Innovative Concepts within Knowledge Management

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Abstract

In our increasingly knowledge-based society the need for innovative concepts within the discipline of Knowledge Management (KM) becomes clear.
Therefore, this article aims to shed light on current and uprising innovative technologies and concepts within the discipline of KM. This study conveys recent and previous scientific literature on the relevance of uprising innovative concepts within the various dimensions of KM. We conducted a systematic literature review (SLR) on various literature sources to cover the whole spectrum of innovative KM approaches. All 37 reviewed articles originate from acknowledged sources and were written in English.
The findings show, which innovative concepts show relevance within KM, how they are classified into the three innovation categories social, technological, and organizational, how they manifest within KM and what to expect from future KM innovations.

Keywords: Knowledge Management, Innovation

1. Introduction

In academics, Knowledge Management (KM) and innovation are historically linked with each other in a way, that KM supports or leads to an improvement within the innovation process (Carneiro, 2000; Du Plessis, 2007; Lai et al., 2014). However, there seems to be a gap in how academia drives innovation within KM as a research discipline. Beside many popular literature reviews and research articles on the effect of KM on innovativeness (Breznik, 2018; Du Plessis, 2007; Menaouer et al., 2015), there are just a few authors, who consider the perspective of innovative concepts within the field of KM (Di Vaio et al., 2021; Nowacki & Bachnik, 2016; Razmerita et al., 2016).

Di Vaio et al. highlight the importance of digital innovation within KM and that there is a dire necessity for it in knowledge management systems (KMS) (Di Vaio et al., 2021). Razmerita et al. promote innovative approaches and technologies to manage the increasing extent of knowledge (Razmerita et al., 2016).

Nowacki and Bachnik state that organizations are not very innovative in the field of KM and therefore propose defining categories for innovations within KM (Nowacki & Bachnik, 2016). Furthermore, the relevance for research in innovation within KM justifies with an uprising number of editorials and (mini-) track introductions of recognized journals and conferences (Freeze & Syler, 2019; Ogiela & Leu, 2015; Soto-Acosta & Cegarra-Navarro, 2016).

With this systematic literature review (SLR), we outline specific innovative concepts within KM and thereby continue the current research by sorting the identified KM innovations into previously developed classifications and elaborate the potentials of these social, technological and organizational innovations (Nowacki & Bachnik, 2016). Our contribution is giving an overview over the current literature on innovative concepts within KM.

2. Theoretical Background

2.1. Knowledge Management

KM itself can be defined from several perspectives and process dimensions. In the following, we briefly introduce renowned KM concepts. Nonaka et al. laid the foundations of organizational KM with the differentiation of tacit and explicit knowledge and their interplay in the knowledge (respectively SECI) spiral (Ikujiro Nonaka et al., 1996). Tacit knowledge is personal and intuitive (such as riding a bicycle), which requires personal experience and 'learning-by-doing'. Explicit knowledge is formal and documentable (e.g. inflating a bicycle tire), which thus is more explicable (Ikujiro Nonaka et al., 1996; Ikujirō Nonaka & Takeuchi, 1995; Schenk et al., 2022).

According to Nonaka et al, the process of knowledge generation can be divided into the different phases socialization, externalization, combination, as well as internalization. This conceptualization is referred to by the acronym SECI (Ikujiro Nonaka et al., 1996; Ikujirō Nonaka & Takeuchi, 1995). In simple terms, the transformation of tacit knowledge

URI: https://hdl.handle.net/10125/103233
978-0-9981331-6-4

into explicit knowledge takes place in the phases socialization and externalization, while the return of explicit knowledge into tacit knowledge takes place in the phases combination and internalization.

In General, there are two major KM strategies: Personalization as human-orientated KM and codification as technology-orientated KM. While personalization assumes individuals to be the main source of (especially tacit) knowledge, codification aims to manage (especially explicit) knowledge within databases (Fteimi & Hopf). Probst introduced the KM core processes knowledge identification, knowledge acquisition, knowledge development, knowledge sharing, knowledge distribution, knowledge preservation and knowledge use (Probst, 1998).

