Chapter 1
Advances in Knowledge Management: An Overview

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Abstract This chapter briefly overviews the evolution of KM from a historical perspective and discusses core concepts associated with the management of knowledge, projects and networks. We introduce theoretical perspectives that are used in the KM literature, discuss the concept of a networked-centric collaborative organization, and present future technologies in KM including the management of knowledge using social media and intelligent techniques.

Keywords Knowledge management · Background · Managing networks · Social media · Personal knowledge · Collective knowledge

1.1 Introduction

Innovations in Knowledge Management (KM): The impact of Social Media, Semantic Web and Cloud computing is one of the first books aiming to discuss recent developments and trends in the management of knowledge work. In particular, this book revisits and presents different perspectives on the management of knowledge in modern organizations in terms of human factors, organizational culture, knowledge platforms, and technical infrastructures under the influence of novel Information and Communication Technologies (ICT) in the social media age. As a result of recent ICT

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evolution (and of web technologies), Knowledge Management (KM) has become "less costly, more cloud-based, ubiquitous, standardized, and mobile, but also more personalized and more effective in meeting individual needs" [1]. Due to social media integration, KM technologies support more effectively business communication, social networking and "strategic self-presentation" [2].

Social media technologies are seeping into organizations, transforming business processes and raising performance [3, 4]. Social media opens innovative avenues to manage knowledge processes by facilitating new ways to externalize, share, create knowledge and innovate through co-creation processes, crowdsourcing or synergistic articulation of personal into collective knowledge [5]. However, these knowledge processes thrive only through active use and human interaction, and a critical mass of users is needed [6–8]. Previous research has also shown that human factors or a strong people orientation play a critical role in managing knowledge. Other significant factors are organizational culture and senior leadership support [9–13]. Next to these factors, technology or ICT has also played a crucial role in the success or failure of various knowledge management initiatives especially when the KM system was not perceived relevant, useful, and easy to use.

Wikis, blogs, social networks, tags and folksonomies make possible the transformation of a corporate intranet towards *Enterprise 2.0* through emergent collaboration of distributed, autonomous peers [14]. According to McAfee [15], who coined the term, Enterprise 2.0 does not focus on capturing knowledge itself but rather the practices and output of knowledge workers. The correct deployment of social technologies in a corporate context will result in better communication and collaboration, more effective knowledge management and faster innovation. Apart from *Enterprise 2.0*, numerous synonym terms have emerged for the new approaches to manage knowledge using social media such as: *Enterprise Social Networking, Enterprise Social Software, Enterprise Social Platforms and Social Business*. The term "social business" seems to be more generic as it is associated with the use of social media within and outside the organizational boundaries. According to Vatrapu [16], "social business is an organization that strategically engages, analyses and manages social media to structure organizational processes and support organizational functions in order to realize operational efficiencies, generate comparative advantages, and create value for customers, shareholders, and other societal stakeholders."

Furthermore, new ICT has the potential to reinvent the future of the work and core concepts associated with the management of knowledge work. These "irremediable" transformations of organizational processes and work practices have been acknowledged both by researchers and in consultancy reports [3, 4]. There is a transformation of Knowledge Management to various types of enterprise systems platforms trying to integrate principles of social media applications in order to better support knowledge sharing, communication, "how knowledge work is done" rather than trying to optimize knowledge processes and the associated work flow (e.g. ERP). Thus, it has recently been argued that email, the prevailing way of communicating and sharing information in enterprises over the past two decades, could be gradually reduced or even replaced in the future. The overuse of email in

organizations leads to reduction of productivity of highly skilled workers [17] or stress due to an overwhelming amount of time spent on reading and writing emails.

In order to provide background on knowledge management for the trends and new ideas discussed in the following chapters, this paper is structured as follows. Section 1.2 briefly overviews the evolution of KM from a historical perspective. Section 1.3 discusses core concepts associated with the management of knowledge, projects and networks. Section 1.4 introduces theoretical perspectives that are used in the KM literature. Section 1.5 of the chapter discusses the concept of networked-centric collaborative organization. Section 1.6 deals with the management of knowledge using social media. Section 1.7 presents a summary of ideas and the organization of the volume.

