Management Studies

Enterprise Social Media for Knowledge Brokering

Mia Leppälä

Aalto University

DOCTORAL THESES

Aalto University publication series
DOCTORAL THESES 159/2024

Enterprise Social Media for Knowledge Brokering

Mia Leppälä

Aalto University
School of Business
Management Studies

Supervising professor
Assistant Professor Niina Nurmi, Aalto University, Finland

Thesis advisor
Provost Professor Kristiina Mäkelä, Aalto University, Finland

Preliminary examiners
Professor Paavo Ritala, LUT University, Finland
Senior Associate Professor Vibeke Thøis Madsen, DMJX, Denmark

Opponent
Professor Paavo Ritala, LUT University, Finland

Aalto University publication series
DOCTORAL THESES 159/2024

ISBN 978-952-64-1952-7 (printed)
ISBN 978-952-64-1953-4 (pdf)
ISSN 1799-4934 (printed)
ISSN 1799-4942 (pdf)
http://urn.fi/URN:ISBN:978-952-64-1953-4

Images: Jussi Talvitie (cover picture)

Unigrafia Oy
Helsinki 2024

Finland

NORDIC SWAN ECOLABEL
Printed matter
4041-0619

Author
Mia Leppälä

Name of the doctoral thesis
Enterprise Social Media for Knowledge Brokering

Publisher School of Business

Unit Management Studies

Series Aalto University publication series DOCTORAL THESES 159/2024

Field of research International Business

Date of the defence 30 August 2024

Language English

☐ **Monograph** ☐ **Article thesis** ☒ **Essay thesis**

Abstract

Increasing use of enterprise social media (ESM) for organizational communication and collaboration has fundamentally changed how knowledge is shared and created. Despite the benefits, the abundant availability of information within organizations can sometimes cause confusion, feelings of inadequacy, and even information overload. This doctoral dissertation focuses on knowledge brokering, as it bridges gaps between diverse domains and ensures that relevant information and insights are effectively used within organizations. Discussions on the ESM platforms of two knowledge-intensive organizations were examined to answer the main research question: "How does ESM influence knowledge brokering?"

This dissertation comprises four essays. Essays 1 and 2 explore how knowledge brokers can be identified based on their ESM discussions. Essay 3 provides a comprehensive literature review on knowledge brokering and highlights the affordances of ESM for knowledge brokering. Finally, the empirical study reported in Essay 4 utilizes ESM data to uncover attention patterns within organizational communication.

Overall, this doctoral dissertation sheds light on how knowledge brokering can leverage ESM to connect individuals, share knowledge, and create new insights, potentially mitigating information overload. It makes four main contributions. First, building on social network theory, this study extends knowledge brokering literature by demonstrating how knowledge brokers, both individuals and intraorganizational groups, can be identified through digital discussions on ESM based on their communicative actions. Second, it identifies the dual role of ESM affordances in both enabling and constraining knowledge brokering, and proposes a framework to analyze and understand the complex interplay of knowledge brokering and ESM. Third, it demonstrates how ESM reveals patterns in attention dynamics within organizational communication. Fourth, it presents innovative methodological approaches to analyze large sets of ESM data, free from self-reflective bias, enabling the observation of individuals and teams in their authentic environments. Furthermore, by complementing qualitative analysis with computational techniques, it introduces a dynamic perspective to the traditionally static view of networks in social network theory, and reveals how organization level patterns are influenced by and influence individual actions over time.

Keywords knowledge brokering; enterprise social media; affordances; attention

ISBN (printed) 978-952-64-1952-7 **ISBN (pdf)** 978-952-64-1953-4

ISSN (printed) 1799-4934 **ISSN (pdf)** 1799-4942

Location of publisher Helsinki **Location of printing** Helsinki **Year** 2024

Pages 205 **urn** http://urn.fi/URN:ISBN:978-952-64-1953-4

Tekijä
Mia Leppälä

Väitöskirjan nimi
Organisaation sisäinen sosiaalinen media tiedonvälityksessä

Julkaisija Kauppakorkeakoulu

Yksikkö Johtamisen laitos

Sarja Aalto University publication series DOCTORAL THESES 159/2024

Tutkimusala Kansainvälinen liiketoiminta

Väitöspäivä 30.08.2024

Kieli Englanti

☐ **Monografia** ☐ **Artikkeliväitöskirja** ☒ **Esseeväitöskirja**

Tiivistelmä

Organisaatioiden sisäisen sosiaalisen median (ESM) käytön lisääntyminen organisaatioviestinnässä ja yhteistyössä on muuttanut tiedon jakamista ja tiedon luomista. Hyödyistä huolimatta runsas tietojen saatavuus organisaatioissa voi joskus aiheuttaa sekaannusta, epätietoisuutta ja jopa informaatioähkyä. Tämä väitöskirja keskittyy tiedonvälitykseen (knowledge brokering), joka yhdistää organisaation eri alueita ja pyrkii varmistamaan, että oleellista tietoa ja näkemyksiä hyödynnetään. Tutkimuksessa tarkasteltiin kahden tietointensiivisen organisaation ESM-alustojen keskusteluja vastaten pääkysymykseen: "Miten ESM vaikuttaa tiedonvälitykseen?"

Tämä väitöskirja koostuu neljästä esseestä. Esseet 1 ja 2 tutkivat miten tiedonvälittäjiä voidaan tunnistaa heidän ESM-keskustelujensa perusteella. Essee 3 tarjoaa kattavan kirjallisuuskatsauksen tiedonvälityksestä ESM-affordanssien näkökulmasta. Lopuksi Esseessä 4 hyödynnetään organisaation ESM-dataa organisaatiojäsenten huomion kiinnittymisen mallien tutkimiseen.

Kokonaisuutena väitöskirja osoittaa, että tiedonvälityksessä hyödynnetään ESM-alustoja ihmisten yhdistämiseen, tiedon jakamiseen, sekä uuden tiedon ja näkemysten luomiseen, mikä saattaa vähentää informaatioähkyä. Tämä väitöskirja tekee neljä kontribuutiota. Ensinnäkin, pohjaten sosiaaliseen verkostoanalyysiteoriaan, tämä tutkimus laajentaa tiedonvälityskirjallisuutta osoittamalla, miten tiedonvälittäjät, sekä yksilöt että organisaation sisäiset ryhmät, voidaan tunnistaa ESM-alustojen digitaalisissa keskusteluissa heidän viestinnällisten toimiensa perusteella. Toiseksi, se tunnistaa ESM-alustojen affordanssien kaksoisroolin, joka sekä mahdollistaa että rajoittaa tiedonvälitystä, ja näin ollen muokkaa tiedon jakamista ja hyödyntämistä organisaatioissa. Kolmanneksi, se osoittaa miten ESM paljastaa huomion jakautumismalleja organisaatioviestinnässä. Neljänneksi, se esittelee innovatiivisia menetelmiä suurten tietoaineistojen analysointiin. Väitöskirja osoittaa miten ESM-alustojen dataa voi analysoida ilman itsearvioinnin vinoumaa, mikä mahdollistaa yksilöiden ja tiimien havainnoinnin heidän luonnollisissa ympäristöissään. Lisäksi yhdistämällä laadullisen analyysin laskennallisiin tekniikoihin, väitöskirja tuo dynaamisen näkökulman perinteisesti staattiseen verkostonäkemykseen sosiaalisessa verkostoteoriassa, ja paljastaa miten organisaatiotason toimintamallit vaikuttavat ajan myötä yksilöllisiin toimiin ja ovat niiden vaikutuksen alaisia.

Avainsanat tiedonvälitys; organisaation sisäinen sosiaalinen media; affordansit; huomio

ISBN (painettu) 978-952-64-1952-7 **ISBN (pdf)** 978-952-64-1953-4

ISSN (painettu) 1799-4934 **ISSN (pdf)** 1799-4942

Julkaisupaikka Helsinki **Painopaikka** Helsinki **Vuosi** 2024

Sivumäärä 205 **urn** http://urn.fi/URN:ISBN:978-952-64-1953-4

Acknowledgments

Starting this Ph.D. journey, I didn't fully realize what a life-changing project I had begun. I am grateful for the warm-hearted, intelligent, and encouraging people I've had the privilege to meet along the way. Although it is impossible to name everyone within these pages, please know that each of you has played an invaluable role in this journey.

I would like to extend my deepest gratitude to my wonderful supervisors, Assistant Professor Niina "Ninnu" Nurmi and Professor Kristiina "Tiina" Mäkelä. Ninnu, thank you for your invaluable support during the toughest times of this journey. Your insightful guidance and skill to find consensus among my overwhelming ideas have been a tremendous help. Tiina, I am grateful for your exceptional support in pushing me through the final stages of this Ph.D. journey. I admire your ability to draw the big picture and guide me in creating a coherent whole from the scattered pieces.

I am also thankful to my pre-examiners, Professor Paavo Ritala and Senior Associate Professor Vibeke Thøis Madsen, with Paavo also serving as my opponent. Your constructive and encouraging comments have helped me in the final stages of this Ph.D.

Over these years, I have had the honor of collaborating with and learning from fellow academics who have enriched my experience with their perspectives and expertise. Thank you to my co-authors, Professor Alberto Espinosa, Anni Harju, Professor Eero Vaara, Senior Research Fellow Jukka Huhtamäki, and Assistant Professor Mickaël Buffart. I would not have reached the depth of the research without your insights and special expertise. It has been a pleasure to work with you.

I would like to extend my gratitude to the former and current faculty and visiting professors of the International Business (IB) unit, including Alexei Koveshnikov, Carl Fey, Catherine Welch, Daria Kautto, Elizabeth Rose, Eleanor Westney, Hannu Seristö, Iiris Saittakari, Ingmar Björkman, Jo Angouri, Perttu Kähäri, Rebecca Piekkari, Sami Itani, Sariana Lundan, and Tiina Ritvala. Your support and helpful comments throughout these years have been invaluable. I would also like to thank all the fellow Ph.D. students both in the unit of IB and

the Organizational Communication, including Anu, Ari, Ella, Emilia, Hilla, Johanna, Kalliopi, Linuy, Mark, Merja, Kirsti, Priit, Riku, Xiaoshi, Valentina, Visa, and Yian. Your peer support has been significant during this journey. Furthermore, I would like to thank Hanna Lagerkrans, Iiris Saittakari, Manuela Shampemba, and Tiia Melander for their professional help with everything related to the graduation process.

Ph.D. journey is a wonderful opportunity for discovery and getting to know academic life from different perspectives. I am grateful to Distinguished Professor Linda Putnam for shedding light on academia abroad, and the fun times we spent near and far. Professor Alberto Espinosa, thank you for all our discussions about doing research, they have enlightened my journey. My gratitude also extends to Professor Eero Vaara, for your exceptional guidance on writing an academic paper, and further insights on academia. I would also like to thank Jouni Virtaharju for the many discussions and your talent at giving feedback on the most challenging questions. Also, Constance "Connie" Kampf, I am thankful to you for sharing your expertise and for the many Skype and Teams calls with me; you truly show how working remotely can bring people together, and Assistant Professor Emma Nordbäck, thank you for the nice evening walks with the meaningful discussions. Furthermore, Senior Reseracher Amber Geurts, thank you for your support and wise thoughts during this process.

My co-conspirators, Kalliopi Platanou and Olli Kupiainen, having you along these last steps of this journey made the travel much more enjoyable. Special thanks go to my dear friend Kalliopi, thank you for your never-ending compassion and helpful comments during these last years. The best thing COVID-19 period gave to me is the wonderful friendship with you. Thank you for always being there. And Olli, thank you for the peer support, challenging questions, and above all, the fun times. I am happy to have you as my good friend.

Accomplishing this journey would have not been possible without the financial support I have been fortunate to receive from several foundations, including the Emil Aaltonen Foundation, The Finnish Work Environment Fund (Työsuojelurahasto), Foundation for Economic Education (Liikesivistysrahasto), Helsinki School of Economics Support Foundation (Tukisäätiö), Jenny and Antti Wihuri Foundation, Marcus Wallenberg Foundation. I would also like to extend my gratitude to my colleagues in the ongoing projects funded by the Foundation for Economic Education – Erjon, Jukka, Kaisa, Minna, and Salla, and Marcus Wallenberg Foundation – Eero, Frank, Jori, and Jukka-Pekka – for your understanding and support in the last steps of this Ph.D. journey.

Furthermore, I thank my dearest friends outside academia - Anna-Kaisa, Antti, Hanna, Heli, Henna, Jussi, Krisse, Leena, Marja, Outi, Paula, Päivi, Tanja, and Tobias. You have given me perspective and other things to think about and do. I promise to spend more time with you all from now on. Special thanks to Jussi for the wonderful cover photo and for being such a confidant friend.

My deepest gratitude goes to my lovely parents, Helinä and Harri. You have been a huge source of strength and motivation. Thank you for teaching me curiosity, persistence, and the beauty of following my passion, even for achieving goals that seem unreachable. I also want to thank my extended family – Elmo,

Iita, Vuokko, Risto, GT, and my lovely aunt Maiju – for the nice times and reminding me about the life outside academia. Finally, my heartfelt gratitude goes to my partner in life, Late. Thank you for your unconditional love, your patience with this almost never-ending project of mine, and for sharing the fun and energizing everyday life with me.

Helsinki, 22 July 2024
Mia Leppälä

Contents

List of Essays

This dissertation consists of four essays and an Introduction. The four essays listed below are referred to by their numbers in the compilation part of the dissertation.

1. Leppälä, M., & Espinosa, J. (2020). Identifying knowledge brokers in enterprise social media. In T. X. Bui (Ed.), *Proceedings of the 53rd Annual Hawaii International Conference on System Sciences, HICSS 2020* (pp. 481-490). Hawaii International Conference on System Sciences.

2. Leppälä, M., & Huhtamäki, J. (2022). Enabling Knowledge Broker Analysis through Actor Clusters in Organizational Structures in Enterprise Social Media. *In Proceedings of the 55th Annual Hawaii International Conference on System Sciences, HICSS 2022* (pp. 585-593). Hawaii International Conference on System Sciences.

3. Leppälä, M.: Knowledge Brokering in Enterprise Social Media: An Affordance Perspective. Unpublished essay.

4. Leppälä, M., Buffart, M., Vaara, E. & Harju, A.: Attention Dynamics in Strategy Work: Uncovering the enabling and constraining effects of ambiguity. Unpublished essay.

Authors' contributions

Publication 1: Leppälä, M., & Espinosa, J. (2020). Identifying knowledge brokers in enterprise social media. *Annual Hawaii International Conference on System Sciences* (pp. 481-490). Hawaii International Conference on System Sciences.

Mia Leppälä was the lead author of this essay. She contributed to the conception and design of the study. She gathered the data and performed the data analysis and interpretation, and crafted the manuscript. She critically revised the manuscript and provided the final version to be published. **Professor J. Alberto Espinosa** provided expertise in data analysis and interpretation. He also made insightful and significant comments to improve the manuscript.

Publication 2: Leppälä, M., & Huhtamäki, J. (2022). Enabling Knowledge Broker Analysis through Actor Clusters in Organizational Structures in Enterprise Social Media. *Annual Hawaii International Conference on System Sciences* (pp. 585-593). Hawaii International Conference on System Sciences.

Mia Leppälä served as the lead author in this essay. Primarily responsible for the conception and design of the study, and the data collection. She assisted in the data analysis, drafted, and finalized the manuscript, and approved the final version to be published. **Senior Research Fellow Jukka Huhtamäki** conducted the primary data analysis which Mia Leppälä helped to interpret. Jukka Huhtamäki also provided critical comments and suggestions to improve the manuscript, contributing to its revisions.

Publication 3: Leppälä, M.: Knowledge Brokering in Enterprise Social Media: An Affordance Perspective. Unpublished essay.

Mia Leppälä was the sole author of this essay.

Leppälä, M., Buffart, M., Vaara, E. & Harju, A.: Attention Dynamics in Strategy Work: Uncovering the enabling and constraining effects of ambiguity. Unpublished essay.

Mia Leppälä, was the primary investigator, taking the lead in the writing process, and she conducted the primary qualitative data analysis in this essay. She collaborated in the data collection and in co-designing the methodology. She further contributed by actively participating in conceptualizing the research topic and being deeply involved in the manuscript drafting. **Assistant Profes-**

sor Mickaël Buffart undertook the primary data analysis using topic modeling, which Anni Harju and Mia Leppälä helped to interpret. He played a key role in drafting the manuscript and co-designing the methodology. He also participated in its revisions. **Professor Eero Vaara** played a central role in developing the theoretical foundation for the research. He offered critical guidance on the research design, helped to interpret the findings, and made significant contributions to the manuscript editing. **Anni Harju**, an employee of the case organization, served as a participant observer. She provided invaluable insights from an insider's perspective, facilitated access to data, and contributed to the interpretation of the observational results. All the authors reviewed and approved the final version of the manuscript.

List of figures

List of tables

1. Introduction

This chapter offers a holistic view of the research and clarifies the structure of the dissertation. Initially, it delves into the background, providing a synthesis of the relevant literature and the gaps identified. The second section defines the research questions and objective, and the following ones cover the key concepts and the scope of the research. An overview of its overall structure concludes the chapter.

1.1 Research background: challenges arising from increasing information availability due to technological advancements

"The more organizational knowledge is shared; the less employees seem to know"
- the author

Navigating the current rapidly evolving work environment, I could not help but observe a recurring theme: despite significant advancements in technology that facilitate the sharing, creation, and retrieval of data and knowledge, many employees often adopt an 'I haven't been informed' mindset. This paradox in-trigued me throughout my years as a communications expert in various organi-zations, and consequently it shaped my research interest: to understand how organizations might approach knowledge sharing and collaboration to mitigate the 'I haven't been informed' mindset among their employees, while also reduc-ing their exhaustion from excessive information. My aim in this study is to shed light on knowledge brokering (Haas, 2015), which refers to actions that facilitate knowledge sharing and collaboration within organizations. I delve into this topic in the context of enterprise social media (ESM), coined by Leonardi et al. (2013). Furthermore, by focusing on the concept of attention (Ocasio, 2011) and examining how ESM affordances (Rice et al., 2017; Treem & Leonardi, 2013) influence knowledge brokering, I aim to deepen understanding of the impact of ESM in this context.

The emergence of new communication technologies, including various collaboration systems and discussion platforms, represents novel ways of enhancing knowledge sharing and potentially improving attention allocation (Rhee & Leonardi, 2018; Haas et al., 2015). However, these technologies often serve as a source of excess information, especially if their use is not carefully designed (Chen & Wei, 2019). Although they provide multiple channels and formats for

communication, they also proliferate traceable information, thereby creating information overload (Bawden & Robinson, 2009). This refers to situations in which the available information exceeds the human capacity to process it (Levy, 2005). Studies aimed at mitigating information overload have highlighted various organizational processes, such as steering ESM discussions to focus exclusively on work-related topics (Chen & Wei, 2019). The allocation of specific tasks to organizational members to manage information flows has also been explored (Edmunds & Morris, 2000). The focus in this dissertation is on the role of ESM as either an enabling or a constraining platform for knowledge brokering.

As mentioned above, the term 'Enterprise Social Media' denotes discussions occurring via social media platforms within an organization (Leonardi et al., 2013), such as MS Teams Chat, Zoom, and Google Meets. Its use within knowledge-intensive work has grown recently, and work-related discussions are shifting more onto these digital platforms. ESM serves as a communication platform that expands professional connections and shifts discussions from the private to the public (Leonardi, 2015). Consequently, it democratizes interaction within the organization, fostering awareness among employees regarding everyone's connections and expertise, encapsulated in the "who knows whom and what' paradigm (Leonardi, 2015). Its utilization for employee interaction enables wider engagement, and stimulates multifaceted discussions within the organization. In this study, ESM serves as both a source for research data and a context for knowledge brokering, which in turn refers to the sharing and creation of knowledge, and bridging knowledge providers ad knowledge seekers (Haas, 2015; Meyer, 2010). ESM platforms have emerged as essential tools enabling communication transparency and fostering knowledge sharing within organizations (Gibbs et al., 2013; Treem & Leonardi, 2013). However, the extant literature is sparse regarding the roles undertaken by diverse actors within these platforms.

Attention directed towards virtual work intensified due to the Covid-19 pandemic (Levin & Kurtzberg, 2020; Leonardi, 2020), thereby highlighting the role of organizational communication and organizing in the increasingly digital work environment. Scholars have expressed growing interest in the implications of technological advances for novel forms of organizing (Faraj & Pachidi, 2021), which potentially involves transformations in knowledge sharing and creation. This captured my attention, as I see knowledge as a critical determinant of organizational success (Davenport & Prusak, 1998; Barley et. al., 2018). Knowledge offers capabilities to act, whereby organizations that strategically manage it gain competitive advantage (Grant, 1996; Tzortzaki & Mihiotis, 2014; Kuhn, 2014). Knowledge is therefore posited in this research as a core element of collaborative actions within organizational social networks, mediated through advanced communication technologies. The ever-increasing access to data and novel methods of leveraging it through ESM (Pee, 2018) led me to focus on knowledge brokering, and to discussions about transparency in communication (Masood et. al., 2022; Leonardi, 2014). Here, transparency of knowledge denotes the affordance of visibility in communication technologies (Ellison et al., 2015; Leonardi & Vaast, 2017), whereby shared information is

available to all organizational members. In this context, the term 'affordance' refers to the range of potential actions or possibilities for interaction that social media platforms offer to organizations and their members (Treem & Leonardi, 2013).

I adopted a mixed-methods approach in this research to explore communication amongst organizational members, more specifically within ESM platforms in two distinct organizations. I focus on knowledge brokering and the enabling and constraining factors of ESM in influencing sharing and knowledge creation. The study provides a nuanced understanding of ESM affordances for knowledge brokering, and highlights the utility of digital discussion data for research. By doing this, I shed light on the influence of ESM on knowledge brokering, which could facilitate the transition from the passive 'I haven't been informed' mindset towards the active endorsement of knowledge-sharing. Furthermore, the findings have practical implications for organizations seeking to optimize their use of ESM and knowledge brokering.

1.2 Research objective and questions

I examined two knowledge-intensive case organizations to address the overarching research question:

"How does enterprise social media (ESM) influence knowledge brokering?"

As discussed, my research interest arose from my fascination with the 'information shared but not absorbed' paradox. Thus, I began my doctoral journey to find out whether academia could contribute new knowledge to this paradox. First, I delved into the research on enterprise social media (Leonardi et al., 2013), as these emerging communication and collaboration platforms seemed to foster knowledge sharing within organizations (Ellison et al., 2015; Leonardi et al., 2013). My interest soon shifted towards the actors on these platforms, and I encountered the concept of knowledge brokering (Haas, 2015). Research has shown that knowledge brokering facilitates knowledge sharing and collaboration within organizations (Haas, 2015; Meyer, 2010; Olejniczak et al., 2016). Knowledge brokers also create knowledge by finding new purposes for old information (Hargadon, 1998). An in-depth examination of knowledge brokering within ESM led me to identify key actors linked to it within organizational social networks, and I also strove to identify the essential communication practices that emerge. I conducted a review of and synthesized existing literature on knowledge brokering, presenting the findings through the lens of ESM affordances. Finally, a longitudinal study of ESM discussions brought valuable insights into the complex interplay of factors influencing knowledge sharing in ESM, and highlighted the role of ESM platforms in both research and practice.