2.2. Innovation

Innovation is more than just new products (Kline & Rosenberg). Innovation can also be a method, behavior, culture, technology or even an organizational structure (Nowacki & Bachnik, 2016). Furthermore, Du Plessis argues that with innovation, you can arrange already existent knowledge in new ways (Du Plessis, 2007). This shows the strong bond innovation and KM have, ever since the two disciplines were found.

Innovation is traditionally understood as a multidimensional concept that includes all organizational and procedural aspects and aims to improve performance efficiency or costs. (Schumpeter, 2000). An organization's openness to innovate is its willingness, to apply new ideas or technologies to obtain a competitive advantage (Harryson, 2008). The ability to innovate depends on whether organizations acknowledge the three innovation resources: Human capital, organizational structures and according technological backbone (Nowacki & Bachnik, 2016). Moreover, innovation lies not only within the understanding of physical production processes but also in the management of intangible knowledge within networks and communities (Farazmand, 2004).

2.3. Innovation within KM

With this article, we appreciate and carry on the research of innovation within the discipline of KM (Di Vaio et al., 2021; Nowacki & Bachnik, 2016; Razmerita et al., 2016). We understand innovative KM as an organizations willingness to apply innovative KM approaches (Nowacki & Bachnik, 2016). As already referred to, a strong focus in this field of research lies within KMS, which are socio-technical systems with means to support KM processes (Di Vaio et al., 2021) with the help of information and communication technology (ICT) as well as organizational and sociological theory (Nowacki & Bachnik, 2016). Therefore, the impact and especially the knowledge of the human factor should be considered thoroughly.

Hence, there are more aspects regarding a company's innovativeness within KM except solely technology. According to empirical findings and field studies, social and organizational factors are equally relevant. These three factors (technological, social and organizational) depict a possible categorization for innovations within the field of KM (Nowacki & Bachnik, 2016).

First, technological KM innovations deal with ICT in KMS (e.g. intranet platforms for storing information). Second, social KM innovations involve the human factor and the interplay between individuals (e.g. motivation incentives for knowledge sharing). Third, organizational KM innovations relate to structure and hierarchy (e.g. breaking up knowledge silos by interdisciplinary knowledge exchange groups). In this study, we build upon and extend this integral model of innovation within KM (Nowacki & Bachnik, 2016).

However and to our best knowledge, there is no current overview over specific innovations within KM. As there are many facets to cover (technological, social and organizational), we shed light on innovative concepts within KM from an interdisciplinary lens and thereby contribute to innovativeness within KM.

3. Methodology

3.1. Research questions

With this systematic literature review (SLR), we carry forward the discussion of innovation within KM. According to Nowacki and Bachnik, research hardly combine innovation with KM and examine how organizations practice innovation within KM (Nowacki & Bachnik, 2016). Razmerita et al. claim, that innovative ICT has a high impact on various KM disciplines (Razmerita et al., 2016). Di Vaio et al. advance to the conclusion, that innovative KM initiatives need support (Di Vaio et al., 2021). However, only few indicators for innovative concepts within KM are provided by preceding authors.

Therefore, our research focus lies on the question, which innovative concepts exist within KM (RQ 1). Moreover, we analyze from a literature perspective, how these concepts can be classified (RQ2). Finally, we elaborate what these concepts imply for future innovative concepts within KM (RQ3).

3.2. Literature Identification

The main methodology consists of a systematic literature review (SLR) and builds upon established standards of literature review in (IS) research (Jane Webster and Richard T. Watson, 2002; Paré et al., 2015; vom Brocke et al., 2015).

Preliminary query searches released many results, which understand KM as a construct for an improved innovativeness or the optimization of innovation processes. As our focus lies on innovation within KM, the key challenge was to distinguish these concepts from KM approaches for increasing innovativeness.

