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A Boundary Spanning Perspective of Practical Impact: The Case of IS Practitioner Doctorates

Completed Research Paper

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Abstract

IS research often seeks to deliver practical impact, in addition to the traditional requirement for theoretical contribution. While an admirable goal, it is nevertheless a challenging prospect, as key questions remain around how to best facilitate a relationship between IS academic and practitioner communities. To explore this question, our paper investigates boundary spanning by 'practitioner doctorates' - PhD students with professional experience who seek to span the fields of academia and practice during their research. Drawing on in-depth interviews with practitioner doctorates, our findings point towards several factors for practical impact such as researcher legitimacy, expectation management, and adapting to changes in industry requirements. In doing so, we contribute towards an understanding of engaged scholarship in IS and take steps towards addressing the dearth of research on doctoral studies in the IS field to date.

Keywords: Boundary spanning; practitioner doctorates; design science research; research-practice gap; engaged scholarship; legitimacy.

Introduction

As investment levels in PhD research continue to rise across the world, the demonstration of value has become paramount (AACSB 2021). From an academia standpoint, value can be evidenced through publication of research as established scholars build on existing literature to put forward theoretical contributions to the IS field. However, a number of PhD research projects also seeks to demonstrate value to industry and other practitioner communities by producing artefacts and knowledge for addressing organisational problems (Cater-Steel et al. 2019). Certain IS research paradigms such as Design Science Research (DSR) and action research are particularly suitable for a close alignment of research and practice and have initiated the development of methodical approaches that are dedicated to the creation of value for practice through research outcomes (Österle et al. 2011; Sein et al. 2011; Wieringa and Moralı 2012).

Literature points to motivations for such an alignment of IS research and practice. Firstly, as an applied research field, alignment between IS research and practice is seen as important from the perspective of legitimacy, as close ties to industry can ensure that theory building is grounded in real world contexts, improving the validity and practical applicability of explanations (Klein and Rowe 2008; Mathiassen and Sandberg 2013; Moeini et al. 2019). For instance, academic-practitioner collaborations seek to address the dual objectives of both problem-solving in a practical context, and theoretical contributions (Hodgkinson and Rousseau 2009; Sein et al. 2011). However, this is set against arguments that an excessive focus on 'variables' (theoretical concepts) versus 'narratives' (practitioner language) in IS research explains in part the challenges faced when engaging practitioner audiences (Ramiller and Pentland 2009). Secondly, from a resource perspective, alignment is seen as desirable from the perspective of accessing novel technologies, winning financial support from industry (e.g., consulting and research funding), and promoting research student employability (e.g., opportunities for graduates, and demand for future graduates) (Gill and Bhattacherjee 2009; Hodgkinson and Rousseau 2009). Close ties between academics and practitioners can therefore guide research directions and curriculum design in universities, ensuring that course content is also informed by industry needs.

However, despite these motivations, research and practice alignment is said to be notoriously difficult to achieve, with many scholars alleging a significant "gap" between the two domains (Moeini et al. 2019; Wainwright et al. 2018). Academia and practice have been described as autonomous and self-referential fields, which makes communication and collaboration between the two, problematic if not impossible (Hodgkinson and Rousseau 2009; Kieser and Leiner 2009). Arguments have also been made that a gap between research and practice is necessary for the effective functioning of each field (Kieser and Leiner 2009). Proponents of this view have asserted that 'cognitive and emotional distance' is necessary for academics to produce scientific knowledge through critical reflection on the practice being examined (Bansal et al. 2012; Kieser and Leiner 2009). Nevertheless, given the emphasis placed on both theoretical contributions (Mueller 2021) and practical contributions (Te'eni et al. 2017) within the IS field, further investigations are warranted into how the gap between research and practice might be reduced.

Motivated by ongoing debates in IS literature around the relationship between research and practice (otherwise referred to as 'engaged scholarship') (Mathiassen 2017; Moeini et al. 2019; Wainwright et al. 2018), our study aims to explore the role of 'practitioner doctorates' in closing the research-practice gap. Practitioner doctorates refer to PhD students with professional experience and qualifications who seek to span the fields of academia and practice during their research, often in collaboration with a practice organisation (Klein and Rowe 2008; Mathiassen and Sandberg 2013). Using the theoretical lens of boundary spanning (e.g., Levina and Vaast 2005), we seek to advance our understanding of cases in which practical impact is desired and investigate the creation of '*joint fields*' between research and practice in the context of practitioner doctorates research. We explore how boundary spanning can help address perceived gaps in areas such as relevance (investigation of problems that align with practitioner needs), knowledge transfer (effective communication), and motivation (practitioners' interest in research) (e.g., Straub and Ang 2011).

To accomplish this, our study aims to answer the following question: *What are the factors influencing practical impact in IS practitioner doctoral research?* We draw on findings from exploratory and in-depth interviews with ten PhD students with professional experience, highlighting both successful and unsuccessful attempts by practitioner doctorates to have a marked effect or influence on practice (e.g., changing ways of working in industry / the public sector) as well as academia (e.g., publishing conference and journal papers). Following Nunamaker et al. (2015) and Moeini et al. (2019), we focus on practical contributions in the form of a proof-of-concept (demonstrating the functional feasibility of a solution), a proof-of-value (investigating whether a solution can create value across a variety of conditions), and a proof-of-use (addressing complex issues of operational feasibility in practice) (Nunamaker Jr et al. 2015).

Our research makes two important contributions which will be of interest to IS academics (including PhD programme coordinators and PhD supervisors), and practitioners involved in collaborative research projects. Firstly, we inductively reveal several factors influencing practical impact in practitioner doctorate research. We discuss the factors of boundary spanning between academic and practitioner communities such as expectation management, researcher legitimacy, and adapting to changes in industry requirements. Secondly, we then develop recommendations for PhD supervisors and programme coordinators on how they might help practitioner doctorates realise practical impact in the future, offering guidance for IS scholars who wish to purse the ambition of practical contribution. This includes activities such as the provision of communication courses, and incentives for practical contribution e.g., requirements for practitioner

publications. As an applied research field, practical impact is a topic of significance for the IS community (e.g., Hirschheim 2019). Our discussion focuses on the perceived gaps between IS research and practice to stimulate further dialogue on the delivery of practical impact by practitioner doctorates and can potentially be adopted by programme coordinators to guide the design of PhD curricula in the IS field.

Background

The Alleged Gap Between Research and Practice in Information Systems

A number of authors have presented bibliometric evidence that suggests the existence of a gap between research and practice (e.g., Gill and Bhattacherjee 2009; Moeini et al. 2019). Moeini et al.'s (2019) analysis of 109 articles published in MISQ, ISR, JMIS, JSIS, and JIT suggests that while IS strategy research has been successful in selecting relevant topics, the development of relevant knowledge products and their alignment with end users and disseminators are less evident. While academic-practitioner collaborations are de-facto evidence of mutual informing, the drop off in practitioner engagement with journals such as MIS Quarterly has also been observed by others, who reference the decision taken by the Society for Information Management (SIM) in 1995 to terminate their subscription to MIS Quarterly for members (primarily senior IT executives, CIOs, and consultants) (Galletta et al. 2019). Some authors have anecdotally discussed how practitioner collaborations are more valued in European countries such as Germany, as reflected in the high level of collaboration between academia and industry (Gill and Bhattacherjee 2009; Hirschheim 2019). However, other scholars have referenced the low attendance of practitioners at IS conferences such as ICIS (Galletta et al. 2019; Klein and Rowe 2008; Rosemann and Vessey 2008) and limited readership of IS journals by practitioners (Moeini et al. 2019; Wainwright et al. 2018).

