in this scenario is that knowledge is not socialized and captured. There is a need for informal and cross-departmental knowledge sharing through a semi-structured process that is conducted in a safe context, where workers are encouraged to talk about mistakes and lessons learned without fear of repercussions. The process and the outcome can be captured in order to create a legacy of knowledge within the organization.

4.4.2.   THE ELITE

In this scenario, strong relationships amongst workers are central to trust and value creation. Knowledge is strongly valued and "knowledge ambassadors" are responsible for circulating internal and external knowledge to relevant stakeholders. Those employees with experiential knowledge and a wide network they can draw from to co-create solutions are highly valued and thus central to organizational learning. Performance and seniority strongly depend on the knowledge networks one has built, and on how the knowledge is disseminated. This leads to a sort of 'knowledge elitism', where organizations, including leadership, are centered around a few key members that are listened to and trusted when the pathway is not clear. Thus, knowledge management practices are built around them and lean on their capacity for mentorship and their openness to sharing their knowledge.

The issue in this scenario is that knowledge is not documented, and thus the key players in the organization have a weak legacy. Organizations need to document existing knowledge and available networks, as well as systematize knowledge-sharing processes with clear categorization for easy recovery.

4.4.3.   THE ABUNDANCE

In this scenario, knowledge is seen as a strategic asset across the world. Accordingly, the exchange of knowledge is greatly valued, and knowledge sharing is a globalized activity aided by technology. Organizational learning is high across the board, and with high levels of co-creation, innovation flourishes. Effective digital repository systems allow for access to huge amounts of information, which is hard to sift through and make sense of. Digital literacy and data analytics skills are therefore in high demand, and many tasks are executed by automated means. Nevertheless, there is strong competition. Not only have many jobs become automated, but a lot of positions require substantive upskilling in order for employees to acquire the ability to thrive in a new work environment. Processes are systematized, including knowledge codification and active knowledge-sharing mechanisms. For employees, it is easy to search for the required information, or be directed to someone knowledge in the domain that is able to help.

The problem in this scenario is that knowledge is not contextualized. Organizations need to provide spaces where employees are enabled to experiment with accessible knowledge in various contexts, so they can make sense of the available data.

4.4.4.   THE CLUB

In this scenario, strong internal competition results in low levels of knowledge sharing. Small, internal, social circles are formed in which knowledge is exchanged. There is a strong reliance on technological solutions rather than conversational information sharing or the sharing of experiences. It is hard to break through organizational silos, and much of the knowledge is sought for externally, or via technology, instead of though leveraging the available intra-organizational knowledge. Work groups operate

very efficiently, and individuals focus on their own skillset development in order to fulfill their tasks more effectively, yet they are not learning from the mistakes made by their predecessors, or the errors being made in other teams. In this data-driven environment, people are enabled to be more competitive, and benefit from incentives such as automated reward systems. These employees mimic the behaviours observed in leadership and management that work in a way that is process-centric and result-oriented.

The issue in this scenario is that knowledge is not flowing in the organization; it is only exchanged in small organizational silos. There is a need to incentivize and reward knowledge-sharing behaviours, and force cross-team and cross-functional knowledge exchange.

4.5. KNOWLEDGE-SHARING METHODS IN THE FUTURE(S)

These scenarios are a snapshot of potential futures that might emerge, based on current trends affecting knowledge sharing in organizations. Through a process of wind tunnelling, where scenarios provide the 'test conditions' in which strategies have to perform (van der Heijden & Sharpe, 2007), we evaluated the knowledge-sharing methods described in the 'Knowledge-sharing methods' chapter. These methods were assessed using the following criteria (on a scale from low to high):

> **Strategic fit**, the efforts required for implementation from management and leadership, as well as for the employees.

> **Cultural fit**, the fit with the organizational culture of learning, and behaviours towards knowledge sharing.

> **Effectiveness**, the questions of whether these methods augment organizational learning, promote knowledge sharing across existing inter-organizational boundaries, and provide learners with access to new knowledge.

The breakdown of the assessment of each knowledge-sharing method in each scenario is shown in Appendix A: Wind tunnelling. The results indicate that both the informal discussions and storytelling methods show the highest potential in terms of strategic and cultural relevance. These two approaches met with excellent results in each scenario. This indicates that, while knowledge-sharing methods or events, such as knowledge cafés or lunch-and-learns may be reasonably effective for inter-organizational knowledge sharing, unless the organizational culture is focused on learning and cross-departmental exchange, the efficacy of these methods and events in eliciting the knowledge-based insights required to accelerate innovation will be very limited. Less formal methods, such as storytelling and informal discussions, have the advantage of being low-stakes methods that can be applied in any place and at any

time during day-to-day operations, and thus have the highest potential for enhancing knowledge sharing.