1.2 The Evolution of Knowledge Management (KM)—A Historical Perspective

Even though the roots of KM date back to the early decades of the previous century, KM as a research field was established in the 1990s with cross-disciplinary contributions by scholars from various disciplines including organizational behavior, strategic technology management, organizational learning, computer science and artificial intelligence. Since then it has been acknowledged by numerous scholars and practitioners that organizations need to continuously create, capture and reuse knowledge in order to remain competitive. To provide a definition: "KM is explicit strategies, tools and practices, applied by the management, that seek to make knowledge a resource for the organization [13]."

KM is a process facilitating knowledge-related activities and the management of knowledge work. Managing knowledge work is an important endeavor for organizations, since knowledge-based capital is a central source of value creation and competitiveness in the knowledge and digital economy. Traditionally, organizations employ ICT, also associated in the literature with terms like knowledge technologies, enterprise systems and KM systems, in order to support the management of knowledge processes. Hence, organizations have spent large amounts of time, money and other resources on different types of technologies—and sometimes inappropriate technology—in order to support their KM efforts [18]. Furthermore, many KM initiatives have not been used and therefore failed to deliver value in organizations because of lack of motivation and participation or lack of adoption of knowledge-sharing behaviors [19]. Among other factors influencing the success of KM systems identified in the KM literature as presented in [20] are: individual/human factors (e.g. motivation, time, perceived usefulness), organizational culture (e.g. rewards, incentives, specific routines and way of working that promote knowledge sharing), managerial support and technology-related issues (usability, integration of different existing systems).

KM methodologies and technologies must enable effective ways to elicit, represent, organize, re-use, and renew this knowledge [21].

Traditional knowledge processes associated with KM are: knowledge creation, knowledge acquisition, storage, transfer, sharing and application (or re-use) of knowledge. Traditionally, KM is associated with knowledge processes, various methodologies, and the use of knowledge technologies or KM systems that ensure that knowledge assets are improved and effectively employed within organizations. The goal of managing knowledge is to leverage and improve the organizational knowledge processes and assets in order to improve knowledge practices, workflows, organizational behaviors and thus to make better decisions and improve organizational performance [22].

More recently, social media have come into play and brought new perspectives for the management of the knowledge work, both in terms of opportunities and challenges [5, 23–25]. As represented in Fig. 1.1, improved knowledge processes lead to intermediate improved organizational processes such as improved communication, collaboration, innovation which again should lead to improved products, services, relationships with partners and customers and to improved organizational performance. In the social media age, due to technological innovation, new streamlined organizational processes may rely on: collective intelligence, collaboration through networks of internal or external collaborators (e.g. open innovation) and business communication with customers or business partners using social media platforms.

1.3 Managing Knowledge, Projects and Networks

Knowledge is a very complex concept and it may be discussed and classified in different ways. Knowledge has been defined as a "justified true personal belief" and a source of competitive advantage for individuals. According to Drucker [26]

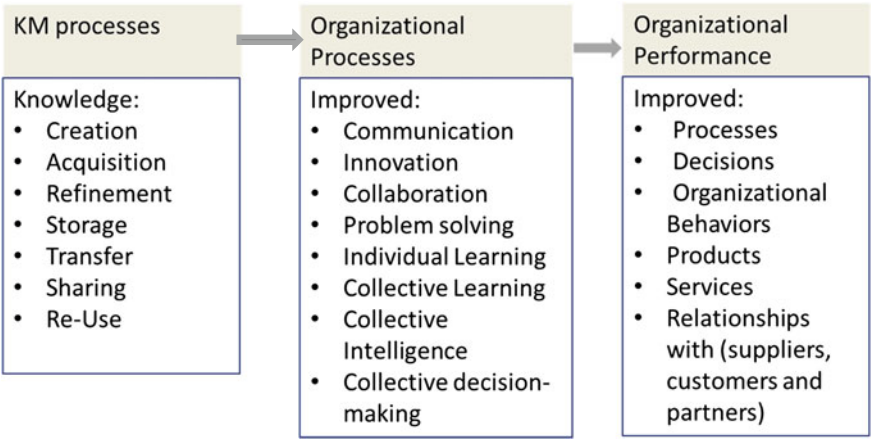

Fig. 1.1 Knowledge processes in organization in the social media age adapted from [22]