Nevertheless, other scholars have presented evidence that argues against the existence of a gap between research and practice (e.g., Baskerville and Myers 2009; Straub and Ang 2011). Based on an analysis of literature from selected academic, professional, and academic-practitioner journals, Straub and Ang (2011) assert that IS scholars satisfy the alignment criteria of topic relevance by frequently investigating key practitioner challenges. The authors are less assertive though about claims for knowledge transference due to the lack of rigorously conducted empirical studies on the topic. Similarly, Baskerville and Myers (2009) suggest that academic research is relevant to practitioner interests, based on empirical evidence that both domains are characterised by the emergence of distinct "fashions" - topics which are seen as worthy of increased attention at different points in time such as computer-aided software engineering, e-commerce, and business process reengineering. Baskerville and Myers (2009) even suggest that academia often leads practice in investigating certain fashions, despite time lags in the publishing.

However, to date, discussions on alleged gaps between research and practice have primarily been delivered as commentaries and opinion pieces (Hirschheim 2019; Straub and Ang 2011). Empirical evidence is by contrast, relatively scarce with many assertions around the existence of a gap between research and practice based on anecdotal and unreferenced evidence (Lee 1999; Straub and Ang 2011). Scholars have consequently called for more empirical evidence to understand potential gaps (Lee 1999; Wainwright et al. 2018), as a more immediate step to addressing IS scholars' broader call for relevance in IS research (Te'eni et al. 2017). Existing empirical studies which examine the gap are primarily based on bibliometric analyses of journal articles (academic, professional, and academic practitioner), and literature reviews (Moeini et al. 2019; Straub and Ang 2011). In contrast, the number of field studies on this research topic are comparatively small, albeit for a few examples such as from Mathiassen & Sandberg (2013). Empirical data on the gap between research and practice has been mixed, with contradictory evidence presented (Straub and Ang 2011).

Practitioner Doctorates

One means suggested for bridging the gap between research and practice is the development of doctorate programmes which emphasise an industry focus during doctoral education (Hirschheim 2019; Klein and Rowe 2008; Mathiassen and Sandberg 2013). These programmes are proposed to support the development of 'practitioner-researchers' who can act as a conduit between the fields of academia and practice (Hardwicke et al. 2018; Klein and Rowe 2008; Mathiassen and Sandberg 2013). Practitioner doctorates are professional qualified PhD students who often seek to combine the rigor of traditional academic research with increased relevance through collaboration with a practice organisation (Borrell-Damian et al. 2010; Hardwicke et al. 2018; Mathiassen and Sandberg 2013). The most salient feature of the model is that the

doctoral student possesses some degree of professional experience either during, or prior to, undertaking doctoral research. For instance, practitioner doctorates may be industry experts who return to academia with the aim of undertaking PhD research or researchers who use industry collaboration projects or industry placements as a setting for their PhD research. Practitioner doctorates are supervised by academic representatives, and sometimes practitioner supervisors, who then guide decisions around the research direction, and/or monitoring of progress and the quality of research deliverables.

Some emerging research suggests that such practitioner doctorates are uniquely placed to bridge the divide between academia and industry and strengthen network ties between the two groups. Doctoral students have been identified as key agents for transferring knowledge between academia and industry, and in turn an essential part of the knowledge economy (Roberts 2018; Thune 2009). Doctoral students are also proposed to address differences in language and cognitive orientation, generating both theoretical and practical contributions that can act as a bridge between the two domains (Hardwicke et al. 2018; Kitagawa 2014; Klein and Rowe 2008; Mathiassen and Sandberg 2013; Thune 2009). The professional experience and qualifications of practitioner doctorates can also enable them to engage in data provision through their network, and secure industry contributions towards a doctoral stipend (Borrell-Damian et al. 2010; Kitagawa 2014). Increasingly, doctoral research is also seen as a segue for a career in industry or academia; while doctoral research traditionally prepared candidates for a career in academia, recent employment trends have also seen many PhD graduates follow career paths in industry (Borrell-Damian et al. 2010).

However, research on practitioner doctorates to date is limited, particularly within the IS field (Burmeister 2015; Klein and Rowe 2008; Mathiassen and Sandberg 2013). Insights into the experience of IS practitioner doctorates, have also received scant attention in the literature, with findings often subsumed under the broader category of business doctorates (Burmeister 2015; Hirschheim and Klein 2012). Research on this topic tends to look at supervisor practices, or the design of industry PhD programmes (Burmeister 2015).

Given the potentially important role that practitioner doctorates can play in bridging gaps between research and practice in IS, further research is therefore needed to understand the process and outcomes of industry-doctoral student interactions. In order to better understand how practitioner doctorates might bridge divides between academic and practitioner groups, we draw on the theoretical lens of boundary spanning (Levina and Vaast 2005; Van Osch and Steinfield 2016).

Boundary Spanning Theory

Boundary spanning involves agents from a specific field (in our case, academics in the IS community) engaging with agents from a separate and distinct field (organisations or practitioners in industry) to pursue shared work outcomes (see Figure 1) (Abbott et al. 2013; Kaplan et al. 2017; Levina and Vaast 2006). The movement of people, objects, and ideas can in turn lead to a reconfiguration of boundaries between fields through ongoing negotiation and dialogue (Kislov et al. 2017). The role of a boundary spanner can be assigned a-priori or emerge over time through interactions within fields (Levina and Vaast 2005; Lindgren et al. 2008). 'Designated boundary spanners' are agents with pre-assigned responsibility for facilitating the transfer of knowledge between fields and reducing professional or organisational distances; meanwhile, 'boundary spanners in practice' are agents without assigned responsibilities who navigate knowledge boundaries between fields over time and cultivate closer relationships between groups. For instance, Abbot et al. (2013) discuss the role of transnational intermediaries as designated boundary spanners in global sourcing arrangements and discuss their impact in creating a new language between fields (creolisation).

Boundary spanning can eventually lead to the creation of a new environment or 'joint field' (in our case, practitioner doctorate research project) where different groups collaborate in shared work practices (Guo et al. 2014). This requires boundary spanning activities to transmit expertise between groups, with individual 'boundary spanners' acting as filters and facilitators of relevant knowledge to different fields (academics and practitioners) (e.g., Van Osch and Steinfield 2016). Boundary spanners provide tailored information to key stakeholders both within (intra-organisational) and outside (inter-organisational) the group to which they belong (Kaplan et al. 2017; Kislov et al. 2017). Another factor affecting boundary spanners is their dual involvement in different fields, which can increase the potential for role conflict due to competing demands (Abbott et al. 2013; Lissillour and Sahut 2021). Boundary spanning is essential for ensuring legitimacy across both fields. This can take the form of accommodating diverse interests, negotiating meanings, and building trust between different groups in the joint field (Kaplan et al. 2017; Levina and Vaast 2006). 'Political manoeuvring' may also be required to maintain the joint field's existence, ensuring all stakeholders

are engaged and committed to boundary spanning activities (Kislov et al. 2017; Levina and Vaast 2005; Van Osch and Steinfield 2016). Boundary spanners often need to transform organisational structures and develop 'locally useful' artefacts for information transmittal. While recognising that boundary spanning can broadly occur within and between organisations, our case focuses specifically on the IS domain of academia ('Field 1' – A in Figure 1) and target practitioner organisations ('Field 2' – B in Figure 1).