The main research question of "How does enterprise social media (ESM) influence knowledge brokering?" is further divided into three sub-questions, addressed by the essays outlined in Section 5. Figure 1. further illustrates how each sub-question addresses the research objective.

The first sub-question (RQ1) aims to identify key individuals and groups for knowledge sharing and creation within an organizational social network: *"How are knowledge brokers and their supportive organizational social structures identified through enterprise social media (ESM) discussions?"*.
The aim in the second one (RQ2) is to enhance understanding of the various ESM affordances in relation to knowledge brokering: *"How do enterprise social media (ESM) affordances influence knowledge brokering?"*.
Finally, the third sub-question (RQ3) delves further into how ESM might be leveraged for attention allocation: *"How does enterprise social media (ESM) uncover patterns of attention within an organization?"*.

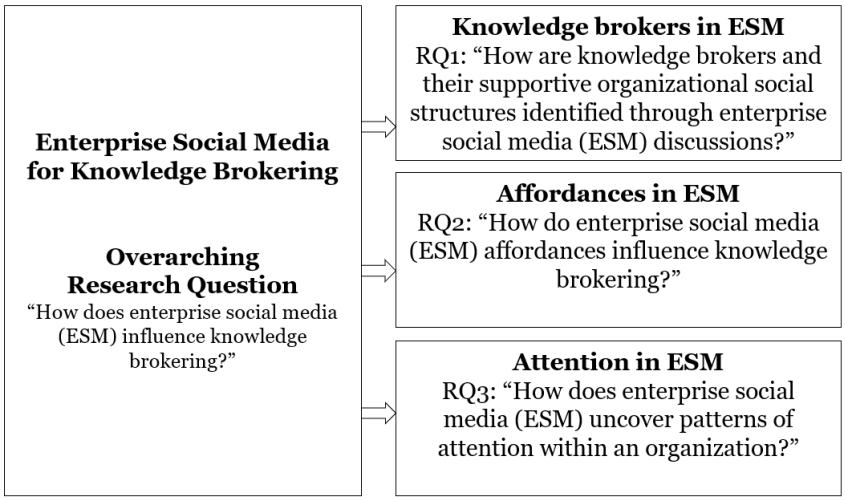


Figure 1. The overarching research question and the sub-questions

1.3 Key concepts of the research

Knowledge Broker
A knowledge broker is an individual, a group or an organization that facilitates the sharing, creation, and exchange of knowledge across different parties, groups, or organizations (Hargadon & Sutton, 2000; Meyer, 2010; Verona et al., 2006). Knowledge brokers play a crucial role in connecting knowledge producers (e.g., researchers, experts) with knowledge seekers (e.g., practitioners, decision-makers) to bridge the gap between these groups. Furthermore, they ensure that relevant knowledge is effectively communicated, understood, and applied by interpreting and translating knowledge across domains (Currie & White, 2012; Lomas, 2007; Dobbins et al. 2009). They operate in multiple areas, including healthcare, education, business, policy-making, and research, and are to be found both within and outside organizations (Robeson et al., 2008; Olejniczak et al., 2016). Knowledge brokers play a significant role in promoting innovation, enhancing organizational learning, and improving overall performance in ensuring that relevant knowledge is efficiently disseminated and utilized (Ward et al., 2009; Verona et al., 2006; Hargadon, 2002). In this study, knowledge brokers refer to individuals or groups within an organizational social

network who share and create knowledge, and connect members of the organization with each other. They utilize ESM in their knowledge brokering.

Enterprise Social Media (ESM)

Enterprise social media are platforms used for knowledge sharing and collaboration in contemporary organizations (Leonardi et al., 2013). They include repositories for knowledge such as Dropbox, joint working platforms such as Google Docs, Miro, and Jamboard, and discussion platforms, such as Slack and Microsoft Teams Chat. Although their usage is overlapping, the general term used to identify these tools is enterprise social media (ESM). Leonardi et al. (2013) define ESM as a platform for organizational members to communicate with each other by sending messages, editing information provided by others, seeing other members' communication relationships and knowledge shared, and as a means of retrieving information at a suitable time for each member. More specifically, it is a platform on which each member of the organizational network can express themselves if they choose to. There are various levels of privacy in that some practices are purely one-on-one, whereas other communication is open for everyone to see and even to edit. ESM in this research refers to discussion platforms and includes only discussions that are openly available to everyone in the organization. It offers a more authentic context for observing organizational communication because it captures discussions among the organizational members during everyday work activities. Therefore, insights gained from ESM data may more accurately reflect the discussions unaffected by self-reporting biases.

Affordances

Affordances refer to the opportunities for action that an object, an environment or a system provides to an individual or a group (Gibson, 1977). In the context of organizations, affordances include the physical layout of the workspace, the technology, and tools available, and the social norms and expectations that shape interactions between individuals (Norman, 1999). ESM affordances are significant aspects of social media and digital communication platforms that impact user interactions, engagement, and behavior. Acknowledging the wide range of studies on ESM affordances (Treem & Leonardi, 2013; Laitinen & Sivunen, 2021; Rice et al., 2017; Sun et al., 2019), I concentrate on the initial definition provided by Treem and Leonardi (2013). I regard their classification of ESM affordances as fundamental concepts that encompass various other affordances recognized in the ESM context. They identify four key ESM affordances: visibility, association, editability, and persistence. Visibility refers to the extent to which users can see and access content shared by others on a platform, allowing them to view the posts, comments, and activities of other users. Association denotes the capability of ESM platforms to connect users, content, and ideas by providing various mechanisms such as hashtags, mentions or hyperlinks. Editability, in turn, refers to the ability of users to modify, revise or delete the content on a platform. Lastly, persistence denotes the enduring accessibility of information on a platform once it has been disseminated. The persistent nature of digital content implies that data, once shared, may be retained

and retrieved on the platform without temporal limitations. Essentially, ESM affordances influence the way in which individuals interact, engage, and behave within organizational social networks, thereby shaping the overall dynamics of organizational communication and knowledge sharing.

Attention

In the field of cognitive neuroscience, attention is understood as a cognitive mechanism that facilitates selective focusing on a distinct component of information, be it subjective or objective, while concurrently excluding other perceivable information (Lavie, 1995). Ocasio (2011) further classifies the use of the term 'attention' in three categories: the attentional perspective, attentional engagement, and attentional selection, and builds upon Ocasio's (1997) work on the attention-based view (ABV), whereby attention is considered a critical factor that affects both individual and organizational decision-making processes. The attention-based view (ABV) is a salient theoretical construct in organizational studies, the aim being to enhance understanding of how the distribution of attention among individuals or groups within an organization influences decision-making and, consequently, strategic outcomes. Organizations, through an ABV lens, are perceived as information-processing systems within, which the direction of attention determines which issues are considered relevant and which are overlooked (Ocasio et al., 2018). This theory posits that the strategic actions of an organization are guided by the focal points identified by the decision-makers (Ocasio, 2011; Rhee & Leonardi, 2018), which highlights the central role of attention in navigating organizational decisions and influencing knowledge sharing processes.

1.4 The scope of the research

Enterprise social media (ESM) is the research context and a source of data. Prior scholarly studies have consistently demonstrated the role of ESM in enhancing knowledge sharing (Ellison et al., 2015; Leonardi et al., 2013), as well as its instrumental role in transforming organizational interactions (Leonardi et al., 2013), thereby fostering the evolution of networks within organizations. This study highlights the significance of ESM in knowledge brokering which is acknowledged in the research (Currie & White, 2013; Haas, 2015: Meyer, 2010) regarding knowledge sharing and creation, and the bridging of siloed organizations. However, only limited research on knowledge brokering has been conducted thus far in the context of ESM (Leppälä & Espinosa, 2020; van Zoonen & Sivunen, 2023), which this research explores further.

It should be acknowledged that the research scope is limited to organizations that leverage technologies for internal communication and collaboration. Consequently, organizations that do not employ ESM, although subject to the impact of knowledge brokering, are excluded from this study. Moreover, the organizational cultures of both case organizations support open communication and transparency. Challenges related to hiding knowledge or using it as an instrument for power are also excluded from this research because such actions would require rigorous investigation in their own right.

Furthermore, the actual ESM messages constitute the primary data in this research. It does not address questions concerning what knowledge brokers are like, or why they act as knowledge brokers, although relevant and interesting, the qualities and motivations of these actors are all beyond the scope of the study. The use of ESM data is sensitive and requires careful processing of the data to ensure the anonymity of any participants. This was considered by anonymizing the data from the beginning and working in accordance with strict non-disclosure agreements.

1.5 Structure of the dissertation

Figure 2 outlines the structural framework of this compilation part of the dissertation. This initial chapter presents the background against which the research is contextualized, introducing the fundamental elements of the study. Chapter two explores the overall conceptual framework that underpins the research. The accumulated conceptual insights are synthesized in the third chapter into a comprehensive theoretical framework that sets the stage for the empirical inquiry. Chapter four delves into the specifics of the empirical process, discussing the data collection, the analytical procedures, and considerations essential to the integrity and quality of the research. The fifth chapter provides a summary of each essay that is included in this dissertation, elucidating the outcomes of the empirical exploration. Building on these findings, Chapter 6 summarizes the first part of the study, including the key findings and their implications within their broader contexts, the limitations encountered, and potential avenues for future scholarly exploration. Following this structured progression (Part 1.), the second part of the dissertation (Part 2.) comprises the complete original essays in their full format, offering a comprehensive understanding of the knowledge generated through this research.

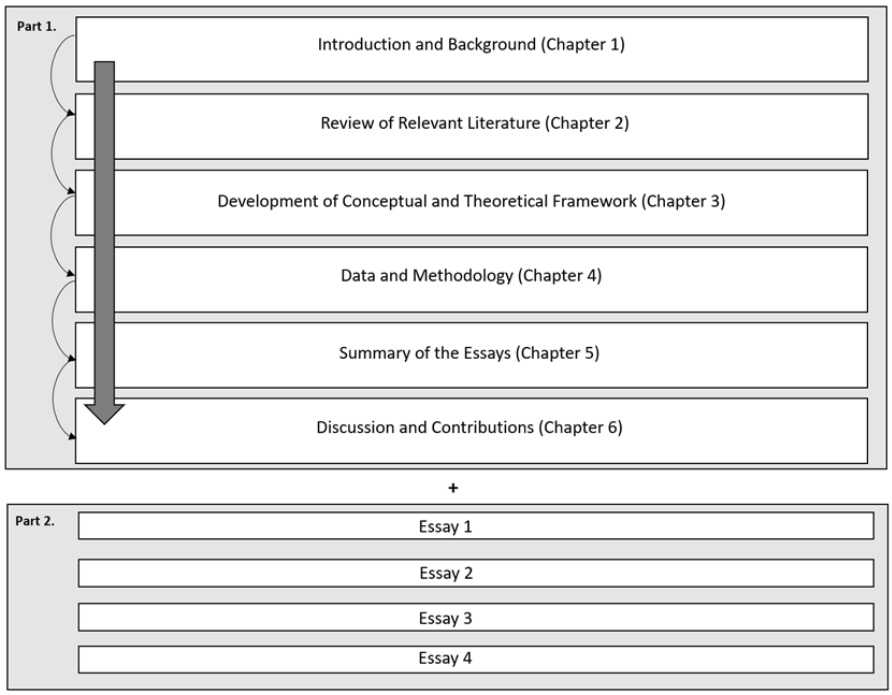


Figure 2. The structure of the dissertation

2. Relevant literature

In light of the diversity of theoretical approaches to knowledge brokering (Hargadon, 1998; Magliocca et al., 2022; Verona et al., 2006), the aim in this research is to categorize the key dimensions based on existing literature. Focusing on understanding the influence of enterprise social media related to knowledge brokering, it concentrates specifically on ESM affordances (Rice et al., 2017; Treem & Leonardi, 2013). Knowledge brokers play a pivotal role in today's networked environments (Ahrne & Brunsson, 2010). Based on social network theory (Granovetter, 1973), this research analyzes knowledge flows in the organizational networks. Current findings have shown that ESM facilitates knowledge sharing and collaboration (Ellison et al., 2015; Leonardi et al., 2013), and is increasingly used for organizational communication, influenced by remote work and the proliferation of such platforms (Leonardi & Vaast, 2017). However, it also challenges knowledge sharing, in terms of information overload (Bawden & Robinson, 2009; Sun et al., 2019) and selective sharing (Ellison et al., 2015). As scholarly evidence indicates, knowledge brokering facilitates knowledge sharing (Bilecen & Faist, 2015; Currie & White, 2012; Massa et al., 2022) and collaboration (Chiambarretto et al., 2019; Currie et al., 2015; Hadi et al., 2022), and promotes knowledge creation (Cillo 2005; Pawlowski & Robey 2004; Wenger 1999). This dissertation further explores these actions within the ESM context.

Chapter Two elaborates on the relevant literature referenced in this dissertation, and in conclusion presents a conceptual and theoretical framework.

In section 2.1. below, I explore the most relevant literature regarding this dissertation. The concept of knowledge brokering is highlighted as a crucial element of knowledge management, with an emphasis on the role of enterprise social media (ESM) as a mediating tool for disseminating organizational knowledge. I apply social network theory, together with the perspectives of affordance and the attention-based view as lenses for my research. I also address how the concept of knowledge is perceived in this study.

2.1 Social Network Theory

The social network theory provides a framework within which to understand the structure and dynamics of social relationships (Borgatti & Ofern, 2010; Burt, 1992; Granovetter, 1973; Liu et al., 2017). It posits that the patterns of connections (edges) among individuals or groups (nodes) influence information flow,

access to resources, and the sharing of knowledge (Granovetter, 1973; Burt, 1992).

The key concepts on which the theory is based include nodes, edges, network structure, centrality, density, and the strength of weak ties (Granovetter, 1973; Burt, 1992), which are employed in practice through social network analysis (Freeman, 1977). A node represents an individual or a group within a social network (Wasserman & Faust, 1994), in an organizational network these could be organizational members, and in this research the nodes represent potential knowledge brokers. Nodes are typically shown as points or circles in social network visualizations, each one being a point at which connections (edges) with other nodes are established. An edge, sometimes called a link or connection, represents the relationship between two nodes in a social network. In this research, messages between potential knowledge brokers represent edges. Edges may be directed or undirected, an undirected edge refers to a mutual, two-way relationship (such as a conversation between colleagues), whereas a directed edge implies a one-way relationship (such as an announcement via an internal communications channel). Edges also have weights, indicating the strength of the relationship (Wasserman & Faust, 1994). They are typically shown in social network visualizations as lines connecting the nodes, and the thickness of the line may indicate the weight. Centrality, another concept in social network theory, implies the influence of a node within a network. In this research, betweenness centrality turned out to be the most relevant measure in identifying potential knowledge brokers. Betweenness centrality refers to the distance that is between two nodes. The shorter the distance is, the bigger the betweenness centrality is.

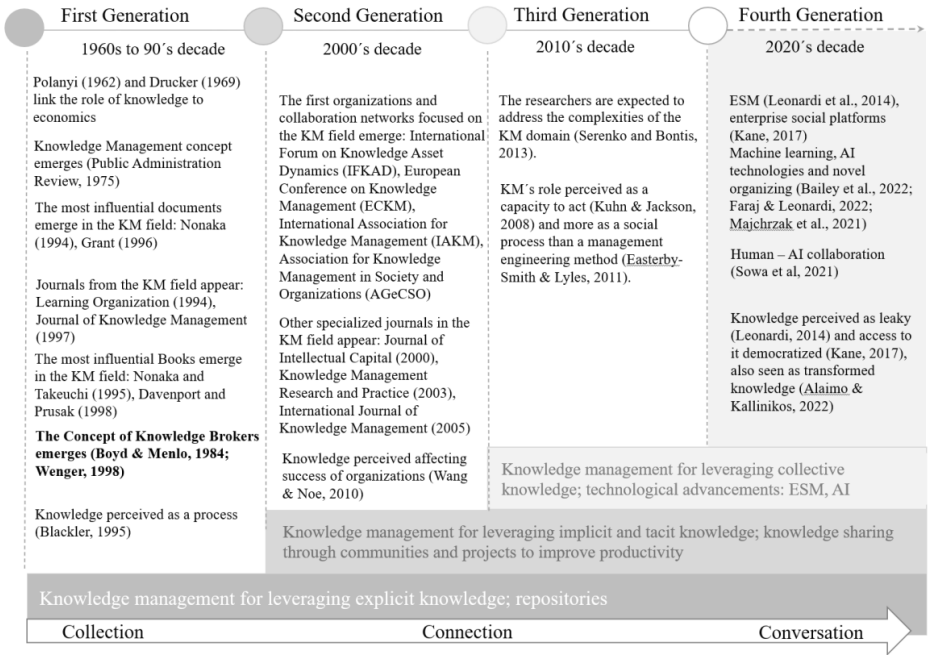
Social network theory, with its emphasis on the structures and dynamics of social relationships, offers insights into how knowledge flows within networks, and how the flows may be facilitated or constrained by the network's structure (Wasserman & Faust, 1994). The focus in this research is on the knowledge flows within an organization. By incorporating the concept of knowledge brokering, it sheds light on the role of social networks in providing the channels through which knowledge is transferred. Knowledge brokers, namely individuals or groups who facilitate the transfer of knowledge between otherwise disconnected parties are identified as central nodes within a network, their betweenness centrality measure is big.

Granovetter´s (1973) concept of weak ties is particularly relevant to knowledge brokering. Weak ties, the connections between individuals or groups that are not closely linked allow access to new knowledge within organizations (Granovetter, 1973). Knowledge brokers leverage these weak ties to bridge diverse groups or domains, facilitating the flow of knowledge across organizational boundaries (Meyer, 2010; Hargadon, 1998). This research focuses on the networked organizations that use communication and collaboration technologies in organizational communication.

2.2 Knowledge Management

Studies on knowledge management discussed in this dissertation constitute a foundational approach to exploring how communication technologies affect knowledge brokering within organizations. Organizations and individuals in contemporary society are required to have the capability to create, share, and utilize knowledge within increasingly diverse and dispersed communication environments. Research focused on knowledge management has recently paid attention to communication and collaboration technologies, shifting the perspective from collection and connection towards conversation, and focusing more on technological advancements for collaborative knowledge sharing (Leonardi et al., 2013; Kane, 2017; Sowa et al., 2021). Throughout its history, knowledge brokering has emerged as a concept referring to actors who facilitate knowledge sharing (Boyd & Menlo, 1984; Dobbins et al., 2009; Wenger, 1998) and creation (Cillo, 2005; Haas, 2015; Verona et al., 2006). In the following I elaborate on the history of knowledge management research, and the emergence of knowledge brokering therein. Table 1. presents an overview of the research over time.

Table 1. An overview of the research on knowledge management over time (adapted from Dixon, 2018 and Gaviria-Marin et al., 2019)



The process of knowledge management has witnessed a significant expansion in scholarly interest since the early 1990s. Already Polanyi (1962) and Drucker (1968) discussed the role of knowledge in economies, and with the maturation of understanding in the field, researchers have adopted an array of approaches to explore knowledge management processes (Alaimo, 2022; Blackler, 1995; Nonaka & Takeuchi, 1995; von Krogh et al., 2000). Within the research on

knowledge brokering, knowledge is typically seen as information tied to action, such as connecting knowledge seekers with knowledge providers, or translating complex knowledge into an understandable form for certain receivers (Hargadon & Sutton, 1997; Olejniczak et al., 2016).

Knowledge is contextual, which means that diverse factors, such as previous experiences or the situation affect it (Tsoukas, 2005). It has also been perceived as linked to the success of organizations (Wang & Noe, 2010). Given the complex nature of the concept (Serenko and Bontis, 2013; Tsoukas, 2005), I believe it is important to delineate what this research does not include in its discussion of knowledge. My approach is pragmatic, focusing on what knowledge enables, rather than on the abstract concept of what it constitutes (Tsoukas, 2005). This research excludes the in-depth analysis of different forms of knowledge, such as tacit and explicit (Polanyi, 1958; Nonaka, 1994), and refrains from philosophical discussion on the essence and the perception of knowledge (Tsoukas, 2005).

Here, knowledge is conceptualized as the capacity to act (Kuhn & Jackson, 2008), underscoring its role in facilitating decision-making and problem-solving. As Drucker (Harris, 1993) put it: *"Power comes from transmitting information to make it productive, not from hiding it"*. Studies emphasizing the significance of knowledge have focused on networks (Ardichvili, 2008; Ritala et al., 2023; Wasco & Faraj, 2000) and the intrinsic features of those sharing their knowledge (Barner-Rasmussen et al., 2014; Wasco & Faraj, 2005). Ardichvili (2008) used communities of practices as a lens through which to examine knowledge management, exploring the motivations for and barriers against knowledge sharing among employees. She argues that the organizational culture plays a pivotal role in successful knowledge sharing, a supportive and open culture enhancing this practice. She also found that knowledge sharing happened more often among employees who viewed knowledge as a public good belonging to the entire organization. Wasco & Faraj (2000) support this point, too, proposing that the perception of knowledge as a public good evokes a sense of moral obligation and community interest, which in turn motivates its sharing.

The centrality of knowledge to organizational success is exemplified in studies exploring knowledge transfer and the creation of valuable knowledge assets to improve competitiveness (Bollinger & Smith, 2001; Girard & Girard, 2014; Hussinki et al., 2017; Wang & Noe, 2010). Among knowledge-intensive organizations, there is a direct correlation between the extent of knowledge and the level of performance, output, and productivity (Colakoglu et al., 2014; Mahdi et al., 2019). Knowledge as a strategic asset forms an integral part of this discourse, highlighting the collective nature of organizational knowledge (Bollinger & Smith, 2001; Wang & Noe, 2010).

The segmentation of knowledge management processes as information-based and people-based (Iverson & McPhee, 2002), has further contributed to current understanding. Information-based approaches concentrate on knowledge repositories (Davenport & Prusak, 1998) and effective knowledge management. Conversely, people-based approaches adopt a holistic view, focusing on the social aspects of knowledge (Pee & Kankanhalli, 2009) and the challenges of knowledge transfer (Colakoglu et al., 2014; Ritala et al., 2023; Valentine et al.,

2019). Valentine et al. (2019) explored central versus peripheral actors in knowledge retrieval, pointing out that repositories alone are insufficient to address the challenges of knowledge sharing. Instead, they discovered that employees already occupying central positions in knowledge sharing benefited more from these repositories than individuals in peripheral positions, such as those with less experience and limited familiarity with teammates, in a remote location, or having a minority gender status. A key implication of this abovementioned research is the need to support the coordination of work between familiar and unfamiliar teammates, which *knowledge brokers* could potentially facilitate (Dobbins et al., 2009; Verona et al., 2006). Furthermore, the people-based approach refers to networks, aligning with the role of knowledge brokers as linking nodes in the organizational social network.

