Evidence Management System: Toward a design theory for research-practice communication platform

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Abstract:

The ultimate purpose is to promote evidence-based management. The immediate purpose is to capture, maintain, and deliver evidence that comes out of both management research and management practice. To do so, we offer an evidence management system design that is versatile to include humans and intelligent systems as its potential users. Our design theory proposes a platform to facilitate ongoing communication between researchers and practitioners as well as a trustworthy mechanism for delivering the evidence to its end user in real time. We take a theory driven approach to design an evidence management system. We use the theory of planned behavior as the framework for design guidance resulting in a design theory and empirical propositions. Our design comprises an evidence template, a wiki platform for bidirectional communication and a blockchain for ensuring trust.

Keywords: Evidence-based management; Evidence Management System; Research-practice gap

Introduction

Organizational knowledge management practices have been largely unsuccessful in capturing, evaluating and sharing knowledge created by researchers and knowledge possessed by managers in a systematic and sustainable way (Rynes *et al.*, 2001). Academic research has not adequately met the knowledge needs of practice, leading to an ever present gap between researchers and practitioners (Marabelli and Vaast, 2020; Rynes *et al.*, 2002). This has diminished the impact of business education and research on management practice (Mintzberg, 2005; Pearce and Huang, 2012). In other words, the gap between management research and practice remains unbridged (Sharma and Bansal, 2020). There have been many attempts to bridge the gap that has resulted in a number of suggestions (Kieser *et al.*, 2015). These include action research (Coghlan, 2011) ,Mode 2 research (Shani *et al.*, 2007), and engaged scholarship (Ven, 2007) which focus on addressing real life problems; Design Science which suggests adding a design mode to the more traditional science mode to generate and evaluate solutions to problems (Holmström *et al.*, 2009); a number of collaborative approaches that bring researchers and managers together in cocreating (Sharma and Bansal, 2020) and coproducing (Schumacher, 2018) knowledge that has practical value. Evidence-based management is one of the more recent approaches that includes a number of principles, processes and managerial practices to enhance the quality of decision making in real-life situations (Rousseau, 2020).

All of these approaches offered progressive solutions that have the potential to close the gap (Sharma and Bansal, 2020). However, most of them fell short at the implementation stage (Schumacher, 2018). There were ontological and epistemological differences between research and practice (Hatchuel, 2005; Sharma and Bansal, 2020). There were differences of emphasis between rigour and relevance (Kieser *et al.*, 2015). There were no mechanisms to maintain ongoing collaboration beyond a researcher and an organization (HakemZadeh and Baba, 2016). That is to say, the collaboration mechanisms were not scalable to a macro level where usable knowledge is generated and made available to the profession in real time. The validity of the knowledge and its trustworthiness could not be guaranteed to the satisfaction of the end user. There is no dynamic system that is capable of constant updates to usable knowledge.

While evidence-based management provided a robust collaborative solution in terms of an institutional structure and a usable product (Barends and Rousseau, 2018), the delivery mechanism required improvement (HakemZadeh and Baba, 2016). Our intention in this paper is to move the solution forward by offering a design, technology, and a delivery mechanism to gather and combine scientific and professional knowledge that we call evidence and make it available to practicing managers to enable evidence-based decision making in real time.

Management of organizations have become increasingly dependent on knowledge – both systematic knowledge produced through research and tacit knowledge of managers embedded often in unique contexts (Schumacher, 2018). Organizations have implemented a variety of approaches and systems for effective and efficient deployment of knowledge to manage their operations (Rubenstein-Montano *et al.*, 2001). The classic view of data-information-knowledge hierarchy in the knowledge management (KM) value chain conceived knowledge as an individual's state of mind (Alavi and Leidner, 2001). The knowledge-based theory of the firm posits knowledge as the know-how of the firm (Grant, 1996). Subsequently, with the growing popularity of the world wide web, the emphasis has shifted from know-how to know-where underscoring the importance of access to information (Alavi and Leidner, 2001). The paradigm shift introduced by data mining (DM), machine learning (ML) and artificial intelligence (AI) has transformed knowledge into a capability to predict future events and engage in timely action (Abbasi *et al.*, 2016). This has become the new value proposition driving modern business.