First, we decided on a simplified search string ('innovation AND knowledge management'), as more complex queries did not deliver the expected results. Consequently, heavy manual filtering became necessary, to identify those articles, which explicitly deal with innovation within KM.

Then, we gradually adjusted the search field and scope and agreed on first using only titles as search fields (AIS eLibrary for IS specific conference proceedings and ScienceDirect for interdisciplinary articles), before expanding to a topic search (title, abstract and keyword) within the IS Senior Scholar Basket for specific high-quality journal contributions, which we conducted via Web-of-Science.

From the 124 initial hits, we read the abstracts, keywords and scanned the text for innovative concepts within KM (initial screening). We dismissed articles, which dealt with KM as construct for improved innovation but not with innovative KM initiatives.

Therefore, our baseline for identifying a concept as innovation within KM is that first it must not consider KM as a construct to improve innovativeness. Second, it must be a multidimensional concept that aims to improve KM performance. Hence, the concept has to aim for improved KM processes (e.g. Probst's KM core processes (Probst, 1998) or Nonaka et al.'s SECI-spiral) to count as innovative. Third, it must impact at least one of the relevant factors for innovations within KM (technological, social or organizational) (Nowacki & Bachnik, 2016).

This led us to 40 articles, which remained in the initial article selection (compare Figure 1). To make sure no highly relevant articles were missed out, we conducted a backward and forward search, based on the two most relevant overview articles regarding the specificity of innovation within the KM discipline (Di Vaio et al., 2021; Nowacki & Bachnik, 2016), which we identified in the initial screening. This led to 6 additional relevant articles, which totals up to 46 selected articles. After verification, we dismissed 2 editorials and 4 research-in-progress articles. Finally, we excluded 3 underrepresented or irrelevant articles.

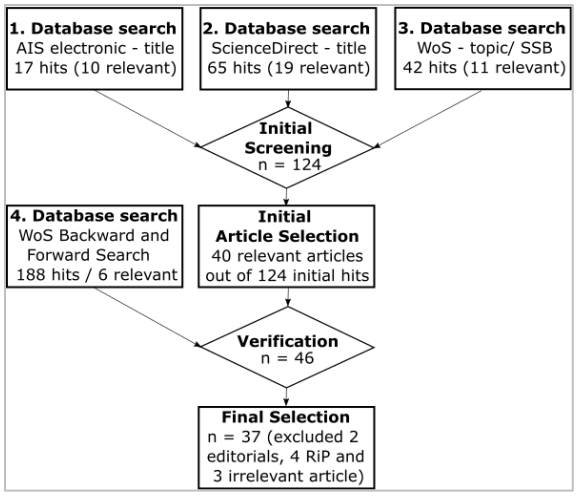

Figure 1: Research process

These 37 relevant articles represent our final selection and literature corpus consist of 26 journal articles, 10 conference proceedings and a single book contribution, all of which deal specifically with innovation within the discipline of KM.

4. Findings

The systematic analysis and synthesis of the final selection of relevant articles (compare Figure 1) reveals eight reoccurring innovative concepts within the discipline of KM (RQ1). By reoccurring we mean, that an innovative concept was found in multiple (at least three different) articles. The concepts vary in their scope and level from applied methods up to comprehensive models.

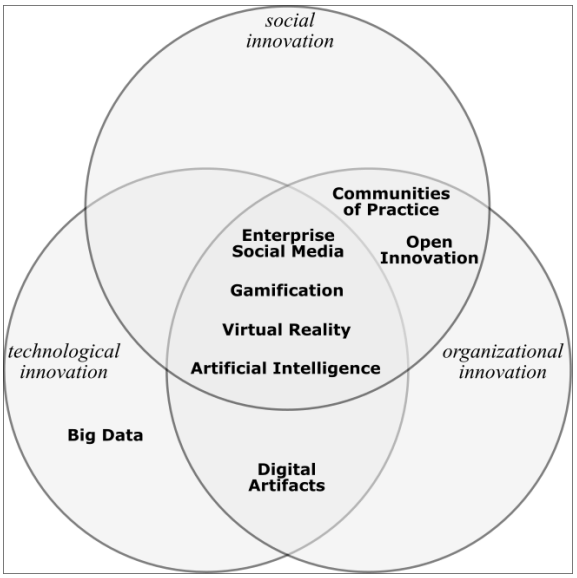

Figure 2: Classification of identified KM concepts (based on (Nowacki & Bachnik, 2016))