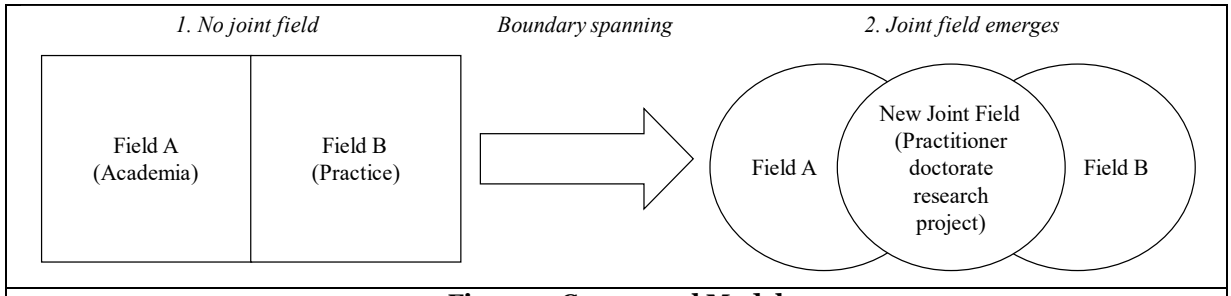


Figure 1. Conceptual Model

Prior research has typically focused on the spanning of internal boundaries within a single organisation (Guo et al. 2014; Lindgren et al. 2008), with less attention directed towards team-level boundary spanning across organisations (Van Osch and Steinfield 2016). One exception is Kislov et al. (2017) who study boundary spanning within the context of a project involving a university and different healthcare organisations. They find that the legitimisation of boundary spanning agents across different fields rests on their access to, and mobilisation of, different forms of capital e.g., social, cultural, economic. However, boundary spanning roles are not permanent and their legitimacy may erode over time. We direct attention towards both inter- organisational boundary spanning to explore how practitioner doctorates pursue the dual objectives of legitimacy by satisfying the requirement of theoretical contributions set by academic supervisors (Hardwicke et al. 2018; Kaplan et al. 2017), while also engaging with key practitioner contact points/gatekeepers across organisations (Borrell-Damian et al. 2010; Kitagawa 2014).

Literature has also primarily focused attention on boundary spanning by high status agents within a single organisation (Levina and Vaast 2005; Lissillour and Sahut 2021). However, Kaplan et al. (2017) in contrast suggest that doctoral students, often perceived as low status agents in academia, are uniquely placed to act as effective boundary spanners given the lower opportunity cost they face in bridging divides across practitioner and academia communities and their willingness to undertake this work. Building on these findings, we focus attention on how practitioner doctorates can span the boundaries between academia and practice, despite status differences across the two fields.

Research Design

Our research aims to explore the factors influencing practical impact in IS practitioner doctorate research projects through a boundary spanning perspective. We draw on qualitative data from ten exploratory, semi-structured interviews with PhD students with professional experience. All practitioner doctorates were based in the same IS department of a chosen European university. The study was approved by the local research ethics committee and the authors were not involved in teaching or examining the participants.

Data was collected between February 2021 and September 2021 through semi-structured interviews (Myers and Newman 2007) with ten participants. This included recent practitioner doctorate graduates, and current practitioner doctorate students (third or final year). Data saturation was reached once all doctoral candidates in the department who met the sampling criteria were interviewed (some declined to be interviewed). We adopted a purposeful sampling approach (Seidman 2006) to select professionally qualified PhD students who (i) were currently working in industry or had prior industry experience, (ii) were a member of a professional body, or (iii) had completed industry certifications prior to the commencement of their doctoral studies. Instead of considering practitioner doctorates as boundary spanners by default, the authors engaged in ongoing discussion around the extent to which they engaged in boundary spanning activities. The opportunities and challenges of boundary spanning were then further investigated in the study with interview questions informed by relevant literature on boundary spanning (see Figure 1).

All selected interviewees also indicated that they have observed some degree of practical impact from their work and engaged in boundary spanning activities between academia and practice. This is not to suggest

that other types of PhD candidates (e.g., those conducting basic research) will be unable to create practical impact during their study. Instead, purposeful sampling sought to understand the opportunities and challenges faced by practitioner doctorates who move from the field of practice to academia with the aim to pursuing practical impact during doctoral training.

The interviews sought to gain insights into participants' perspectives on boundary spanning within the joint field of doctoral research, as well as the enablers and barriers encountered in deriving practical impact. Interviews each lasted between 45 and 90 minutes and were scheduled at a time and location that is convenient for participants. Before the interview, participants were asked their permission to record the interview for the purposes of transcription and further analysis. The interview guideline was informed by a review of literature on boundary spanning, engaged scholarship, and practitioner doctorates (see Section 2). Participants in our study were asked questions on the topic, method, and content of their PhD research as well as their dissemination activities with practitioners (interview protocol is available upon request). They were then asked to indicate the degree to which they feel the PhD research has achieved different measures of practical impact, and how boundary spanning has influenced this. Table 1 provides an overview of the practitioner doctorates interviewed in our study.

ID	Description of Practitioner Doctorate Projects	Participants' Background
PHD1	Design science research project that sought to create a checklist artefact for enhancing patient-clinician communication during medical appointments.	Full-time practitioner doctorate (on campus) with 20+ year's practical experience in the IT sector.
PHD2	Design science project research which aimed to explore the application of blockchain technology for specified use cases e.g., idea generation.	Full-time practitioner doctorate (on campus) with 5 years' experience working in an industry sponsored research lab.
PHD3	Qualitative research project which sought to explore the competencies affecting employee wellbeing and happiness in the IT sector.	Part-time practitioner doctorate (external) with 15+ year's practical experience in the IT sector.
PHD4	Quantitative research project which explored the application of blockchain technology for financial use cases e.g., crowdfunding.	Full-time practitioner doctorate (on campus) with 2 years' experience in an industry sponsored research lab.
PHD5	Case study research project exploring large-scale system implementations in the healthcare sector, and the associated competencies of success and failure.	Part-time practitioner doctorate (external) with 20+ years' experience as director of IT in a national hospital.
PHD6	Qualitative research project exploring the cognitive aspects of digital transformation and outcomes of IT adoption.	Part-time practitioner doctorate (external) with 20+ years' experience as a consultant in a multinational IT firm.
PHD7	Design science research project which aimed to create design principles for e-learning systems and assessment practices.	Part-time practitioner doctorate (on campus), educator and associate researcher with 10+ years' experience in a university research centre.
PHD8	Design science research project which aimed to create a canvas for assessing and planning research projects.	Part-time practitioner doctorate (on campus), 25 years' experience as director of IT and research.
PHD9	Qualitative research project on the decision-making processes behind enterprise architectural decisions, and the impacts of trade-offs and assumptions.	Part-time practitioner doctorate (external) with 15+ years' experience as director of enterprise architecture in a multinational IT company.
PHD10	Qualitative research project exploring oscillations in decision-maker's approaches when using IS solutions in dynamic and un-dynamic environments.	Full-time practitioner doctorate (on campus) with 3 years practical experience. Returned to industry after graduation.