success in the knowledge economy "comes to those who know themselves, their strengths, their values and how they best perform." There are different dimensions of knowledge that can be considered. Among the most common forms of knowledge discussed in the literature are: tacit versus explicit or personal versus public or organizational/collective knowledge. Polanyi [27] and later Nonaka [28, 29] have popularized the term of tacit knowledge.

Personal knowledge can be perceived as a private good or a source of power and, therefore, certain employees may be reluctant to share it. Knowledge is also considered an intangible asset for both individuals and organizations. As emphasized by Nonaka [30] "in an economy where the only certainty is the uncertainty" the only source of competitive advantage is knowledge. Personal knowledge is often associated with the tacit dimension of knowledge while collective knowledge is associated with both explicit knowledge and organizational knowledge.

Knowledge in both its tacit and explicit form is an intangible asset for organizations that needs to be captured, reused and leveraged within organizations. Tacit knowledge resides in the minds of people and it is accumulated over years of education, training and personal experience. Tacit knowledge consists of insights and hunches, and is more difficult to articulate and therefore more difficult to share or communicate or make explicit. Explicit knowledge can be more easily shared or communicated in different forms.

In order to manage knowledge and business processes, organizations have implemented KM systems as repositories of knowledge, Enterprise Systems (ES) or Enterprise Resource Planning (ERPs). KM systems have been associated with other more or less sophisticated ICT solutions such as yellow pages of employees and experts, repositories of "lessons learned", groupware technologies (e.g. Lotus Notes) or discussion forums. KM systems can be databases or data warehouses enhanced with a front-end application where knowledge such as "best practice" types of knowledge, or lessons learned from various types of projects, are captured and codified in order to be reused. Through various KM initiatives and the use of KM systems, organizations attempt to store, share and deploy knowledge in an attempt to prevent knowledge loss or "reinventing the wheel".

A survey conducted by Davenport in 2005 [31] has found that the communication technologies used most by knowledge workers are email (100 %), corporate intranets, instant messaging and text messaging, corporate websites, information portals, or corporate extranet. Based on the findings of this survey, it is interesting that the terms KM systems and groupware technologies are not even present, McAfee [15] concludes that KM systems and groupware technologies should be considered an outdated technology (or at least the names of these technologies). Going beyond the debate that tries to define what could be considered an up-to-date technology, we would like to provide a more recent overview of communication technologies in use today.

A more recent study related to the use of ICT for knowledge-sharing within Danish organizations, conducted in 2013, [10] shows that even though the main communication channels are still email and face-to-face meetings, other technologies such as IM/chat and Intranet, social media platforms (e.g. Yammer, Chatter,