Due to this interdisciplinarity and variety of concept dimensions, we categorized the concepts into a VENN-diagram (RQ2), based on the KM innovation categories introduced in 2.3. Innovation within KM (see Figure 2). On the one hand, *Artificial Intelligence (AI)*, *Enterprise Social Media (ESM)*, *Gamification* and *Virtual Reality (VR)* are overlaps of all three KM innovation categories. On the other hand, *Communities of Practice (CoP)* and *Open Innovation (OI)* are overlaps between social and technological innovation, *Digital Artifacts (DA)* are a mixture of technological and organizational innovation while *Big Data (BD)* is exclusively technological. Table 1 lists the previously introduced concepts with the respective references from the literature corpus.

Table 1: Innovative concepts within KM

Concept	Reference
Artificial Intelligence (AI)	(Lloyd & Cranmore, 2003), (Kruse et al., 2013), (Gergin & Koch, 2013), (Sturm et al., 2021), (Johnson et al., 2015)
Big Data (BD)	(Tian, 2017), (Uden & He, 2017), (Intezari & Gressel, 2017), (Thomas & Chopra, 2020)
Communities of Practice (CoP)	(Dinter et al., 2016), (Erat et al., 2006), (Randhawa et al., 2017), (Bell et al., 2012), (Huang & Zhang, 2016)
Digital Artifacts (DAs)	(Thomas & Chopra, 2020), (Fang et al., 2022), (Krogh & Haefliger, 2010)
Enterprise Social Media (ESM)	(Huang & Zhang, 2016), (Sultan, 2013), (Krogh, 2012), (Leonardi, 2014), (Schlagwein & Hu, 2017),
Gamification	(Friedrich et al., 2020), (Thneibat, 2021), (Žemaitis, 2014)
Open Innovation (OI)	(Dinter et al., 2016), (Randhawa et al., 2017), (Žemaitis, 2014), (Naqshbandi & Jasimuddin, 2018), (Santoro et al., 2018), (Lopes et al., 2017), (Haapalainen & Kantola, 2015), (Draghici et al., 2015), (Xu et al., 2018)
Virtual Reality (VR)	(Mueller et al., 2011), (García-Álvarez, 2015), (OLeary, 2013)

In the following, we briefly introduce the identified innovative concepts within KM. We start with brief definitions and the relevance for KM, review the dimensions of the literature and provide further research opportunities as well as application areas. Certain articles may cover multiple concepts.

Artificial Intelligence (AI)

Current research considers Artificial Intelligence (AI) to be able to transform and fundamentally change knowledge processes in our working environments, society and economy (Berente et al., 2021; Fteimi & Hopf; Sturm et al., 2021).

AI is a socio-technical umbrella concept and no fix set of technologies, which can be defined as the cutting edge of computational innovations that uses human intelligence to answer more complicated decision-making issues (Berente et al., 2021).

In the context of KM, machine learning (ML) (Sturm et al., 2021) algorithms as well as pattern languages (Gergin & Koch, 2013; Lloyd & Cranmore, 2003) play a major role. Furthermore, Natural Language Processing (NLP) (Johnson et al., 2015) as well as text mining (Kruse et al., 2013) are represented in the literature corpus. Most of the reviewed articles regarding AI are of conceptual nature (Kruse et al., 2013; Lloyd & Cranmore, 2003; Sturm et al., 2021), whereas one study is quantitative (Johnson et al., 2015) and one investigates case studies (Gergin & Koch, 2013). This conceptual focus shows that there is still plenty of room for applied research in form of e.g. Design Science Research, to make AI initiatives more tangible in the context of KM as a discipline.