5. STORYTELLING AND KNOWLEDGE SHARING

Since the dawn of time, storytellers have used stories to convey information and deliver meaning to an audience. One can often find pieces of art depicting a group of people listening to a story from someone narrating a tale or explaining a lived experience. Passing on knowledge through storytelling was one of the most effective tools for preserving and sharing meaningful knowledge for many generations in the past (Dunbar, 2014; Gabriel, 2000). Our research project concludes that the impact and benefits of storytelling in knowledge sharing can only grow into the future.

We analyzed the storytelling method further and assumed that organizations might benefit from implementing and promoting storytelling as an effective knowledge-sharing tool in the light of future trends, such as further technological advancements, digitalization, and growing polarization. Moreover, integrating storytelling into knowledge-management strategies can help organizations shift employees' attitudes toward knowledge sharing and promote collaborative and knowledge-sharing behaviours within the organization at the same time.

As the future of knowledge sharing will hinge on strategies and methods that will help leaders create a collaborative environment with a high level of trust among individuals, storytelling can play an important role.

5.1. BUILDING BLOCKS OF STORIES

In order to explore the benefits of storytelling in promoting attitude and behaviour change towards knowledge sharing, the key components of a story first need to be explored. Storytellers often refer to the 4P model to describe elements of a story (Hooper, 2019). This refers to People, Place, Purpose, and Plot. By analyzing each of these building blocks, we can explore the benefits of storytelling in achieving behavioural and attitude shifts toward knowledge sharing.

5.1.1. PEOPLE (CHARACTERS)

In creative storytelling, the people involved are viewed as central to a story. A story needs a character, a hero, a protagonist, or simply a main actor. This is a person the listener can relate to, whose experiences and emotions can be felt. A good storyteller will identify the emotion they want to elicit in the audience even before beginning, and, through the course of the story, will utilize that emotion to create a powerful, empathic, connection between the protagonist and the audience. This phenomenon is driven by the neurochemical effects of oxytocin, often referred as 'the hormone that

helps people be more trustworthy, generous, charitable, and sensitive to social cues' (Zak, 2013). Zak (2013) argues that character-driven stories with emotional content lead to a higher production of oxytocin, making the audience more compassionate, connected and engaged.

Storytelling can be instrumental in creating bonds among individuals and social groups and in promoting cooperation. In studying hunter-gatherer societies, Smith et al. (2017) state that groups with a storyteller among them demonstrated a higher level of cooperative behaviour than other groups. Moreover, storytellers in the groups assessed by researchers were valued even more than people with other important survival skills in the camp, such as hunting, gathering, fishing, medicinal knowledge, and camp influence. In fact, researchers identified that storytelling was the most important reputational attribute. Bietti et al. (2018) argue that storytelling helps in creating social bonds and facilitating social connections. By nature, the ability to tell stories emerges at an early age and helps shape social bonds. A more specific example of such bonds in the organization is through communities of practice, or lessons-learned events, where people get together to share their experiences by telling their success stories and sometimes their stories about failures as well.

Strategic Implications

In a world of growing isolation and polarization, driven by rapid technological advancement, the power of storytelling to bring people together to connect on a higher level of values might help leadership to establish a collaborative environment and higher levels of trust within the organization.

5.1.2. PLACE (SETTING)

The setting, or context, of a story plays an equally significant role in storytelling. Good stories are highly contextualized as they allow the audience to understand the environment in which the character lives, thus helping the audience to make sense of the protagonist's decisions in that environment. Through the contextualization of the character's decisions and actions, the audience makes conclusions about the nature of a character and their relatability and trustworthiness. In this vein, Mitchell (2005) refers to work conducted in the late 90s, where the process of deciding whether a defendant is guilty or innocent was studied. During the trial, both the defence and prosecution presented a lot of information. The researchers questioned how jury members cataloged that information and, thus, the potential impact. They found that "instead of passively listening to the attorneys, the jurors are actively trying to build their own stories and explanations. Then they compare their stories to those presented by the two attorneys and select the one that more closely matches their own story" (Mitchell, 2005, p. 638).