Table 1. Overview of Practitioner Doctorates in the Study

Thematic analysis was then used to analyse data from our ten transcribed interviews (see Figure 2). The authors met regularly during each phase of thematic analysis to collectively make sense of the findings through ongoing dialogue and negotiation around the codes (Miles and Huberman 1994). During these meetings, which typically lasted between one and two hours, the authors asked a series of questions about the data to extract potentially relevant themes. These interactions in turn helped guide the ongoing analysis.

Following Gioia et al. (2013), phase one began with the co-authors continuously reading and re-reading the ten interview transcripts to familiarise themselves with the data and note initial ideas. Phase two then involved generating initial codes (see Level 1 codes in Figure 2) that identified interesting factors influencing practical impact achieved by each practitioner doctorate research project, as well as associated properties. Phase three centred on searching for relevant themes by collating initial codes into potential themes (see Level 2 codes in Figure 2) through collective reasoning among the four co-authors. In phase four, each theme

was reviewed and critically appraised by the co-authors to ensure it was representative of coded extracts and the entire data set. Meanwhile, phase five sought to define and name themes, refining core themes to form a storyline around the research (Strauss and Corbin 1990). In phase six, the authors adopted aggregate codes based on the work of Roseman and Vessey (2008) to characterise how research impact can be improved. Coder corroboration sessions were organised on a weekly basis and involved a critical discussion of outcomes from each phase of data analysis. Each author's contribution was exposed to questioning to ensure that codes were consistent with the data, theoretical background, and underlying research question.

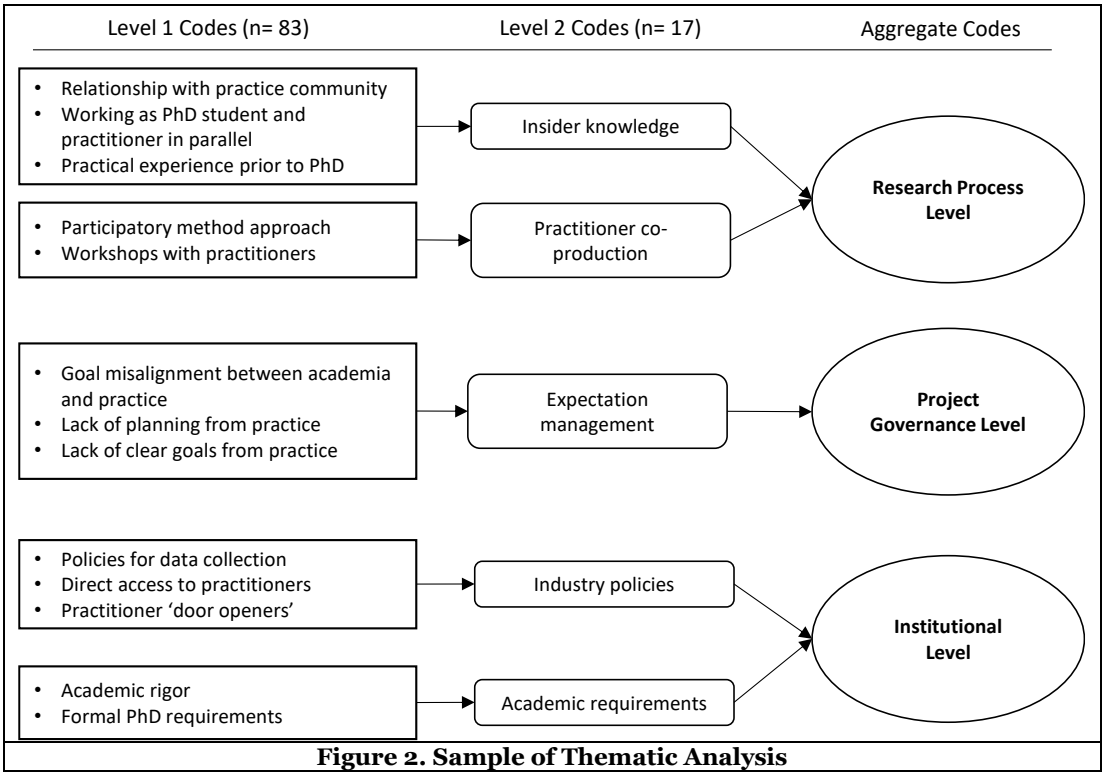


Figure 2. Sample of Thematic Analysis

To illustrate our coding process, the following excerpt is provided from one of the interviews with explanations on how this mapped to identified themes: "*number one is, you know, lack of like top level commitment or the governance and support. It was the first thing that happened. I felt was that like, those objectives weren't put out there straight away"* (PHD2). We firstly coded this as "*Organisational attention*" at level 1 which was then grouped with the code "*Competing demands*" as "*Priority management in organisation*" at level 2. This level 2 code then falls into the aggregate theme of "Project governance".

Boundary spanning theory also provided a sensitising lens for our data analysis (Klein and Myers 1999). Based on our coding, we inductively reveal the factors effecting practical impact through boundary spanning by practitioner doctorates across three levels (Rosemann and Vessey, 2008):

- Research process refers to decisions around methodology, theoretical background, and the communication of findings which researchers control directly. In our study, this perspective applies to a *single* practitioner doctorate research project and can *only be* influenced by the practitioner doctorate and supervisor.
- Project governance refers to the different alliances formed in the research project. In the context of our research, this perspective applies to a *single* practitioner doctorate research project and *all* stakeholders involved who can influence its governance e.g., academic supervisors and practitioner contact points.
- Institutional refers to the mechanisms of social order that institutions put in place to provide "an environment conductive to pursuing research that is relevant to practice" (Rosemann and Vessey, 2008 pg. 3) e.g., structures and rules. In the context of our research, we apply this perspective to a *class* of practitioner doctorate research projects (transcending single projects).

The final phase of data analysis involved the co-authors producing a report using extracts from the thematic analysis process to explore the research question detailed in section 1.

Findings

In this section, we discuss the factors influencing practical impact through boundary spanning by practitioner doctorates across the three levels.

Boundary Spanning at Research Process Level

The practitioner doctorate can influence the practical impact of the single PhD project, making decisions or undertaking actions throughout the research process to stimulate practical impact (see Table 2). Firstly, a practitioner doctorate can bring with them **insider knowledge**. Such knowledge is useful since it helps with understanding the problem in practice and can help obtain better results through a more informed and empathic interactions with practitioners: "*I have [the illness] myself, so I am a patient, so I experience the problem […] Sometimes I realised that […] by me telling them my stories it would make them more comfortable telling their stories. […] People relate and they open up"* (PHD1). Insider knowledge can ensure that practitioners are convinced a practitioner doctorate understands the problem to be addressed and the limits of their research. This can provide more open and valuable feedback: *"I use [the artifact] myself and sometimes I think it's rubbish in these various domains. And once I gave [a patient] that kind of permission to speak she was giving me very, very good feedback then.*" (PHD1)

A practitioner doctorate's **personal motivation** for advancing practice can facilitate impact since they might have the opportunity to align the thesis' topic with their aims: "*I've been involved in a number of ERP systems […] what amazed me was that, on the one hand so many people felt they were a failure and on the other hand, different people in the same organisation, looking at the same system, thought it was an outstanding success. […] So really it was my own personal experience that drove the topic and the issue. I was passionate about it and still am.*" (PHD5) An in-depth or even emotional connection with a research problem might also support the definition of an impactful topic; however, a practitioner doctorate should avoid having too much emotional involvement and to ensure they can separate the research from their own personal situation: *"Rather than looking at something all the time through the eyes of a patient to start to be looking at it more through the eyes of a researcher. In other words: wear your researcher hat. And knowing when to take off the researcher hat and put on the patient hat in terms of empathy."* (PHD1)