Big Data (BD)

Big Data (BD) is defined as a concept of enormous data size and complexity, which is beyond what most database software tools can analyze (Tian, 2017). Beside this enormous data volume, BD also comprises data velocity, data variety, data veracity and data value. These ‘V’s represent the waves of big data evolvement. BD analytics is the process of capturing, acquiring, and sharing large volumes of explicit knowledge. This knowledge can be interpreted through tacit insight to produce conclusive outcomes for organizations (Thomas & Chopra, 2020).

On the one hand, BD may likely contribute to and/or be a component of KM in the future. [28]. On the other hand, it is still to be discussed, how BD influences or changes KMS design [28]. To counteract these controversies, research came up with intensive framework building regarding BD in KM (Intezari & Gressel, 2017; Tian, 2017). As a result, the future of BD seems to be closely related with the future of KM (Tian, 2017). Furthermore, BD shows high relevance for enabling KM systems to improve decision-making processes (Intezari & Gressel, 2017; Thomas & Chopra, 2020; Uden & He, 2017). However, there are still limiting factors especially for better strategic decision-making [28].

First, organizations started collecting and forging the existing knowledge into so called 'digital artifacts' (Thomas & Chopra, 2020) to counteract the sheer unavailability of explicit knowledge. Below, this concept of Digital Artifacts (DAs) is evaluated in more detail. However, these DAs were still limited by the lack of tacit knowledge as well as real-time data.

The lack of real-time data is addressed by the concept of Internet of Things (IoT). IoT refers to the network of physical objects that are connected to the internet and can collect and exchange data. By embedding IoT into KM systems via BD, organizations can achieve a competitive advantage by making faster decisions than their competitors (Uden & He, 2017).

Communities of Practice (CoP)

The definition of CoPs follows a clear order. First, a CoP is a group of people who share a joint domain of interest, which connects them. Second, they have social relationships and share their knowledge. Third, the CoP members are practitioners with a shared set of common resources, like tools or methods [30].

Out of the analyzed articles, there are different CoPs being addressed. On the one hand, CoPs seem to play a major role in interfirm communication and are affected by the firms learning and competition orientations (B2B), but not customer orientation (Bell et al., 2012). On the other hand, CoPs appear to be a main instrument for customer engagement in business customer communities (B2C) (Erat et al., 2006). Furthermore, CoPs effect the individual dimension, as there is empirical evidence, that contributing to CoPs leads to increased job-hopping (Huang & Zhang, 2016).

The concept of CoPs is also closely related to the concept of open innovation (OI) (Dinter et al., 2016; Randhawa et al., 2017). This relationship is being evaluated in more detail below.

Digital Artifacts (DAs)

Digital Artifacts (DAs) are provisional products or outputs of teamwork that rely on continuous inputs by contributors and are therefore more than often work in progress. DAs are a key part of modern teamwork, allowing (especially virtual) team members to communicate and coordinate their work. The use case for these artifacts and how they affect team productivity is an important area of research, as DAs are becoming increasingly common in workplaces around the world (Fang et al., 2022; Krogh, 2012; Thomas & Chopra, 2020). Examples for DAs are email messages or documents but can also be multimedial. These are quite distinct from the IT tools which produce them. Email systems and productivity software are used to create DAs. Email messages are sent and received through email systems and documents are created with word processing software.

The uprising discipline of knowledge coordination within KM – defined as the management of individually-held knowledge and respective knowledge requirements across boundaries, which includes processes like sharing and utilizing knowledge in order to solve complex multi-facetted problems (Fang et al., 2022) – heavily depends on DAs. It relies on the continuous production and reproduction of those artifacts.