Strategic Implications

Storytelling plays an important role in sensemaking, which is how people give meaning to their experiences (Boje, 1991). Dawson and Sykes (2018) demonstrate that

storytelling is used to give sense to people's experiences in organizations by utilizing traditional narrative structures that contain a plot, a character, a beginning, and an end. Similarly, Bietti et al. (2018) suggest that storytelling might arguably be the primary social activity that allows individuals and groups to achieve collective sensemaking. Changing the stories we tell in the organizations might change the meaning and the narrative people take away as an explanation. This is where stories can play a compelling role in changing employee attitudes in a specific context of a particular organization.

5.1.3. Purpose (Meaning)

The key value of each story is hidden in its purpose, or meaning, which the storyteller is seeking to convey. A well-articulated purpose in a story helps the storyteller to communicate the meaning of the story. It is a takeaway that the audience receives from each story. Research conducted using magnetic resonance imaging (MRI) of two people in communication, revealed how the brainwaves of the person listening to the story synchronized with those of the storyteller (Stephens et al., 2010). Synchronization occurred between the parts of the brain involved in capturing the meaning and the context of the story, which makes the case for the efficacy of stories as an effective tool of explaining and conveying meaning.

Strategic Implications

This effect of storytelling becomes particularly valuable for organizations operating in an environment influenced by the gig economy, where new hires need to quickly adapt to a new working environment, and to its diversity in cultures, opinions, and perspectives. Storytelling helps in building connections in an environment where, otherwise, connecting with others will be harder than ever before.

5.1.4. Plot (Structure)

The plot of a story creates a continuous theme that helps to better engage the audience and keep their attention. The plot helps to link the different parts of the story to make it more memorable. Memorability is one of the key benefits that storytelling has over other methods of conveying information. This can be extremely beneficial in large organizations that struggle with informational overload. Swap et al. (2011) analyzed multiple research articles and found that individuals tend to act upon memorable information. Whilst organizations have access to a vast pool of knowledge and information, memorability is a challenge, due to the sheer amount of the information available.

Strategic Implications

Leaders may find storytelling effective when they need to deliver important information that aims to modify or amend employee behaviour (i.e., regarding regulations, best-case practices, success scenarios, etc.) and make sure that the audience will memorize the information. It's been proven that memorable knowledge has a higher chance of being shared and acted upon (Swap et al., 2011).

The use of stories and storytelling provides a powerful method for individuals, groups and organizations to share what they know. Using stories to share knowledge leverages the traditional means of communications that are embedded into our culture and helps forge connections among people, and between people and ideas (Boris, 2017).

6. STRATEGIC RECOMMENDATIONS

Previous chapters have established knowledge sharing as one of the key activities of in the value chain of knowledge, and have found the importance of knowledge-sharing behaviours and attitudes in creating a culture of learning, collaboration, and thus of innovation within organizations. However, our research indicates a list of widespread beliefs and behaviours that create barriers to implementing proactive knowledge-sharing practices within organizations. Aside from research conducted within the context of this report, our recommendations are also based on our professional experience in corporate communications, together with the foresight and lived experience shared by other seasoned professionals.

In this chapter, we aim to share strategic recommendations that might help leadership to overcome those barriers and build a culture of learning within their organizations. Our research, spanning existing literature and exploring potential futures, brought us to the conclusion that storytelling should be emphasized as a highly effective tool for knowledge sharing, thus constituting the core of our proposed intervention strategy. This implementation strategy is intended as a tool that can be tailored according to the needs of each organization and their respective organizational culture. It is to be seen as a set of recommendations that can be customized to match a set of organizational needs. These strategies were developed utilizing tools from the Systemic Design Toolkit, which enabled us to create a strategy with the potential to be adopted and incorporated to grow within organizations (Systemic Design Toolkit, 2022).

6.1. STRATEGIC GOALS AND OBJECTIVES

This strategy centers around two main objectives:

(1) **Change the attitude and perception that employees have towards knowledge sharing (attitude change)**
(2) **Change individual and group knowledge-sharing behaviours (behavioural change)**

We believe that outlining the objectives and recommendations around these two goals will help provide a clear strategic direction for leaders and potential knowledge managers tasked with promoting knowledge-sharing practices in their organization.