The field of knowledge management has further developed with the emergence of enterprise social networking tools as enablers (Leonardi et al., 2014; Kane, 2017; Mäntymäki & Riemer, 2016), and novel technologies relating to machine learning and AI (Artificial Intelligence) (Alaimo & Kallinikos, 2022; Benbya et al., 2020; Zammuto et al., 2007; Faraj & Leonardi, 2022). Recent scholarly publications within the field have introduced and applied novel terms such as 'self-organization,' 'human – AI collaboration,' and 'transformed knowledge' (Bailey et al., 2022; Majchrzak et al., 2021; Sowa et al., 2021). These terms reflect the ongoing evolution of knowledge management as a field, emphasizing the increasing integration of advanced technologies and the transformation of traditional knowledge management practices. It is worth noting that although the origins of knowledge management go back to the 1970s, it has not become obsolete. On the contrary, it has continuously evolved, adapting to advancements in technology and the changing dynamics of organizational structures and processes.

2.3 Knowledge Brokering

Knowledge brokering is a process whereby knowledge is gathered, adapted, and shared, with an emphasis on practices, collaboration, and interaction. Given the strategic significance of knowledge, and the crucial process of its sharing, my aim in this dissertation is to present a comprehensive view of knowledge brokering within organizational social networks. Knowledge brokering as an idea can be traced back to research conducted by Boyd & Menlo (1984) positioning knowledge brokers as intermediaries between the producer of information and its user. Unlike knowledge sharing, knowledge brokering extends to creation, sensemaking, reasoning, and persuading (Olejniczak et al., 2016; Haas, 2015). It further differs from mere knowledge sharing in terms of translating and adapting knowledge across domains, thereby facilitating sense-making and collaboration (Meyer, 2010; Pawlowski & Robey, 2004).

Organizations wishing to leverage information and knowledge need to facilitate knowledge sharing across their structural and functional domains, thereby underscoring the pivotal role of knowledge brokers. As defined within the literature, a 'knowledge broker' is an individual or group connecting information or

creating new ways of utilizing existing knowledge (Verona et al., 2006; Cillo, 2005; Wenger, 1999). According to Wenger (1999, p. 109), "Brokers are able to make new connections across communities of practice, enable coordination, and – if they are good brokers – open new possibilities for meaning". Through this lens, knowledge brokers may bridge organizational siloes, facilitating the flow and use of knowledge across the organization.

Existing research primarily explores knowledge brokers in various professions, such as establishing connections between projects and top management, as well as researchers and practitioners, particularly within the healthcare industry and in policy-making (Lomas, 2007; Dobbins et al. 2009). These cases include communicating complex issues, such as practical nursing knowledge, to doctors (Currie & White, 2012), or between research and practice (Dobbins et al., 2009), the primary objective of knowledge brokering being to help practitioners to understand research findings and thereby promote their application in real-world settings. In medical research, for instance, businesses have to be educated in how medical products are to be used and produced. Beyond fostering collaboration between diverse parties, knowledge brokering plays a crucial role in engineering work and innovation. As Verona et al. (2006) and Cillo (2005) point out, knowledge brokers serve as a) enablers of innovation by connecting various organizational stakeholders, and b) translators ensuring that everyone shares a mutual understanding of relevant issues. They create knowledge by inventing new concepts, and link individuals to facilitate problem solving, and to build relationships (Meyer 2010). More specifically, Cvitanovic et al. (2017) showed that knowledge brokering could foster the development of relationships and networks among knowledge producers and users, enhancing the flow of knowledge across the network. In virtual environments, where physical interaction is absent, building relationships between colleagues and organizations is highlighted (Verona et al., 2006). Knowledge brokers, or as Verona et al. (2015) call them, virtual knowledge brokers, provide information from outside sources to be used for organizationally internal purposes. On collaboration platforms, they facilitate discussion by posing questions, recommending other participants for discussion, and offering suggestions for the next steps for the task (Leppälä & Espinosa, 2020). By leveraging interaction, knowledge brokers enhance collaboration within the organizational social network.

Viewed from various perspectives through their actions, knowledge brokers facilitate the gathering of individuals and foster the formation of new connections and insights to enable others to succeed in their work (Meyer, 2010; Hargadon & Sutton, 1997). Literature reviews (Haas, 2015; Olejniczak et al., 2016) categorize knowledge brokers according to their activities, such as identifying knowledge, assisting knowledge creation, and translating knowledge. The knowledge brokers must possess good interpersonal skills and be familiar with various cultures or habits from different communities of practice (Dobbins et al., 2009). Thus, they have to maintain active relationships with different worlds, or 'lifeworlds' in the words of Habermas (1980). A lifeworld is a social sphere in which individuals engage in communicative action. One of the most interesting actions in knowledge brokering is the transcoding, or translation of

knowledge (Boari & Riboldazzi, 2014). Knowledge brokers create knowledge by combining existing information and using old knowledge to invent new purposes (Wenger 1999; Pawlowski & Robey 2004; Cillo 2005). In other words, they interpret information from one community of practice into another. Olejniczak et al. (2016) refer to this information as brokered knowledge. I see it as partly knowledge creation in that the brokered knowledge is new knowledge as far as the recipient is concerned.

Knowledge brokering, although a valuable concept, has its challenges. Various researchers have identified ineffective brokering, the organization's cultural values, and contextual issues as hinderances (Kislov et al. 2017; Surridge & Harris, 2007; Joerges & Shinn, 2001). Of organizational cultural values that may be hinderances, for instance, Surridge and Harris (2007) draw attention to the academic world, which rewards and prioritizes disciplinary training, the production of journal articles, and the receipt of research grants, which seemingly do not encourage knowledge sharing. Hierarchical organizations in particular tend to have difficulties in this respect (Currie & White, 2012). Employees accustomed to following orders without offering their own opinions, or who view knowledge as power and withhold it for fear of losing influence, can obstruct knowledge brokering. For instance, monopolistic organizational linkages (Joerges and Shinn, 2001) and highly hierarchical fields such as healthcare (Currie & White, 2012) exemplify environments in which knowledge brokering might be challenging. Kislov et al. (2017) identify three types of challenges in this context: tensions between various aspects of brokering; tensions between diverse types and sources of knowledge; and tensions resulting from the 'in-between' position of brokers. All of these inhibit the effective use and sharing of knowledge. Sturdy & Wright (2011) further point out that knowledge brokers may serve as gatekeepers and boundary spanners, roles that could highlight power struggles in communication.

Boundary spanners, gatekeepers, structural holes, and orchestrators are conceptually close to knowledge brokers. A gatekeeper is an individual or organization that controls the dissemination of information, ideas, or people within a system (Allen, 1984; Singh & Wassenaar, 2016). Research on gatekeepers primarily emphasizes their ability to grant or deny access to resources or information, investigating the biases and inequalities that may arise from such practices. Thus, gatekeepers regulate the flow of information and access, whereas knowledge brokers actively work to bridge the gaps between the sources and recipients of knowledge, thereby fostering collaboration.

Boundary spanners, in turn, represent individuals or groups operating at the interface between different organizational units, or between an organization and its external environment (Mäkelä et al., 2019; Tuschman & Scanlan, 1981). By connecting various information sources and actors, they contribute to innovation and the fostering of knowledge sharing. They concentrate on bridging gaps and fostering communication within and between organizations, and thus could be related to knowledge brokers in that the actions align and may be used interchangeably. However, the term knowledge broker is used in this research to highlight the action of knowledge creation among the other actions.

Burt (1992) introduced the concept of structural holes, having observed that social networks included structural gaps or 'holes' that lacked any connection between the separate groups. This could result in reduced information flow and less collaboration between the disconnected groups, thereby giving knowledge brokers the opportunity to facilitate information and resource sharing.

In innovation studies, an orchestrator is defined as an individual, group, or organization that plays a pivotal role in coordinating interactions and facilitating knowledge sharing and adoption within knowledge networks (Hurmelinna-Laukkanen & Nätti, 2018; Ritala et al., 2023). Unlike knowledge brokers, who concentrate on connecting individuals, sharing, and creating knowledge on a smaller scale to boost knowledge adoption, orchestrators focus on the broader activities essential for network stability, fostering innovation, and achieving collective goals.

In conclusion, knowledge brokering plays an instrumental role in communication within organizations, acting as a cognitive bridge between local and global knowledge (Cummings et al. 2019). It is a process that facilitates the exchange, translation, and dissemination of knowledge between seekers and providers (Boyd & Menlo, 1984). It also enhances collaboration (Stasser, 1995; Obstfeld, 2005), improves daily work efficiency, and facilitates knowledge transfer across organizational units (Pawlowski & Robey, 2004; Olejniczak et al. 2016). In short, knowledge brokering as an integral process promotes the effective utilization of knowledge across an organization.

2.4 Enterprise Social Media

Enterprise social media (ESM) refers to online platforms that are used in business and organizational contexts to facilitate communication and collaboration (Leonardi et al, 2013). The characterization used in this research is based on the definition put forward by Leonardi et al. in 2013:

"ESM refers to web-based platforms that allow workers to (1) communicate messages with specific coworkers or broadcast messages to everyone in the organization; (2) explicitly indicate or implicitly reveal particular coworkers as communication partners; (3) post, edit, and sort text and files linked to themselves or others; and (4) view the messages, connections, text, and files communicated, posted, edited and sorted by anyone else in the organization at any time of their choosing" (Leonardi et al., 2013, p. 2).

Building on Leonardi´s contribution, I focus on organizational internal communication in this research. Communication and collaboration platforms, such as Slack, Flowdock, SocialCast, Yammer, Skype, Zoom, and Microsoft Teams Chat, represent digital communication channels that are widely used in knowledge-intensive work environments. The use of ESM tools had gradually increased and the year 2020 characterized by the Covid-19 pandemic amplified this further. Although the extant literature frequently refers to enterprise social media using terms such as 'internal social media' (Haddud et al., 2016; Madsen & Verhoeven, 2016) and 'enterprise social networking sites or technology' (El-

lison et al., 2014; Leonardi, 2015) interchangeably, I chose to use the term 'enterprise social media' because the definition coined by Leonardi et al. (2013) resonated with my understanding of ESM. I have been intrigued by the thought that whereas traditional knowledge sharing paradigms focus primarily on knowledge repositories (Martins & Patricio, 2013; Ardichvili, 2008), ESM has emerged as a novel approach highlighting the invaluable contributions of individuals in the knowledge sharing process.

ESM facilitates knowledge sharing and social interaction among employees within organizations (Chen & Wei, 2019; Rode, 2016 in Chen et al., 2020). Metaknowledge as described by Leonardi (2015) refers to an individual's awareness of organizational networks, comprising an understanding of who knows whom and who possess what knowledge. According to Leonardi (ibid) the visibility of conversations on ESM platforms promotes more accurate metaknowledge, encompassing 'message transparency' and 'network translucence'. Leonardi´s notion of metaknowledge resonates with my understanding of the features of ESM. It is interesting how, by virtue of their inherent transparency, these platforms affect organizational learning (Leonardi, 2015) and collaboration through knowledge sharing.

Moreover, this heightened awareness of other people's communication accelerates knowledge gathering and seeking (Leonardi & Meyer, 2015). Given its complexity, seekers of knowledge often hesitate to ask as they do not know how best to acquire it, particularly if they lack familiarity with the source (Leonardi & Meyer, 2015), and this prevents knowledge sharing. However, ESM platforms make the communications visible to everyone (Leonardi et al., 2013), enabling seekers of knowledge to identify potential sources, providing a context for inquiry (Leonardi & Meyer, 2015). Leonardi and Meyer (2015) posit that ESM provides 'ambient awareness', in other words context-specific, continuous awareness of others' activities, roles, and expertise within the organization: this is also referred to as ESM affordance of association (Treem & Leonardi, 2013). Ambient awareness fosters knowledge seeking in several ways (Leonardi & Meyer, 2015). First, it allows colleagues to identify experts in specific areas; second, it offers insights into colleagues' ongoing work; and third, it reduces uncertainty about knowledge acquisition concerning the appropriate timing and methodology. The informal nature of ESM conversations further encourages advice-seeking and question-posing (Leonardi & Meyer, 2015). The data it generates provides empirical material on knowledge flows and organizational social networks that facilitate knowledge sharing.

Leonardi (2015) further contends that enhanced metaknowledge via ESM could stimulate product and service innovation and mitigate knowledge duplication by raising awareness of other people's work within the organization. This is particularly beneficial in large organizations where individuals may not be familiar with the work of others', reducing the risk of simultaneous work duplication in distinct locations, and improving knowledge creation across organizations. Leonardi (2015) exemplifies this in an empirical case in which an employee had developed a novel marketing program by utilizing knowledge that she had encountered earlier via ESM. By combining her previous knowledge

with the new insights from another department she was able to introduce a novel product. The increased accessibility and awareness of knowledge improves problem-solving capacities, illustrating the potential of ESM in facilitating innovation and knowledge sharing within organizations (Leonardi, 2015; Vaast & Leonardi, 2017). Furthermore, in providing a platform for inclusive participation, ESM could democratize communication and flatten hierarchical organizational structures (Gibbs et al., 2015; Leonardi & Vaast, 2017).

However, it is equally critical not to overlook the challenges of implementing and using ESM, including concerns about data security and privacy (Majchrzak et al., 2013), potential time-wasting due to the inappropriate use of tools - such as pretending to know how to do things (Leonardi, 2015; Oostervink et al., 2016), and blurring work-life boundaries (Gibbs et al., 2013; Leonardi et al., 2013), and information overload (Bawden & Robinson, 2009; Chen & Wei, 2019). Gibbs et al. (2013) further point out that its use may lead to unproductive organizational behavior, including intentional ambiguity. There may be resistance from individuals, too, especially those accustomed to traditional communication methods (Yuan et al., 2005). In my research, therefore, I seek to shed light on the optimizing of ESM use, enabling active employee participation to succeed in the adoption of these tools.

2.5 Affordances

American psychologist James. J. Gibson (1977) first conceptualized affordances, defining them as the potential actions that an object or environment provides to an organism. He emphasized the need for the capabilities and properties of the object to utilize the affordances. As an ecologist, he drew examples from nature. For instance, a branch of a tree has the affordance of providing food for a bird. However, depending on the size of the bird, the branch might also have other affordances, such as a place for nesting. Thus, a particular object or environment affords something to be acted on, such as a chair affords sitting, whereas stairs afford descending or ascending. However, Gibson's approach (1977) is based solely on physical objects. During the 1990's Donald A. Norman (1988) complemented the conceptualization of affordances with the notion of virtual objects or online environments, thereby bringing the discussion into the discipline of human-computer-interaction (HCI). He adopted the term to refer to an object's perceived and real characteristics, especially its essential properties that outline its possible uses. For instance, a button on a website might afford clicking if it appears to be clickable (Norman, 1988). Norman sought to understand the difference between real and perceived affordance, the former being based on the actual capabilities of a system or object, the latter on the user´s mental model of how the system or object is supposed to work. He highlights the importance of uniting the two, namely perceived and real affordance, to design better systems and objects. Thereby users could intuitively understand and use the system or object correctly (Norman, 1999).

Affordance theory has been used extensively in ESM research (Gibbs et. al., 2015; Rice et al., 2017; Treem & Leonardi, 2012). These studies enhance understanding of how social media affordances shape the use of the media and could be applied to organizational contexts, such as in the use of ESM. ESM affordances make communication and knowledge sharing visible and accessible in organizations (Leonardi et al., 2013). Both Chen et al. (2020) and Ellison et al. (2014) suggest that ESM affordances can enhance connections within social networks because ESM supports interpersonal relationships, enhances sharing of identity-related information, and provides virtual space for individuals with common interests. Moreover, social network studies have shown that such ties foster higher employee performance (Wu, 2013).

Treem and Leonardi (2013) identify four ESM affordances designed to facilitate communication, collaboration, and knowledge sharing on an organization's ESM platform. 1) Visibility refers to the feature that makes information, interactions, and activities available and accessible to users on the platforms (Treem & Leonardi, 2013). It enables users to see what others are working on, and who is connected to whom (Leonardi & Vaast, 2017). 2) Association refers to the capacity of ESM platforms to enable the formation of connections and networks among users (Treem & Leonardi, 2013). Thereby it contributes to the building and maintaining of relationships and fosters collaboration and the identification of expertise within the organization. 3) Editability encompasses the ability of users to create, modify or delete content within the platform (Treem & Leonardi, 2013), thereby ensuring the accuracy and iterative development of ideas and knowledge over time. 4) Persistence refers to the extent to which information and communication on ESM platforms are retained and remain accessible over time (Treem & Leonardi, 2013). Storing the digital traces of communication enables organizations to improve the transfer of knowledge across temporal and spatial boundaries.

The aim in this research is to expand the existing discourse by integrating the notion of knowledge brokering into the concept of ESM affordances. The capacity of knowledge brokering to enhance collaboration and facilitate knowledge sharing and creation underscores its significance. Given that knowledge brokers leverage ESM affordances (van Zoonen & Sivunen, 2023), the aim is to further elaborate on the complex ways in which ESM affordances affect knowledge brokering. Although I draw inspiration from the theory of affordance (Gibson, 1977), my focus is on ESM affordances as coined by Treem & Leonardi (2013). Acknowledging the various other social media related affordances (Argyris and Monu, 2015; Rice et al., 2017), I have chosen to concentrate on their seminal work (Treem and Leonardi, 2013), as I perceive their categorization of affordances representing umbrella terms for other affordances identified in ESM context.

2.6 Attention

Attention plays a crucial role in knowledge sharing and collaboration because it is a prerequisite for action to take place (Wu, 2011). In cognitive neuroscience,

attention refers to assigning limited processing resources to a selection of available information. This process involves focusing on one issue while neglecting another (Lavie, 1995). The term attention was first introduced by Herbert Simon (1947) in the context of firm behavior (Ocasio, 1997). Simon's work aimed to shed light on how organizations and organizational structures influence the distribution of attention to their decision-makers. William Ocasio (1997) introduced the Attention-based view (ABV) of the firm to illustrate that the direction and focus of an organization are highly determined by how and where its decision-makers direct their attention. He based his theorizing on the former theory by Simon (1947). Ocasio points out the constraints on the human capacity for attention and brings concepts used by Simon into the research on organizations. He categorizes the usage of attention based on a focus on structure, process, or outcomes: the attentional perspective, attentional engagement, and attentional selection. The first refers to top-down cognitive structures that generate specific expectations and interpretive frames for information processing (Ocasio, 2011). He gives an example of a study by Nadkarni and Barr (2008) whereby organizations that operate in rapidly changing environments pay more attention to competitiveness and the market than those in stable environments. On the other hand, attentional engagement refers to the top-down and bottom-up process in which cognitive resources are intentionally processed to guide problem-solving, planning, sensemaking, and decision-making (Ocasio, 2011). Lastly, attentional selection refers to the emergent outcomes from automatic or intentional attentional processes. These processes result in the focusing of attention on specific stimuli or responses and the exclusion of others.

Attention allocation refers to how individuals pay attention to specific issues. Haas et al. (2015) found that knowledge providers are more likely to allocate attention to solving problems that more closely match their expertise. They also report that characteristics of the problem, such as length, breadth, and novelty, influence the decision to allocate attention. Their research revealed how knowledge providers consider the cognitive load of the problem and thus prefer it to be short, narrow, or familiar because it might surpass the advantages for the knowledge provider (Ocasio, 2011). Cognitive load is focal in the allocation of attention. Lavie (1995) argues that the perceptual load affects attention depending on the capacity of an individual, which defines whether it requires lightening and early or late selection. Given the need for limitation, selective attention is used in connection with loaded processes (Lavie, 1995).

The emergence of ESM platforms and other communication technologies raises interest among scholars focusing on strategy, given the impact of these new forms of communication and collaboration, which are changing how strategies are developed. Organizational practices such as engaging employees and allowing open discussions on ESM platforms open new possibilities and challenges for strategy building. Communication is crucial to strategy work (Ocasio et al., 2023). Ocasio et al. (2018) acknowledge the dynamics of communication and attention in strategic change in the context of the attention-based view. He regards communication as a process rather than information-processing channels such as pipes and prisms Ocasio et al. (ibid). He encourages researchers to

focus on the role of communication in strategic processes. This could explore how strategic agendas evolve over time and how vocabularies, rhetorical tactics, and forms of talk and text influence a firm's dynamic capabilities.

This dissertation seeks to extend the discussion about attention-based view of strategy in the context of ESM. Drawing upon ABV principles concerning the limited attention capacity of humans and the increasing availability of information due to technological advancements (Leonardi & Vaast, 2017; Ocasio, 1997), I believe it is essential to gain a better understanding of how to allocate attention carefully towards relevant information. Using ESM democratizes knowledge by making more information available to larger audiences (Leonardi et al., 2013). In light of this dissertation, this could relate to knowledge brokers: their unique roles in facilitating knowledge sharing, synthesizing knowledge, and presenting knowledge in a way that captures attention within an organization, thereby leveraging attention management.

3. The development of the conceptual and theoretical framework

In the following I explain the framework for the theoretical constructs and concepts employed in this dissertation (see Figure 3). The purpose of the framework is to interconnect the varying threads of the research, providing a comprehensive overview of the dissertation.

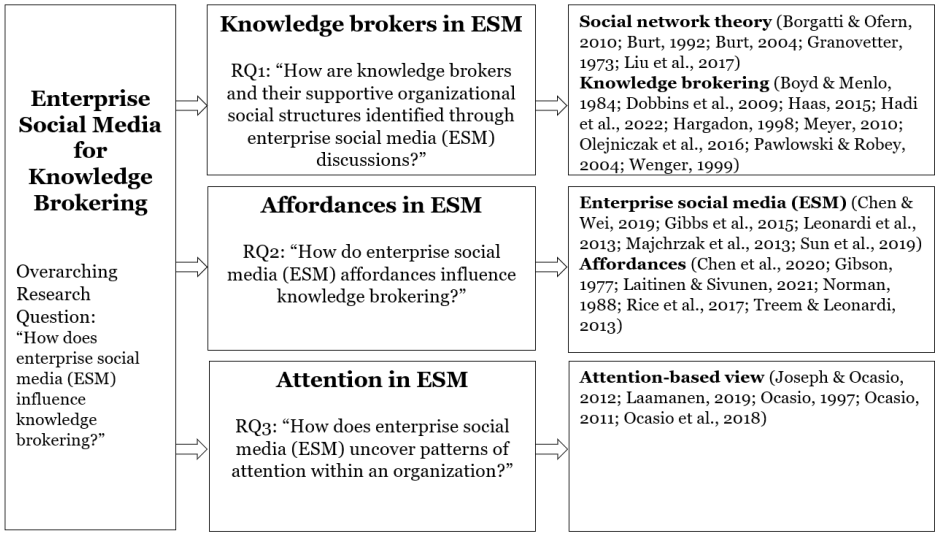


Figure 3. The conceptual and theoretical framework

Social network theory (Borgatti & Ofern, 2010; Burt, 1995; Burt, 2004; Granovetter, 1973; Liu et al., 2017) serves as the foundational theoretical framework for this study. It enables exploring knowledge brokering within an organizational social network through understanding the patterns of relationships and interactions among individuals. The concept of *knowledge brokering* (Boyd & Menlo, 1984; Hargadon & Sutton, 1997; Meyer, 2010) is rooted in the research on knowledge management (Nonaka & Takeuchi, 1995; Alavi & Leidner, 2001), according to which it is an integral part of organizational processes (Boyd & Menlo, 1984; Hargadon, 1998; Wenger, 1999). Existing literature highlights a range of actions essential for knowledge brokering to facilitate knowledge sharing, and creation (Currie & White, 2012; Dobbins et al., 2009; Haas, 2015).