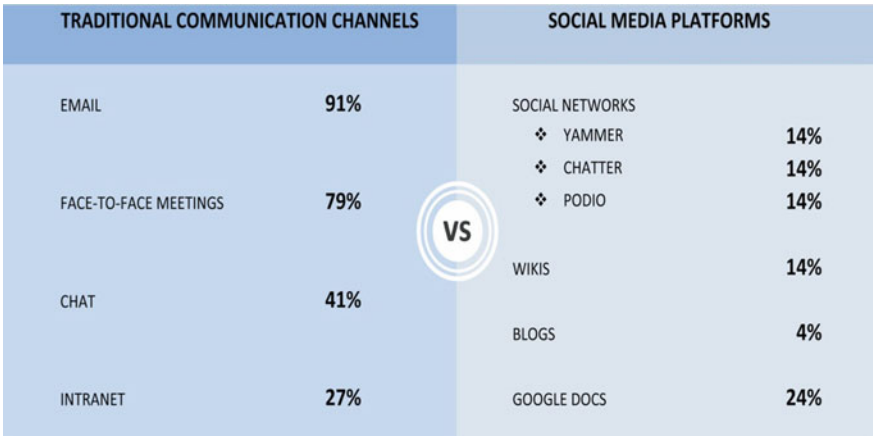

Fig. 1.2 Knowledge sharing and communication technologies in Danish organizations published in [10]

Podio), blogs, wikis and Google Docs have started to be adopted and used in certain organizations. As illustrated in Fig. 1.2, in the 21st century knowledge workers in Denmark still share knowledge primarily through email (91 %), face-to-face meetings (79 %), chat (41 %), Intranet (27 %) and Google Docs (24 %). However, new ways to share knowledge and communicate in organizations are social media platforms: Yammer (14 %), Podio (14 %) and Chatter (14 %), wikis (14 %) and blogs (4 %). These platforms still score low compared with traditional communication channels.

According to a study published by McKinsey [17] the average employee spends an estimated 28 % of the work week reading and answering e-mails, 19 % searching and gathering information and 14 % communicating and collaborating internally. Thus, this report [17] argues that "improved communication and collaboration through social technologies could raise the productivity of interaction workers by 20–25 %."

Knowledge processes are an organizational endeavor but they rely on individual, social and collective endeavors and therefore *motivation of participation* is a key human factor for KM initiatives to be investigated. Several cases have shown that many KM initiatives failed because people are not aware or not motivated to participate and exchange knowledge through technology. Motivation of participation can be viewed through different theoretical lenses which will be briefly outlined below.

1.4 Theoretical Perspectives in KM

Even if network-centric, social, collaborative processes of managing knowledge are gaining importance, the management of knowledge remains something profoundly personal. People are still ultimately driven in their actions by personal motives, and

when they contribute to the collective effort it is either because of expected personal benefits ranging from monetary value, increased intangible capital (such as reputation), social capital or self-accomplishment or because they are prompted to do so through the organizational culture, by leadership or by managers [5].

Social-psychology theory and research helps to explain both individual and collective motives, and user behavior and participation in knowledge exchanges and interactions. In such systems, participants engage in knowledge exchanges because they are perceived as interesting or important (self-determination theory [32]), they perceive a tangible benefit such as visibility or reputation (social exchange theory [33] or social dilemma theory [34]) and/or because it contributes to certain individual needs such as the desire for self-accomplishment (self-efficacy), the desire to belong to a group or the enjoyment of helping others (altruism). A direct consequence of this is that enterprise systems that harness collective intelligence have to include a stronger personal dimension [5] where users are recognized for their contributions, where users are rewarded, or where users perceive a personal benefit beyond contributing to the collective knowledge pool even when it indirectly benefits the group and/or the organization as well [35]. This is a radically different approach to that adopted in knowledge management systems, in which the individual benefit of the participant is not obvious or is perceived as being to the detriment of the individual (e.g. because "knowledge is power").

New "collective intelligence" systems aim at supporting social processes and harnessing "collective" knowledge while the collective value emerges as part of processes providing benefits for both the individuals and the organizations. In the case of social networking systems, the participation in knowledge exchanges is made visible, which may lead to the increase of the reputation recognition or social capital of the contributor [11]. In Chap. 3, O'Leary brings into discussion three other theories that are relevant for KM: the Least Effort Theory, the Pecking Order Theory and the Social Exchange Theory.

1.5 Towards a Network-Centric Collaborative Approach

Business software tools and organizational processes are redefined using technological innovations associated with the evolution of the web. Recently, both consultancy reports and academic articles have started to discuss the potential role of social media in a business context. Social media (SM) change organizational processes [3] and bring new opportunities and challenges to organizations. Social media facilitate multimodal knowledge communication both internally and externally with customers, stakeholders or business partners.