Knowledge needs to be rigorous, relevant and actionable to be useful in the field (Baba and HakemZadeh, 2012). We define the knowledge that is created, maintained, and used at the level of the phenomenon that we call business as business evidence (hereafter evidence). It is macro level knowledge that transcends the level of the organization. Arguably, it is of value to all entities --- organizations, government, and other institutions of society --- connected to business. Micro level knowledge generated at the firm level or across a sample of firms can be scaled up to macro level by a systematic review (SR) of many relevant studies that focus on a shared phenomenon or relationship (Barends and Rousseau, 2018; HakemZadeh and Baba, 2016). For example, empirical studies located at individual organizations exploring the relationship between absence and performance can be gathered together in the form of an SR to reveal a more sustainable relationship that can be simultaneously useful to a practicing manager interested in absence management or a theorist interested in exploring an enduring connection between absenteeism and productivity. However, for the knowledge to be of value to the practicing manager, it has to incorporate relevant field evidence gathered from practicing managers (Barends and Rousseau, 2018).

Members of the scientific community produce rigorous evidence based on research called Evidence with a capital "**E**"; while members of the professional community have access to evidence that is relevant and witnessed in their practice known as evidence with small "**e**" (Rousseau, 2006). The two communities need to collaborate to generate evidence that is rigorous, relevant and actionable (HakemZadeh and Baba, 2016). The strength of such evidence is contingent upon the prevailing consensus about its fit with the context, its replicability and its transparency (Baba and HakemZadeh, 2012). Ongoing collaboration between the two communities is vital in creating and maintaining such evidence (Marabelli and Vaast, 2020; Schumacher, 2018; Sharma and Bansal, 2020).

The rest of the paper is organized as follows. First, we discuss the notion of evidence-based management (EBMgt) and the need for evidence management systems (EMS). Then we propose a design theory for EMS that includes the kernel theory, meta-requirements, meta-design and empirical propositions for meta-design validation (Cronholm and Göbel, 2019; Walls *et al.*, 1992). We present the theory of planned behaviour (TPB) as the kernel theory for design guidance (Ajzen and Fishbein, 1980). Next, we explore the meta-requirements --- the class of goals informed by the kernel theory. This is followed by a description of meta-design --- a class of artifacts that satisfy the meta-requirements and the procedures for their construction. Finally, we propose a set of empirical propositions that can assess whether the design artifact satisfies the meta-design.

Evidence-based Management (EBMgt)

Although the concept of evidence-based practice originated in healthcare (Rousseau and Gunia, 2016), using the best available evidence for decision making is vital for success in many professions such as law, engineering, and management. Evidence-based practice is a disciplined approach to decision-making based on evidence that involves the integration of scientific knowledge and local knowledge (Barends and Rousseau, 2018). Rousseau (2006; 2020)

makes the distinction between knowledge that originates from research (scientific knowledge) and knowledge that originates from practice (local knowledge). The scientific knowledge is synthesized by researchers. It should be complemented by situational information, stakeholder concerns, and practitioner experience in generating evidence for the broad use by the community (Baba and HakemZadeh, 2012). However, the collaboration between researchers and practitioners in business management is quite limited (Rynes *et al.*, 2001). There are reasons for this fragmentation. The problems identified by management researchers often have limited practical significance, and their recommended solutions have limited practical application (Bartunek *et al.*, 2006). The scientific and professional communities have no common platform to exchange ideas (Kieser *et al.*, 2015). The resulting isolation makes practitioners unaware of research knowledge (Rynes *et al.*, 2002). Consequently, the scaling up of knowledge to evidence and its systematic codification common in healthcare, rarely happens in management (HakemZadeh and Baba, 2016).

The concept of EBMgt (Pfeffer and Sutton, 2006; Rousseau, 2006) was introduced to bridge the gap between researchers and managers. EBMgt posits that scientific knowledge from researchers and practical knowledge from managers collated in the form of an SR and made available in real time can improve decision quality and decision outcomes (HakemZadeh and Baba, 2016). This calls for a mechanism for the two communities to exchange ideas (Sharma and Bansal, 2020). Collaboration between researchers and practitioners is central to successful EBMgt (Barends and Rousseau, 2018; Rynes and Bartunek, 2017).