Enterprise social media (ESM) (Leonardi et al., 2013) provides the context and the primary empirical data for this research. Connecting the essays within this dissertation, ESM serves as a context and a source of data in Essays 1, 2 and 4, and as a context of knowledge brokering in Essay 3. The unique access to ESM discussions from the first case organization allowed the comprehensive examination of both social networks and the individual digital discussions in addressing the first research question: "How are knowledge brokers and their supportive organizational social structures identified through enterprise social media (ESM) discussions?". In response, the phenomenon of knowledge brokering was analyzed by employing social network analysis (Wasserman & Faust, 1994) together with qualitative thematic analysis (Braun & Clarke, 2006), placing a particular emphasis on digital discussions between organizational members (Essays 1 and 2).

In response to the second research question: "How do enterprise social media (ESM) affordances influence knowledge brokering?", I explored knowledge brokering from the perspective of *ESM affordances* (Treem & Leonardi, 2013). The theory of affordances, initially proposed by James Gibson (1977) in the late 1070s, emphasized the critical role of affordances in facilitating action. In light of Norman's (1999) adaptations to include technological affordances such as user interface and perceptions, this dissertation considers the affordances of technology, specifically ESM, as vital for knowledge brokering in modern organizations. ESM affordances (Rice et al., 2017; Treem & Leonardi, 2013) have been shown to enhance knowledge sharing and collaboration. From this perspective, the affordance approach is particularly relevant to the field of knowledge brokering, in that knowledge brokers can leverage affordances. Consequently, Essay 3 develops the academic discussion on the four ESM affordances: visibility, association, editability, and persistence (Treem & Leonardi, 2013), by analyzing their implications for knowledge brokering.

In response to the third research question: "*How does enterprise social media (ESM) uncover patterns of attention within an organization*?", this compiling part of the dissertation discusses the role of ESM in enabling individuals to intentionally direct their focus, or mental resources (i.e. attention) to a specific issue within an organization. Attention, and more specifically *attention-based view* (Ocasio, 1997) is used to shed light on the emergence and evolution of discussions within an organizational social network. Patterns of attention are explored in Essay 4, to which ESM provides longitudinal data.

4. Data and methodology

My doctoral dissertation consists of four essays. Three of these essays use a mixed-methods approach that integrates both qualitative and quantitative research methodologies, while one is a literature review. The idea of incorporating multiple methodologies was interesting to me, as it enables constructing a comprehensive understanding of knowledge brokering within organizational social networks. The foundation of my research is grounded in qualitative inquiry (Denzin & Lincoln, 2011), which I have complemented with computational techniques to reconstruct an in-depth interpretation of a substantial volume of textual data. For me, qualitative research is about capturing the complexity and richness of the social world by trying to understand the meaning and context of human experiences and interaction. However, the extensive and complex nature of my research dataset presented an unprecedented challenge: conducting a traditional qualitative analysis as a sole researcher within a reasonable time would not have been feasible. Consequently, I utilized computational techniques (Lindgren, 2020; Leavitt et al., 2021) as a complementing approach to guide the qualitative research.

The combination of methodologies, which are traditionally considered counterparts, has gained attention from organizational scholars in recent years (Denzin & Lincoln, 2011). This development intrigued me, as it seemed to be an adaptive response to an evolving empirical landscape whereby researchers seek to study increasingly complex phenomena. Although my prior experience with quantitative methods was limited, restricted primarily to basic calculation in Excel, I familiarized myself with social network analysis (SNA, Freeman, 1977). I selected this method on the grounds that it can provide an overview of communication networks within large organizations and is well-suited to identifying relationships in organizational social networks.

The learning curve for mastering the fundamentals of SNA was steep. However, I achieved a level of proficiency that allowed me to understand its limitations and capabilities and, crucially, enabled me to collaborate effectively with experts in that domain. Establishing productive research relationships with individuals from diverse academic backgrounds is, in my view, essential in mixed-method analyses. I was fortunate to interact with experts from various fields who offered valuable advice and collaborated with me throughout my research journey.

4.1 Research paradigm and approach

Being primarily engaged in qualitative research, I am intrigued by various phenomena, and my aim is to understand how and why particular events emerge within specific contexts (Denzin & Lincoln, 2011). Overall, qualitative research is a methodological approach used to explore and understand complex phenomena, focusing on 'why' and 'how' opposed to the 'what' and 'where' of quantitative inquiry (Denzin & Lincoln, 2011). Qualitative analysis provides in-depth insights into various issues exploring the perspectives of individuals or groups, and it is particularly useful for studying complex and nuanced subjects that require human reasoning. Various data collection methods are used in qualitative research, including interviews, observations, and document analysis. These methods often produce text-based data, such as transcripts, digital platform messages, or field notes. Given the plethora of methodological choices, qualitative research includes a detailed and interconnected array of terminology, concepts, and foundational beliefs. Although qualitative research is useful for analyzing rich, detailed data, there are limitations associated with qualitative analysis: rigorous qualitative analysis requires time and skill (Shank, 2006), and carries the potential for researcher bias (Poggenpoel & Myburgh, 2003).

To delve deeper into the phenomena of interest in my dissertation, I chose to employ mixed methods that would enhance understanding of the issues being studied. As part of my contribution, I engage in discussions regarding the additional value computational techniques can offer to qualitative research (Lindgren, 2020). I adopted *constructivism* as my ontological and epistemological perspective in my research. Constructivism as an **ontology** posits that reality is socially constructed, subjective, and context dependent (Berger & Luckmann, 1967). From my perspective, there is no objective social reality that exists separately from human perception; instead, what could be understood as a 'reality' is an outcome of human perceptions, social interactions, and cultural practices. Aligning with the constructivist ontological perspective, I assume that multiple social realities can exist because diverse groups or cultures might construct different meanings from the same phenomena. The **epistemological** stance focuses on "what is the relationship between the inquirer and the known?" (Denzin & Lincoln, 2011: 12). In line with my constructivist perspective, I believe that knowledge is actively constructed by individuals through their interactions with the environment. I emphasize the role of individuals in constructing or creating their knowledge based on their prior experiences, interpretations, and social relations. Therefore, a deeper understanding of the underlying influences and collective knowledge construction enables analysis of the interaction that constitutes our social reality. I acknowledge that researchers bring their perspectives and biases to the research process (Heidegger, 2008; Poggenpoel & Myburgh, 2003). This is why I strive for transparency in my work, and throughout the analysis process, I consistently questioned my own approaches and the meanings I associated with my data. This was achieved through numerous presentations, during which I gathered feedback from diverse audiences.

In line with several scholars (Johnson & Onwuegbuzie, 2004, 14; Lindgren, 2020; Leavitt et. al., 2021) I recognize the importance of both quantitative and

qualitative research methods as complementary approaches. The integration of research methodologies is interesting as it opens up novel ways of examining empirical data. In my research, the broader perspective on empirical material facilitated identification of the essential question of "What is this a case of?", and the integration (Hitchcock & Onwuegbuzie, 2022) of methodologies further guided the qualitative analysis by narrowing down the data set.

Overall, making the effort to extend one's expertise in using fresh methods enhances the quality of one's study and thinking. Enhancing and refining our methodological expertise not only increases the accuracy of our analyses but also opens novel approaches, leading to the discovery of questions that previously might have gone unexplored (Edwards, 2008). In my research, computational techniques enabled me to view the data from a distinct angle, unveiling not only research questions but also guiding me towards the discovery of critical issues that might have otherwise remained undiscovered.

Mixed-method research presents barriers such as time constraints and unfamiliarity with different methodologies (Cresswell, 2017). Challenges in organizational communication and collaboration inspired this study, the overarching research question being "How does enterprise social media (ESM) influence knowledge brokering?". To address this question, it was necessary to examine organizational social networks and internal communication using both quantitative and qualitative analysis methods. Having unique access to extensive organizational datasets provided this research opportunity to conduct an in-depth study of communication within organizational social networks.

The research design is data-driven and inductive (Thomas, 2006). The empirical material was collected during two separate periods from two distinct organizations. The research concentrates on knowledge brokering and organizational social networks within the context of enterprise social media, the primary focus being on digital discussions. To analyze these discussions, I needed to access a sufficient number of messages and ensure that I had adequate contextual information regarding where and when they occurred. Regarding the first dataset, I used my prior experience as a researcher in that organization, as well as my familiarity with the communication platform. When it came to the second dataset, I ensured my acquisition of contextual knowledge by consulting an employee in the case organization.

4.2 Research context

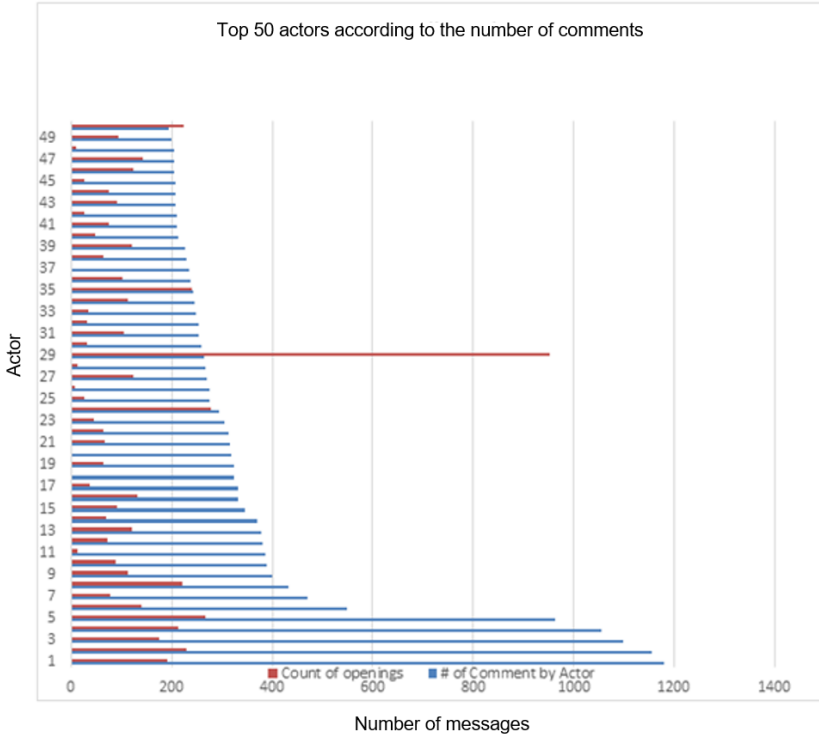
This research examines expert organizations operating within knowledge-intensive environments. Digital discussion platforms play a significant role in fostering discussions and knowledge sharing, particularly in the context of knowledge-intensive work. In this research, the focus is on work-related professional communication, with a specific emphasis on digital discussion platforms. The organizational culture in both case organizations supports the use of enterprise social media for work-related discussions. Employees who actively use ESM recognize its value in promoting knowledge sharing and collaboration.

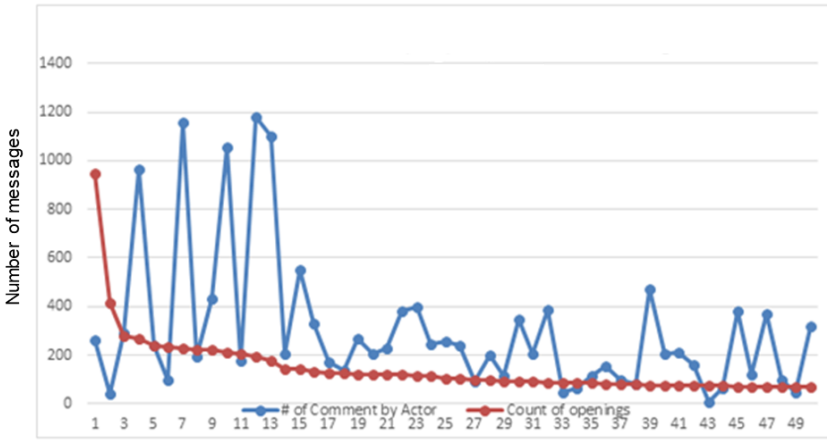
Thus, most work-related conversations take place on the discussion platforms. The empirical material of this dissertation comprises two separate datasets.

4.3 Empirical material

The first dataset, used in Essays 1 and 2, comprises organizationally internal discussions over a three-year period. These discussions on the ESM include 124,015 messages involving around 9,000 employees. The case organization is a global software and hardware manufacturer. The dataset is extensive, dense, and unstructured. The initial data collection within the organization was not systematic, which meant that significant cleaning and systematic organization were required for research purposes. Lacking prior experience in managing large-scale data, I initially encountered difficulties related to the scale. My computer was not sufficiently powerful to process such an extensive dataset, and I was uncertain about the most suitable formats to be used for my research purposes. Initially, I used Excel to organize the data, and it was only later through research collaboration that I learned about more advanced tools and techniques for handling the data more effectively. Table 1 shows the basic metrics of this dataset.

Table 2. The metrics of the first data set, employed in Essays 1 and 2





Actors sorted by the number of opening messages (red), comments (blue)

The second dataset, employed in Essay 4, consists of interviews, documents, field observations, and ESM messages in an organization with operations in several European countries. The field observations were done over a year and the ESM messages were analyzed during a seven-year period, amounting to over one million messages. The 23 semi-structured, in-depth interviews were conducted among management, developers, designers, and data scientists from five units of the organization located in three countries. The field observations consist of a year-long site observation of one of the teams in the case organization, including meeting memos from all its Monday meetings, general documents about strategy, and observations collected in two key meetings considering strategy building in the organization. The ESM messages include all the public posts, meaning those that are published on the case organization´s internal discussion platform accessible to everyone in the organization. Table 2 below summarizes the empirical material collected from the second case organization.

Table 3. A summary of the empirical material collected from the case organization studied in Essay 4

Type of material	Description of the material
Participant observations	Discussions with the head of strategy (42 in total). After each strategy meeting observed and twice a month from January 2020 to September 2020. To hear insights about the current strategic focus of the organization and to discuss what was happening in the organization.
Field observations	Council meeting. November 2019 Reduced board meeting. November 2019 Strategy update shared to the whole organization in spring 2019 Observations in 104 meetings. The team in charge of making sense of the internal data and activities and initiatives (it includes two of the organization's founders among other members).
Documents	Summer camp in a foreign site on the topic of AI, 2017 Feedback collection from the organizational members on the strategic agenda, 2018. Notes and presentations at the strategy meeting in November 2018, including the report that was written after the meeting. Strategy update shared to the whole organization in spring 2019
Interviews (305 pages)	23 semi-structured in-depth interviews. The interviewees include managers, owners, board members, developers, designers, data scientists and project managers. The deep interviews lasted 40 to 54 minutes, the purpose being to understand the organization's history, its practices, and the various perceptions of the strategy and of strategizing. The interviews were recorded and fully transcribed.
ESM messages (30,000 pages)	Flowdock and Slack messages. Between January 2014 and September 2020 (the end of the data collection), 1,011,881 messages in English were exchanged among 1,163 users: this represents close to 600 messages per working day, on average. The organization started massively using Flowdock in January 2014 (8,539 posts during the month). A total of 557,622 messages in English were exchanged among 1,129 different users from 2017 onwards. The messages were analyzed to shed light on how topics evolve over time.

4.4 Data analysis and research design

The nature of the online conversation data allowed and inspired the adoption of diverse approaches. Given my interest in thick and deep data, I deemed it essential to utilize the data as comprehensively as possible. This led me to complement my primary method, qualitative analysis, with computational approaches. I used both qualitative and quantitative analysis in three of the essays, complementing each other, thereby implementing a mixed-method approach (Hesse-Biber & Johnson, 2015).

Overall, this dissertation comprises four essays addressing to four research questions. Figure 4. summarizes the data and methodologies used in each essay. It also connects the relevant essays to each research question.

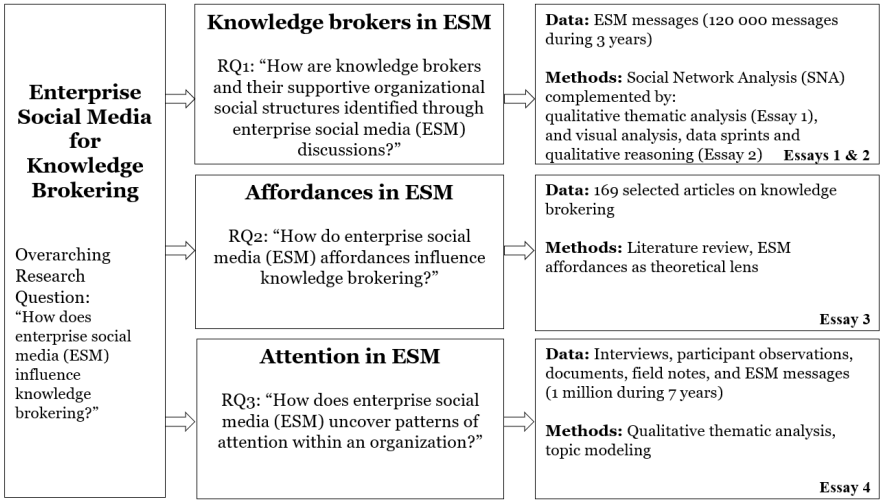


Figure 4. A summary of the data and methodologies used in each essay

I describe each method in greater detail in the following sections, and briefly explain the analytical approach in each essay.

Mixed-method analysis

Mixed-method analysis, which is applied in three of the essays included in this dissertation, refers to the use of multiple research methods within the same study (Hesse-Biber & Johnson, 2015). The purpose of mixed-method analysis is to combine qualitative and quantitative research methods to capitalize on the strengths of both types of methods. In this dissertation, the adoption of multiple methodologies enhanced the quality and depth of the research to produce more accurate findings (Lindgren, 2020).

Social network analysis (SNA) was used in Essay 1 to inform thematic qualitative analysis. The first step was to identify the most prominent knowledge brokers, with betweenness centrality as a key measure. The most prominent knowledge brokers were identified based on their central position in the network according to their digital conversation traces on the ESM platform used in

the organization for internal collaboration, knowledge sharing and communication. The next step was to analyze the messages both deductively and inductively to uncover themes and categories for knowledge brokering. Qualitative reasoning facilitated a comprehensive understanding of the most connected individuals in the organizational social network, revealing the actors who were most likely to represent knowledge brokers. However, social network analysis alone does not determine whether an actor is a knowledge broker. According to the extant literature, knowledge brokering refers to bridging individuals, groups, or organizations, implying knowledge sharing and the creation of new knowledge. Given these prerequisites, an inductive analysis was conducted among the most prominent knowledge brokers first identified by SNA. A closer examination of the actual messages these actors sent via ESM proved beneficial. The starting point for this analysis was previous literature that identified roles and actions of knowledge brokers. The messages of seven most prominent knowledge brokers found by SNA were analyzed, with the combination of deductive and inductive approaches to identify themes for knowledge brokering communication. Three themes were identified: connecting, exploring, and interpreting by reading selected messages through and highlighting the textual traces that indicated each of the theme.

The social network analysis reported in Essay 2 was informed by qualitative reasoning, and a comprehensive methodological approach was mapped. My co-author and I, with our distinct research traditions, collaborated in the data sprints that provided synergies and fostered mutual understanding in a complex empirical setting. Data sprints are used in academic research during collaborative events in which researchers from different disciplines work intensively together on a particular dataset or research question (Munk et al., 2019; Venturini et al., 2018). In this case, they served as a source for sensemaking and enhanced the rigor of the study. The aim in this essay was to make a methodological contribution to the analysis of complex data, and data sprints helped in achieving it.

My co-authors and I complemented topic modeling with qualitative thematic analysis in Essay 4. Our empirical data were diverse, including field observations and meeting memos from November 2019 to November 2020, 23 semi-structured in-depth interviews, and ESM messages spanning a seven-year period. As a research method, we used qualitative thematic analysis for the textual documents including interview transcripts, documents, and field notes. For the ESM messages we used topic modeling, which provided an extensive perspective on the phenomena including over a million messages and the ability to observe changes over time. The topics derived from the topic modeling were verified through participant observation and further analyzed in the findings from the qualitative thematic analysis.

Social Network Analysis

Social network analysis (SNA) is a research method and an analytical tool used to study relationships and patterns of interaction among individuals, groups, or organizations within a social network (Wasserman & Faust, 1994). The aim is to

understand the structure, dynamics, and properties of social networks by examining the nodes (individuals or groups) and the ties (relationships or connections) that link them, also referred to as edges.

SNA was used in this research to obtain an overall view of the network in the case organization studied in Essays 1 and 2. The objective was to identify central actors and clusters within the network. Key measures used included outdegree, indegree and betweenness centrality. Outdegree refers to individuals possessing high betweenness centrality, acting as bridges and crucial actors in facilitating the exchange of ideas among various groups of people (Freeman, 1977). In the context of knowledge brokering, these individuals are known as knowledge brokers, and the flow extends beyond ideas to comprise knowledge, decision-making tools, and information about various data sources. Weighted indegree centrality highlights individuals or groups who gain the most attention within the network, those who are recipients of the highest number of messages or are most often cited by their peers. Conversely, weighted outdegree centrality highlights individuals or groups that are primary message senders, characterizing them as most proactive in establishing links within the network. Betweenness centrality highlights the nodes that are the most central. In our study, individuals, or groups with high betweenness centrality were identified as having crucial roles, linking different individuals or groups. At the network scale, we employed cluster detection to identify groups of actors (Blondel et al., 2008). We chose these measures to highlight users who act as bridges, in other words, knowledge brokers, and to identify diverse communities within the social network.

Essay 1 is based on a comprehensive dataset sourced from a multinational organization with a workforce in thousands. The data includes discussions on an enterprise social media (ESM) platform, comprised of approximately 9,000 employees who predominantly use this ESM platform for professional communication. The dataset contains 124,015 messages, dispatched by employees throughout the organization. The analytical method applied in this essay is Social Network Analysis (SNA), an effective tool used to pinpoint individuals occupying the most central positions within the network in terms of betweenness centrality. Betweenness centrality is a quantitative measure that identifies individuals serving as crucial links connecting various groups within the social network. Figure 5 is a visual representation of the social network, employing betweenness centrality to pinpoint these key linking individuals, herein referred to as actors. Each node (represented as a round shape in the figure) corresponds to an actor, the darkness of the node being proportional to the betweenness centrality of that particular actor. In this study the SNA nodes symbolize actors, and the edges represent messages dispatched via the ESM platform. Consequently, the connecting lines within the figure represent digital discussions, whereas the round shapes signify the nodes, such as actors engaged in message exchange within the organizational social network via the ESM platform.