6.1.1. CHANGING ATTITUDES AND PERCEPTIONS TOWARDS KNOWLEDGE SHARING

In the chapter on knowledge sharing, we described the reluctance of individuals and teams within organizations to share knowledge due to its competitive nature and the existence of established beliefs and perceptions about the concept of knowledge and the strategic advantage it provides. However, this view can be changed by shifting the perception of knowledge as a strategic resource to knowledge as a tool that enables collaboration and innovation, which yields results to all the individuals and groups involved in that knowledge-sharing activity.

To achieve the desired shift in attitude and perception towards knowledge and knowledge sharing and reach the goal of changing the attitude and perception towards knowledge sharing, organizations might be interested in pursuing the following objectives:

SHIFTING THE PERCEPTION OF KNOWLEDGE AS AN INSTRUMENT OF STRATEGIC ADVANTAGE

In order to shift the perception of knowledge being an instrument of strategic advantage, the following objectives should be achieved:

Understand: Leadership understands the attitudes towards the practices that enable organizational knowledge within the organization

- A knowledge assessment task force is appointed to assess the context in the organization
- Assessment methods are established to assess the current state in knowledge perception among all levels of stakeholders (i.e., executive leaders, senior managers, middle managers, etc.)
- Knowledge attitudes and perception benchmarks are identified within the organization

Inform: Employees are regularly informed about the tangible benefits achieved from cross-departmental collaborations when knowledge is shared between key project stakeholders

- Content champions are appointed and tasked to collect and record knowledge sharing success stories and other relevant examples
- Appropriate communications channels are identified (based on available channels and resources such as social media, intranet, lunch and learns, etc.) to promote selected stories within the organization

Engage: Leadership demonstrates the desired attitudes and behaviours; leading by example

- Leaders and senior managers regularly participate in knowledge-sharing activities as part of their KPIs

- Leaders and senior managers discuss knowledge-sharing opportunities with their subordinates during their performance review dialogue

Inspire: Organizational attitude towards knowledge sharing **is articulated and documented in organizational narratives (such as organizational values) and other documents (including employee charters, organizational philosophy, etc.)**

O'Reilly et al. (1991) provides a strong argument for personal and organizational value congruency. Even organizations that might be considered similar, especially those of similar size, operating in the same industry, often demonstrate fundamental differences when it comes to cultures. Establishing clear organizational values that reflect the desired attitudes towards knowledge and knowledge-sharing behaviours within organizations will serve multiple purposes, such as:

- Demonstrate leadership attitude towards knowledge and desired behaviours
- Attract new talent with similar values, open to collaboration and knowledge sharing

6.1.2. CHANGING INDIVIDUAL AND GROUP KNOWLEDGE-SHARING BEHAVIOURS

Srivastava et al. (2006) argue that even though technology plays an important role in the successful implementation of knowledge-sharing methods, individual behaviours may impact the process even more. They suggest that the desired behaviours empowered by leadership can be implemented effectively, but acknowledge that such efforts may not be effective if employees are demotivated or disengaged. Therefore, recognition and engagement efforts should be important components of this behaviour change strategy.

KNOWLEDGE-SHARING BEHAVIOUR SHIFTS CAN BE ACHIEVED BY FOCUSING ON AND RECOGNIZING DESIRED BEHAVIOURS

Reward and recognition: Established processes encourage knowledge-sharing behaviours, which are rewarded consistently across all organizational units

- Extrinsic and intrinsic motivation factors are identified both for individuals and groups
- A relevant reward system is established by the leadership and promoted among employees
- The internal promotion campaign is built on sharing stories about reward beneficiaries via the established communications channels

Open dialogue around process improvement: Individuals and groups should feel encouraged to bring forward their ideas on knowledge management and on the improvement of knowledge-sharing processes

- The opportunities and resources to bring to life the ideas that are deemed valuable are made available to the individuals suggesting those ideas
- Stories of successfully accomplished projects are shared on the organizational intranet page

Measure: An assessment process is established to a degree of reciprocity within the group and a proactive approach is demonstrated by the individuals involved

IDENTIFYING AND EMPOWERING KNOWLEDGE-SHARING CHAMPIONS CAN ACCELERATE BEHAVIOUR CHANGE WITHIN ORGANIZATIONS

Leadership plays a pivotal role in empowering knowledge-sharing champions as well as in influencing knowledge-sharing behaviours (Srivastava et al., 2006). Simply empowering knowledge-sharing champions and motivating them to share their knowledge is not enough, however. The leaders also need to lead by example, demonstrating a collaborative approach with their peers and involving them in knowledge-sharing activities both with peers and subordinates. Sharing stories about their experiences through formal and informal communications channels can demonstrate leadership's involvement and commitment to the efforts leading to behavioural changes, and can encourage employees to engage in knowledge-sharing behaviours.