The motivation to create practical impact should be channelled and operationalised with a plan to know which steps need to be undertaken to achieve impact and monitor progress. After the practitioner doctorate has received a basic understanding of the topic and performed foundational work, the practitioner doctorate can then define a plan. Depending on his or her preferences, the plan can focus on either academic or practical contributions or both and indicate a path to achievement: "*I think the idea that this could have practical implications kind of came not towards the end. […] Then [my supervisors] were asking me what I wanted to do afterwards if I wanted to continue on academic. […] I didn't really want to stay in academics myself. So, my supervisor started kind of aligning the conclusion of my thesis into more of a how this thesis could help in industry.*" (PHD4) During the research process, **practitioner co-production** of the research results can help bring in insights from practice. Practitioner doctorates can decide to involve other practitioners by applying a participatory method approach, e.g., through the practitioners' involvement in the design and evaluation of an IT artifact: "*And in looking at that, an artifact […] was created and then it was put into being, I suppose, through instantiations for evaluation. And in that regard, there were different practitioners involved in its development and evaluation.*" (PHD7)

If a practitioner doctorate involves other practitioners through co-production, the results are mostly visible to a smaller group of practitioners. After final or intermediate results have been created, practitioner doctorates make these available to a broad audience through **digital communication with practice**. For example, blogs and reports can serve as foundation for an academic article. Alternatively, they can be created out of academic publications, backed up with a rigor argumentation: "*I think what will come out of it is […] probably things like blogs so maybe taking the […] academic paper and then making that consumable for the wider population we'll say the work in practice population […] I suppose something that a lot of blog writers wouldn't do isn't that I would have done the academic rigor that I used to back up anything I say in a blog. It's not just an opinion, it's opinion that's backed up by facts.*" (PHD3) For successful

communication in boundary spanning, a practitioner doctorate should have interpersonal skills: "*I think the ability to do research and the ability to be entertaining are two circles […] the ability to actually take the knowledge, turn it into bite sized pieces that people can understand and give it to people in a way that they can really relate to, that's a very different skill*" (PHD9). Also, joint events with practitioners such as conferences and the creation of reports as preliminary versions of conference or journal articles can provide suitable means for dissemination to practice.

To appropriately communicate their results to practice and avoid misunderstandings, we find that practitioner doctorates use both **practitioner language** and academic language. For instance, they present anecdotes rather than focusing too much on definitions: "*The title of that paper was kind of like: [something about value]. And if you give that to any practitioner, they get the idea. Whereas from an academic perspective, like one of the things that we discussed recently is: What do we mean by value? I don't think a practitioner would ever really dig into value and use vs. value and exchange and all these different nuances of every single term being defined.*" (PHD2)

Factor	Description	Finding
Insider knowledge	Whether a practitioner doctorate brings in their own practical experience.	Insider knowledge helps to understand the problems in practice and obtain valuable feedback based on informed interactions.
Personal motivation	Whether a practitioner doctorate has the personal interest and ambition to make a substantial practical contribution.	A practitioner doctorate might be able to shape the topic according to his or her preferences into the direction of practical impact.
Practitioner co-production	Whether a practitioner doctorate decides to involve practitioners in the creation of results through a participatory method approach or the development of results individually.	The practitioners can bring in insights from practice that may align the results more to the needs and perceptions of practitioners.
Digital communication with practice	Whether a practitioner doctorate disseminates his or her results to a wide practical audience.	The PhD results do not only influence the practitioners involved in co-production but also other practitioner groups.
Practitioner language	Whether a practitioner doctorate makes use of a writing style and terms familiar to practitioners.	The practitioner doctorate's results are easy to understand for practitioners.
Researcher legitimacy	Whether a practitioner doctorate acts objectively and applies rigorous methods.	Practitioners perceive the practitioner doctorate and results as more trustworthy.

Table 2. Boundary Spanning at the Research Process Level

Researchers can be recognised by practitioners as experts that objectively analyse data and base their arguments and results on rigorous methods. An objective voice can be perceived as useful in practice. Practitioner doctorates should focus on objectivity and rigor in their interactions with practitioners to strengthen **researcher legitimacy** so that their results can be adopted in practice: "*One friend of mine, he read my paper […] He said 'I want to get you in speaking to people and telling them this is what the employee feels and this is what people should be doing' and so he could see the value of giving the perspective from the employee up as a neutral party without fear from employees or leaders can say then well that's an external view or whatever or they can choose to take it on board so it's having that neutral voice coming in, they like the idea of that.*" (PHD3)

Boundary Spanning at Project Governance Level

The ability of a practitioner doctorate to contribute to practice can also be influenced by boundary spanning on a project level. Such boundary spanning can be related to any stakeholder involved in a single practitioner doctorate research project (see Table 3). For a practitioner doctorate to succeed in contributing to practice, expectations of the research outcome need to be managed within the project. Such **expectation management** refers to the classic chasm between contributions to practice and academia: "*Again there's probably a constant battle between academic output and research. They just have different objectives. But if it can be properly managed and those objectives are clear from the outside: 'This is what is going to have to be produced'. Then I think it can be very strong. […] I think that can be as helpful as selecting avenues is being able to say: 'No that's out of scope, that's not of interest to us', because it doesn't align with the practical or research goals of our project.*" (PHD2)

Management of expectations should start early in the research project: "*And I think again it comes back to the early engagements probably between academic and industry are really important, where you really*

set out your stall. 'This is what we aim to produce'." (PHD2) Expectations should also be managed continually throughout the research project: "*And look if they're not happy with the objectives up front, then you can pivot them. But it's something different to be a year down the line and they're saying: 'This isn't what we expected.' And it actually falls back on you, because you didn't make those expectations clear.*" (PHD2) Several informants (PHD2, PHD4, and PHD5) noted that a lack of continuous expectation management can lead to an inability for changing the research focus at a later stage of the project: "*They didn't really tell us what goals they had for us. […] Like as we got into the later stages of our PhD, we kind of realised that they were probably looking for something different. […] And they only kind of realized what they wanted a year or a year and a half into where we were. And at that stage they couldn't tell us to change what we were doing*." (PHD4) Expectation management also helps to clarify the timeliness of the contribution: whether a practice organisation expects short-term contributions, of if the community views the PhD as an investment for contributions in the long-term. While most practitioner doctorates viewed the completion of their PhD as the short-term objective, contribution to practice was viewed as a long-term effort: "*I'd love it if I had some impact somehow e.g., this model gets used somewhere even if it's in the smallest niche somewhere in in terms of digital transformation. However, I'm not driven by that at the moment, I'm just trying to get through the PhD.*" (PHD6) This long-term perspective was supported by other informants (PHD5 and PHD6): "*I think it has been positive but the extent to which I could genuinely attribute better outcomes I think that's got to be a long game. It's a long campaign.*" (PHD5)