In general, social media are Web-based and mobile technologies that enhance human communication and create dynamic, interactive dialogues [36]. Kaplan and Haenlein [37] defined social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, which allows the creation and exchange of user-generated content". They identified six different

types of social media: collaborative projects, blogs and microblogs, content communities, social networking sites, virtual game worlds, and virtual social worlds. These technologies enable co-creation of content, development of collective intelligence, broad reach to a user community without regard to geographic boundaries, immediate accessibility without regard to time constraints, ease of use without regard to place, and a permanent electronic record for future reference. On the other hand, there is a lack of control over content and accuracy that makes social media challenging for KM applications.

1.5.1 Networked Organization

Technologies break down traditional boundaries of time and space and transform organizations and organizational structures. Businesses can be structured around virtual teams and networks which interact, communicate and collaborate using new technologies. The rise of social media facilitates the production, distribution and consumption of products and services by increasingly following the principle of "Give according to your abilities, receive according to your needs" or GARN [38]. The question one may ask is: Could the GARN principle be applied to an organizational context?

An organization can be viewed as a system of cooperative interaction between individuals, and this even extends to the relation of the individual to a larger system (i.e. group, the organization or even other organizations) that prompts the necessity of the immediate actor to contact other individuals in the organization or even outside the organization boundaries. This view of organization reinforces the need to focus on networks.

The use of use social software in knowledge-intensive organizations leads to the development of networked organizations. Networked organizations have virtual modes of organizing more open-ended collaborative forms of innovation and product development [39]. Within these organizations, the primary mode of production is knowledge and this means of production is owned by the knowledge workers who are granted autonomy and are empowered to act autonomously in managing their work and knowledge. These new type of enterprise systems are emergent and may be introduced through a bottom-up approach as a "grass root" initiative, especially in small-medium enterprises, as described in [40] since the participants in the knowledge processes are self-directed agents who are interested in expressing, and managing efficiently, their personal knowledge or/and their social capital. Social media platforms are cheaper or even free alternatives to traditional KM systems that open the opportunity to communicate and collaborate within and/or beyond the organizational borders. Moreover, the actors participating in knowledge exchanges may not be employed by the organization itself, as is often the case in community of practices or in open innovation.

Furthermore, using social media, concepts such as collective intelligence, crowdsourcing or open innovation have gained momentum, reflecting this shift

towards knowledge processes that are inherently social and network centric. This hyper-connected space creates numerous opportunities for social exchanges and interactions and may lead to a "massive interaction overload" [41], which may distract the attention of knowledge workers.

Due to the fact that people are more connected to each other through mobile devices, social media platforms and apps for the new "on demand" economy solutions or services seem to emerge. According to a recent article published by [42], "freelance workers available at a moment will reshape the nature of companies and the structure of careers." The above-mentioned article cites a study by Pfizer, conducted in 2008, according to which highly skilled workers spend between 20 and 40 % of their time on routine work-entering data, producing Powerpoint slides or doing research on the Web. In order to mitigate this problem, knowledge-intensive organizations are contracting more work to the market in order to save costs and "free up" their highly skilled workers so they can "focus on the things that add the most value".

While in the first phase of KM, which can be named a document-centric perspective or "content-centric", the emphasis was on encouraging employees to share, create and codify knowledge using various information systems, in the second phase the emphasis is on exploiting the social dimension of Web 2.0 technologies and in particular social-collaboration processes in order to create new knowledge through collaborative work and exploit knowledge networks or networks of practice. Traditionally these knowledge networks existing within companies have the role of optimizing the flow of knowledge in organizations [43]. According to Hansen's earlier studies, the way the company organizes its units and people has an impact on the knowledge flow, the effectiveness of knowledge-sharing and consequently the performance of organizations.

Networks of practice are self-organizing, open-activity systems focused on shared practices and facilitated by computer-mediated communication [44]. These networks rely on both human links and technology and are important for effective knowledge sharing and organizational learning.