To identify and empower knowledge-sharing champions, the following objectives should be achieved:

Establish knowledge-sharing processes: Leadership establishes formal processes, activities and methods

- Formal knowledge-sharing processes, activities and methods are established by leadership. Those may include lunch and learns, communities of practice, formal onboarding and offboarding, job rotations, targeted mentoring programs, virtual and in-person peer-consulting groups, and hackathons, etc.
- Various informal knowledge-sharing processes are also established and facilitated. Those may include informal social communities, informal virtual chats, team-building activities, organizational educational and entertainment events, etc.

Identify knowledge champions: knowledge-sharing process stakeholders are identified and recognized

- Formal and Informal knowledge champions should be identified, similarly to top talent identification (a process established by HR and traditionally conducted in conversation during employee performance reviews)
- The role of knowledge-sharing process stakeholders should be recognized and defined; knowledge experts should understand their role in the knowledge-sharing process and recognize the importance of knowledge-

sharing behaviours in day-to-day operations; knowledge sharing targets should also be included in employee's KPI and assessed on a regular basis

Promote knowledge-sharing behaviours from the top down: Leadership's involvement in sharing knowledge among peers and subordinates is operationalized

- Leaders share their knowledge in formal and informal conversations with their peers, are involved in the mentoring process, and use sharing methods such as storytelling in organizational events
- Leaders are involved in programs designed to reward and recognize knowledge champions and knowledge-sharing success practices

The strategic goals and objectives proposed above are designed to fit the broad needs of organizations tasked with improving their knowledge-sharing processes and practices. Even though we understand that the intervention strategy cannot be generic, we have tried to focus on goals and objectives that might be effective from a long-term perspective.

When tailoring the implementation strategy to specific organizational needs, we also encourage leaders to consider the following driving forces that impact the knowledge absorption capacity and the organization's ability to implement change.

6.2. DRIVING FORCES

Multiple drivers are available to support leadership in implementing their selected strategies within their teams and organizations. Those driving forces, which are connected to the forces of change identified in the previous chapter on the future of knowledge sharing, are designed to make the proposed strategic recommendations resilient and future-proof in the face of oncoming change. Those forces focus on creating an organizational culture that enables and empowers employees on all levels to engage in, and promote knowledge-sharing behaviours and practices, and to improve the existing digital and physical structures that support them at the same time.

6.2.1. DIGITAL INFRASTRUCTURE AND DIGITAL LITERACY

As previously identified, these days, employers can source the best talent from anywhere in the world, given that they have access to the internet. This also means that individuals with skills in high demand can live and work where they choose. As mentioned, a more distributed workforce will require a powerful digital infrastructure to support productivity, connection, and the wellbeing of employees. Paradoxically, digital infrastructures can, at the same time, act either as enablers or barriers to organizational knowledge sharing, depending on the level of digital literacy within the organizations (Neches et al., 1991). As remote and virtual ways of working become more common after the pandemic, an employee's ability to operate digital

infrastructure autonomously becomes critical in any form of communications, including knowledge sharing (Agrawal, 2021).

Therefore, if the goal is to implement an effective knowledge-sharing strategy, the existing infrastructure and digital literacy within organizations need to be assessed. This assessment might help leadership to identify any gaps that prevent teams and individuals from sharing the knowledge in ways that are time- and resource-efficient.

6.2.2.   ORGANIZATIONS VS. PERSONAL VALUES CONGRUENCY

Technological advancements have the potential to boost the knowledge flow within organizations. The technology could be utilized for knowledge creation and sharing, where smart and connected products, networked systems, and AI empower knowledge workers. However, the inexorable integration of technology, both in the private and work environment could diminish the essential human capacities such as empathy and cooperation and lead to an emotional distancing of employees from the organization.

By creating congruency between employees' personal values and organizational values, leaders gain the opportunity to build emotional connections between the individuals and the organization, promoting behaviours that benefit organizations at the same time. Values impact individual attitudes, which in turn impact the decision-making process and influence behaviours (Homer & Kahle, 1988).

