

Open strategy and IT: A review and research agenda

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1. Introduction

Open strategy has drawn increasing attention in recent years. A growing number of studies have captured greater transparency and heightened inclusion in the strategic practices of contemporary organisations (e.g., Whittington et al., 2011; Hautz et al., 2017). It is often Information Technology (IT) that can facilitate involvement of a wider range of stakeholders in the generation of strategic content and knowledge (Chesbrough and Appleyard, 2007; Wulf and Butel, 2016), and in the practice of strategy (Whittington et al., 2011; Whittington, 2014). However, despite the widely recognised role of such technology as online platforms (Malhotra et al., 2017) and social media (Huang et al., 2013; Baptista et al., 2017) in enabling openness in strategy, literature with an explicit focus on IT has been surprisingly sparse to date (Tavakoli et al., 2015; 2017). Thus far, most papers have been published in Management and Strategic Management outlets (e.g., Whittington et al., 2011; Stieger et al., 2012; Seidl and Werle, 2017), including a special issue on open strategy in *Long Range Planning* (e.g., Hautz et al., 2017). Additionally, much of the research to-date has focused on such dimensions of openness as inclusion and transparency to enhance our understanding of open strategy. In consequence, IT is an often present, yet silent, partner in studies of open strategy.

Although Whittington et al. (2011) identify technology as a potential driver for openness in strategic practice, there is only limited reference throughout the literature on the nature of the important role played by IT in opening strategy. In particular, the intricacies of *how* IT enables open strategy remain ambiguous and underdeveloped. Promise has been shown in recent work, however, outlining a clear link between open strategising and the organisational use of IT (e.g., Amrollahi et al., 2014; Tavakoli et al., 2017). Tavakoli et al. (2015; 2017) provide an important step in positioning IT as a core enabler for openness in strategy by integrating 'IT-enabledness' with the dimensions of inclusion and transparency in an attempt to provide a "consolidated definition" of open strategy. However, while this places IT as essential in much open strategy work, it does so by considering open strategy cases utilising different perspectives on strategic thought. The authors establish open strategy as a practice, and invite closer inspection of how the sociomaterial ensemble of IT and open strategic practices

interact. Future research must go further to craft a more comprehensive and explicit research agenda by clarifying the types of IT and how they are used in open strategy. This chapter addresses these important contributions by invoking established concepts and theories in Strategy and Information Systems (IS) in line with Whittington's (2014) call to draw these fields closer together.

In this vein, this chapter examines and reviews how various types of information technologies are employed to support strategic practice with the intention of elevating IT from the position of silent partner in open strategy. This culminates in a research agenda that can help further explicate the role and significance of IT in open strategising. First, the chapter highlights the growing presence of IT in the strategy literature, highlighting the ever-increasing strategic significance of IT and how this has evolved in strategy and IS work. Second, we identify the types of IT used for open strategy, arguing that these are yet to be unpacked in any depth in the literature to date, remaining 'blackboxed'. Third, the chapter builds on this foundation to uncover four themes; scope, scale, suitability, and structure, which connect the aforementioned IT types with IT in-use for open strategy. We review these themes in line with existing literature as a means of emphasising inherent gaps in open strategy research relating to IT and its use in strategising. The chapter concludes by proposing a future research agenda, further drawing on themes we have identified to emphasise potential research directions consistent with calls for a 'synergy' between strategy practice and IS research (Peppard et al., 2014; Whittington, 2014).

2. The Strategic Significance of IT

IT and strategy have long been intertwined. Indeed, the associated literature has seen an increasing appreciation by strategy practitioners and researchers regarding the pivotal role of IT (Porter and Millar, 1985; Galliers, 1991; 2006; 2011; Powell and Dent-Micallef, 1997; Haefliger et al., 2011). We capture the journey to social software (von Krogh, 2012) and social media (Leonardi et al., 2013) becoming strategic tools from the pioneering period of computing in organisations as a series of epochs. This presents a chronology broadly of how both information technologies and the conceptualisation of IT and strategy have developed over time.