1.6 Managing Knowledge Using Social Media

Globalized society along with the digital revolution brings new opportunities and challenges for both knowledge workers and organizations. Companies need to innovate faster and knowledge workers are under pressure to solve problems more quickly, learn new skills, respond within shorter timeframes and work more efficiently.

Using new KM technologies organizations and individuals become more connected, and possibly more "social", but KM should be more personal and targeted to users' needs [8, 31, 45]. Modern KM is decentralized, more flexible, less costly and can be configured and designed for special practices by individual knowledge workers.

KM should, thus, become relevant for individual knowledge workers who ideally will perceive it to be more effective, enabling them to engage in more interactions and enhancing performance of tasks. However, if knowledge workers don't see the benefits of participation and online interaction through social media, they may not engage in such platforms and perform only activities considered important for their daily tasks.

Furthermore, users shape the way technologies are actually implemented in everyday practice because most technologies are "open-ended", meaning that most technologies can be used in multiple ways. Individuals and groups can use the same technology in different ways for different purposes and may adapt technology in the way fitting their personal needs or interests [46].

In the social media age, managing oneself and personal knowledge becomes as important as managing collaboration or managing knowledge in networks. The ubiquitous nature of social media blurs the personal and professional sphere; it brings new possibilities to externalize knowledge, and to improve communication and collaboration. The concept of personal Knowledge Management (PKM) dates back to late 1990s [47], however most of research in KM has been associated with organizational KM and only recently the concept of personal KM has started to be discussed and redefined through the use and influence of the social media [48]. Knowledge management technology may be also be used for strategic self-presentation and impression management [2].

Social media makes possible the management of both personal and collective knowledge through collaborative platforms and tools enabling a varying degree of interaction and control. Knowledge processes may be facilitated by social media, but benefits and challenges may be discussed at both individual and organizational levels [5].

A study reported by [9] focusing on the adoption of social media by several big IT consultancies in India emphasizes that cultural dimensions also need to be considered for knowledge-sharing using social media. Social media adoption by IT consultants is low due to both personal and organizational factors. Significant factors that precede the social media adoption at work, calculated through a cost benefit analysis, are: "It enhances my contacts and networks", "lack of perceived usefulness", "it is strongly supported by the management" and "social media usage in the personal life". The study also points to organizational factors that may impact the adoption of social media: having a good strategy along with top management support, leading by example, incentives for knowledge-sharing, an enabling context for knowledge sharing and a chief knowledge or "social media" officer.

Tensions between KM and SM have been also identified and discussed from a micro and macro level perspective by [23] including individual, group and organizational levels. According to a study conducted by Gartner, the vast majority of "social collaboration" initiatives fail due to a lack of purpose or a 'provide and pray' approach, which leads to only 10 % success rate [49].

Therefore, the authors of this chapter argue that the adoption of social media in organizations is beneficial and will be integrated in the future but it has not yet "commoditized". SM management is still a challenging task owing to various

factors and in particular organizational culture (e.g. established working routines), individual factors (e.g. time constraints, lack of perceived benefits) and even technological factors (complexity, lack of support or training).

A crucial step for an organization that is concerned with the strategic use of social media for both internal or external communication (social media engagement) is the creation of a social media strategy which should be aligned with the corporate strategy [16]. Social media policies and guidelines for employees should accompany the social media strategy for the organization. Such guidelines and policies can help employees understand what type of information and resources can or should be shared through social media.

Furthermore, companies need to consider the use of huge amounts of unstructured social data generated through social media conversations. Social media analytics relying on both textual analysis and social network analysis could further guide the organization on network of actors involved in online interactions, topics discussed, and various metrics, KPIs or associated sentiment analysis.