Much of the discussion on evidence-based management so far is predicated on the assumption that the evidence will be used by human agents and has resulted in templating the evidence for human use. Considering the tremendous progress over the past decade in machine learning (ML) and artificial intelligence (AI), we foresee that such evidence will likely be used by AI systems for decision making. Most business processes have already been automated in large organizations. Hence, we need information systems to codify business evidence that can be interpreted by both humans and machines. This is crucial to any future knowledge management system (KMS). We shall refer to such KMS as evidence management systems (EMS), and we believe they are a vital component of evidence-based management practice.

We see the need for a design theory to support the construction of an EMS artifact. Design theories are theorized practical knowledge that gives knowledge support to the design process (Goldkuhl, 2004) and provide prescriptions for building an artifact (Gregor, 2006). Consequently, we propose a design theory for evidence management systems following an established framework (Walls *et al.*, 2004) consisting of kernel theory, meta-requirements, meta-design and empirical propositions for the meta-design validation.

Kernel Theory

The social and the natural world influence socio-technical systems and require guidance from social theories for its design (Walls *et al.*, 2004). Such broad explanatory theories with no direct relationship to design, but nevertheless, providing insights for potential problem solutions are called kernel theories (Kuechler and Vaishnavi, 2012).

As our interest converges on managerial behavior, we believe that evidence-based decision making will improve firm performance (Rousseau and Gunia, 2016). Consequently, we would like to steer management decision making behavior toward evidence use. It is well established that behavior is driven by intention (Schwenk and Möser, 2009; Webb and Sheeran, 2006). Theory of planned behavior (TPB) suggests that such intention is influenced by the ease of effort, one's belief that effort would lead to good performance outcomes (Ajzen and Fishbein, 1980). The intention is further shaped by behavioral norms within the social system and the perceived control one has over one's behavior (Ajzen and Fishbein, 1980). Social influence is sustained by trust in the influencers (Alharbi, 2014). This framework has subsequently been applied to study the acceptance and use of technology by managers resulting in the popular unified theory of acceptance and use of technology (UTAUT) (Alharbi, 2014; Venkatesh *et al.*, 2003).

Figure 1: Theoretical framework for EMS design

To enable our effort to influence managers to use the best available evidence in their decision making, we start with

the assumption that intention to use evidence in managerial decision making is a function of one, the ease of effort to access evidence referred to as effort expectancy, two, the belief that effort would lead to anticipated performance outcomes via evidence use referred to as performance expectancy, three, the norms that favor evidence use in decision making referred to as social influence, four, the mechanisms of behavioral control that ensures decision use, and five, trust in the system itself as shown in Figure_1 (Venkatesh *et al.*, 2003). Our motivation is to design a system that would facilitate the coalescence of all these parameters toward evidence-based decision making (Baba and HakemZadeh, 2012; Venkatesh *et al.*, 2003). TPB serves as the kernel theory providing a conceptual lens for our design.

Meta-requirements of EMS

Meta-requirements describe requirements at a high level for a class of problems (Walls *et al.*, 2004), such as researcher-practitioner collaboration in our case. As EMS is a type of KMS, we describe the meta-requirements for extending a KMS to an EMS using the Alavi and Leidner (2001) framework for analyzing the role of IT in organizational knowledge.

KMS are enabling technologies that support the creation, storage, retrieval, transfer and application of knowledge (Alavi and Leidner, 2001). KMS does not represent a single technology and its implementation depends on the organizational needs. KMS consist of an IT infrastructure, collaboration technologies such as discussion forums, shared databases and wikis, and methods to integrate the various collaborative technologies (Santoro *et al.*, 2018). Potentially useful knowledge exists in many formats. Scientific knowledge often exists in an explicitly codified form, while practical knowledge is mostly the tacit knowledge of individuals, embedded in their context. EMS should be able to assist the research community to systematically validate the tacit knowledge and externalize it into an explicit form. Evidence, being communal or macro in scope combines the explicit and articulated knowledge of individual organizations also called its semantic memory (Stein and Zwass, 1995) available to everyone. Firms need to combine internal and external knowledge, collected from multiple stakeholders to manage their dynamic internal environment (Teece, 2007). Sharing resources requires accurate and unambiguous codification and a machine-readable structure. Though EMS as a knowledge community resource can potentially benefit everyone, groups that contribute knowledge may try to control the evidence for proprietary leverage. A mechanism is needed to ensure the communal nature of evidence and to guarantee authenticity so that all user groups of EMS trust it and use it.