Enterprise Social Media (ESM)

The term enterprise social media (ESM) is a neologism in the context of social software, web 2.0 and enterprise 2.0. According to Krogh, ESMs fundamentally change KM and a trend towards KM by social software exists. Especially the three layers of ESMs are relevant for KM. These layers are: 1. peer production and unbounded collaboration, 2. applications such as blogs, wikis and 3. scalable open platforms (Huang & Zhang, 2016; Krogh, 2012; Leonardi, 2014).

Whereas two articles in the literature corpus follow applied approaches (Huang & Zhang, 2016; Sultan, 2013), just as many articles focus on theory building (Leonardi, 2014; Schlagwein & Hu, 2017). Furthermore, Krogh opens up a strategic research agenda for social Software/ ESMs in KM (Krogh, 2012).

On the application side, Huang & Zhang outline the effect of ESM on job-hopping (Huang & Zhang, 2016), Sultan focuses on the application of disruptive ICT within ESM (Sultan, 2013). On the theory building side, especially the theory of communication visibility and the theory of extended absorptive capacity theory stand out. The theory of communication visibility stands for invisible communication between individuals becoming visible for third parties by ESM, which is supposed to improve at least the third parties metaknowledge (Leonardi, 2014). Absorptive capacity links ESM to organizational performance via the recognition and acquisition of external knowledge (Schlagwein & Hu, 2017).

Despite certain doubts regarding the future of ESM in KM concerning risks (e.g. knowledge spillover) and cost issues (e.g. value of internal knowledge), Krogh's research agenda outlines the development towards a ESM-led KM (Krogh, 2012).

Gamification

The term gamification stands for applying game elements in a context which would otherwise not be associated with fun (Deterding et al., 2011, p. 2). The human instinct to play becomes stimulated by gamification. Thereby, monotonous work, unpopular tasks or complex challenges can be made fun through the use of so-called 'game mechanics' (Schenk, 2019). Gamification can be distinguished from the related concept of serious games by the scope of the game elements. Complete games with a purpose other than just playing are called serious games. Partial game elements used in non-game environments are called gamification.

While many innovative concepts in KM mainly focus the technological aspects of knowledge storing, gamification is a key component for human motivation regarding knowledge sharing (Friedrich et al., 2020). Hence, gamification can be a great motivator for monotonous tasks in KM, such as knowledge preservation. In the context of KM especially game-based learning needs to be mentioned as a renowned gamification application area (Ahmed & Sutton, 2017). Gamification appears in various KM-dimensions, identified in the literature corpus.

While Friedrich et al. build a comprehensive framework for gamification in KM (Friedrich et al., 2020), Žemaitis focuses on gamification as a knowledge transfer method inside the SECI-phases and learning environments (Žemaitis, 2014). Besides, Thneibat picks up the concept of gamification for human motivation thereby focuses mainly on rewarding systems for knowledge acquisition and sharing (Thneibat, 2021).

A practitioners example for gamification within KM is the application of game elements to improve knowledge transfer in production and logistic environments like industrial shopfloor (Sochor et al., 2021). Previous empirical research implies that gamification is an instrument to improve knowledge sharing (Richter et al., 2014).

Open Innovation (OI)

Undoubtedly, (OI) received much attention in the corpus of literature. The concept's name contains the term 'innovation', which is one of the main search parameters. However, the incorporated articles consider OI as an innovative concept within KM.

OI stands for a concept beyond internal KM processes, in which organizations acquire external knowledge and innovation resources (e.g. partners in their value chain) (Santoro et al., 2018). Hence, the goal of OI is to combine internal with external knowledge and open the barrier between internal and external knowledge flows. Thereby, OI main research dimensions are inbound OI and outbound OI. Inbound OI is bringing in external knowledge into the organization (e.g. knowledge acquirement and knowledge utilization for internal product development), whereas outbound OI describes internal knowledge flowing out of the organization (e.g. knowledge sharing by licensing for commercializing on new markets) (Haapalainen & Kantola, 2015; Naqshbandi & Jasimuddin, 2018).