6.2.3.   COLLABORATIVE PHYSICAL ENVIRONMENTS

We previously established that knowledge sharing is a form of social interaction between individuals and groups. Collaborative environments play an important role in the quality of these types of interactions. The key to a thriving office environment is to empower individuals by giving them high levels of control over their work process, thus enabling them to create a space in which they can thrive. Achieving this kind of environment is possible when the physical space is divided into different areas. (Redman et al., 2016). We all have very different needs in terms of safety and comfort, and the physical environment should be flexible to cater to a variety of those needs. A selection of common areas that fit smaller group interactions and individual one- to-one conversations can serve that purpose. Allowing employees to select the level of privacy and the quality of space that meets their individual needs can dramatically impact the quality of their interactions within those spaces (Congdon et al., 2016).

6.2.4.   ORGANIZATIONAL STRUCTURES

With the greater opportunities and risks of the digital era and the emergence of remote organizations, leaders are focusing on the speed of innovations as much as on the goals of achieving excellence in operational efficiency and maximizing value for shareholders. The speed of innovation is linked to many factors, including the organizational ability to gather and share knowledge; while the actual knowledge represents tangible value to

key organizational stakeholders. To make the knowledge-sharing process effective, organizations often seek to streamline their decision-making processes, which leads to changes in organizational structures.

Organizations where middle management or even junior employees have access to the leadership, for example, have much higher chances of accelerating the pace of innovation in comparison to organizations that require multiple levels of approval before decisions can be made.

6.2.5. DICHOTOMY OF LEARNER AND TEACHER

The relationship between the owner of knowledge (subject matter expert) and the knowledge seeker is often governed by reciprocity, which may be based on a subjective assessment of knowledge owners and seekers. If both sides see a different value in a subject of interest, the exchange of knowledge becomes more problematic. Establishing rules of engagement between subject matter experts and knowledge seekers can help organizations streamline the knowledge-sharing process and can empower individuals to share knowledge whenever necessary for organizational success.

7. CONCLUSION

In this research project, we examined the process of knowledge sharing in organizations, we identified existing knowledge-sharing methods, and explored potential futures that might emerge based on the current forces of change that are affecting knowledge sharing as well as knowledge management.

While establishing the framework for this research, we learned that recording, preserving, and sharing tacit knowledge in organizations is a challenge, which led us to further narrow our research scope by focusing on tacit knowledge-sharing practices. We analyzed the challenges groups and individuals within organizations traditionally have when engaging in knowledge-sharing activities. The conclusion of this analysis shows us that successful knowledge sharing is dependent on how leadership organizes and manages knowledge management practices within their organization, as well as on promoting a culture of open innovation and collaboration. It is also crucial for leadership to demonstrate the appropriate attitude towards knowledge sharing.

We applied a magnifying glass to knowledge sharing as a research subject by identifying the most relevant and effective methods and tools that can support leadership in shifting attitudes toward knowledge and promoting knowledge-sharing behaviours. To explore the resilience of the knowledge-sharing methods identified, we created four possible future scenarios of knowledge sharing based on internal and external forces of change that might impact knowledge sharing. This path has brought us to recognize the value of storytelling in knowledge sharing, particularly in sharing tacit knowledge and contextualized knowledge. This research has shown that storytelling can serve as a highly effective tool in promoting and facilitating knowledge-sharing practices and enabling knowledge-sharing behaviours within organizations.

These insights have led us to design a set of strategic recommendations that can be applied in any organization where knowledge-sharing issues have been identified. The proposed intervention strategy focuses on two main goals: changing employees' attitudes and perceptions towards knowledge sharing, and changing individual and group knowledge-sharing behaviours. To explore the resilience of the recommendations provided in our strategy, we identified external and internal trends that might impact knowledge sharing and thus, the implementation of the strategies. The success in achieving those goals hinges on multiple factors, but the evidence clearly suggests that organizational culture and leadership play a key role in knowledge sharing, and that organizational values should reflect the importance of knowledge-sharing behaviours and need to be championed by employees that are highly engaged.

7.1. GETTING THE MOST FROM THIS REPORT

This report was developed in order to propose an implementation strategy to promote and implement knowledge-sharing behaviours. The strategy was initially developed as a set of recommended objectives for use by the organizations concerned to establish effective knowledge-sharing practices.

It is paramount that organization leaders conduct a situational analysis or another applicable form of assessment that might help them identify the specific needs of their team in knowledge management in general and knowledge management in particular.