The meta-requirements for an EMS can be summarized as follows:

1. Information must be collected in a structured form from as many stakeholders as possible.

2. Knowledge flow must be bidirectional. Evidence users (managers in the business field) giving practical recommendations and experts (institutional researchers in business) systematically aggregating evidence.

3. EMS must enforce a uniform ontology to minimize ambiguity.

4. EMS as a platform must offer a mechanism to ensure trust when the information is collected.

Next, we describe the meta-design to support these requirements.

Meta-design

Meta-design is a class of artifacts that could meet the meta-requirements embedded in the kernel theory (Walls *et al.*, 2004). We represent our meta-design in the form of a Design relevant explanatory/predictive model (DREPM)(Kuechler and Vaishnavi, 2012) that shows how the class of artifacts we propose meets the meta-requirements of the kernel theory --- TPB --- as shown in Figure_2. The artifacts are the component mechanisms that operationalize the theory.

Figure 2: Meta design for EMS

We propose the following components for our meta-design:

1. A structured Systematic Review (SR) template for EBMgt.

2. A wiki platform for collaborative bidirectional information collation.

3. An ontology based on value theory to ensure uniform terminology.

4. The blockchain platform to ensure trust.

Structured template for EBMgt

HakemZadeh and Baba (2016) suggest a template that captures the best practices in business research with well-defined sections such as title, introduction and background, methodology and measurement. These sections ensure rigor, relevance, and actionability of evidence for business management. Evidence captured with EBMgt template consists of standardized sections such as the title, introduction and background, methodology, related outcomes of interest, etc. This structured format ensures consistency and facilitates evidence use in decision-making. Natural language processing (NLP) techniques such as text summarization and topic modelling can extract information from such templates facilitating knowledge reuse (Chambers and Jurafsky, 2011). The use of a formal markup language such as XML may make structured evidence more machine-readable.

Wiki

Evidence has a moderate life span, and it needs to be updated periodically. Many stakeholders contribute knowledge, that needs to be collated into evidence by intelligent software agents or human curators. Evidence should be examined periodically leading to confirmation or refutation. In other words, evidence is a resource collaboratively collated by a knowledge community and a wiki (a collaboratively edited web resource) is a natural KMS for managing it (Dennis and Vessey, 2005).

Wikis are editable web pages that a group of users can collaboratively maintain. A markup language that uses tags to annotate elements within a document makes editing and formatting of text easy within a web browser (Wagner and Majchrzak, 2006). Wikipedia democratized the wiki platform and is one of the most widely used web applications. Anyone can create a new page as well as edit existing content, thereby building a free expandable collection of interlinked web pages on a wiki (Leuf and Cunningham, 2001). The knowledge captured by wikis is semi-structured. Expert curators enforce minimum quality standards as required for the user community. Knowledge captured in wikis can be reused by various users. The crowd-sourced nature of wikis keeps the knowledge up-to-date and actionable. MediaWiki is an example for free and open-source wiki platform, originally created for use on Wikipedia (Barrett, 2008). MediaWiki software provides role-based access giving special editorial rights to curators. The functionality of MediaWiki software can be extended using custom extensions and has built-in support for collaboration.

We believe that wiki, as a knowledge community platform, is ideal for an EMS. EMS requires a mechanism for reconciling minimally codified practical knowledge from managers and structured knowledge from researchers. In an ideal EMS, there should be a two-way communication between managers and researchers to convert practical knowledge to scientific knowledge and ultimately to evidence. However, this two-way communication between evidence users (managers) and evidence creators (researchers) is not directly supported by most wiki platforms. We

recommend the following capabilities in the wiki platform to serve as an EMS:

1. Any new page created on a particular topic should enforce the EBMgt template.

2. The front page should list potential topics on which research evidence is available or being collected.

3. Evidence creators should be able to create and update evidence, while evidence users give their comments, which should be kept separate from the EBMgt template.

4. The evidence-users should be able to vote on the importance of these topics. This would work as a feedback mechanism to evidence creators to recognize practically relevant topics.

A wiki with customized extensions could ensure effective and efficient bi-directional knowledge transfer between evidence creators and evidence users. Next, we discuss how the need for a common terminology and trust can be addressed in an EMS.