With over 30 years of applying IT to organisational tasks, by the 1980s, IT in organisations had reached a level of maturity (Somogyi and Galliers, 1987). However, whilst many organisations possessed some level of IT resources, the precise application to organisational tasks – specifically their role in relation to business *strategy* – was highly varied and only just emerging. Galliers (1987) identified four phases in the development of IS strategising that illustrate different approaches determined by whether the plan is driven by specific technologies or the needs of the business, and whether the strategic objective is to explore new directions or to identify and improve organisational issues (exploit efficiencies) – foregrounding more recent work on organizational ambidexterity (e.g., Tushman and O’Reilly, 1996). The IS planning phases i) isolated, ii) reactive, iii) prospective and, iv) proactive are shown in Figure 1 below:

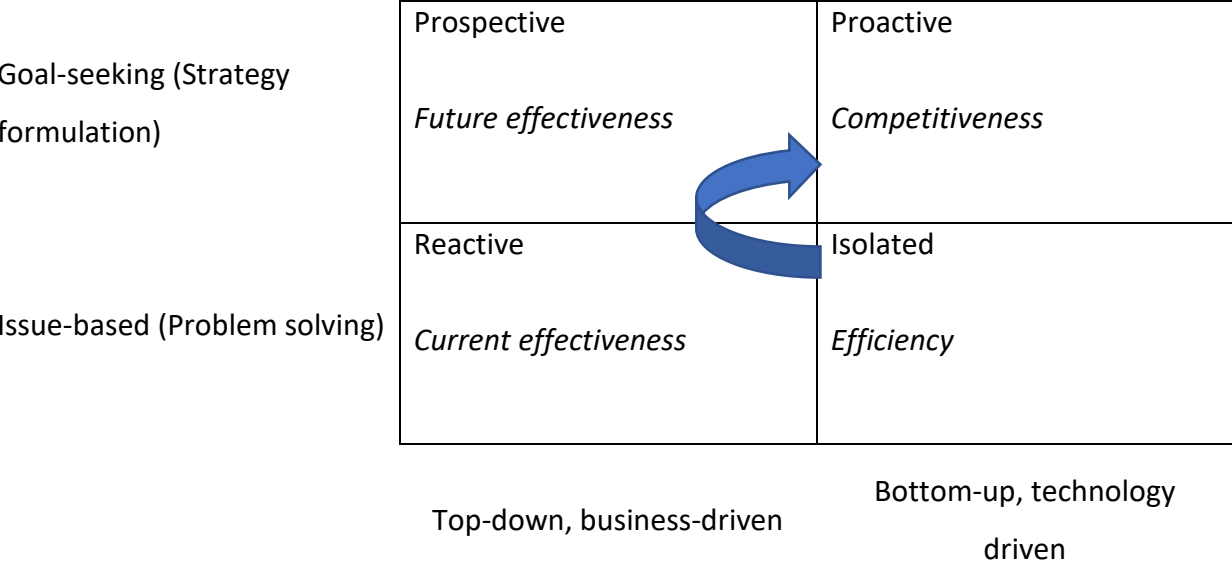


Figure 1. Developments of information systems strategising (adapted from Galliers, 1987)

Galliers (1987) gives a full account of these phases, but pertinent to our framing of IT as a strategic concern is that information systems strategising has evolved from stand-alone or ‘isolated’ systems directed at efficiency gains to much more highly sophisticated ensembles of technologies that aim to harness and shape proactively the direction of the organisation. It is these developments that launched IT into the domain of strategic management. Thus, this *proactive* phase cemented IT as a mainstay of business strategy with, for example, Porter and

Millar (1985) placing information and IT centre stage in providing competitive advantage to firms. They argue that IT encompasses information, its management and its strategic potential, rather than just hardware. Additionally, they point to its impacts on the rules of competition and the advantage that can be gained from the astute use of information, as well as its impacts on the everyday operations of organisations (ibid.).

Guided by the strategic significance of IT, many organisations have seized the initiative in the competitive environment by fundamentally changing approaches to strategy development, as informed by the rapid and oftentimes unpredictable advances in technology (Berman and Hagan, 2006). Indeed, by the late 1980s and early 1990s, IT was widely recognised as fundamental to developing core capabilities of a firm (Itami and Numagami, 1992), and IT executives were gaining prominence in top management teams for their knowledge and influence on strategy-making (Ives, 1992). The prominence and speed of technological developments, and the associated impact and challenges of the 'information revolution' on developed economies, organisations and general managers was at the forefront of strategic planning and strategic positioning of organisations. In essence, firms that introduced IT aligned to the business strategy would out-manoeuvre competitors through better coordination within, and between, value chains unlocking superior industry positioning (typically through first-mover advantages enabled by IT) and higher levels of performance (e.g., Dos Santos and Peffers, 1995).