1.6.1 New Approaches and Technologies for Capturing/Acquiring Knowledge

Intelligent paradigms utilizing sophisticated artificial intelligence techniques are being integrated in virtually every field, including engineering, science, healthcare, aviation, architecture, art and business. Knowledge management is no exception. People are demanding more from systems, and companies are offering more to remain competitive. For example, some banks are able to approve loans for their customers within few minutes of receiving their online application using combined knowledge from many different sources. This speed (and hopefully accuracy) is only possible by using paradigms such as intelligent clustering to sort out the applications in the accept/reject zone. Businesses have realized that knowledge can be extracted from the vast quantity of data available today.

There is a tremendous interest among researchers and practitioners in the development of ideas from the fields of big data, data analytics, cloud computing, and business intelligence. Organizations, groups and individuals generate a huge amount of data (often referred to as big data) from sources such as social media, sensor networks, images, acoustic and transactions. These data can be stored and accessed using concepts from cloud computing (CC). Even with CC issues of privacy and security, the low initial capital investment and shorter start-up time for data storage and computation are attractive [50].

People want to connect everything with everything. Thus, connecting data and processing a variety of data types will play a big role in knowledge management techniques in the future. Intelligent paradigms are key to processing big data for knowledge acquisition.

Data-driven intelligent learning algorithms can be used to fuse limited intelligence in a knowledge management system. The main attributes of intelligence are learning, adaptation and self-organization. Researchers are using various paradigms such as Artificial Neural Networks (ANNs), Expert Systems (ESs), Fuzzy Systems (FSs) and Genetic Algorithms (GAs) to implement intelligence in a system. Expert systems mimic humans in a very limited sense by transferring the knowledge of humans to the computer. For example, artificial neural networks are computing systems that attempt to mimic the human brain as a biological problem-solving mechanism. ANNs can learn to find a solution through a process of training. GAs are modelled on the principle of biological evolution and try to find a solution to a problem for which no obvious optimization method is available. These paradigms are successfully used in processing data in knowledge management systems, but there are weaknesses associated with these paradigms. The trend is to fuse these paradigms to offset the demerits of one paradigm by the merits of another paradigm. For example, GAs can be used to evolve NNs automatically.

Organizations have realized that intelligent paradigms will play a major role in acquiring data, extracting knowledge from big data, and managing knowledge for competitive advantage. With their significant resources, Facebook, Google and LinkedIn are directing their efforts toward enhancing and using intelligent paradigms in their systems. As researchers develop new intelligent techniques and make them more widely available and accessible, knowledge management systems of the future will increasingly incorporate intelligence as a key component.

1.7 Conclusions

Innovative technologies are changing, disrupting businesses, organizational practices and shaping the future of the work. Innovative ICT, and, in particular social media, will impact the management of knowledge work initiatives, strategies and practices. In particular managing knowledge using social media has the potential to improve communication and streamline business processes in organizations.

Social media platforms bring new opportunities for the management of knowledge (e.g. knowledge sharing, externalization of knowledge, collaboration, and coordination), management of projects and networks but they are not a panacea for typical issues of KM (e.g. participation, engagement).

In summary, this chapter:

- examines the evolution of KM from “document-centric approaches” or content-centric approaches towards project-centric or network-centric collaborative approaches
- presents technological innovations associated with the management of knowledge in the social media age
- discusses opportunities and challenges opened by social media
- surveys new approaches and technologies for capturing or acquiring knowledge.

1.7.1 Organization of the Book

The book brings into discussion emerging trends in the field of KM due to technological innovations. The book is organized in 3 sections: the first section, entitled **Managing Knowledge, Projects and Networks**, discusses knowledge processes and their use, reuse or generation in the context of an organization. The second section, entitled **Managing Knowledge using Social Media: factors influencing adoption and usage**, focuses on the role of social media for managing knowledge and discusses the factors that influence employee's acceptance and participation. The third section brings into discussion **New approaches and technologies for acquiring knowledge**.