Ontology

Collation of the E and e harvested from the semantic memory of various groups into community-owned evidence requires a mechanism to define concepts formally and explicitly. An ontology is an explicit formal specification of terms in a domain and the relations among them (Gruber, 1993). Formal here refers to the machine-readability of knowledge in an ontology. It helps in making domain assumptions unambiguous and enables information systems to capture, evaluate and share domain knowledge reliably. The domain knowledge in business is complex with its own professional terminology and scientific jargon. Ontology makes knowledge repositories amenable to efficient search and reuse because of the unambiguous terminology and well-defined structure. We believe that an ontology-based search facilitated by EMS will increase the diffusion of complex knowledge even when knowledge users are scattered across the community (Sorenson *et al.*, 2006).

Several independent ontologies define substantive domains in business research such as accounting, finance, marketing etc. Resource Event Agent (REA) is an ontology for accounting that focuses on the change of value happening in organizations (Sicilia and Mora, 2010). REA assumes that every business transaction can be conceived as an exchange of value embedded in the resources between two actors. Hence, the core concepts in REA are Resource, Event, and Actor. e3-value is another business ontology covering value exchange between business partners, profitability analysis, and risk management (Gordijn and Akkermans, 2001). The Business Model Ontology (BMO) describes the business model of organizations at the enterprise level emphasizing internal capabilities and resource planning (Osterwalder and Pigneur, 2002). BMO has a wider scope incorporating marketing aspects in addition to accounting. A reference ontology has been constructed from REA, e3-value, and BMO ontologies reconciling their similarities and differences (Andersson *et al.*, 2006). Financial Industry Business Ontology (FIBO) defines concepts for the financial industry (Bennett, 2013) and uses the web ontology language (OWL) to abstract terminologies related to financial instruments and processes. These are examples of business ontologies currently in use.

In ontology design, it is crucial to prevent the proliferation of ontologies within the same domain. It is in the best interests of the field to have an inclusive ontology with a shared vocabulary, architecture, and semantics. The use of a foundational ontology to define upper-level concepts is a common practice (Keet, 2011). The unified foundational ontology (UFO) is an ideal foundational ontology tailored for the business domain (Guizzardi and Wagner, 2004). A mid-level ontology is needed to anchor the domain ontologies to the foundational ontology.

Figure 3: Proposed mid-level ontology to connect foundational ontology to domain ontologies

We suggest that the business community work towards a mid-level ontology that connects the UFO to domain ontologies such as REA and FIBO, mentioned earlier as shown in Figure_3. While there are dictionaries and encyclopedias on various business and management domains (Argyris *et al.*, 2005; Statt, 2004) that could serve as the basis for a foundational ontology, the concepts were not guided by any enveloping framework of business. So, we

felt the need to introduce a midlevel ontology that provides a theoretical framework for the domain. We put forward the value theory of business (Baba, 2016) to guide the design of such a mid-level ontology. Value theory envisions business as a transaction of value in society resulting in the creation of wealth (Thurow, 2000). The assumption here is that value creation leads to wealth creation. According to the theory, each functional field of business focuses on some aspect of value. Production and operations management focus on value creation. Accounting focuses on value assessment, finance with value allocation while marketing focuses on value exchange. Similarly, subdomains such as organizational behavior, human resources management, and management information systems also play important roles in value creation and exchange. Value theory forms the intellectual platform for knowledge creation in business management (Baba, 2016) and could serve as the conceptual guide for a mid-level ontology that links to the other domain ontologies in business. The ontology together with the EBMgt template provides the base for collating evidence. The process involves combining and evaluating "E" evidence gathered from research studies, and "e" evidence gathered from managerial practice. This combined and evaluated evidence is made available through an SR to end-users, in a machine friendly and seamless manner.

Blockchain

Evidence needs to be trusted for it to be put to use. This involves assessments and guarantees. Evidence requires to be assessed at two levels. The measurement of the outcome (e.g. reduction in productivity) and the measurement of the uncertainty associated with the measurement itself (e.g. error in measuring productivity). Evidence improves as outcome measurement becomes more accurate and the uncertainty associated with the measurement reduces (Hubbard, 2014). An evidence may completely change when the outcome expectations change. (Productivity reduces with increasing absenteeism, but this may change in future.) The utility of evidence is contingent on the methods of measurement at both levels (outcome and error). Therefore, a mechanism is needed to verify the methods of measuring outcome and error and to ascertain their credibility.