However, doubts grew as to whether IT was indeed unlocking competitive advantage or was in fact a competitive burden (e.g., Warner, 1987). The development of the resource based view (RBV) within the strategy discipline (Barney, 1994) invited closer inspection of IT as a strategy resource, along with the uniqueness of capabilities and competencies that underpin competitive advantage (Santhanam and Hartono, 2003). Wade and Hulland's (2004) comprehensive review of the RBV and IS research reveals the latter can constitute different types of strategic resource in organisations. These are shown in Table 1:

Outside-In	Spanning	Inside-Out
<ul style="list-style-type: none"> • External relationship management • Market responsiveness 	<ul style="list-style-type: none"> • IS-business partnerships • IS planning and change management 	<ul style="list-style-type: none"> • IS infrastructure • IS technical skills • IS development • Cost effective IS operations

Table 1. A Typology of IS Resources (based on Wade and Hulland, 2004)

The type of IS resource is linked expressly to strategic thinking (outside-in, inside-out) and how such resources are intended to deliver competitive advantage. The increased focus on the internal dynamics of firms has invited much closer investigation of the linkage between the role of IT in strategy form(ul)ation, implementation and performance: A number of different sectors and industries, such as banking (e.g., Jarvenpaa and Ives, 1990), tourism (e.g., Buhalis, 1998), marketing (e.g., Kotabe et al., 1996), retail (e.g., Powell and Dent-micallef, 1997), manufacturing (e.g., Berman and Hagan, 2006), and engineering (e.g., Smith, 2013) have been studied. Early areas of focus included exploration of network technologies and the Internet in commons-based production (e.g., Wikipedia) and knowledge sharing capabilities (Benkler, 2006). More recently, the focus has moved to an expatiation of the interconnections of people and material features in social networks, ‘smart’ devices, and social software (Cecez-Kecmanovic et al., 2014; Haefliger et al., 2011), such as social media (Majchrzak, 2009; Marabelli et al., 2016) creating new, and far-reaching, implications for the relationship between [social] IT and strategic management.

As well as the theoretical debate that surrounds whether competitive positioning or uniqueness of resources and capabilities drives competitive advantage, the field has seen growing interest in precisely *how* strategy and strategic work is undertaken in firms. In endeavouring to perceive the impact of IT advancements on strategic management, much research and emergent theory has divided between important epistemological differences in strategic management and organisation studies, and IS work (Orlikowski and Barley, 2001). There have been, for example, those exploring how strategy and IT interact with each other

in organisations over time (Itami and Numagami, 1992), and those who have positioned studies towards how firms strategically manage IT and the inherent opportunities and threats ubiquitous technologies present (Leonardi and Barley, 2010). With considerations of such distinctions and traditions in scholarly work, Orlikowski and Barley (2001) were among the first to more explicitly outline areas in which strategy and organisation studies and IS scholars should begin to interplay and collaborate, particularly through potential hybrid approaches which breach epistemological boundaries in both fields to balance substantive expertise in the social dynamics of organising, and the role of human agency and technology (Galliers et al., 1997). More recent are the aforementioned, specific calls for practice-based trans-disciplinary research involving strategy and IS (Orlikowski, 2010; Vaara and Whittington, 2012; Whittington, 2014). For strategy scholars, the explication of materiality helps begin to emphasise a shift where IT is viewed as being an instrumental part of strategy (Vaara and Whittington, 2012; Whittington, 2014). This emphasis on materiality is particularly relevant as technology has become central in contemporary strategy work, even in mundane and near ubiquitous strategising practices such as the use of PowerPoint (Kaplan, 2011), enterprise systems (Leonard and Higson, 2014), and stand-alone software packages (Arnaud et al., 2016). Moreover, scholars have stressed that strategy scholarship still fails to widely explicate the business implications of certain emerging technologies, too seldom considering distinct types of IT and their varying properties in its theorising (Haefliger et al., 2011). For IS scholars, there have been calls to step out of the comfort zones of traditional and established methodological approaches, and to seek out innovative approaches to research (Ives, 1992, p.xii). Such calls can be of help in positioning practice as a phenomenon with a view to advancing the inherent understanding the *doing* of strategy work with IS, (cf., Orlikowski, 2010). Following the example of strategy practice work, the focus might be on the *technê* and *phronêsis* of IS professionals, managers, executives, and consultants (Peppard et al., 2014), and in the intricate activities of IS strategising in organisations (Henfridsson and Lind, 2014; Leonard and Higson, 2014).

Ultimately, the strategic significance of modern IT has changed some of the fundamental assumptions about organisations in conventional strategy theory (Porter and Millar, 1985; Itami and Numagami, 1992; von Krogh, 2012) and has had several theoretical ramifications. In

the context of open strategy, modern IT has, for example, made knowledge increasingly costly to protect and validate with potential impact on competition and competitive advantage (Porter and Millar, 1985). For the core concept of openness in strategy, it also raises many issues for conventional strategy theory and thinking, and for strategy as a profession, such as by empowering creative independent individuals and implying uncertain reactions and creations in support of, or indeed in opposition to, the strategy-making of top management teams (Haefliger et al., 2011; Whittington et al., 2011). It must also be acknowledged that IT does not exclusively follow an intended strategy to become open. Indeed, there are instances where – already highly collaborative – organisations develop open strategies from collective, online ways of working (for example, the case of Wikimedia’s strategy process in Dobusch and Kapella, 2017; Dobusch et al., 2017). To parallel a central debate in strategy, it is possible that IT can follow Open Strategy or Open Strategy can follow IT!