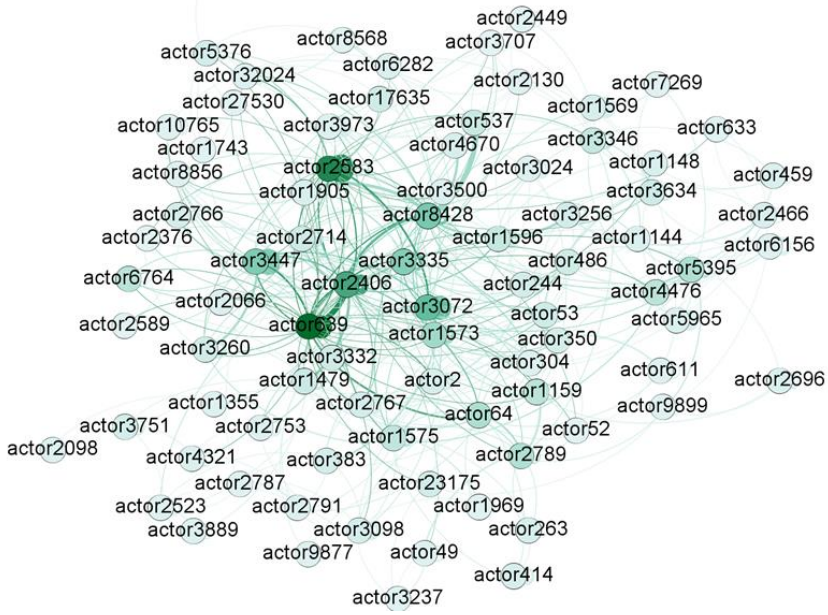


Figure 5. An illustration of the social network according to the betweenness centrality measure

The Social Network Analysis (SNA) facilitated the identification of the 50 most potential knowledge brokers within the organizational social network, as indicated through digital discussions amongst the employees. These discussions were subsequently subjected to both deductive and inductive qualitative analysis (Azungah, 2018).

The analysis reported in Essay 2 was extended to include different organizational levels. The dataset was the same as in Essay 1, including 124,015 messages on an organizational ESM platform. In the subsequent SNA, the users were nodes, and the digital discussions were edges. Figure 6 shows the intricate web of connections among the business units, the ESM groups, and individual users within an organizational ESM platform. Here, node size is determined by betweenness centrality, which subsequently highlights the potential of various groups and units to function as knowledge brokers within an organization.

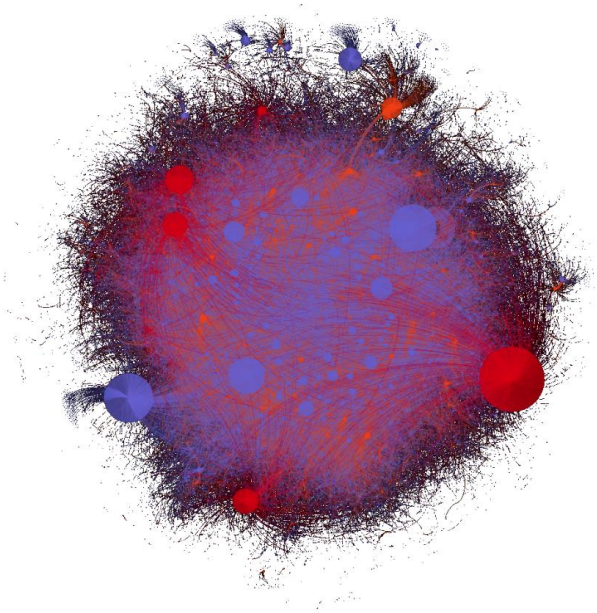


Figure 6. A network structure highlighting betweenness centrality as node size. The red color indicates a business unit, orange represents ESM groups, and blue represents individual users (Adapted from Leppälä & Huhtamäki, 2022: 589)

We conducted an actor cluster analysis to get a better understanding of the individual level of knowledge brokering in this network. Figure 7 shows the structural positions of the individual actors.

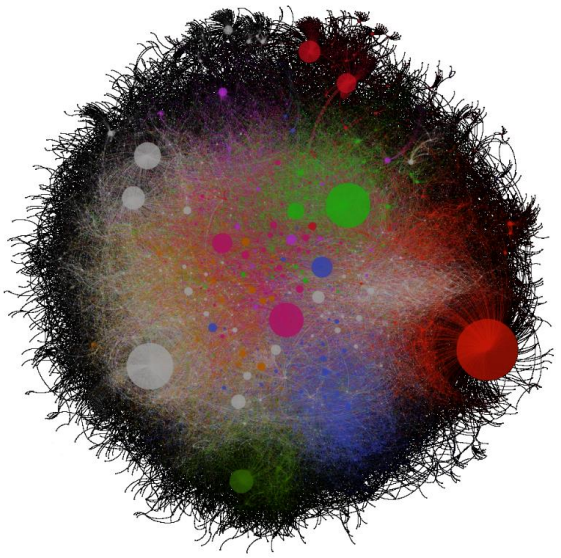


Figure 7. The colors of the nodes indicate cluster membership, and node size is determined by between-ness centrality, representing individual actors (Adapted from Leppälä & Huhtamäki, 2022: 590)

Because pure betweenness centrality only gives a hint of the knowledge brokering position, we continued the analysis using weighted indegree as a measure to indicate node size (see Figure 8). This measure indicates the attention that a particular actor receives in the network, thereby indicating the most potential actors to serve as knowledge brokers.

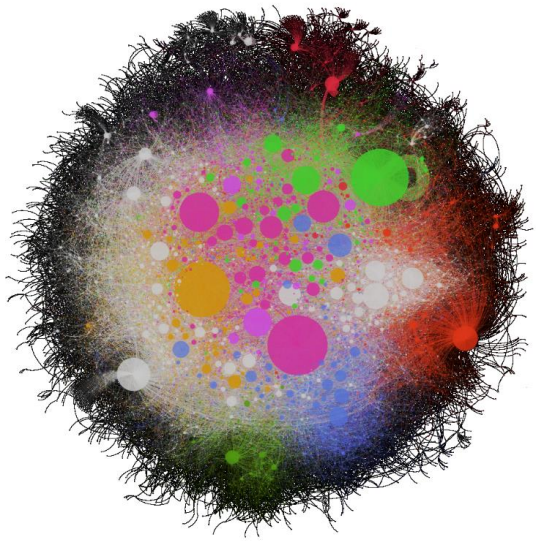


Figure 8. An actor cluster view based on weighted indegree centrality that shows the attention a particular individual receives (Adapted from Leppälä & Huhtamäki, 2022: 590)

Thematic Qualitative Analysis

Thematic analysis is a method used for identifying, analyzing, and reporting themes, recurring ideas, or patterns of meaning within qualitative data (Braun & Clarke, 2006). Braun and Clarke (2006) highlight its applicability to large datasets and complex research settings. It is also known as methodology that suits junior scholars as it does not require detailed theoretical and technological knowledge of other qualitative approaches (Braun & Clarke, 2006). Moreover, it allows analysis across a range of epistemologies (Nowell et al., 2017), which was necessary in this research to maintain a mutual understanding within multidisciplinary research teams. However, its adaptability could result in variability and incoherence in forming themes emerging from the research data.

Thematic analysis suited my research purposes in that it enables those conducting qualitative and quantitative studies to communicate with each other, as Boyatzis (1998, p. vii) also noted, referring to it as a function of a translator. For me, collaboration among researchers carrying out quantitative and qualitative analysis was the key to success in conducting the studies. Thematic analysis also accommodates large datasets that give an overall view of a phenomenon, which was the initial purpose in addressing the first research question “How are knowledge brokers identified based on their enterprise social media (ESM) discussions?”. It also allows for making the analysis process iterative (Braun &

Clarke, 2006). Iterative data analysis involves repeatedly revisiting the data and revising or refining the interpretations as more insights are gathered. In this research it was conducted to familiarize me with the empirical data and the existing literature on the topic of knowledge brokering.

I initially adopted an inductive approach in developing a deep, nuanced understanding of the data (Thomas, 2006), allowing ideas and patterns to emerge from the data. Qualitative inductive analysis involves generating themes or categories that are most relevant to the identified research objectives (Thomas, 2006). The main purpose is to identify patterns and themes within the data by drawing conclusions directly from the empirical evidence. During the first stage of the process the researcher gathers relevant data and familiarizes themselves with the data, reading and rereading it to develop a deeper understanding of the material and to prepare for the coding process (Thomas, 2006). In this case it meant organizing the data dump containing messages from individuals on an ESM platform and reading through samples of them. Given the size of the dataset comprising thousands of pages of text, I needed to take smaller random samples to be able to get at the content. The first rounds of reading gave me insights into the types of issues that are generally discussed on this particular digital discussion platform, and whether there were differences in the number of comments depending either on the question or on the person asking it. A significant aspect of iterative analysis is reflexivity, or reflective thinking (Braun & Clarke, 2019), whereby the researcher critically considers their own role in the research process and how prior knowledge and experiences may affect their interpretation of the data. Related to this, I should mention that I had worked for that organization and was familiar with the discussion platform, which I had used in my work.

According to the inductive approach, after becoming familiar with the material the researcher does the initial coding, which may be in the form of words, phrases, or short descriptions. In this study the data was derived from the extensive textual dataset by SNA, then the messages of those identified as most potential knowledge brokers were collected as the dataset to be analyzed qualitatively. The initial codes were phrases describing the actions of knowledge brokers. During my theoretical investigations I came across the interesting concept of knowledge brokering, on which I based the codes. Having chosen this conceptual approach, I further analyzed the qualitative data deductively, informed by existing theory: as Braun and Clarke (2006) point out, deductive analysis leans on existing theory as a framework for its structuring.

In Essay 1 I analyzed the communicative actions of potential knowledge brokers following both inductive and deductive approaches (Azungah, 2018), elucidating the topics and themes with which these potential knowledge brokers typically engaged. The initial step was to familiarize myself with the existing literature on knowledge brokering, enabling the extraction of key indicators for such a role. The next step was to conduct a qualitative thematic analysis of the selected messages based on these indicators, augmented by the basic metrics of the digital discussions. However, I excluded actors who merely sent an abundant number of messages without contributing to the knowledge pool. Thus, I

defined knowledge brokers as individuals who both initiated discussions and responded to others' messages.

The existing themes around knowledge brokering were used as guidelines for identifying certain knowledge brokering actions in the data, namely connecting, exploring, and interacting (see Table 4). When the themes had been chosen, the messages of the most potential knowledge brokers were subjected to qualitative thematic analysis. For this purpose, message threads involving the seven most potential knowledge brokers were selected for detailed examination. This process resulted in a total of 12,958 short messages, including 1,744 opening messages (equal to the number of message threads) and 11,214 commenting messages. A random sample was obtained from this dataset by selecting every 50th message thread, then reducing the thread count to 34 and the individual message count to 257. This random sample included messages spanning the entire period under scrutiny. To make sure that the most active actors are found, I included only those who had sent a large number of both opening and commenting messages, which would correlate with the activity of the actor. I analyzed entire message threads to make sure I understood the context. Having thoroughly read the messages, I identified the following five knowledge brokering actions that aligned with the existing literature: sharing information, linking people and issues, problem-solving through exploration, posing questions, and offering suggestions. I subsequently categorized these actions as connecting, exploring, and interacting. Table 4 summarizes the analysis of the selected actors, by highlighting the various actions that could be discerned from digital discussion data.

Table 4. A summary of the qualitative analysis conducted in Essay 1

Initial coding	Knowledge brokering action	Categories of Knowledge Brokering
Actor733 is sharing information that is known only by persons not involved in this message thread: product availability and security concerns related to early availability. Actor733 is in contact with one organization unit and shares knowledge with others in the message thread.	Sharing information	Connecting
In the excerpt, Actor115 is referring to actors 598, 244 and 1258 to being possible resources of information or the matter in question. He links these actors into the message thread using the social media feature where a new user can be linked by using a command '@user_name'. Actor115 is pinpointing two actors 1258 and 613 because he has indicated that those actors know what is looked for. Actor115 is suggesting to contact actor2751 as he/she has better knowledge for decision-making.	Linking people and issues	
Actor 1250 is rigorously seeking for a solution to a problem by asking questions. Actor1250 is actively trying out technical solutions to solve the problem. Actor1250 is trying to find people to help in solving the problem Actor1250 finally finds the solution.	Problem-solving by exploring	Exploring
Actor5844 encourages others to participate in providing feedback of the problem solution prioritization. Actor5844 asks questions to make others to participate into the conversation.	Asking questions	Interacting
Actor5844 enters the conversation without being notified about it. Thus, he/she finds the conversation with is/her own awareness. He/she joins the conversation with a suggestion which contributes to the ongoing conversation	Posing suggestions	

The interview transcripts, documents, and field observations were subject to thematic qualitative analysis in Essay 4. Inductive reasoning (Thomas, 2006) was used in the search for patterns of varying dynamics and themes in the empirical material. The first step was to identify emerging topics from the data, including strategy-related topics, organizational culture, unclarity of strategy, organization structure, diversity and inclusion, artificial intelligence, resilience, ecosystems, and OKR (objectives and key results). Following several iterations, the analysis was both inductive and deductive (Azungah, 2018). In the end we identified three key themes, namely artificial intelligence, diversity and inclusion, and the closure of one site to be analyzed further. The concepts of ambiguity and the attention-based view guided the deductive analysis. During the process, we oscillated between collecting data and its analysis and also between qualitative reasoning and computational methodology, namely topic modeling. In this study we used topic modeling to map the most probable topics that emerged in connection with the themes we had chosen, and we analyzed them over time.

The qualitative thematic analysis (Thomas, 2006) conducted for this study incorporated both inductive and deductive reasoning as well as iteration between

the data gathering and analysis, qualitative reasoning, and computational methods. This served the first and fourth essays well, given that they explore rich and complex data. Moreover, connecting thematic qualitative analysis with computational methods allowed for a holistic understanding of the research questions. Our analytical approach was iterative, ensuring an interdependent connection between qualitative insights and quantitative findings. Several iterations were included in the analysis of the multidimensional data in Essay 4 (see Figure 10).

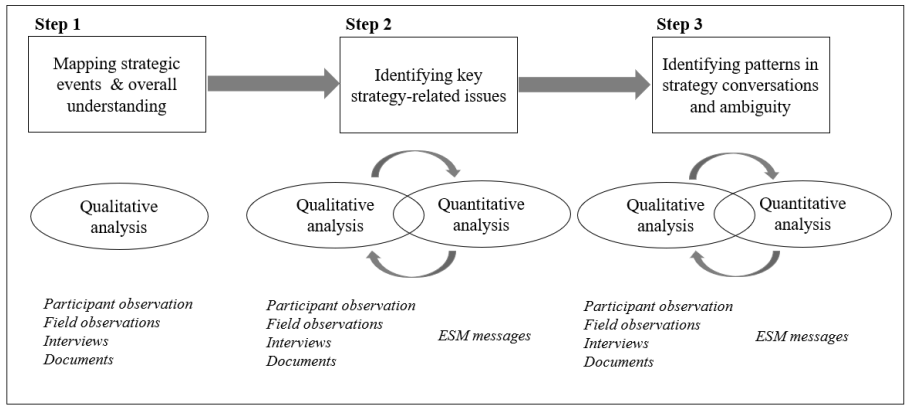


Figure 9. Summary of the iterative analysis process in Essay 4

Topic Modeling (conducted by my co-author in Essay 4)

Topic modeling is a technique used in natural language processing (NLP) and machine learning, aimed at discerning underlying 'topics' within a set of documents (Blei et al., 2003). A pivotal method within topic modeling is Latent Dirichlet Allocation (LDA; Blei et al., 2003). It operates as an unsupervised learning mechanism, renowned for its capability to classify sparse and unstructured datasets based on their latent semantic attributes (Blei et al., 2003; Aggarwal & Zhai, 2012). It is a method that has been employed successfully in diverse research areas, including management science, to extract pertinent topics from extensive text corpora (*e.g.* Haans, 2019; Taeuscher et al., 2020). In terms of understanding strategic concept diffusion within organizations, LDA can be applied to model topics on platforms such as enterprise social media (ESM). The dynamic nature of the discourse on these platforms can be captured by updating topic models periodically. The first approach offers insights into the progression of topics over time and in various organizational communities. In contrast, the second approach sheds light on the evolution of dominant terms and the emergence of novel linguistic constructs and meanings within organizational dialogues over time. It is worth noting that, to ensure optimal consistency, the text data should be pre-processed consistently by utilizing a systematic document-term matrix for the analyses.

Literature Review

Literature reviews are effective for assessing existing knowledge on a particular topic (Hart, 2000), which in this research was *knowledge brokering*. As a method the review involves the gathering, analysis, and summarization of existing material on a given topic (Hart, 2000). Its fundamental objective is to summarize the existing knowledge about the subject (Paul & Criado, 2020). The starting point is defining the research question, which provides the basis for the selection of studies and journals to be incorporated into the review, thereby proving relevant and insightful material. The research questions addressed in Essay 3 were: 1) "What types of knowledge brokering exist?" and 2) "How do enterprise social media (ESM) affordances influence knowledge brokering?". Once the research questions have been established, the researcher conducts an extensive search for literature that is relevant to the topic. This involves searching through databases, journals, and other sources, using appropriate keywords related to the research question. The literature review conducted in Essay 3 was based on a thorough search of Scopus and the Web of Science employing 'knowledge broker,' 'knowledge brokers,' 'knowledge brokering,' and 'knowledge brokerage' as search terms within abstracts, keywords, and titles (see Table 4 for additional details).

Table 5. The search protocol and the selected journals (Essay 3)

The search protocol	Key journals
'knowledge broker' OR 'knowledge brokers' OR 'knowledge brokering' OR 'knowledge brokerage' in (title OR key words OR abstract)	California Management Review
	Science Communication
	Journal of The Academy of Marketing Science
	Mis Quarterly
	Implementation Science
	Harvard Business Review
	Organization Studies
	Journal of International Business Studies
	International Journal of Project Management
	Journal of Organizational Behavior
	Regional Studies
	Information And Software Technology
	British Journal of Management
	Journal of Knowledge Management
	European Management Journal
	Global Networks-A Journal of Transnational Affairs

It is important to define how the researcher ensures the validity of the search criteria (Hart, 2000). In line with this, only peer-reviewed articles were selected into Essay 3. To ensure the relevance of the selected articles the search was limited to the disciplines of organization and management, and communications and information technology, which relate strongly to the research questions. Additional sources were explored to complement the previous search with relevant articles including recent publications from key scholars in the field. With

reference to Essay 3, influential articles on knowledge brokering were scanned through the reference lists of articles identified via the Web of Science and Scopus. Articles referring to them were also considered. The final number of articles was 169, including publications from various fields.

An in-depth analysis was of the selected 169 articles was conducted focusing on the theoretical underpinnings, the methodological choices, and findings regarding knowledge brokering. A need for knowledge brokering was identified in each article, and on that basis the actions of a knowledge broker were mapped. Table 6 summarizes the findings. The in-depth analysis identifies three themes for the main knowledge brokering dimensions: *collaborative, sharing and constructive*.

Table 6. Example articles on each knowledge brokering dimension

Knowledge Brokering Dimension	Reference	Key Findings
Collaborative	Pawlowski & Robey (2004)	Knowledge brokers transfer business and IT knowledge, bridging parties. They translate and interpret knowledge.
	Hadi A., Liu Y., Li S. (2022)	Knowledge brokers bridge knowledge flow gaps in siloed organizations. They connect horizontal and top-down organizational levels.
	Dobbins et al. (2009)	Knowledge brokers improve knowledge transfer and exchange. They provide a link between research producers and end users by developing a mutual understanding of goals and cultures.
	Magliocca et al. (2022)	Categorizing the roles of start-ups as knowledge brokers and clarifying the direct and indirect links between the suppliers, customers, and service providers.
	Toral et al. (2010)	The importance of middle-man role is evident in virtual communities, emphasizing interactive collaboration.
	Meyer (2010)	Knowledge brokers connect researchers and various audiences. They also create new type of knowledge: brokered knowledge.
Sharing	Hargadon (1998)	Continuous innovation is possible when using knowledge brokering processes.
	Ruuska & Teigland (2009)	Knowledge transfer is taking place across communities. Project manager as a knowledge broker facilitates the transfer of knowledge by being aware of particularities of the various communities.
	Dobbins et al. (2009)	The KB synthesizes local community and patient data with general and specific research knowledge to assist users in translating the evidence into locally relevant recommendations for policy and practice.
	Reiche et al. (2009)	As knowledge transmitters, assignees' host-unit social capital facilitates their creation of individual intellectual capital, which, in turn, translates into inter-unit intellectual capital.
	Currie & White (2012)	Social structures may be mediated through developing architectural knowledge and using knowledge brokers.

Constructing	Hargadon & Sutton (2000)	Knowledge brokers can gather information from various sources and connect old ideas with new insights to create new knowledge.
	Pawlowski & Robey (2004)	As knowledge brokers, IT professionals see themselves facilitating knowledge flow across boundaries.
	Dobbins et al. (2009)	KB improve relationship development, ongoing support, customized approaches, and opportunities for individual and organizational capacity development.
	Crupi et al. (2020)	Italian DIHs act not only as KBs but also as knowledge sources that give rise to a digital imprinting process that is able to shape the DX of SMEs.
	Verbeke et al., 2011	Requires salespeople with sufficient cognitive abilities who can absorb knowledge and know about the way these products help their customers solve their problems.
	Verona et al. (2006)	Virtual knowledge brokers help firms to complement their knowledge by gathering relevant knowledge through virtual channels for customer interaction.

4.5 Research quality

Mixed-method analysis was applied in this dissertation to ensure a comprehensive understanding of the complex phenomenon of knowledge brokering within enterprise social media. While prior research has concentrated primarily on network positions or the roles and activities of knowledge brokers, this one delves deeper by combining both approaches. Two extensive datasets were collected to address the overarching research question, "How does enterprise social media (ESM) influence knowledge brokering?".

The analytical techniques employed in Essays 1 and 2 included social network analysis (SNA), which was used to inform the qualitative analysis. The dataset provided a sufficiently large organizational social network for examination through SNA. The analytical process identified potential knowledge brokers and reduced the sample size to be feasible for qualitative analysis. Inductive qualitative analysis was chosen for the qualitative thematic analysis in Essay 1, as it aligned with the objective of identifying themes or categories for knowledge brokering within an ESM. The selection of SNA was based on its ability to identify central actors among other actors in a network, which served as a reasonable basis on which to analyze knowledge brokering. Betweenness centrality, a measure of SNA, was used to identify potential knowledge brokers given that it highlights the most prominent actors serving as links in a network. Further, studying the textual data by means of qualitative thematic analysis served well to validate the identification of knowledge brokers within the organizational social network, adding a more nuanced selection based on current understanding of knowledge brokering and the findings from empirical material, namely the ESM messages of the first case organization.

Essay 3 consisted of a literature review complemented with qualitative analysis to explore the extant literature on knowledge brokering and its connection to ESM affordances. This method of analysis was chosen because it facilitates in-depth understanding of what is already known about knowledge brokering and gives insights into the theories and methodologies used in the research. Additionally, the thorough review helped me to find an area that had not been adequately explored in previous research, namely the use of ESM for knowledge brokering.

Multiple sources of empirical material, including interviews, documents, field observations, and ESM messages, were utilized to give a holistic view of the phenomenon addressed in Essay 4, based on topic modeling (which examines the emergence of specific topics over time) and qualitative reasoning. The topic modeling analysis of the ESM messages was validated by consulting the participant observer. Further, it was decided to use thematic qualitative analysis to examine insights into the factors affecting the evolution of topics in the organizational social network. These methods were well-suited to the objective of the study, which was to enhance understanding of emerging strategic topics within an organization.