The situational analysis can be as simple as asking four key questions:

1. Do our people share information and collaborate with each other in the organization?
2. Do employees know who can help them if there's a problem? Or: Do they always take the problem to the right person?
3. Do we know how to retain knowledge in the organization in case the knowledge holders leave tomorrow?
4. Do we understand which areas of knowledge should be preserved at all costs and which may not be critical for the organization?

If any of these questions leads to negative answers, further assessment and knowledge management intervention strategy should be put into place.

The implementation strategy is just one of the helpful tools that organizations can extract from this report. Our background research provides implications that can also be used as insights to improve workshops or brainstorming sessions with people managers who are willing to learn more about the factors that can influence a team's willingness to share knowledge and collaborate. Those factors are often perceived as driving forces for innovation within the organizations but can become roadblocks if not taken into account.

7.2. CONSIDERATIONS AND AREAS FOR FUTURE RESEARCH

Several factors should be taken into consideration with regard to this research. First, the research subject has been, and continues to be, severely affected by the Covid-19 pandemic. Our exploration of the subject came during a time of constant disruption and evolution as new technologies to work from home became the norm, office spaces were vacated, and heightened social unrest impacted our everyday lives. As this research offers a glimpse of a particular moment in time , the rapid evolution of forces shaping knowledge sharing and knowledge management need to be considered. Lastly, the scope, breadth, and depth of this project was limited by time and by the fact that the research was designed to fulfill the Major Research Project academic requirements for the degree of Master of Design in Strategic Foresight and Innovation

at OCAD University, a factor which influenced our choice of research and design methods.

Many additional avenues could be explored to advance the breadth and depth of this research. While the scope of this project was centered on knowledge sharing, each of the knowledge activities depicted here are worth exploring, as is their interconnectedness and impact on organizational learning. Storytelling as a method for effective knowledge sharing has immense potential, therefore researching different narrative patterns, testing their potency, and analyzing them in the context of a chosen organization appears a logical continuation of this research.

We also wish to note that, while we talked to experts across Asia, Europe, Australia, and America, much of the knowledge management today is the product of work by western researchers, either in North America or Europe. The dominance of these western epistemologies and scholarly requirements on knowledge validation (such as the politics of citations and peer reviews) greatly impact the ease of access to other perspectives on knowledge and knowledge sharing.

Through this research, our objective is to emphasize the importance of knowledge sharing and knowledge management to accelerate innovation. We hope it encourages conversations about how to support knowledge-sharing behaviours and that it demonstrates the need to explore this field from a human-centric lens.

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9. APPENDIX

9.1. APPENDIX A: WIND TUNNELLING

	Scenario 1: The Sandbox			Scenario 2: The Elite		
	Strategic fit	Cultural fit	Effectiveness	Strategic fit	Cultural fit	Effectiveness
Coaching	Medium	High	Low	Low	Medium	Low
Communities of practice	Low	Low	High	Low	Medium	Medium
Informal discussions	Medium	Low	High	High	Medium	High
Knowledge cafés	Low	Low	Medium	Low	Low	Low
Knowledge maps	Low	Low	Medium	High	High	Medium
Knowledge repositories	Low	Low	Low	Medium	Low	Medium
Knowledge-sharing events	Low	Low	Medium	Medium	Medium	High
Mentoring	Medium	Medium	High	Medium	Medium	High
Storytelling	Medium	Medium	High	Medium	Medium	High
Workgroups	Low	Low	Medium	Medium	Low	Medium

	Scenario 3: The Abundance			Scenario 4: The Club		
	Strategic fit	Cultural fit	Effectiveness	Strategic fit	Cultural fit	Effectiveness
Coaching	Low	Medium	Low	Low	Medium	Low
Communities of practice	High	High	Medium	Low	Low	High
Informal discussions	Medium	High	High	Low	Low	High
Knowledge cafés	Medium	Medium	Medium	Low	Low	Low
Knowledge maps	Medium	High	Medium	Medium	Low	Low
Knowledge repositories	High	High	Medium	High	Medium	Low
Knowledge-sharing events	Medium	Medium	Medium	Low	Low	Medium
Mentoring	Medium	Medium	Medium	Low	Medium	Medium
Storytelling	Medium	High	High	Medium	High	High
Workgroups	Medium	Medium	Medium	Medium	Low	Medium