Trust plays a vital role in managing evidence. Conventionally, peer-review and professional consensus of reviewers are required for scaling data to knowledge and to evidence. The journals and other publishing platforms ensure trust by verifying the credentials of reviewers. The reviewers assess the validity of the methods and the accuracy of the conclusions of the researchers before incorporating it into evidence.

EMS needs a mechanism to manage trustful interactions. An online platform inherently lacks trust as anybody can potentially claim any identity. Though massive online knowledge management platforms such as Wikipedia has built-in mechanisms for ensuring credibility, they are not infallible. Conventionally, trust is propitiated by the competence of the curators.

Blockchain is a technology originally developed for managing cryptocurrencies such as bitcoin (Pilkington, 2016). Blockchain is a promising technology for ensuring trust in community-owned evidence (Secinaro *et al.*, 2021). The blockchain technology combines a distributed digital ledger, a decentralized consensus mechanism and cryptographic security measures to ensure a tamper-proof system to record any information (Secinaro *et al.*, 2021). Blockchain is essentially immutable ensuring the authenticity of any information stored in it. Here, we discuss some of the important design features and pragmatic choices for blockchain in an EMS. While the details of implementing and integrating blockchain technology into a wiki-based EMS is beyond the scope of this paper, we will describe at a general level, how blockchain can ensure trust in an EMS with an example.

Transformational leadership as a construct is known to influence job satisfaction (Hanaysha *et al.*, 2012). A meticulous SR can generate evidence on the strength and direction of this relationship that needs to be collaboratively benchmarked. Knowledge users need to verify who contributed to the benchmarked evidence and how and why they made these contributions. The end-users' (human or machine) knowledge reuse goals depend on these metadata. Blockchain can store this metadata about evidence in a shared, de-centralized, tamper-proof and immutable database. It is important to decide how much data to keep in the blockchain. Blockchain applications have high computational and storage overheads especially when all the data are written into the blockchain. In an EMS, ideally the metadata should be included in blockchain while the evidence itself remains in the EMS (off-chain) (Eberhardt and Tai, 2017). A validation mechanism can be incorporated in the EMS platform that finds and verifies the information and submits it to the blockchain (Xu *et al.*, 2016). Universities can function as external validation agents with academic researchers as curators of the information that gets into the blockchain. Public blockchain networks allow each user to create personal accounts and interact with the system (Vukolić, 2017). This model will be appropriate for a resource such as

an EMS and is likely to promote active collaboration among those who generate information and those who use it.

Empirical propositions

Empirical propositions verify if a design artifact is consistent with the meta-design (Walls *et al.*, 2004). As discussed before, the four constructs driving evidence use are Effort expectancy, Performance expectancy, Social influence and conditions that facilitate control (Venkatesh *et al.*, 2003). We have mapped the various functional modules in the EMS to these constructs as depicted in Figure_2 to show how EMS facilitates evidence use and to formulate them as empirical propositions.

The EBMgt SR template (HakemZadeh and Baba, 2016) helps in structuring the knowledge capture process. Structuring knowledge assists decontextualization of the information from the context in which it was collected, and then a subsequent recontextualization when it is applied to a new situation (Ackerman and Hadverson, 2000). Structured knowledge capture is important for knowledge communities. We believe that the EBMgt SR template to structure the codified evidence in a standardized manner, augments effort expectancy --- degree of ease associated with the use of the system (Venkatesh *et al.*, 2003).

P1: Template based knowledge capture enhances effort expectancy.

The performance expectancy is the belief that the system can positively influence outcome. The uniform terminology in the form of a formal ontology will reduce ambiguity associated with communications. Communication training is known to positively influence performance expectancy (Tanabe *et al.*, 2012). Consequently, we believe that the ontology will improve performance expectancy by facilitating efficient communication between researchers and managers.

P2: Adopting an ontology for knowledge capture enhances performance expectancy.

The wiki platform enables the community to not only contribute evidence but also communicate needs and preferences. The wiki platform can be augmented with additional modules for functions such as adding the voting and social media sharing.

The upvoting and downvoting is a popular technique adopted by social media platforms to capture user feedback on specific pieces of information with minimal effort. The ability to upvote and downvote on the EMS wiki will enable knowledge users (managers) to prioritize the topics according to their practical relevance. Hence, we associate the voting module in the Wiki platform with performance expectancy.