Beside three general articles regarding OI in KM (Haapalainen & Kantola, 2015; Naqshbandi & Jasimuddin, 2018; Santoro et al., 2018), two articles deal with university-industry collaboration (Draghici et al., 2015; Xu et al., 2018), two further articles focus on communities of practice (CoP) (Dinter et al., 2016; Randhawa et al., 2017), while one article each addresses OI regarding sustainability (Lopes et al., 2017) respectively the high tech sector (Žemaitis, 2014). While prior research lacked a comprehensive understanding of KM processes in OI (Haapalainen & Kantola, 2015), quantitative studies regarding OI affecting KM capacity (Santoro et al., 2018) but also OI affecting KM capability (Naqshbandi & Jasimuddin, 2018) addressed this shortage.

OI also seems to play a role in the relationship between university and industry but also in the interplay with government and research institutions. On the one hand, the process of University-Industry-Research (U-I-R) collaborative innovation (synonym for OI) seems to be the link between universities, enterprises and research institutions (Xu et al., 2018). On the other hand, the KM approach of OI in university-industry collaboration (UIC) considers entrepreneurial outcome as an achievement of the interplay between university, industry and government (Draghici et al., 2015). Both have in common, that they identify KM between universities and industry as the main action field for OI.

As already mentioned, CoPs show great relevance regarding OI. While Dinter et al. integrate OI and KM into virtual CoPs for improved knowledge creation and acquisition (Dinter et al., 2016), Randhawa et al. portray CoPs as OI intermediaries between organizations and online communities (Randhawa et al., 2017).

Finally, two domain specific articles round up the concept of OI within KM. Lopes et al. highlight in their exploratory analysis, that OI enriches KM with a method for driving competitive advantages for organizational sustainability in an integrated conceptual way [46].

For the high tech sector, OI in KM stands for the acquisition, exchange and transfer of knowledge – especially regarding the combination of traditional KM frameworks with new ICT for improved absorption of innovative knowledge (Žemaitis, 2014).

Virtual Reality (VR)

From a scientific perspective, the main aspects of VR include *immersion*, *presence*, and *interactivity*. *Immersion* describes the connection between the virtual world and the user, where the sense of time and the real world are often disconnected. *Presence* is the subjective experience of being in a place or environment, even if one is physically in a different place. *Interactivity* is a state in which a user can manipulate the VR environment in real time and change or interact with it (Radianti et al., 2020). VR is technologically implemented using so-called 'Head-Mounted Displays' (HMD for short) such as computer displays in or on a pair of glasses, which can convey a comprehensive illusion of reality (Slater & Wilbur, 1997). Analysts expect VR to compete with existing markets such as PCs or smartphones. Therefore, companies are encouraged to evaluate the potential use of VR in their processes, as the technology is advancing, and leading global companies are investing heavily in it (Harvard Business Review, 2019). In addition to the main application areas gaming and training, VR is particularly used in medical and healthcare, sports, architecture, real estate, and even tourism.

In the corpus of literature one article regarding the relevance of VR in KM stands out, without even mentioning the keyword virtual reality. In a prior concept to VR, Müller et al. consider so-called virtual worlds as electronic worlds, in which people can interact in realistic ways by using avatars. These virtual worlds may enable KM processes due to their social and collaborative potential (Mueller et al., 2011). In Addition, two further studies explicitly mention VR as either a relevant ICT-tool for KM processes (García-Álvarez, 2015) or as a promising KM technology regarding web 2.0 (OLeary, 2013).

Current applied research intensifies its ambitions, to prove the value of VR in KM, e.g. design thinking workshops conducted in VR (Schenk et al., 2022).

5. Discussion and Limitations

Our findings suggest that there already are several innovative concepts within the discipline of KM. Previous studies state, that KM is in dire need of innovative improvements due to several challenges (e.g. fast-paced competition, consumer preferences as well as disruptive technologies and business models) (Nowacki & Bachnik, 2016). While Di Vaio et al. conducted a solid bibliographical analysis of digital innovation within KMS (Di Vaio et al., 2021), Nowacki and Bachnik establish defining categories for innovations within KM (Nowacki & Bachnik, 2016). In contrast, this study focuses on making innovation within the field of KM visible and conceptualizing current innovative concepts within KM based on the relevant literature corpus. However, these findings are limited by the sheer amount and complexity of KM literature.