Having worked in the first case organization, I acknowledge both the benefits and the potential biases this may involve. Background knowledge about the context and the discussion platform could be advantageous, although potential biases may arise from personal experiences and relationships within the organization that could influence interpretation. To minimize such bias, I engaged in conscious self-reflection and sought feedback from colleagues who provided external perspectives to identify potential bias or blind spots in the research. Moreover, as an observer in the other case organization, I shared findings with participants to ensure the accurate representation of their perspectives and to address potential misinterpretations. Throughout the research, I maintained transparency regarding potential biases by clearly describing prior relationship with the organizations and discussing potential biases with colleagues, and in research documents and presentations.

Ethical considerations were acknowledged from the outset through the anonymization of the participants' personal information and the secure handling of data at all times. The guidelines set forth by Aalto University and the Finnish National Board on Research Integrity TENK were followed.

5. Summaries of the Essays

My aim in this chapter is to conduct a comprehensive discussion of each of the essays included in the dissertation. The emphasis is primarily on the findings and the contributions, given that previous chapters cover the methodologies and the theories used. Figure 10. below summarizes how each Essay aligns with the research questions in the compiling part of the dissertation.

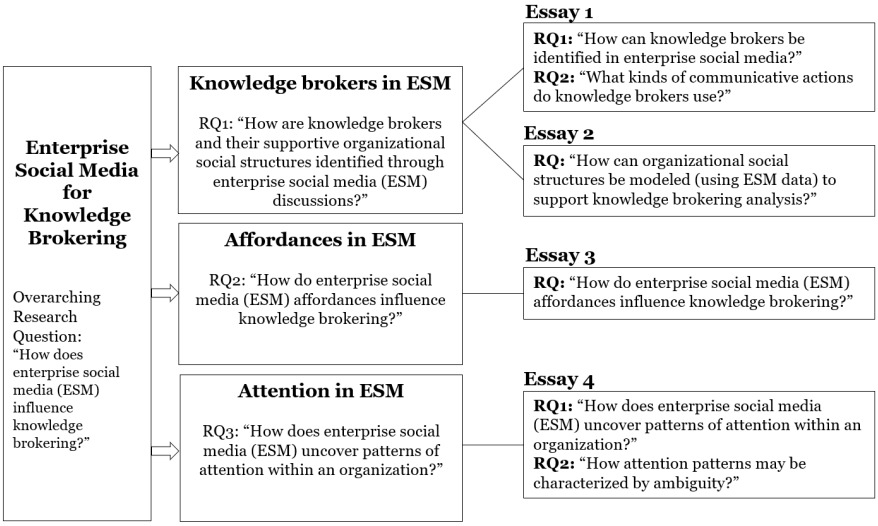


Figure 10. Map of research questions aligned with those in the compiling part of the dissertation

To provide a succinct overview, Table 7 summarizes the core contents of each essay.

Table 7. A summary of the essays

Essay	Essay 1	Essay 2	Essay 3	Essay 4
Focus	Identifying knowledge brokering on individual level through digital discussion data	Identifying knowledge brokering on organizational level through digital discussion data	The influence of ESM affordances on knowledge brokering	The role of ESM in attention allocation within organizations
Research questions	"How can knowledge brokers be identified in enterprise social media?", and "What kinds of communicative actions do knowledge brokers use?"	"How can organizational social structures be modeled (using ESM data) to support knowledge brokering analysis?	"How do enterprise social media (ESM) affordances influence knowledge brokering?"	"How does enterprise social media (ESM) uncover patterns of attention within an organization?", and "How attention patterns may be characterized by ambiguity?"
Data	ESM messages (120 000 during a 3-year period)	ESM messages (120 000 during a 3-year period)	Articles on knowledge brokering 169	Interviews, participant observations, documents, field notes, and ESM messages (1 million during 7 years)
Method	Mixed-method: social network analysis and qualitative thematic analysis	SNA, data sprints, qualitative reasoning	Literature review	Mixed-method: qualitative analysis and topic modeling
Theoretical perspective	Knowledge management, social network theory	Social network theory	Theory of affordance	Attention-based view
Authors	Leppälä, M. Espinosa A.J.	Leppälä, M. Huhtamäki, J.	Leppälä, M.	Leppälä, M. Buffart, M. Vaara, E. Harju, A.
Publication outlet	HICSS53 proceedings	HICSS54 proceedings	Accepted to ICA 2024 Conference	To be submitted to AMJ in 2024

5.1 Summary of Essay 1

Leppälä, M., & Espinosa, J. A. (2020). Identifying knowledge brokers in enterprise social media. In *Annual Hawaii International Conference on System Sciences* (pp. 481-490). Hawaii International Conference on System Sciences.

Essay 1 addresses the first research question in the dissertation: "How are knowledge brokers and their supportive organizational social structures identified through enterprise social media (ESM) discussions?". This essay combines social network analysis (SNA) with thematic qualitative analysis to study both the positions that knowledge brokers occupy within the organizational social

network and their actual communication on ESM platforms. This approach allows for a detailed examination of how knowledge brokers are identified and how they interact on ESM.

The findings of my co-author and me show that knowledge brokers leverage ESM through communicative actions including *connecting, exploring, and interacting*. *Connecting* refers to @mentions and other ways of linking individuals or issues within the organizational social network. In addition to informing the knowledge provider of the need for attention, knowledge brokers show others in the network that the mentioned individual may contribute to the issue. Another communicative action, *interacting,* includes opening message threads, continuously commenting, and searching for mutual understanding. By interacting in ESM, knowledge brokers pinpoint similar problems among different work units, which enables them to connect units to solve problems together. Furthermore, the communicative action of *exploring* refers to gathering information, asking questions, and actively finding solutions to problems.

This essay presents an innovative methodological contribution by complementing qualitative thematic analysis (Braun & Clarke, 2006) with social network analysis (Wasserman & Faust, 1994) within the field of knowledge brokering. SNA enabled us to examine network structures and relationships among various organizational members. However, it primarily identifies potential knowledge brokers because it relies on the sole network position of the actors. Integrating qualitative thematic analysis allowed to explore the actual communicative actions of knowledge brokers initially identified through their network positions. This approach revealed that a central position in the network, indicated by betweenness centrality, is not sufficient alone for identifying knowledge brokers. For instance, the position may indicate a central node in the network, but a closer qualitative analysis could show that this node was only sharing messages and not actively participating in the discussions nor connecting participants within the network. Thus, in our study, we did not identify this type of a node as a knowledge broker.

The contribution of this essay is twofold. First, it extends literature on knowledge brokering by including the context of enterprise social media (ESM). Second, as methodological advancement in the study of knowledge brokering it combines the network approach and the particular communicative actions of knowledge brokers. By analyzing discussions on ESM, which comprises over 120,000 digital discussion entities, this essay broadens the scope of knowledge brokering research to include naturally occurring data, moving beyond solely self-reported insights.

Figure 11. below illustrates the role of Essays 1 and 2 within the overarching conceptual and theoretical framework of the dissertation.

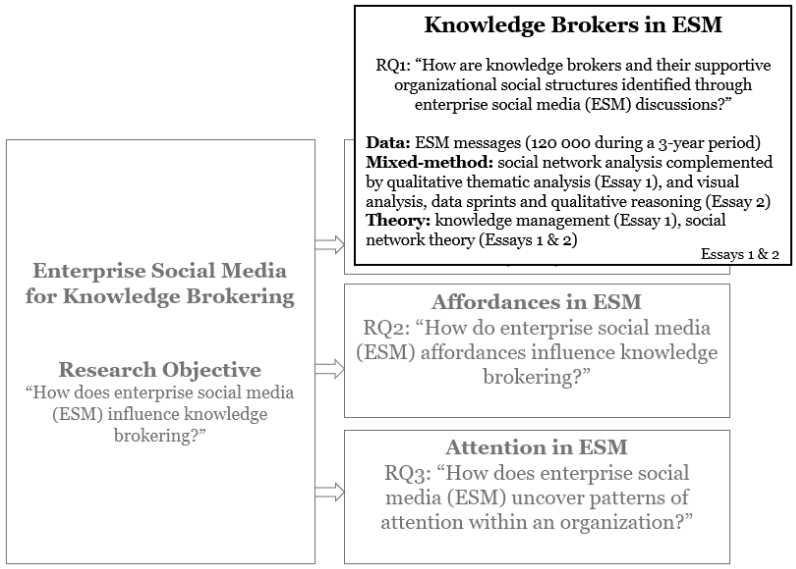


Figure 11. The roles of Essays 1 and 2 in the dissertation

5.2 Summary of Essay 2

Leppälä, M., & Huhtamäki, J. (2022). Enabling Knowledge Broker Analysis through Actor Clusters in Organizational Structures in Enterprise Social Media. In *Annual Hawaii International Conference on System Sciences* (pp. 585-593). Hawaii International Conference on System Sciences.

As Figure 11 above illustrates, Essay 2 addresses the first research question in the compiling part of the dissertation: "How are knowledge brokers and their supportive organizational social structures identified through enterprise social media (ESM) discussions?". By analyzing a substantial dataset from a multinational organization, this essay sheds light on the roles of both individuals and groups as knowledge brokers. In collaboration with my co-author, we developed a method for studying the phenomenon of knowledge brokering within the context of an organizational social network, by utilizing ESM discussions.

Essay 2 embodies the duality of knowledge brokering, focusing on phenomena on both group and individual levels. The analysis is based on a substantial dataset consisting of 124,091 digital discussion entities, emerging within an organizational social network of a multinational organization. This network, involving around 9,000 users, employs the ESM platform as a medium for professional communication within the organization.

In this essay, we sought to illustrate the potential of qualitative reasoning informed by computational techniques. Specifically, how social network analysis can be utilized for a more profound analysis of knowledge brokering, aiming at

answering the research question: “How can organizational social structures be modelled (using ESM data) to support knowledge brokering analysis?”.

As a key finding, Essay 2 brings diverse organizational structures to the forefront in the research on knowledge brokering, highlighting that not only individuals but also intraorganizational groups may be identified as knowledge brokers within ESM. Prior studies often focus on either individuals or a separate entity formed to act as a knowledge broker, such as a digital innovation hub (Crupi et al., 2020) or a project management office (Hadi et al., 2022). In this study, groups comprising individuals within the organizational social network serve as knowledge brokers within their own organization. Therefore, our study contributes to the literature on knowledge brokering by introducing intraorganizational groups as knowledge brokers. It also sheds light on the diverse organizational structures in which knowledge brokers operate, ranging from formal to informal.

Complementing these theoretical contributions to the literature, Essay 2 also brings new insights into methodological approaches to analyzing knowledge brokering on an ESM platform. It underscores the benefits of collaborative analysis conducted by scholars with diverse analytical proficiencies. The research offers a detailed description of the simultaneous use of various methodologies in the domain of knowledge brokering research. Throughout the analytical process, I and my co-author utilized our diverse academic backgrounds, my co-author as a data scientist and I as a specialist in qualitative research. We employed data sprints (Venturini et al., 2019) as a strategic methodology to analyse and interpret complex empirical material. Deviating from the conventional approach to data sprint, whereby some of the most time-intensive aspects of the analysis are undertaken separately, we collaborated during all the phases. This collaboration enhanced the quality of the research and allowed the study to progress more efficiently. We found that data sprints were beneficial in terms of improving the analytical process through pinpointing challenges in the data processing on the go. This was achieved through a process of immediate and reciprocal feedback between us two. My personal experience within the organization facilitated a comprehensive understanding of the contextual nuances of the dataset. This helped in validating the quality of the analysis. Furthermore, the implementation of immediate feedback permitted synchronous adjustment of analysis parameters, which minimized errors and bias.

In conclusion, Essay 2 provides a comprehensive approach to understanding knowledge brokering within organizational social networks, shedding light on the significant role of intraorganizational groups in addition to individuals. By harnessing a vast dataset from the ESM platform of a multinational organization, it presents a robust methodological approach that combines qualitative insights with computational analysis. Moving forward in this domain, the insights and methodologies introduced in the essay provide a basis on which to exploit the potential of ESM data in exploring complex organizational phenomena, as well as the utilization of data sprints to improve quality in the analysis of large datasets.

5.3 Summary of Essay 3

Leppälä, M.: Knowledge Brokering in Enterprise Social Media: An Affordance Perspective. Unpublished essay.

Essay 3 delves into research question: "How do enterprise social media (ESM) affordances influence knowledge brokering?". Through a literature review, it aligns the constructs of knowledge brokering (Meyer, 2010; Haas, 2015), with the ESM affordances, as conceptualized by Treem and Leonardi (2013). Although knowledge brokering has gained interest among scholars and industry experts alike, it has remained partially theorized. The aim in this essay is to leverage the theory of affordances (Gibson, 1977; Norman, 1999) as an analytical lens to shed light on knowledge brokering on ESM platforms. Within the broader scope of the dissertation, it provides an in-depth examination of the phenomenon, also expanding the discussion by including ESM affordances. Figure 12. illustrates the integration of Essay 3 into the dissertation.

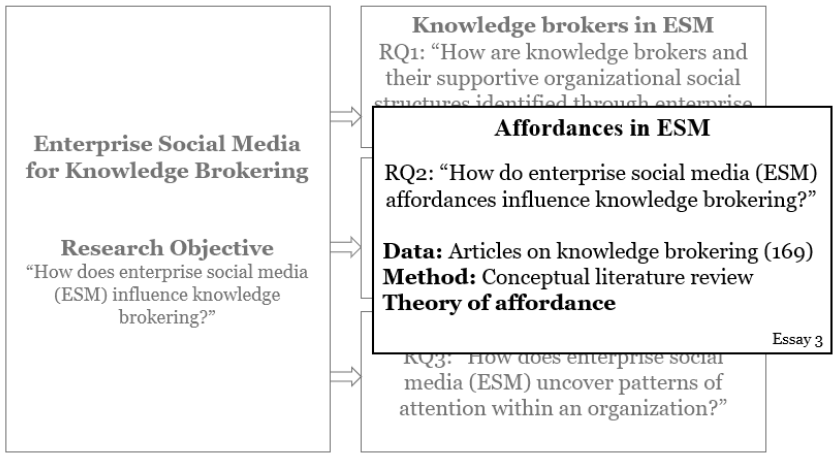


Figure 12. The role of Essay 3 in the dissertation

The findings of this review comprise three distinct but interconnected dimensions of knowledge brokering, which the ESM affordances both enable and constrain. The first dimension is *connection*, emphasizing the ESM affordances of visibility and association (Treem & Leonardi, 2013). In that ESM allows the transparent flow of information, it facilitates knowledge brokering by providing information about who knows whom and what (Leonardi, 2017). Visibility is crucial factor for knowledge brokers precisely because it provides information about content, context, and individuals (van Zoonen & Sivunen, 2023). Association provides information about the skills and preferences of individuals (Treem & Leonardi, 2013). This, again, serves as an information source for knowledge brokers who connect individuals based on their capabilities and ability to contribute to various tasks. The second dimension identified in the literature review is *sharing*. The ESM affordances of visibility, association, and per-

sistence each contribute to this knowledge brokering dimension. Visibility affords sight of what can be shared; association refers to the enabling factor of knowing what background information is to be shared and with whom (Treem & Leonardi, 2013); and persistence allows for efficient sharing by making it possible to link old messages (Treem & Leonardi, 2013). The third dimension, *construction*, includes knowledge brokering actions such as translating (Reiche et al., 2009), adapting, sensemaking, creating new knowledge, and interpreting complex issues (Currie & White, 2012; Massa et al., 2022). All four ESM affordances are beneficial for this dimension, namely visibility, association, persistence, and editability. The creation of new knowledge requires persistence in the use of old knowledge. Visibility and association ensure access to knowledge, and editability serves as a tool to improve its accuracy.

Given the importance of knowledge sharing to organizations, the integration of ESM affordances into knowledge brokering is a significant area of contribution in that it clarifies how knowledge brokers may leverage them. ESM affordances may foster communication, collaboration, and coordination among organization members, but it may also challenge knowledge sharing related to information overload or selective sharing (Bawden & Robinson, 2009; Ellison et al., 2015). Thus, there is need for a better understanding of the various aspects of ESM affordances that are connected to knowledge brokering to enable the planning of knowledge sharing and collaboration within organizations.

This review underscores the increased relevance and usability of shared knowledge that leveraging ESM affordances could achieve, which essentially means that knowledge brokers could utilize ESM to contextualize knowledge within a wider scope and, thereby improve the efficiency of knowledge sharing. It therefore opens up new avenues for exploring how technology can improve knowledge sharing within organizations through knowledge brokering. Moreover, it contributes to the broader discourse on the role of digital platforms in organizational knowledge management.

5.4 Summary of Essay 4

Leppälä, M., Buffart, M., Vaara, E. & Harju, A.: Attention Dynamics in Strategy Work: Uncovering the enabling and constraining effects of ambiguity. Unpublished essay.

The focus in the final essay of this dissertation is on the pivotal role of enterprise social media (ESM) in advancing both research and organizational practice. ESM has revolutionized data collection methods, introducing innovative ways for organizations to leverage these technologies in their routine operations. Essay 4 highlights the significance of attention allocation (Haas et al., 2015) within organizations, and draws from the attention-based view (ABV; Ocasio, 1997). Figure 13 below shows how this essay links to the broader dissertation.

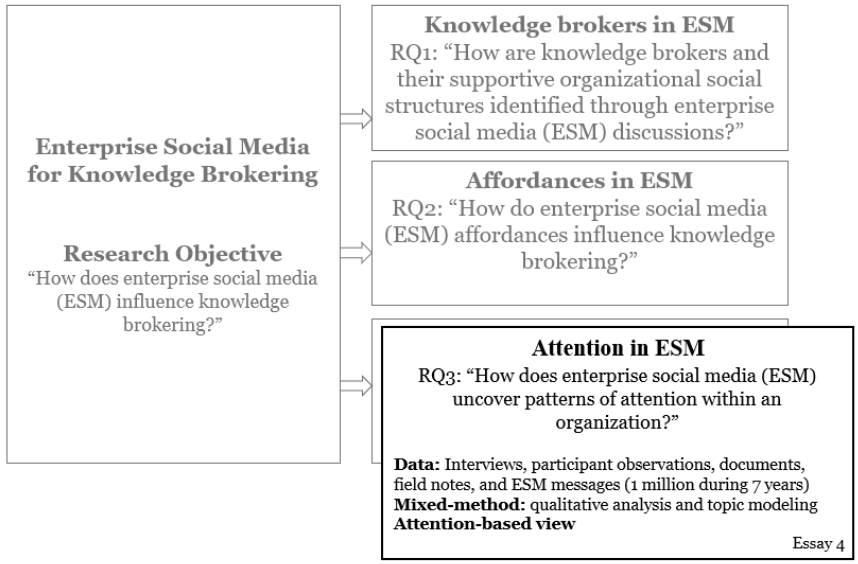


Figure 13. The role of Essay 4 in the dissertation

Essay 4 uncovers the emergence and evolution of different attention patterns in strategic conversations, and the influence of ambiguity on them. Attention patterns imply the how and among whom attention flows within an organization. The aim in this essay is to bridge a gap in current knowledge concerning how distinct patterns of attention are influenced by ambiguity, and further hinder or enable strategy work. Taking a mixed-method approach, my co-authors and I integrated qualitative analysis into computational techniques, specifically topic modeling.

The key outcomes of our study highlight three distinct attention patterns in discussion flows within the organization and elucidate the nuances of ambiguity in strategy-related discourse. The identified patterns include parallel, evolving, and sporadic attention. Parallel attention refers to simultaneous emergence and evolution of attention within separate, diverse groups. It enables development of understandings among likeminded groups, while it may lead to challenge of siloed discussions, differentiated understandings, and slowing down organizational learning by disregarding synergies within the organization. Evolving attention emerges in separate groups but evolves into a bigger, united group. It enables mutual understanding to grow gradually, although in some contexts it may hinder collaborative sensemaking. The third, sporadic attention refers to intentional restriction of attention. Here, attention emerges within a limited group and its evolution is purposefully modified. Sporadic attention enables deliberate focus of limited groups of individuals but challenges organizational trust due to a lack of transparency.

This essay highlights the significance of digital platforms, particularly digital discussion data as a rich source of information that facilitates the application of diverse research methodologies. It explores spatial, temporal, and relational dynamics in the emergence and evolution of various themes and topics within an

organization. Complementing qualitative insights with topic modeling, this essay introduces the mixed-method research approach to discourse on the attention-based view (Ocasio, 1997). ESM data facilitates the longitudinal analysis of complex issues such as the emergence and evolution of strategy-related topics within an organizational social network. Moreover, the extensive availability of digital discussion data combined with other rich empirical material offered us a unique opportunity to explore patterns of attention. Apart from its methodological contributions, our essay adds to the discussion on the attention-based view of strategy. It sheds light on the three types of attention patterns that were identified within an organization and includes ambiguity as an inherent component.

6. Discussion and contributions

My dissertation aimed to explore the influence of enterprise social media (ESM) on knowledge brokering, guided by an overarching question, "How does enterprise social media (ESM) influence knowledge brokering?". To ensure a comprehensive analysis, I divided the research into three sub-questions. The first sub-question (RQ1), "How are knowledge brokers and their supportive organizational social structures identified through enterprise social media (ESM) discussions?" was addressed by using mixed-methods analysis to provide a detailed look at the identification process. The second sub-question (RQ2), "How do enterprise social media (ESM) affordances influence knowledge brokering?" was answered by a comprehensive literature review with a theoretical perspective of ESM affordances (Treem & Leonardi, 2013). In response to the third sub-question (RQ3), "How does enterprise social media (ESM) uncover patterns of attention within an organization?" the emergence and evolution of attention within an organization were examined.

ESM enables rich data analysis, providing a broader understanding of the phenomenon and an in-depth approach. It offers real-time discussion data that is free from self-reflection bias. This dissertation shows that knowledge brokers leverage ESM to connect, share, and construct knowledge within organizations. They act as intermediaries and facilitators of attention allocation, using their social relationships and the ESM platform to highlight and disseminate knowledge. Knowledge brokers make the information and knowledge visible and understandable to others (Currie & White, 2012; Massa et al., 2022; Reiche et al., 2009), and in doing so, they help those who are not active in the network to see who knows what, and about whom (Leonardi, 2014). Knowledge brokering is essential in today's information-rich and increasingly dispersed work environment because it bridges gaps between domains and ensures that valuable information and insights are effectively used across the organization. By doing so, knowledge brokering may mitigate the mindset of 'I haven't been informed' and help overcome information overload.

Figure 14 summarizes the main findings and contributions of this dissertation. In the following sections, I elaborate on the specific areas of contribution.