Closely related to expectation management, the practitioner doctorates also need to address real-world problems to impact practice: "*What I really do think we need to align an awful lot of our thinking with real-world problems and practical impact.*" (PHD1) Or expressed differently by another informant: *"I think it's just going to be down to the topic because you… If you go off and do something really theoretical or far out there, […] that's way over the horizon.*" (PHD8) Thus, the research should demonstrate **practice usefulness**. In doing so, a practice organisation should be actively involved in influencing and shaping the topic of the PhD project: "*I'd say in terms of influencing [the topic], I would definitely say the patients and carers that I interviewed. And indeed, the clinicians, as well. […] So primarily the patients and carers [influenced the topic].*" (PHD1) Addressing real-world problems from a practice organisation is, however, not a guarantee of achieving practice usefulness alone. Like expectation management, shaping the research topic is an ongoing project activity between the practitioner doctorate, the supervisors, and a practice organisation. The following quote illustrates that the practice organisation was only involved in shaping the topic initially, and thus did not see the usefulness of the project at a later stage: "*When we came in as a group, [the topic] was kind of decided: These are the two topics […] So, my supervisor […] would have had a huge influence on, you know, going towards crowdfunding. So, I would say the initial topic would have been more given to us [by the company]. But then, once we were into it, it was the [university] supervisors that kind of guided us into what topic to look at.*" (PHD4) When a practice organisation is not involved in continuously shaping the topic of the research, the practitioner doctorate needs to invest time and effort to convince organisational actors of its usefulness: "*When you're looking at digital transformation […] I'm trying to get the company I'm working with to see [the usefulness]. […] If we can somehow mould that and find how to present that from the implementer frame as they call it.*" (PHD6)

There can at times be conflicting perceptions of usefulness in a practice organisation due to **different stakeholder interests**. One informant illustrates this conflict, where the research outcome was an artefact that impacted two stakeholder groups differently (patients and clinicians): "*Technology was actually interfering within the communication process of the medical appointment. So, we had to look at something that would work [for both patients and clinicians], but nevertheless that wouldn't interfere in this vital discourse between the clinician and patient or carer.*" (PHD1) Different stakeholder interests in a practice organisation therefore need to be managed to succeed with practical contributions.

To succeed with boundary spanning between academia and practice, and the delivery of practical contributions, **practitioner commitment** to the project was found to be crucial. This includes commitment from the top-level of the practice organisation as well as other partner organisations: "*I would have been in contact with the person that was working with the CEO […]. And he was great. […] We were communicating all the time because he was actually interested, as you can imagine, in the research as well, in what was going on and how he could help me. […] And that was great from the perspective of stakeholder buy-in, you have the backing of a national organisation, you know, you have the commitment from them.*" (PHD1) Such commitment from the top-level of a practice organisation was, however, absent in most of the projects investigated. More often, practitioner doctorates experienced the practice

organisation as disengaged with their study: "*Top level support just wasn't fully engaged. […] when it came to the end of our contract with [the organisation], they almost scurried to have a like end-of-contract meeting with us. And that was like: 'Can you remind us of what you were doing?'*" (PHD2). In addition to top-level commitment, other organisational actors affected by the practical contributions need to be committed: "*So, the idea that for instance, if you want to have a successful clinical system, clinicians have to engage to one extent or another. Now that was one of my outcomes, one of my conclusions.*" (PHD5)

Lack of commitment from a practice organisation was often related to poor communication between the practitioner doctorate and practice organisation: "*Communication between the two would have been or should have been better for us. We were kind of, I won't say forgotten, but we were only asked for things from them when they needed it. And you know we could go weeks or months without hearing from them. […] So, I think actually like constant almost diaries that every week we're gonna talk to them would have been much better."* (PHD4) This illustrates that practitioner engagement is closely related to the frequency of communication between the practitioner doctorate and a practice organisation. Moreover, practitioner commitment also influences how the contribution is communicated and enacted in practice. In one case, a fully committed top manager acted as a mediator of the contributions: *"And it was so obviously, how he [the CEO] could take the story and disseminate it amongst the [practice] community.*" (PHD1) In other cases, however, such dissemination was absent: "*I have, since I submitted the thesis, I don't think I've been in contact with anyone at [the organisation] to say that they read it. I don't think it has been circulated inside [the organisation] itself. So, I would say, my research anyway in particular was not, didn't have any practical implications on [the organisation].*" (PHD4)

Finally, implementing, or enacting research contributions in a practice organisation can also be challenging when such efforts are competing with other organisational initiatives. Thus, **priority management** is important for a practice organisation in directing the organisational focus to the research contributions: "*So if you take healthcare for instance. Particularly [nationally], but also internationally the same issues crop up, healthcare is inevitably about managing crises. So that was a very strong contextual background for anything. So, when you try to engage with people and say: Well, major information system implementations have you know a typical horizon of two years plus. People will say: Listen, we have a crisis today.*" (PHD5)

Factor	Description	Finding
Expectation management	Expectations of the research contribution can differ between the practitioner doctorate and a practice organisation. These expectations may also change during the project.	Expectations of research contributions need to be managed and aligned continuously throughout the research project.
Practice usefulness	A practice organisation's perception of the usefulness of the research topic may change during the project.	The research needs to address a real-world problem, and continuously involve practice in shaping the topic.
Negotiating different stakeholder interest	Research contributions may have different impact on various organisational stakeholders in the project.	Aligning organisational stakeholder interests may increase practical impact.
Practitioner commitment	Different levels of commitment to the research may exist among practitioners in the project.	Top-management and organisational actors affected by the research must be committed to frequent communication.
Priority management in organisation	Attention towards implementing research contributions in a practice organisation may compete with other organisational initiatives.	A practice organisation needs to actively prioritise enactment or implementation of contributions to benefit from the research.

Table 3. Boundary Spanning at the Project Governance Level

Boundary Spanning at Institutional Level

A practitioner doctorate's ability to deliver practical contribution can be influenced by institutions at play in the broader institutional level. These institutions influence practitioner doctorate beliefs and mechanisms that influence PhD activities (see Table 4). A practitioner doctorate must adhere to **academic requirements** for PhD education, which may be less relevant for practice: *"Say, when you're doing your literature review chapter […] Depending on the nature of the topic that you're covering, there might not be anything practical involved. And that can be a very academic process and it just takes a lot of time. So, you could be six months for instance without producing anything necessarily for… you know."* (PHD2)

The often-tedious processes in PhD research make it difficult for a practitioner doctorate to keep up with the pace in the industry: *"There is a huge pressure now I think on organisations coming from Big Tech companies and big service companies that you can do these things very quick and very fast."* (PHD5) While doing a PhD, the practitioner doctorate is expected to publish papers in respected IS outlets. These outlets often are perceived to focus on the research story rather than real-life human stories: *"I suppose the other thing that I found quite extraordinary was that how sanitised IS papers are. Where they give you the best story, but they don't tell you the raw story, you know. How the problems were really and how we got out of them. The real-life human stories."* Furthermore, they may not be perceived as practitioner-friendly by practitioner doctorates who want to make a practical impact: *"[a top IS journal editor] said: that's too medical, that should go into a medical informatics journal."* (PHD1)