Therefore, there might be additional innovative concepts within the broad field of KM research and application, which were not comprehensively covered. This reveals a clear limitation of this work and of SLRs in general. It is hard to decide when a SLR is finished (vom Brocke et al., 2015). In this case, we decided it to be finished after conducting forward and backward searches for the most relevant articles of the research field, as a complete forward and backward search produced an unmanageable count of articles (multiple thousand).

However, our classification scheme (compare Figure 2), allows further concepts to be grouped into. For example, the concept of knowledge risks, stands for a merely organizational innovative concept within KM (Durst & Zieba, 2017), (Trkman & Desouza, 2012), (Marabelli & Newell, 2012). Thereby, Durst & Zieba identified several novel KM risks such as knowledge loss, attrition, leakage, spillover, waste, hiding or hoarding and their impact on organizational KM (Durst & Zieba, 2017).

Still, our study heavily relies on IS literature. This leads to a biased initial selection, which we tried to mitigate by also using cross-disciplinary databases like ScienceDirect beside IS specific outlets. Due to their interdisciplinary nature, further innovative KM concepts might not have been recognized as such, e.g. the concept of knowledge dynamics (Bratianu & Bejinaru, 2020). Furthermore, the definition of our search string leaves room for discussion regarding limiting factors. Solely relying on KM authors labeling their contribution as innovative might have cost us innovative KM concepts, which were not labelled as such. A taxonomy of innovations within KM, building on an established KM-process frameworks could have been of value, to create a more complex search string.

Nevertheless, this work highlights various highly relevant concepts and extends Nowacki and Bachniks categories for innovations within KM (Nowacki & Bachnik, 2016) by bringing them together into a classification scheme (compare Figure 2) for the underrepresented research of innovative concepts within KM as a discipline.

6. Conclusion

In the previous elaborations, the first two research questions were adequately addressed (RQ1 and RQ 2).

In this study, we examined, which innovative concepts exist within KM (RQ1) and how they can be categorized (RQ2). We identified eight innovative concepts, sorted them to according to KM innovation categories and assessed their potentials for specific KM subdisciplines. The concepts were also analyzed regarding their current state and their applicability. However, the questions what this implies for the future remains open (RQ3).

With this work, we contribute to the existing literature, with innovative concepts within KM, which represent possible future research areas. Nevertheless, we found, that many concepts are still addressed individually. There are only a few concepts, which share thematic similarities (such as CoPs and OI or BD and DAs). However, there are already articles, which study the interdependencies and synergies between concepts – e.g. concerning Gamification and VR (Ahmed & Sutton, 2017).

Furthermore, we propose to conduct further studies in order to verify Nowacki and Bachniks hypothesis that 'enterprises are little innovative in the area of knowledge management' (Nowacki & Bachnik, 2016). An applied research approach within existing organizations would help to figure out, which innovations show relevance in the practitioners' field and support the development of an integral model for innovation within KM.

Moreover, there is plenty of room for further empirical investigations, e.g. regarding traditional KM models, e.g. the SECI-spiral as the interplay between implicit and explicit knowledge, and how these fit to the modern KM innovations we introduced. These additional studies could also come across further undiscovered concepts within KM as a discipline and build upon or even extend the classification scheme.

All in all, we suggest a holistic approach on the identified innovative concepts – especially of those four, which touch all categories inside the reuleaux triangle (the triangle with curved edges) in the middle of the VENN-Diagram (compare Figure 2) – as a further research area. The sum of these concepts (ESM, Gamification, VR and AI) follows a metaversal approach (Mystakidis, 2022), which could form an interesting perspective on the future of KM.

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