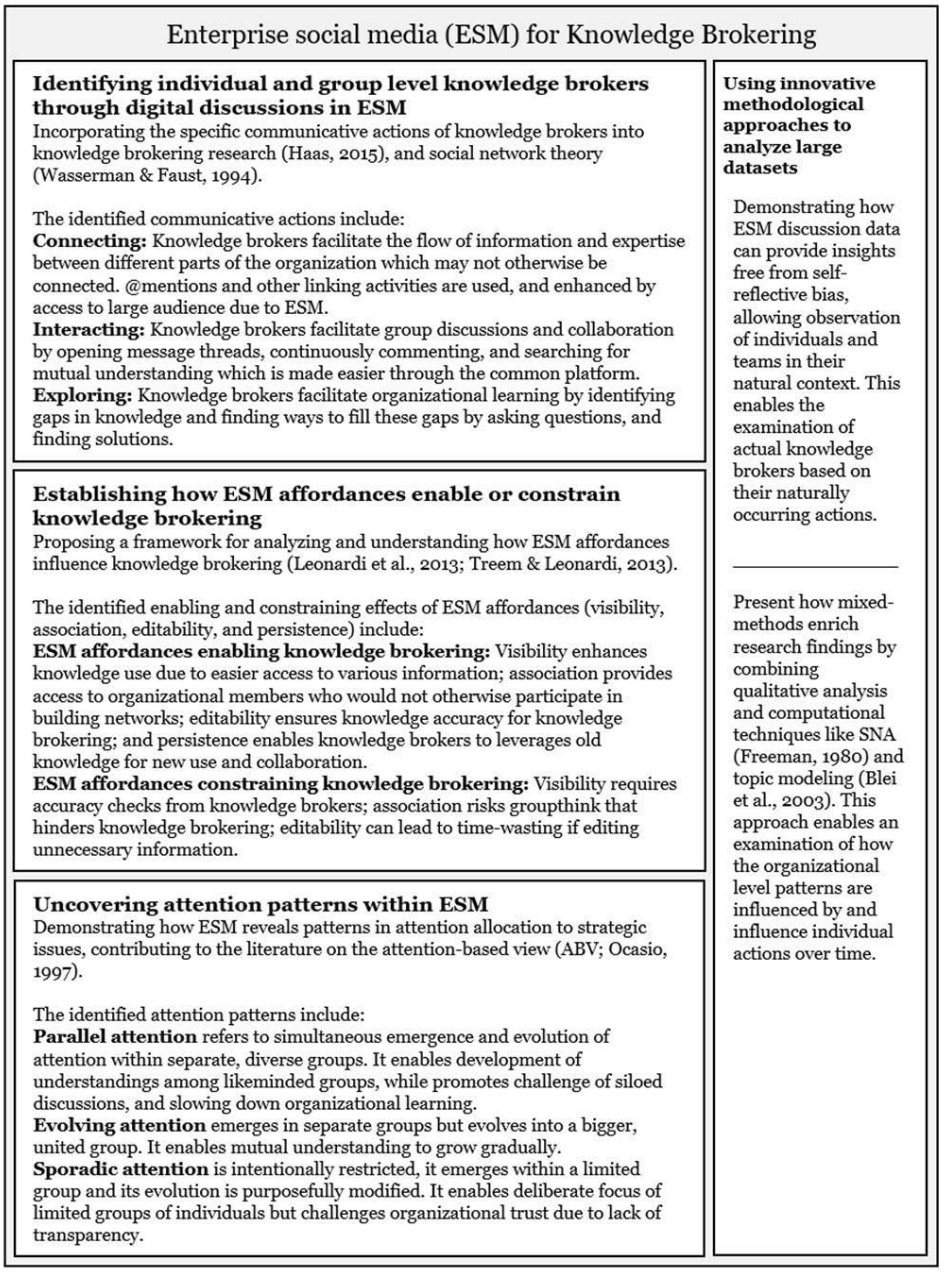


Figure 14. A summary of the main findings and the contributions of the dissertation

6.1 Identifying individual and intraorganizational knowledge brokers through digital discussions in enterprise social media

Primarily, scholarship focused on knowledge brokering has predominantly concentrated on defining the roles and actions of knowledge brokers within and between organizations (Meyer, 2010; Haas, 2015; Olejniczak, 2016). My research contributes to a more nuanced understanding of knowledge brokering,

emphasizing the dynamics of intraorganizational information flow within digital platforms. Despite the increasing use of communication technologies in knowledge work, research on knowledge brokering on digital platforms has remained limited (Leppälä & Espinosa, 2020; van Zoonen & Sivunen, 2023).

This dissertation advances knowledge brokering research by examining its application within the digital context of ESM. The increasing use of ESM in work-related discussions within knowledge-intensive organizations underscores its significance as a channel for organizational knowledge sharing and collaboration (Ellison et al., 2015; Oostervink et al., 2016; Leonardi et al., 2013). The challenges posed by information overload, a byproduct of the increasing availability of knowledge (Bawden & Robinson, 2009), can be mitigated by ESM. Prior literature has recognized ESM as an essential channel for knowledge sharing and collaboration (Leonardi & Meyer, 2015; Leonardi et al., 2013). This dissertation posits that ESM further serves as an arena for knowledge creation, including repurposing existing knowledge or its synthesis into new forms (Dobbins et al., 2009; Massa et al., 2022).

Leveraging unique access to digital discussion data within organizations, my research provides a comprehensive analysis of knowledge brokering within extensive organizational social networks. My, and my co-author's findings enrich the knowledge brokering discourse by identifying and analyzing communicative actions of knowledge brokers through digital discussion data. The identified communicative actions are *connecting, interacting, and exploring*. The communicative action of *connecting* refers to the ability of knowledge brokers to link people and issues within an organization. Using @mentions and other linking activities, they act as bridges facilitating the flow of information and expertise between various parts of the organization that may not otherwise be connected. It involves identifying who has specific knowledge or expertise and linking them to others who need that information. By so doing, knowledge brokers enhance collaboration and knowledge sharing. Another communicative action, *interacting*, involves facilitating group discussions and collaboration. Knowledge brokers who interact are actively involved in conversations, propose ideas, ask questions, and encourage participation from others. They enhance collaboration by steering discussions in productive directions and summarizing points made by others to clarify and stimulate further discussion (Leppälä & Espinosa, 2020). ESM offers a mutual platform for these collaborative efforts. Finally, the communicative action of *exploring* refers to actively seeking information and solutions to problems and applying this knowledge to create new uses and solutions. Through exploring, knowledge brokers facilitate organizational learning by identifying gaps in knowledge and finding ways to fill these gaps. Utilizing ESM for gathering knowledge and adapting it to new purposes is enabled by open discussion groups and accessibility to various sources of knowledge within ESM.

A detailed examination of these communicative actions revealed that ESM discussion data can be instrumental in pinpointing knowledge brokers. These actions correspond with the dimensions of knowledge brokering identified from

the current literature in Essay 3. The communicative action of connecting represents the dimension of collaboration, while interacting aligns with the dimension of sharing. Meanwhile, exploring is associated with the dimension of construction, indicating knowledge brokering that involves creating knowledge through gathering and adapting it.

Moreover, this research sheds light on the organizational structures through the lens of ESM, expanding social network theory (Wassermann & Faust, 1994) with real-world practices of knowledge brokers. It introduces a dynamic perspective to the traditionally static view of networks in social network theory. By exploring the organizational social network to identify intraorganizational groups acting as knowledge brokers and examining the formality and structural organization of these groups, the findings posit that formal and semiformal intraorganizational groups can function as knowledge brokers in large organizational social networks.

Fundamentally, this research contributes to broader discourse on the interplay between communication platforms and organizational knowledge sharing. It particularly emphasizes knowledge brokers and their communicative actions within these platforms, thereby contributing to the fields of knowledge brokering (Haas, 2015), knowledge management (Nonaka & Takeuchi, 1995; Alavi & Leidner, 2001), and social network theory (Wassermann & Faust, 1994).

6.2 Establishing how enterprise social media affordances enable or constrain knowledge brokering

This dissertation highlights the dual role of ESM affordances for knowledge brokering, both enabling and constraining it. These affordances can serve as enablers, facilitating knowledge sharing, creation, and evolution. Conversely, they can also pose challenges that knowledge brokers must solve. The detailed conceptualization of the influence of ESM affordances on knowledge brokering provides a comprehensive framework for future research and practice in this field.

Current literature on knowledge brokering is characterized by its multidisciplinary nature and a lack of coherence, as evidenced by diverse perspectives (Dobbins et al., 2009; Haas, 2015; Hadi et al., 2022; Hargadon, 1998; Meyer, 2010). My research addresses this fragmentation by categorizing the core areas of knowledge brokering, thereby establishing a framework that emphasizes the interplay between these areas and the affordances of enterprise social media (ESM). Despite the increasing use of ESM in organizational knowledge sharing, research on knowledge brokering in the context of ESM (Leppälä & Espinosa, 2020; van Zoonen & Sivunen, 2023) remains limited. My research extends beyond the affordance of visibility, as identified by van Zoonen & Sivunen (2023), to underscore how additional ESM affordances, such as persistence and editability (Treem & Leonardi, 2013), may influence knowledge brokering.

Augmenting the theory of affordances (Gibson, 1977; Norman, 1988), I found that knowledge brokers may leverage each ESM affordance (Treem & Leonardi, 2013) in various ways depending on whether knowledge brokering is used for collaboration, sharing, or creation of knowledge. For instance, the affordance of

visibility in ESM platforms can enhance the dissemination and accessibility of knowledge, thereby enabling more effective knowledge brokering. However, this same affordance might also pose challenges, such as information overload (Bawden & Robinson, 2009), knowledge hiding (Sigh, 2019), and selective sharing (Ellison et al., 2015). Similarly, the affordance of association may help connect individuals and units with mutual interests, which promotes collaboration and knowledge sharing. However, it can also lead to the formation of echo chambers (Leonardi et al., 2013), misinterpretations (Gibbs et al., 2013), or the reinforcement of existing hierarchical barriers (Currie & White, 2012), thus constraining the flow of knowledge. Furthermore, the affordances of persistence and editability in ESM enable knowledge to be refined and updated (Treem & Leonardi, 2013), fostering an environment supportive of knowledge co-creation and adaptation (Hargadon, 1998; Reiche et al., 2009) and ensuring the relevance and usability of shared knowledge (Chiambarretto et al., 2018; Reich & Lahav, 2020). On the other hand, these affordances also raise concerns about the accuracy and trustworthiness of the knowledge over time, thus challenging knowledge brokers in curating and verifying information.

6.3 Uncovering attention patterns within enterprise social media

Attention plays a crucial role in knowledge sharing and adaptation within organizations. The way information flows in an organization are shaped by attention (Ocasio et al., 2018). ESM has influenced attention patterns by making a larger pool of knowledge more visible (Treem & Leonardi, 2013) and by providing access to information about who knows what, and who knows whom (Leonardi, 2014). However, ESM has also brought challenges, such as difficulty in prioritizing and focusing when there is too much information (Bawden & Robinson, 2009), disrupting attention patterns. By discerning the emergence and evolution of attention patterns within ESM, this research contributes to the attention-based view of strategy (Ocasio, 1997).

This research identified three attention patterns: parallel, evolving, and sporadic attention. Parallel attention refers to the simultaneous emergence and evolution of attention within separate, diverse groups. These separate groups may focus on the same topic but with different perspectives, often leading to siloed conversations and misunderstandings. However, parallel attention also allows smaller groups to discuss within their trusted networks, creating a safe and collaborative atmosphere that can enhance learning. The main challenge lies in achieving organization-wide collaborative learning, which may be hindered due to differing perspectives on the same issue. For instance, in Essay 4, diverse groups within the organization discussed artificial intelligence from at least two diverse perspectives. In this particular case, developers had a more limited view of the potential of AI (Artificial Intelligence), while management saw greater opportunities for the future growth of the organization's business offerings. However, discussions were hindered by siloed thinking, which slowed down the process of finding common ground. Evolving attention is initially similar to parallel attention in that attention originates within separate groups.

However, in evolving attention these groups gradually unite and form a more extensive, united group. This evolution illustrates a dynamic process where smaller, isolated attention streams gradually integrate. In the case of Essay 4, this was illustrated by an example of a sensitive issue gradually gaining mutual understanding across the organization. This topic, diversity and inclusion, was initially discussed in small like-minded groups, and only after deliberate attention to shifting the discourse by using a particular vocabulary did it grow into a more extensive group that shared common ground. Therefore, organizational cultures that effectively facilitate evolving attention patterns can integrate diverse perspectives to reach mutual understanding. Finally, sporadic attention is characterized by intentional restriction of attention. In our case, attention was purposefully restricted to allow management to make decisions without distractions. However, in an organization used to transparent operations, this challenged the organizational trust and led to rumors.

6.4 Applying innovative methodological approaches within the context of ESM

Examining knowledge brokering in a digital context, particularly focusing on ESM, provides methodological advancement in organization studies. Traditionally, knowledge brokering research has predominantly emphasized direct interpersonal interactions, often leveraging self-reported data, such as surveys and interviews. There has also been a division of research approaches into those examining knowledge brokering from the network perspective (Magliocca et al., 2022; Toral et al., 2010) and those studying it from the operational perspective (Dobbins et al., 2009; Hargadon & Sutton, 2000; Meyer, 2010). My research combines these approaches, delving deeper into knowledge brokering within ESM. The findings indicate that digital discussion data is a crucial empirical source to discern knowledge brokering within an organizational social network.

Digital communication platforms, specifically ESM have revolutionized knowledge sharing and communication within organizations (Ellison et al., 2015; Leonardi & Meyer, 2015; Leonardi et al., 2013). Access to the ongoing discussions and the ability to trace back the discussion threads (Leonardi et al., 2013) open new avenues for research. Allowing scholars to directly observe and analyze communication and knowledge sharing as they unfold provides a more dynamic and detailed understanding, as opposed to depending on retrospective narratives. Accordingly, ESM represents a naturalistic setting where organizational members interact as part of their regular work routines, differing from traditional research settings involving artificial environments, like interviews or surveys. As a result, the findings derived from ESM data are likely to be more representative of actual organizational behavior, free from self-reflective bias. The findings of this dissertation highlight the potential of employing digital discussion data derived from ESM as a rich data source, enabling the analysis of relationships, network structures, and the evolution of discussions over time.

Such an innovative approach to ESM amplifies its research applicability and offers a novel perspective to understand knowledge brokering within organizational social networks.

This dissertation underscores the potential synergies of qualitative and quantitative analyses, shedding light on the complexities of contemporary organizations navigating through turbulent and ambivalent environments (Hesse-Biber & Johnson, 2015; Lindgren, 2020). It complements qualitative analysis (Braun & Clarke, 2006; Denzin & Lincoln, 2011) with computational techniques (Blei et al., 2003; Wasserman & Faust, 1994), contributing to the discourse on methodological advancements within the field of organizational studies. Specifically, this research identifies potential knowledge brokers through the computational technique of social network analysis SNA (Wasserman & Faust, 1994). Further, it enriches this identification with an in-depth qualitative thematic analysis of digital discussions (Braun & Clarke, 2006). This comprehensive data utilization may lead to novel theories that clarify organizational complexities (Lindgren, 2020). Furthermore, collaboration with researchers from diverse academic backgrounds has brought nuanced insights into the analytical processes, as evidenced in Essays 1, 2, and 4 of this dissertation. Interestingly, my co-author and I found in Essay 2 that effective collaboration by using data sprints enhanced the quality and relevance of our analytical processes.

6.5 Practical implications

The convergence of ESM and knowledge brokering offers significant opportunities for organizations to enhance decision-making, collaboration, and knowledge sharing. Digitalization and the increasing capacity to create and utilize information sets challenges for managers, who must adapt to the changes by leveraging new tools and approaches to improve these organizational functions. The proliferation of ESM platforms has made it easier for managers to gather and analyze data from various sources, which facilitates more informed decision-making and can be used in strategy planning. By harnessing ESM data, for instance, managers can identify trends and patterns in employee communication, helping them anticipate and address potential issues proactively. Fostering a culture of collaboration and open communication enhances decision-making and problem-solving throughout the organization.

Organizations seeking to maximize the benefits of ESM for knowledge brokering should invest in developing analytical tools that extract and synthesize valuable insights from ESM content, which would help managers identify relevant internal information and expertise. They could identify potential bottlenecks or silos if the flow of knowledge across different teams and departments were to be visualized and tracked.

A better understanding of knowledge brokering could be a basis for developing tools and practices that facilitate knowledge sharing and collaboration within organizations. These include implementing ESM platforms that support the natural flow of knowledge brokering, such as features for connecting individuals

with relevant information or people. Insights from the study could assist organizations in enhancing their knowledge sharing on ESM platforms.

This research offers methodological tools to identify, train, and support individuals who play critical roles in knowledge brokering within organizations. This encourages a culture of knowledge brokering by rewarding those who actively share their knowledge and expertise on the ESM platform. It is advantageous, for instance, to provide training in effective knowledge brokering that would enable individuals to become competent at connecting with colleagues and leveraging their collective knowledge.

The findings from this dissertation could offer organizations a novel approach to overcoming the 'I haven't been informed' mindset while also managing the challenge of information overload. Leveraging knowledge brokering within organizational digital platforms may mitigate information overload by improving knowledge sharing and collaboration.

6.6 Limitations and suggestions for future research

This dissertation has certain limitations associated with the constraints of the empirical material and the methods employed. The research primarily draws upon discussions within ESM, excluding other modes of communication and collaboration in organizational contexts. However, the focus on ESM is essential, given the increasing adoption of digital communication and collaboration platforms in dispersed work environments.

There are several details in the ESM data analysis that require further consideration in future studies. First, the analysis was limited to public messages, specifically those posted in organizationally accessible threads or groups, thus excluding private messages due to privacy concerns. Such messages could provide valuable insights into knowledge brokering. Second, the datasets were limited to English language messages, which may introduce biases and lead to an incomplete understanding of communication dynamics and knowledge brokering in multilingual settings. Given that the case organizations use English as the primary work language but also incorporate other languages, excluding non-English messages may affect the generalizability of the findings. Third, cultural differences and supportive organizational cultures deserve attention, as findings might differ in organizations with diverse cultural norms and ESM usage. Most actors in both case organizations are technologically advanced and experts within technology-driven fields. This inclination towards technology might pose a bias, and the findings could come out differently within an organization from another field. Fourth, the limited availability of detailed actor profile information (Essays 1 and 2) posed a challenge to fully understand aspects such as expertise, job roles, and affiliations with specific units or departments. Thus, future research complementing digital discussion data with other sources, such as surveys, interviews, or observations, could enhance the reliability of studies in knowledge brokering. Moreover, an investigation into the skills and motivations of knowledge brokers would provide deeper insights into why knowledge brokers connect, share, and construct knowledge.

The ESM platforms selected for this study are commonly used for internal communication and collaboration within knowledge-intensive organizations. However, the diversity in usage could introduce bias into the findings because different platforms are used variably for information sharing and collaboration. Future studies could examine the integration of ESM platforms with other information and knowledge management systems to facilitate a more holistic approach to knowledge management.

Methodologically, the study employed social network analysis (SNA), topic modeling, and qualitative analysis, but only across some empirical material. Understanding the impact of knowledge brokering on organizational performance, such as innovation, productivity, or employee satisfaction, remains an area for future exploration. Longitudinal data from ESM platforms could track changes in knowledge brokering processes over time, offering insights into their evolution with organizational and technological changes. The absence of double-blind coding limited the qualitative thematic analysis in Essay 1. Feedback from colleagues and academic audiences was actively sought to mitigate this limitation in the current essay. Future work will incorporate such coding to ensure analytical rigor and credibility.

The theory of the communicative constitution of organization (CCO) (Putnam & Nicotera, 2009) offers a valuable perspective from which to explore how communication acts as a central process in forming and transforming organizational structures. This perspective is particularly relevant for examining how discussions within digital platforms, such as ESM, contribute to shaping organizational social networks. As interest in applying the CCO to organizational communication studies continues to grow, a need for innovative research methods arises. These methods must effectively navigate the complexities and capture the nuanced dynamics inherent in organizational communication. ESM platforms can support the application of both qualitative and computational research methods. Specifically, social network analysis (SNA) and topic modeling present opportunities to quantitatively analyze communication patterns and themes within organizational discussions. By employing ESM to combine qualitative insights with the analytical power of computational techniques, research can uncover rich and detailed understandings of the communicative acts that constitute organizations.

The advancement in communication and collaboration technologies, such as ESM platforms, opens up promising avenues for future research on knowledge brokering. The approach adopted in this research in the context of ESM was innovative and lays the foundation for future studies. With the growing interest in open strategy (Hautz et al., 2017) and contemporary organizing (Faraj & Pachidi, 2021), and the integration of digital platforms into organizational structures (Vergne, 2020), there is a growing demand for research on communicative actions through ESM platforms. Such research efforts could redefine the role of knowledge brokers, positioning them as central to the digital transformation of organizational communication, knowledge sharing, and organizing.

References

Aggarwal, C.C. & Zhai, C. eds. (2012). *Mining text data*. Springer Science & Business Media.

Ahrne, G., & Brunsson, N. (2011). Organization outside organizations: The significance of partial organization. *Organization*, *18*(1), 83-104.

Alaimo, C., & Kallinikos, J. (2022). Organizations decentered: Data objects, technology and knowledge. *Organization Science*, *33*(1), 19-37.

Alavi, M., & Leidner, D. E. (2001). Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS quarterly*, 107-136.

Allen, T. J. (1984). Managing the flow of technology: Technology transfer and the dissemination of technological information within the R&D organization. *MIT Press Books*, *1*.

Ardichvili, A. (2008). Learning and knowledge sharing in virtual communities of practice: Motivators, barriers, and enablers. *Advances in developing human resources*, *10*(4), 541-554.

Argyris YE and Monu K (2015). Corporate use of social media: technology affordance and external stakeholder relations. Journal of Organizational Computing and Electronic Commerce 25(2): 140–168.

Azungah, T. (2018). Qualitative research: deductive and inductive approaches to data analysis. *Qualitative research journal*, *18*(4), 383-400.

Banalieva, E. R., & Dhanaraj, C. (2019). Internalization theory for the digital economy. *Journal of International Business Studies*, *50*, 1372-1387.

Barley, W. C., Treem, J. W., & Kuhn, T. (2018). Valuing multiple trajectories of knowledge: A critical review and agenda for knowledge management research. *Academy of Management Annals*, *12*(1), 278-317.

Barner-Rasmussen, W., Ehrnrooth, M., Koveshnikov, A., & Mäkelä, K. (2014). Cultural and language skills as resources for boundary spanning within the MNC. *Journal of International Business Studies*, *45*, 886-905.

Bawden, D., & Robinson, L. (2009). The dark side of information: overload, anxiety and other paradoxes and pathologies. *Journal of information science*, *35*(2), 180-191.

Benbya, H., Pachidi, S., & Jarvenpaa, S. (2021). Special issue editorial: Artificial intelligence in organizations: Implications for information systems research. *Journal of the Association for Information Systems*, *22*(2), 10.

Berger, P. L., & Luckmann, T. (1967). The social construction of reality: A treatise in the sociology of knowledge. Anchor.

Bilecen, B., & Faist, T. (2015). International doctoral students as knowledge brokers: Reciprocity, trust and solidarity in transnational networks. *Global Networks*, *15*(2), 217-235.

Blackler, F. (1995). Knowledge, knowledge work and organizations: An overview and interpretation. *Organization studies*, *16*(6), 1021-1046.

Blei, D. M., Ng, A. Y., & Jordan, M. I. (2003). Latent Dirichlet allocation. *Journal of Machine Learning Research*, 3(Jan), 993-1022.