P3: Voting module in a wiki platform enhances performance expectancy.

The social media sharing module in the wiki platform enables users to share any content on their social network. The comment module in the wiki setup lets the knowledge users discuss the evidence with their peers. These modules will facilitate social influence. The Wiki with appropriate modules could displays links to other semantically related articles in the wiki and elsewhere on the internet. This is an enabling condition that encourages use.

P4: Social media sharing module enhances social influence.

As mentioned earlier, trust is central to evidence use necessitating a mechanism that ensures the authenticity of the evidence made available to the community (Alharbi, 2014). With the growing popularity of blockchain technology, users may become increasingly aware of the embedded privacy and security, positively influencing their trust in the platform (Shin, 2019). The blockchain framework for ensuring trust in the EMS platform facilitate evidence use.

P5: The blockchain technology enhances trust and behavioral control.

Discussion

Business is undergoing a paradigm shift. Business practices are gradually moving toward adaptable models used by humans and machines alike. As business researchers, we have the responsibility to adapt to these changing times and to guide the inevitable shift toward a machine-dominated world of ML and AI.

There is a growing discontent in the widening gap between business research and everyday practice. There is a burgeoning interest on how to close this gap and how to make our research relevant and actionable (Craighead *et al.*, 2019). The research community constantly generates peer-reviewed and thoroughly tested information that gets

codified in the published literature. The growth of corporate intranets has made it possible to collect and share tacit practical knowledge. In fact, the value of such organizational knowledge is often greater than the tangible assets of the organization. Our interest is to bring the two bodies of knowledge – scientific and professional – together, and to elevate them from an organizational level knowledge management to that of community level evidence management. EMS provides the glue that brings both together - the community of researchers and practitioners unconstrained by organizational boundaries. In essence, EMS is a theory driven approach to design.

The design we recommend has safeguards that ensure the quality and authenticity of evidence along with the ease of access. Ontologies or terminology systems are vital for collaboration between researchers and practitioners. The effectiveness of ontology engineering in the process of collaborative research has been well established (Kumazawa *et al.*, 2017). Healthcare has benefitted enormously from such well-established ontologies. The blockchain is emerging as a technology disrupter offering a simple and effective mechanism for brokering trust in online transactions. Trust is vital in machine-readable online EMS as unaccounted meddling can lead to serious consequences. We offer insights on how the blockchain technology can be used in EMS. The blockchain is an evolving technology and may undergo major changes at the conceptual and implementation levels in the future.

Collaboration is the key to bringing arcane research knowledge to actionable evidence. The EMS enhance collaboration by bringing new possibilities of knowledge synthesis. We propose customizations for a wiki platform for SRs based on the EBMgt template (HakemZadeh and Baba, 2016). Standardization of terminology and benchmarking evidence are the main challenges to effective collaboration. We recommend building a mid-level ontology based on value theory for linking a suitable foundational ontology to existing business ontologies. We believe that the blockchain technology will ensure trust in the evidence extended by the process of collaborative benchmarking (Sobati-Moghadam and Fayoumi, 2019). These components can be integrated into an overarching information system for evidence management.

We make four important contributions to the practice of management. The first is a system of evidence collection, collation, and use that adds value to the professional practice of management. The second is the design of a platform that allows for easy access to the best available evidence in real time for practicing managers and professional researchers. The third is a mechanism that engenders ongoing collaboration between the research and professional communities using machine learning and artificial intelligence. The fourth is a technology that ensures trust in the evidence that is produced and made available to the participating community.

We also make a contribution to the literature on evidence-based management by addressing the problem of evidence delivery and to the literature on KM by moving its dominant locus from the level of the firm to the level of the profession and by making KM models receptive to ML and AI through the use of advanced technology.

Modern societies continue the inevitable transformation into knowledge societies as economic growth increasingly relies on knowledge. Most business domains may not be knowledge-intensive enough to capitalize on this transformation as in other knowledge-intensive professions such as healthcare. EMS may be instrumental in aiding this transformation towards a sophisticated knowledge society in the business domain (Sorenson *et al.*, 2006). We hope that our recommendations would guide the development of a transformational EMS for the business domain that would facilitate management decision making.

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