The PhD process is time constrained, making it harder for the practitioner doctorate to focus on long-time practical impact: *"I'd love it if I had some impact somehow, for example, this model gets used somewhere even if it's in the smallest niche somewhere in in terms of digital transformation. However, I'm not driven by that at the moment, I'm just trying to get through the PhD [..] I'm trying to just do this job and do this bloody PhD."* (PHD6) Along the way, the practitioner doctorate must also pass certain requirements: *"I think it's more academic-focused currently. Our focus is kind of around the methodology and making sure the rigor of that will stand up when at my viva or whatever, so I was looking at different methodologies and then being able to justify why I've chosen the methodology I have."* (PHD3) The lack of **rewards for practical impact** in IS research is mentioned by several informants (PHD2, PHD6, PHD7), which emphasises that this can be problematic; *"Yeah, I think it's definitely a challenge"* (PHD2) and should be addressed: *"If you want my own dirty view, I think that there should be, I wouldn't say… if someone would come to me and they were looking for funding. Before I would give them funding, I would want to see that the research is aligned with a practical outcome."* (PHD1)

While **industry requirements** change frequently, the time constraints of PhD research call for certainty about the research topic: *"So, in the following year, there were some masters students given their topics to look at. But within three to six months, half of them were changed. So, I suppose like what I would say for industries to make sure those topics that they want a PhD student or a master student to study, is set and can't really be changed. Because that for any PhD student one of the biggest things is kind of the uncertainty of what your topic would be. It could take a year of actually learning what this is, what my thesis is gonna actually look like."* (PHD4). As the topic is settled, there is a further need to limit the scope of the research inquiry: *"So, there was a discipline there that had to come in and a part of me that was leaving loads of interesting stuff that I would have liked to pursue but I had my research questions, I had my objectives."* (PHD5) However, one practitioner doctorate emphasised that one should not be afraid of experimentation as a practitioner doctorate: *"That would be some advice as well. Not to be afraid of experimentation. Not be afraid of running up blind alleyways. Don't do it deliberatively, but if you do it enough, don't panic."* (PHD5)

Factor	Description	Finding
Academic requirements	Academic requirements to be fulfilled to obtain PhDs.	Fulfilling academic requirements are prioritised by practitioner doctorates facing time constraints.
Rewards for practical impact	Incentives for pursuing practical impact in PhDs.	Incentives for pursuing practical impact in PhDs may increase practical contributions.
Changing industry requirements	Industry requirements are at a different pace than academia.	Practitioner doctorates prefer less changes to their PhD projects to be able to finish their PhDs.
Industry policies	Policies put into place by an industry organisation to safeguard their interests in PhD education.	Industry organisations that provide policies for the communication of findings and involvement of practitioner doctorates may obtain more practical usefulness.
Industry's understanding of PhD research	Whether industry organisations have employees with research experience.	Industry organisations that understand the work of obtaining PhDs will have more "realistic" expectations of practical impact.
Academia's understanding of practice	Whether academic organisations have researchers with practitioner experience.	Supervisors with practitioner background can help practitioner doctorates to fulfil industry expectations.

Table 4. Boundary Spanning at the Institutional Level

To better facilitate boundary spanning and ensure practical impact, **industry policies** could enforce more standardised processes to align processes in academia and the practitioner community: *"So yeah, the*

alignment of goals there I suppose was slightly off I felt at times. [..] So yeah, I think it could have been planned. I suppose it comes down to planning. It could have been better planned out." (PHD2) The perception that many industry organisations are not prepared to work with practitioner doctorates was further emphasised by the lack of contact with these organisations: *"We were given contact points, but again being the guinea pigs at the start, I think those processes just weren't properly defined for our year. And of course, I sat in the lab and saw three or four more years of [Masters students] coming through. And the process seemed to be getting better for them, that they had a more structured approach."* (PHD2)

Communication with practitioner contact points sometimes, but not always, involved going through the supervisors who passed along messages to the practitioner doctorate: *"[..] they would have also been in contact with our supervisors who would have passed along some messages as well. They wanted us to, say, go to a presentation. They would have organised that with the supervisor. And then, they would have, our supervisors would have gone through with us. But it was…there was times when they would get directly out to us."* (PHD4) However, there were other organisations that established meeting places where the practitioner doctorates presented their work to practitioners outside the project: *"they had an annual kind of… what would you call it? Seminar I suppose."* (PHD2) Furthermore, presentations at industry conferences were also sometimes initiated: *"I spoke different blockchain presentations, [national] Blockchain Week was one of the ones that I did a few presentations at."* (PHD2) The gap can be bridged by using practitioners with research experience, who **understand the process of doing research**: *"When he has a PhD himself, like he's gone through…[..], got a PhD. So, academia he has been through himself. He's aware of it."* (PHD7) Furthermore, the **understanding of practice** is enhanced by having supervisors with practitioner experience: *"I've appreciated NN [anonymised supervisor] much more because he's come from a direction in industry very similar to myself. He was in some technology company, so yeah, his insights are incredible in that he knows what industries are like."* (PHD6) This could be important if practitioners perceive researchers as being preoccupied with non-relevant work: *"a practitioner might think the academic doesn't really understand what they do, they have a different view, a more academic view, it's not real-world stuff."* (PHD9)

Discussion

Our findings suggest that practitioner doctorates are uniquely positioned to act as 'designated' boundary spanners (Levina and Vaast 2005; Lindgren et al. 2008) between academia and practice, working as agents across the two fields (Kaplan et al. 2017). Over the course of their education, practitioner doctorates can seek to explore real-world organisational problems in collaboration with practitioners to drive both theoretical and practical contributions. The joint field is supported as practitioner doctorates navigate knowledge boundaries and create a common language between fields (Abbott et al. 2013; Guo et al. 2014). However, despite their unique position, IS research on the role of practitioner doctorates as boundary spanners between academia and practice is limited (Klein and Rowe 2008). In this paper, we take steps towards addressing this lacuna by revealing how practitioner doctorates can support the emergence of a joint field between academia and practice in IS research, and the boundary spanning activities which influence the realisation of practical impact. While prior discussions on practical impact have mainly centred on the research process, less attention has been directed towards the broader project governance and institutional levels (Rosemann and Vessey 2008) and the particularities of practitioner doctoral research. Our research builds on existing discussions but expands the scope of attention to practitioner doctorate research, considering the research process, project governance, and institutional levels in tandem. We believe this can provide practitioner doctorates, supervisors, PhD programme coordinators, and practitioner contact points with a more complete view of how boundary spanning shapes practical impact.

At the research process level, we firstly reveal that practitioner doctorates' access to increased social capital, in the form of network ties to industry practitioners and IS scholars can provide them with a potentially useful asset for developing 'applicative' knowledge which is of value to both academia and practice (Kitagawa 2014; Klein and Rowe 2008; Wainwright et al. 2018). The symbolic capital they possess as experts in research can also prove invaluable source when connecting with the practitioner community to disseminate findings. Another commonly noted factor associated with the research process is that the practitioner doctorate's 'insider knowledge' and access to data can provide them with material around real-world organisational problems, which might otherwise be difficult to source (Hardwicke et al. 2018; Thune 2010). Our research is consistent with prior studies which suggest that this can improve the likelihood of deriving practical contributions, when combined with a DSR method which seeks to develop artefacts in

collaboration with practitioners. For instance, Cater-Steel et al. (2019) found that all 40 doctoral candidates interviewed undertaking a DSR project in collaboration with industry claimed to have made a contribution to practice. Our findings on the contribution of DSR to practical impact are more mixed however, suggesting that while DSR can support closer interactions with practitioners, adoption of the method alone does not necessarily lead to practical contribution. This goes together with the existing partitioning of DSR into various genres - for instance, a laboratory approach and practice approach - and not all of them are equally connected to practice (Goldkuhl and Sjöström 2018; Iivari 2015; Peffers et al. 2018). Additionally, our results show that practitioner doctorates can also achieve practical impact following research paradigms other than DSR. However, the connection to practice might not be inherent to those research activities and practitioner doctorates might need to establish this connection more insistently. Regardless of the research approach, a key is the active involvement of practitioners throughout the entire research process from the problem definition to the dissemination of the results.