Blondel, V.D., J.-L. Guillaume, R. Lambiotte, and E. Lefebvre, "Fast Unfolding of Communities in Large Networks, Journal of Statistical Mechanics: Theory and Experiment, 2008. doi: 10.1088/1742-5468/2008/10/P10008

Bollinger, A. S., & Smith, R. D. (2001). Managing organizational knowledge as a strategic asset. *Journal of knowledge management*.

Borgatti, S. P., & Ofem, B. (2010). Social network theory and analysis. *Social network theory and educational change*, *17*, 29.

Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. sage.

Boyd, R. D., & Menlo, A. (1984). Solving problems of practice in education: A prescriptive model for the use of scientific information. *Knowledge*, *6*(1), 59-74.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101.

Burt, R. S. (1992). Structural holes: The social structure of competition. Harvard university press.

Burt, R. S. (2004). Structural holes and good ideas. *American journal of sociology*, *110*(2), 349-399.

Chen, X., & Wei, S. (2019). Enterprise social media use and overload: A curvilinear relationship. *Journal of Information Technology*, *34*(1), 22-38.

Chen, X., Wei, S., & Rice, R. E. (2020). Integrating the bright and dark sides of communication visibility for knowledge management and creativity: The moderating role of regulatory focus. *Computers in Human Behavior*, *111*, 106421.

Chiambaretto, P., Massé, D., & Mirc, N. (2019). "All for One and One for All?"-Knowledge broker roles in managing tensions of internal coopetition: The Ubisoft case. *Research Policy*, *48*(3), 584-600.

Cillo, P. (2005). Fostering market knowledge use in innovation: The role of internal brokers. *European Management Journal*, *23*(4), 404-412.

Colakoglu, S., Yamao, S., & Lepak, D. P. (2014). Knowledge creation capability in MNC subsidiaries: Examining the roles of global and local knowledge inflows and subsidiary knowledge stocks. *International Business Review*, *23*(1), 91-101.

Craig, R. T., & Tracy, K. (1995). Grounded practical theory: The case of intellectual discussion. *Communication theory*, *5*(3), 248-272.

Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage publications.

Currie, G., & White, L. (2012). Inter-professional barriers and knowledge brokering in an organizational context: the case of healthcare. *Organization Studies*, *33*(10), 1333-1361.

Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Harvard Business Press.

Dearborn, D. C., & Simon, H. A. (1958). Selective perception: A note on the departmental identifications of executives. *Sociometry*, *21*(2), 140-144.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The Sage handbook of qualitative research*. Sage.

Dobbins, M., Robeson, P., Ciliska, D., Hanna, S., Cameron, R., O'Mara, L., ... & Mercer, S. (2009). A description of a knowledge broker role implemented as part of a randomized controlled trial evaluating three knowledge translation strategies. *Implementation science*, *4*(1), 1-9.

Drucker, P. F. (1968). Worker and Work in the Metropolis. *Daedalus*, 1243-1262.

Edmunds, A., & Morris, A. (2000). The problem of information overload in business organisations: a review of the literature. *International journal of information management*, *20*(1), 17-28.

Edwards, J. R. (2008). To prosper, organizational psychology should… overcome methodological barriers to progress. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *29*(4), 469-491.

Eggers, J. P., & Kaplan, S. (2009). Cognition and renewal: Comparing CEO and organizational effects on incumbent adaptation to technical change. *Organization Science*, *20*(2), 461-477.

Ellison, N. B., Gibbs, J. L., & Weber, M. S. (2015). The use of enterprise social network sites for knowledge sharing in distributed organizations: The role of organizational affordances. *American Behavioral Scientist*, *59*(1), 103-123.

Erhardt, N., Gibbs, J., Martin-Rios, C., & Sherblom, J. (2016). Exploring affordances of email for team learning over time. *Small Group Research*, *47*(3), 243-278.

Finnish National Board on Research Integrity TENK, "The ethical principles of research with human participants and ethical review in the human sciences in Finland", 2019, https://tenk.fi/sites/default/files/2021-01/Ethical_review_in_human_sciences_2020.pdf.

Faraj, S., & Pachidi, S. (2021). Beyond Uberization: The co-constitution of technology and organizing. *Organization Theory*, *2*(1), 2631787721995205.

Faraj, S., & Leonardi, P. M. (2022). Strategic organization in the digital age: Rethinking the concept of technology. *Strategic Organization*, *20*(4), 771-785.

Freeman, L. C. (1977). A set of measures of centrality based on betweenness. *Sociometry*, 35-41.

Gibbs, J. L., Rozaidi, N. A., & Eisenberg, J. (2013). Overcoming the "ideology of openness": Probing the affordances of social media for organizational knowledge sharing. *Journal of Computer-Mediated Communication*, *19*(1), 102-120.

Gibson, J. J. (1977). The theory of affordances. *Hilldale, USA*, *1*(2), 67-82.

Girard, J., & Girard, J. (2015). Defining knowledge management: Toward an applied compendium. *Online Journal of Applied Knowledge Management*, *3*(1), 1-20.

Gerbaudo, P. (2016). From data analytics to data hermeneutics. online political discussions, digital methods and the continuing relevance of interpretive approaches. *Digital Culture & Society*, *2*(2), 95-112.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, *78*(6), 1360-1380.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic management journal*, *17*(S2), 109-122.

Haas, A. (2015). Crowding at the frontier: boundary spanners, gatekeepers and knowledge brokers. *Journal of Knowledge Management*, *19*(5), 1029-1047.

Haas, M. R., Criscuolo, P., & George, G. (2015). Which problems to solve? Online knowledge sharing and attention allocation in organizations. *Academy of Management Journal*, *58*(3), 680-711.

Haans, R.F. (2019). What's the value of being different when everyone is? The effects of distinctiveness on performance in homogeneous versus heterogeneous categories. *Strategic Management Journal*, 40(1), 3–27.

Hadi, A., Liu, Y., & Li, S. (2022). Transcending the silos through project management office: Knowledge transactions, brokerage roles, and enabling factors. *International Journal of Project Management*, *40*(2), 142-154.

Hargadon, A. B. (1998). Firms as knowledge brokers: Lessons in pursuing continuous innovation. *California management review*, *40*(3), 209-227.

Hargadon, A., & Sutton, R. I. (1997). Technology brokering and innovation in a product development firm. *Administrative science quarterly*, 716-749.

Hargadon, A., & Sutton, R. I. (2000). Building an innovation factory. *Harvard business review*, *78*(3), 157-157.
Hart, C. (2000). Doing a literature review: Releasing the social science research imagination. SAGE Publications
Harris, T. G. (1993). The post-capitalist executive: An interview with Peter F. Drucker. *Harvard business review*, *71*(3), 114-122.
Hautz, J., Seidl, D., & Whittington, R. (2017). Open strategy: Dimensions, dilemmas, dynamics. *Long Range Planning*, *50*(3), 298-309.
Heidegger, M. (2008). Ontology—The hermeneutics of facticity.
Hesse-Biber, S. N., & Johnson, R. B. (Eds.). (2015). *The Oxford handbook of multimethod and mixed methods research inquiry*. Oxford University Press.
Hills, T. T. (2019). The dark side of information proliferation. *Perspectives on Psychological Science*, *14*(3), 323-330.
Hitchcock, J. H., & Onwuegbuzie, A. J. (Eds.). (2022). *The Routledge Handbook for Advancing Integration in Mixed Methods Research*. Taylor & Francis.
Hussinki, H., Ritala, P., Vanhala, M., & Kianto, A. (2017). Intellectual capital, knowledge management practices and firm performance. *Journal of intellectual capital*, *18*(4), 904-922.
Iverson, J. O., & McPhee, R. D. (2002). Knowledge management in communities of practice: Being true to the communicative character of knowledge. *Management Communication Quarterly*, *16*(2), 259-266.
Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, *33*(7), 14-26.
Kane, G. C., Palmer, D., & Phillips, A. N. (2017). *Achieving digital maturity*. MIT Sloan Management Review.
Kuhn, T., & Jackson, M. H. (2008). Accomplishing knowledge: A framework for investigating knowing in organizations. *Management Communication Quarterly*, *21*(4), 454-485.
Kuhn, T. R. (2014). Knowledge and knowing in organizational communication. The SAGE handbook of organizational communication: Advances in theory, research, and methods, 481-502.
Nordbäck, E. S., Myers, K. K., & McPhee, R. D. (2017). Workplace flexibility and communication flows: a structurational view. *Journal of Applied Communication Research*, *45*(4), 397-412.
Laitinen, K., & Sivunen, A. (2021). Enablers of and constraints on employees' information sharing on enterprise social media. *Information Technology & People*, *34*(2), 642-665.
Lavie, N. (1995). Perceptual load as a necessary condition for selective attention. *Journal of Experimental Psychology: Human perception and performance*, *21*(3), 451.
Leavitt, K., Schabram, K., Hariharan, P., & Barnes, C. M. (2021). Ghost in the machine: On organizational theory in the age of machine learning. *Academy of Management Review*, *46*(4), 750-777.
Ledzińska, M., & Postek, S. (2017). From metaphorical information overflow and overload to real stress: Theoretical background, empirical findings, and applications. *European Management Journal*, *35*(6), 785-793.
Leonardi, P. M. (2020). COVID-19 and the new technologies of organizing: digital exhaust, digital footprints, and artificial intelligence in the wake of remote work. *Journal of Management Studies*.
Leonardi, P. M. (2015). Ambient awareness and knowledge acquisition. *MIS quarterly*, *39*(4), 747-762.

Leonardi, P. M., & Meyer, S. R. (2015). Social media as social lubricant: How ambient awareness eases knowledge transfer. *American Behavioral Scientist*, *59*(1), 10-34.

Leonardi, P. M. (2014). Social media, knowledge sharing, and innovation: Toward a theory of communication visibility. *Information systems research*, *25*(4), 796-816.

Leonardi, P. M., Huysman, M., & Steinfield, C. (2013). Enterprise social media: Definition, history, and prospects for the study of social technologies in organizations. *Journal of Computer-Mediated Communication*, *19*(1), 1-19.

Leonardi, P. M., & Vaast, E. (2017). Social media and their affordances for organizing: A review and agenda for research. *Academy of Management Annals*, *11*(1), 150-188.

Leppälä, M., & Espinosa, J. A. (2020). Identifying knowledge brokers in enterprise social media. In T. X. Bui (Ed.), *In the Proceedings of the 53rd Annual Hawaii International Conference on System Sciences, HICSS* (pp. 481-490). Hawaii International Conference on System Sciences.

Leppälä, M., & Huhtamäki, J. (2022). Enabling Knowledge Broker Analysis through Actor Clusters in Organizational Structures in Enterprise Social Media. *In the Proceedings of the 55th Annual Hawaii International Conference on System Sciences, HICSS* (pp. 585-593). Hawaii International Conference on System Sciences.

Levin, D., & Kurtzberg, T. (2020). *Sustaining employee networks in the virtual workplace*. MIT Sloan Management Review.

Levy, O. (2005). The influence of top management team attention patterns on global strategic posture of firms. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *26*(7), 797-819.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. *The Sage handbook of qualitative research*, *4*(2), 97-128.

Lindgren, S. (2020). Data theory: Interpretive sociology and computational methods. John Wiley & Sons.

Liu, W., Sidhu, A., Beacom, A. M., & Valente, T. W. (2017). Social network theory. *The international encyclopedia of media effects*, 1-12.

Lomi, A., Lusher, D., Pattison, P. E., & Robins, G. (2014). The focused organization of advice relations: A study in boundary crossing. *Organization Science*, *25*(2), 438-457.

Luo, Y., & Bu, J. (2016). How valuable is information and communication technology? A study of emerging economy enterprises. *Journal of World Business*. https://doi.org/10.1016/j.jwb.2015.06.001

Mahdi, O. R., Almsafir, M. K., & Yao, L. (2011). The role of knowledge and knowledge management in sustaining competitive advantage within organizations: A review. *African Journal of Business Management*, *5*(23), 9912.

Majchrzak, A., Faraj, S., Kane, G. C., & Azad, B. (2013). The contradictory influence of social media affordances on online communal knowledge sharing. *Journal of Computer-Mediated Communication*, *19*(1), 38-55.

Majchrzak, A., Järvenpää, S. L., & Faraj, S. (2017). Theorizing knowledge collaboration in online communities. In *The Oxford Handbook of Group and Organizational Learning*.

Majchrzak, A., Malhotra, A., & Zaggl, M. A. (2021). How open crowds self-organize. *Academy of Management Discoveries*, *7*(1), 104-129.

Masood, A., Zhang, Q., Ali, M., Cappiello, G., & Dhir, A. (2022). Linking enterprise social media use, trust and knowledge sharing: paradoxical roles of communication transparency and personal blogging. *Journal of Knowledge Management*, (ahead-of-print).

Massa, L., Ardito, L., & Petruzzelli, A. M. (2022). Brokerage dynamics in technology transfer networks: A multi-case study. *Technological Forecasting and Social Change*, *183*, 121895.

Meyer, M. (2010). The rise of the knowledge broker. *Science communication*, *32*(1), 118-127.

Munk, A. K.; Madsen, A. K.; Jacomy, M. (2019). Thinking Through the Databody: Sprints as Experimental Situations. In M. E. Å. Mäkitalo, T. Nicewonger (Ed.), Designs for Experimentation and Inquiry: Approaching Learning and Knowing in Digital Transformation (pp. 110–128). Routledge. https://doi.org/10.4324/9780429489839

Mäkelä, K., Barner-Rasmussen, W., Ehrnrooth, M., & Koveshnikov, A. (2019). Potential and recognized boundary spanners in multinational corporations. *Journal of World Business*, *54*(4), 335-349.

Nadkarni, S., & Barr, P. S. (2008). Environmental context, managerial cognition, and strategic action: An integrated view. *Strategic management journal*, *29*(13), 1395-1427.

Nonaka, I., & Johansson, J. K. (1985). Japanese management: what about the "hard" skills? *Academy of Management Review*, *10*(2), 181-191.

Nonaka, I. (1994). On a knowledge creating organization. *For*, (1994/23-24).

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International journal of qualitative methods*, *16*(1), 1609406917733847.

Norman, D. A. (1988). *The psychology of everyday things*. Basic books.

Ocasio, W. (1997). Towards an attention-based view of the firm. *Strategic management journal*, *18*(S1), 187-206.

Ocasio, W. (2011). Attention to attention. *Organization science*, *22*(5), 1286-1296.

Ocasio, W., Laamanen, T., & Vaara, E. (2018). Communication and attention dynamics: An attention-based view of strategic change. *Strategic Management Journal*, *39*(1), 155-167.

Ocasio, W., Yakis-Douglas, B., Boynton, D., Laamanen, T., Rerup, C., Vaara, E., & Whittington, R. (2023). It's a Different World: A Dialog on the Attention-Based View in a Post-Chandlerian World. *Journal of Management Inquiry*, *32*(2), 107-119.

O'Connor, A., & Shumate, M. (2018). A multidimensional network approach to strategic communication. *International Journal of Strategic Communication*, *12*(4), 399-416.

Olejniczak, K., Raimondo, E., & Kupiec, T. (2016). Evaluation units as knowledge brokers: Testing and calibrating an innovative framework. *Evaluation*, *22*(2), 168-189. Pee, L. G. (2018). Affordances for sharing domain-specific and complex knowledge on enterprise social media. *International Journal of Information Management*, *43*, 25-37.

Oostervink, N., Agterberg, M., & Huysman, M. (2016). Knowledge sharing on enterprise social media: Practices to cope with institutional complexity. *Journal of Computer-Mediated Communication*, *21*(2), 156-176.

Pachidi, S., Berends, H., Faraj, S., & Huysman, M. (2021). Make way for the algorithms: Symbolic actions and change in a regime of knowing. *Organization Science*, *32*(1), 18-41.

Pawlowski, S. D., & Robey, D. (2004). Bridging user organizations: Knowledge brokering and the work of information technology professionals. *MIS quarterly*, 645-672.

Pee, L. G. (2018). Affordances for sharing domain-specific and complex knowledge on enterprise social media. *International Journal of Information Management*, *43*, 25-37.

Pee, L. G., & Kankanhalli, A. (2009). A model of organisational knowledge management maturity based on people, process, and technology. *Journal of information & knowledge management*, *8*(02), 79-99.

Paul, J., & Criado, A. R. (2020). The art of writing literature review: What do we know and what do we need to know? *International Business Review*, *29*(4), 101717.

Poggenpoel, M., & Myburgh, C. (2003). The researcher as research instrument in educational research: A possible threat to trustworthiness? (A: research instrument). *Education*, *124*(2), 418-423.

Polanyi, M. (1962). Tacit knowing: Its bearing on some problems of philosophy. *Reviews of modern physics*, *34*(4), 601.

Putnam, L. L., & Nicotera, A. M. (Eds.). (2009). *Building theories of organization: The constitutive role of communication*. Routledge.

Rhee, L., & Leonardi, P. M. (2018). Which pathway to good ideas? A n attention-based view of innovation in social networks. *Strategic Management Journal*, *39*(4), 1188-1215.

Rice, R. E., Evans, S. K., Pearce, K. E., Sivunen, A., Vitak, J., & Treem, J. W. (2017). Organizational media affordances: Operationalization and associations with media use. *Journal of Communication*, *67*(1), 106-130.

Ritala, P., De Kort, C., & Gailly, B. (2023). Orchestrating knowledge networks: alter-oriented brokering. *Journal of Management*, *49*(3), 1140-1178.

Robeson, P., Dobbins, M., & DeCorby, K. (2008). Life as a knowledge broker in public health. Journal of the Canadian Health Libraries Association/Journal de l'Association des bibliothèques de la santé du Canada, 29(3), 79-82.

Roetzel, P. G. (2019). Information overload in the information age: a review of the literature from business administration, business psychology, and related disciplines with a bibliometric approach and framework development. *Business research*, *12*(2), 479-522.

Shank, G. D. (2006). Qualitative research: A personal skills approach. Pearson Merrill Prentice Hall. New Jersey.

Simon, H. A. (1947). Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations. Macmillan, Chicago, IL.

Singh, S., & Wassenaar, D. R. (2016). Contextualising the role of the gatekeeper in social science research. *South African Journal of Bioethics and Law*, *9*(1), 42-46.

Sowa, K., Przegalinska, A., & Ciechanowski, L. (2021). Cobots in knowledge work: Human–AI collaboration in managerial professions. *Journal of Business Research*, *125*, 135-142.

Sun, Y., Zhou, X., Jeyaraj, A., Shang, R. A., & Hu, F. (2019). The impact of enterprise social media platforms on knowledge sharing: An affordance lens perspective. *Journal of Enterprise Information Management*, *32*(2), 233-250.

Sutcliffe, K. M., & Weick, K. E. (2009). Information overload revisited. In *The Oxford handbook of organizational decision making*. Oxford University Press.

Taeuscher, K., Bouncken, R.B. and Pesch, R., (2020). Gaining legitimacy by being different: Optimal distinctiveness in crowdfunding platforms. *Academy of Management Journal*, (forthcoming).

Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American journal of evaluation*, *27*(2), 237-246.
Treem, J. W., & Leonardi, P. M. (2013). Social media use in organizations: Exploring the affordances of visibility, editability, persistence, and association. *Annals of the International Communication Association*, *36*(1), 143-189.
Tsoukas, H. (2005). Complex knowledge: Studies in organizational epistemology. OUP Oxford.
Tushman, M. L., & Scanlan, T. J. (1981). Boundary spanning individuals: Their role in information transfer and their antecedents. *Academy of management journal*, *24*(2), 289-305.
Tzortzaki, A. M., & Mihiotis, A. (2014). A review of knowledge management theory and future directions. *Knowledge and Process Management*, *21*(1), 29-41.
Wu, L. (2013). Social network effects on productivity and job security: Evidence from the adoption of a social networking tool. *Information systems research*, *24*(1), 30-51.
Valentine, M. A., Tan, T. F., Staats, B. R., & Edmondson, A. C. (2019). Fluid teams and knowledge retrieval: Scaling service operations. *Manufacturing & Service Operations Management*, *21*(2), 346-360.
van Zoonen, W., & Sivunen, A. (2023). Knowledge brokering in an era of communication visibility. *International Journal of Business Communication*, *60*(1), 313-330.
Venturini, T.; Munk, A. K.; Jacomy, M. (2018). "Data-Sprinting: A Public Approach to Digital Research". In E. Lury, C., Fensham, R., Clough, P., Heller-Nicholas, A., Lammes, S., Last, A., Michael, M., Uprichard (Ed.), Handbook of Interdisciplinary Research Methods Routledge. Routledge International Handbooks. https://doi. org/10.4324/9781315714523
Vergne, J. P. (2020). Decentralized vs. distributed organization: Blockchain, machine learning and the future of the digital platform. *Organization Theory*, *1*(4), 2631787720977052.
Verona, G., Prandelli, E., & Sawhney, M. (2006). Innovation and virtual environments: Towards virtual knowledge brokers. *Organization studies*, *27*(6), 765-788.
Von Krogh, G., Nonaka, I., & Aben, M. (2001). Making the most of your company's knowledge: a strategic framework. *Long range planning*, *34*(4), 421-439.
Wang, S., & Noe, R. A. (2010). Knowledge sharing: A review and directions for future research. *Human resource management review*, *20*(2), 115-131.
Ward, V., House, A., & Hamer, S. (2009). Knowledge brokering: the missing link in the evidence to action chain? *Evidence & policy*, *5*(3), 267-279.
Wasko, M. M., & Faraj, S. (2005). Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. *MIS quarterly*, 35-57.
Wasserman, S., & Faust, K. (1994). Social network analysis: Methods and applications.
Wenger, E. (1999). Communities of practice: Learning, meaning, and identity. Cambridge university press.
Wittek, R. (2018). Intraorganizational Networks.
Wu, W. (2011). Attention as selection for action. *Attention: Philosophical and psychological essays*, *97*.
Zammuto RF, Griffith TL, Majchrzak A, et al. (2007) Information technology and the changing fabric of organization. *Organization Science* 18(5): 749–762.

Knowledge brokering is essential in today's information-rich and dispersed work environment as it bridges gaps between diverse domains and ensures the effective use of relevant information and insights within organizations. The increasing use of enterprise social media (ESM) for organizational communication and collaboration has fundamentally changed how knowledge is shared and created. This doctoral dissertation explores the role of ESM for knowledge brokering. It demonstrates how ESM data allows identifying knowledge brokers based on their digital discussions, and presents how mixed-methods research enriches findings by combining qualitative analysis and computational techniques.

This doctoral dissertation sheds light on the use of ESM both as a research context and a data source, and highlights the significance of knowledge brokers in navigating and managing organizational knowledge. Moreover, this study examines how ESM affordances enable and constrain knowledge brokering. The findings offer practical implications for organizations aiming to enhance their knowledge management practices, particularly through digital communication tools.

Aalto-DT 159/2024

ISBN 978-952-64-1952-7 (printed)
ISBN 978-952-64-1953-4 (pdf)
ISSN 1799-4934 (printed)
ISSN 1799-4942 (pdf)

Aalto University
School of Business
Management Studies
www.aalto.fi

BUSINESS + ECONOMY

ART + DESIGN + ARCHITECTURE

SCIENCE + TECHNOLOGY

CROSSOVER

DOCTORAL THESES