Chapter 1: Razmerita, Phillips-Wren and Jain present an overview of KM and associated innovations.
Chapter 2: Schacht and Maedche emphasize the importance of knowledge reuse as "knowledge oscillates between its discovery and its loss". Through various KM initiatives and the use of KMS, organizations attempt to store, share and deploy knowledge to prevent knowledge loss or "reinventing the wheel". An effective KM strategy facilitates not only capturing knowledge, but also prepares it for reuse. The authors propose a methodology for project reuse through the development of the "lessons learned sessions" and the "double-cycled lessons learned".
Chapter 3: O'Leary discusses the "bifurcation" of KM in enterprises beyond traditional content capture towards facilitating collaboration. New software capabilities such as Enterprise Social Networking (ESN) have facilitated interaction between users but have also created challenges that cause tension in firms. The article develops potential theories to help explain KM use: the Least Effort Theory, the Pecking Order Theory, and the Social Exchange Theory, and applies them to the supply and demand of personal knowledge in both content and collaboration settings. A case study is presented to illustrate the concepts and issues.

The article points to potential research opportunities, including theory development for KM behavior, in-depth case studies, turning collaboration messages into knowledge, and generating data that can offer new uses of collaborative technologies for KM.

Chapter 4: The process of building "networks of practice as new supra-organizational entities" through social media is studied by Cudanov and Kirchner. Communities of practice available on social media may act as a supplier of knowledge for employees and facilitate the formation of networks of practice. Their study indicates that knowledge workers rely more on web communities of practice than getting help from colleagues. The usage of social media in this context appears to have a similar function to a guild that may impact the employees' sense of affiliation and even their loyalty. As knowledge can be created and shared easily in decentralized ways on the Web, the question of securing knowledge and protecting knowledge from "spilling over" needs to be considered.
Chapter 5: Martensen, Ryschka and Bick address the question of how social applications and Enterprise 2.0 applications are used for KM in organizational

contexts. They develop a comprehensive classification system for the organizational use of social software and validate it through qualitative interviews with expert management consultants. Their system contains four categories: knowledge sharing, knowledge seeking, communication and collaboration. By understanding stakeholder perspectives, design and use of social software can be enhanced for KM.

Chapter 6: The Kirchner and Stegman study emphasizes some factors that impact the successful adoption of social media. The article discusses factors that impact employees' motivation to share knowledge. According to their study, companies adopt social media internally for four main reasons: (1) for better collaboration and communication; (2) for better project management; (3) for improved knowledge management; and (4) for improved productivity.

Based on case studies, the article discusses factors that need to be considered by companies before deploying social media. The chapter concludes that "employees will share their knowledge, but only if an exchange can be expected in return". This viewpoint is in opposition to an "altruistic" perspective of knowledge sharing/donation.

Chapter 7: Calero Valdez, Schaar, Bender, Aghassi, Schuh and Ziefle focus on providing a theoretical background and empirical research on social media acceptance. Their findings reveal that understanding users' (emotive) needs is critical when dealing with sensitive communication and data. They recommend a systematic user-centered approach when designing a social media based knowledge exchange. Their results show that "respecting user diversity in regard to willingness to disclose personal information lower the entry barriers for using such a system, while explicitly defining social norms for communication improves the perception of daily use by establishing a consistent and matching etiquette".

Chapter 8: Grambow, Oberhauser and Reichert discuss context-aware and process-centric knowledge provisioning. The authors present an introduction to the topic including technical challenges to the provisioning of contextually-relevant knowledge to knowledge workers. A solution based on the context-aware software engineering environment event driven framework is presented.

Chapter 9: Heitmann, Dabrowski, Hayes and Griffin suggest near real-time social recommendations for the enterprise. The authors argue for a need to combine Semantic Web technologies with standardized transport protocols to provide an open source layer for aggregation of distributed social platforms in the modern enterprise. The architecture for such a distributed social platform is presented.

Chapter 10: Simoes, Antunes and Cranefield propose a storytelling approach for enriching knowledge in business process modelling. The authors contrast the workflow paradigm with the storytelling approach for process modelling and process-oriented knowledge management and emphasize the advantages of their approach for externalization of knowledge.

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