This finding can be further explained by boundary spanning at the project governance level. We first find that the realisation of practical impact may be influenced by expectation management during the selection of research topic, as well as goals of the joint field and the direction offered to practitioner doctorates. A more pressing project governance issue centres on how the process of practitioner doctorate research unfolds, and the level of industry interest/commitment needed to sustain the joint field over time (Kislov et al. 2017; Van Osch and Steinfield 2016). Prior research suggests that many practitioner doctorates indicate a decline in communication with industry practitioners after the initial collaboration phase (Cater-Steel et al. 2019; Thune 2009). This is often due to an initial contact point having been lost (Thune 2009), or increased constraints around the number, availability, or diversity of contacts (Cater-Steel et al. 2019). We find that the supervisor may also mediate and control the practitioner doctorate's interactions with industry, potentially affecting communication. At a project governance level, practitioner doctorates may also be required to complete tasks requested by their industry partner(s), such as status updates and presentations. This balancing of research obligations can be particularly problematic for practitioner doctorates during their studies as their conflicting roles as practitioner-researcher may create dual responsibilities (Abbott et al. 2013; Lissillour and Sahut 2021) e.g., different systems for reporting progress may be demanded by academic and industry supervisors, leading to increased admin burden (Borrell-Damian et al. 2010).

Lastly, our findings reveal several factors relevant to the institutional level which affect practitioner doctorate's ability to deliver practical impact through their research. Chief among these is the tension between the objectives of academia and practice, which has previously raised questions around whether industry involvement may compromise the standards and consistency of doctoral education (Borrell-Damian et al. 2010; Roberts 2018; Sharda et al. 2013). While practical impact primarily requires exposure to tacit knowledge deeply embedded in local contexts, research knowledge needs to be explicit and follow specific codes of representation (Mathiassen and Sandberg 2013). While some literature has dismissed the tension between rigor vs. relevance in PhD research (Thune 2010), our findings suggest it is indeed experienced as a dilemma by practitioner doctorates. While rigor can be useful for building research legitimacy at the research process level, the institutional requirements for rigor in terms of methodology and topic stability can impede a practitioner doctorate's ability to accommodate fast paced changes in industry. Negotiating such differences in interests and meanings is crucial for the joint field's longevity (Kaplan et al. 2017; Levina and Vaast 2006). Industry policies such as confidentiality requirements, contractual arrangements, and Intellectual Property (IP) rights (Borrell-Damian et al. 2010) can also potentially impact scholarly productivity by limiting the practitioner doctorate's ability to communicate freely and publish any findings perceived to be commercially sensitive (Thune 2009). While prior empirical results on this are mixed (Borrell-Damian et al. 2010; Thune 2009), we provide evidence to suggest that industry policies may affect the practitioner doctorate's ability to derive practical impact.

Consolidating findings across these three different levels, we finally present recommendations for advancing practical impact in practitioner doctorate research going forward. Based on our findings, we reveal that a practitioner doctorate is not solely responsible for achieving practical impact in his or her research. While there are some boundary spanning activities and factors that the practitioner doctorate can influence and control individually (as indicated in the research process level), a substantial number of factors require initiatives from other actors (as indicated in the project governance and institutional levels). To influence these, other actors need to undertake action. This includes practice organisations, PhD supervisors, PhD program coordinators, as well as the wider academic community. Table 5 presents recommendations for the IS community to deliver practical impact in practitioner doctorate research based on our findings. We

suggest that formal requirements for practical impact in PhD programmes might be a desirable course of action for the IS community and a first step towards closing the research-practice gap.

Recommendation	Description
Focus on problem-oriented research	Utilise the practitioner doctorate's *insider knowledge* to select a topic and ensure alignment with real-world problems (see findings in Table 2). The choice of methodology (e.g., DSR) may support this process.
Provide communication courses	Universities and IS departments should provide courses that teach practitioner doctorates how to engage in *(digital) communication* with both academia and practice (see findings in Table 2).
Require practitioner publications	Since practitioners rarely read IS journals, PhD programs should require practitioner doctorates to include practical publications (e.g., newspaper articles, white papers, blogs) written in *practitioner language* to address a practical audience (see findings in Table 2).
Develop plans for collaboration	Practice organisations and universities should plan and clarify expectations when they support practitioner doctorates. Frequent meetings between the practitioner doctorate, supervisors, and a practice organisation may facilitate increased *practice usefulness* in the project, continuous *management of expectations*, and increased *practitioner commitment* (see findings in Table 3).
Provide incentives for practical contributions	The IS community and universities should provide *incentives* for delivering practical contributions through practitioner doctorate research (see findings in Table 4). For example, they could reward impact initiated through various forms such as blogging, social media posts, magazine articles, and practitioner conferences.

Table 5. Practical Recommendations for Boundary Spanning in IS Practitioner Doctorate Research

Conclusion

In this paper, we explored the boundary spanning of practitioner doctorates in IS. In terms of theoretical contributions, we inductively reveal how practitioner doctorates pursue practical contribution, and the factors of practical impact through boundary spanning across three levels: *Research Process*, *Project Governance*, and *Institutional*. Our research therefore takes initial steps towards understanding the unique roles that practitioner doctorates can play in spanning the boundary between academia and practice in the IS field. In terms of practical contributions, we presented a series of recommendations for deriving practical impact in practitioner doctorate research going forward. These recommendations can help guide IS scholars when pursuing practical impact and potentially inform curriculum design by PhD programme coordinators.

Avenues for future research are also proposed. Firstly, we suggest that future research is still needed to explore different perspectives on the career prospects of practitioner doctorates. Literature suggests that practitioner doctorates can more positively view their future career prospects, as the competencies they gain as 'practitioner-researchers' are sometimes looked on favourably by employers in both academia and industry (Borrell-Damian et al. 2010; Roberts 2018; Thune 2010). Findings in this area are mixed however, with further research required to explore candidate employability across more specific contexts. Future research can also seek to investigate whether industry involvement affects scholarly productivity and the doctoral candidates' research experience (Thune 2009). While accreditation bodies such as AACSB having recognised practitioner doctorates as a legitimate form of doctoral education (AACSB 2021; Sharda et al. 2013), we believe that more research is needed to investigate the unique competencies of practitioner doctorates, and their experiences. Through these continued efforts, we propose that the IS community can strengthen the symbiosis between research and practice going forward.

There are, nevertheless, limitations inherent in our qualitative study which future research can seek to address. Firstly, some of the findings may be specific to the context in which our research was undertaken, an IS department based in the business school of a European university. We encourage further research on doctoral studies in other contexts, such as North and South America, Australia, Asia, Africa, and other parts of Europe. This could provide novel insights into differing perspectives on engaged scholarship across different schools and IS education systems across the world, such as the Northern and Southern hemisphere. Another limitation is that some of the findings may be specific to practitioner doctorates or PhD students who participated in industry sponsored research projects. Our purposeful sampling strategy was chosen to centre discussion on issues around contributions to practice. Future research can seek to explore different archetypes of PhD students and IS scholars who have engaged with practice to varying degrees or conducted basic research only.

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