We argue therefore that there is clear potential for coaction between strategy and IS research (Whittington, 2014), particularly as academic journals in the fields of strategy and organisation studies continue to focus on IT and its impacts (Jarvenpaa and Leidner, 1998; Orlikowski, 2007; Dobusch and Kapeller, 2017), and similarly IS scholars now routinely produce work heavily influenced by concepts and theories grounded more traditionally in strategy and organisation studies (e.g., Sambamurthy et al., 2003; Henfridsson and Lind, 2014). In this chapter, our intention is to not only add to this overarching conversation, but to focus more specifically on collaboration that is particularly relevant to the evolution of open strategy scholarship in relation to the central role of IT.

3. Types of IT and their significance in open strategy

Consistent with the strategic management literature (Haefliger et al., 2011), and as already noted, the majority of open strategy work still tends to ‘blackbox’ the types of IT in-use in open strategy activities. Common epithets include “online platforms” (Malhotra et al., 2017), “web 2.0 technologies” (Matzler et al., 2014a), and “social networks and collaboration software” (Stieger et al., 2012, p.45). These have been identified as key to enabling actors to participate in open discussions, contribute ideas, and thus collectively contribute to and

develop new strategies (Matzler et al., 2014b). Open strategy has also been equated with crowdsourcing or open sourcing (e.g., Newstead and Lanzerotti, 2010; Amrollahi et al., 2014; Matzler et al., 2014a; Aten and Thomas, 2016) due to similarities in being an inclusive and adaptable process involving clearly defined initiators, contributors and goals (Estellés-Arolas and González-Ladrón-de-Guevara, 2012).

Studies have shown promise in positioning the role of IT more centrally in relation to enabling open strategic inclusion and transparency, going beyond the aforementioned broader examination of IT in relation to crowd- and open-sourcing. For example, the inclusive use of Wikis in strategy has been studied (Baptista et al., 2017; Dobusch and Kapeller, 2017), whilst IBM’s ‘jamming’ events to shape strategy have also been explored (Whittington et al., 2011; Morton et al., 2016a; Tavakoli et al., 2017). Others have identified the many types of social media used for open strategising (Baptista et al., 2017), whilst research has also focused on specific examples of IT used to enable openness in strategy such as blogging platforms (Whittington et al., 2011; Gegenhuber and Dobusch, 2017), particularly as a means of being transparent about strategy, and sharing strategic content. Online surveys and email have also been studied as a means of collecting strategy ideas and opinions and discussing strategy over time (Dobusch and Kapeller, 2017; Luedicke et al., 2017). Studies on idea contest platforms (Matzler et al., 2014b; Hutter et al., 2017), as used for strategic inclusion, stress the potential importance of incentivisation in open strategy activities (e.g., Piller and Walcher, 2006; Bullinger et al., 2010). Less commonly mentioned forms of IT include employee listening programmes that are used to conduct electronic interactive interviews with stakeholders, as a means of demonstrating openness by listening to the strategic views of employees (Morton et al., 2015; Baptista et al., 2017). Table 2 provides an illustration of the broad and varied nature of types of IT used in open strategy and examples of studies from the open strategy literature.

Type of IT	IT use for open strategy	Example Studies
Blogging and microblogging platforms	Used by top management to communicate with and include stakeholders in strategic discussions	Whittington et al. (2011); Morton et al (2016b); Gegenhuber and Dobusch (2017)
Crowdsourcing platforms	IT specifically identified as	Newstead and Lanzerotti

	following a crowdsourcing or open sourcing model/process/design	(2010); Stieger et al. (2012); Amrollahi et al. (2014); Amrollahi and Ghapnchi (2016); Aten and Thomas (2016); Amrollahi and Rowlands (2017); Malhotra et al. (2017)
Email/mailling lists	Used as a means of discussing strategy with stakeholders, and collecting strategic ideas	Dobusch and Kapeller, (2017); Luedicke et al. (2017)
Employee listening programmes	Used by managers to electronically capture and record employee thoughts on strategic issues	Morton et al. (2015); Baptista et al. (2017)
Idea contest/competition platforms	Designed to incentivise participation in strategic idea generation	Amrollahi and Rowlands (2017); Hutter et al. (2017)
Innovation Jams/strategy jams	Specific use of IBM jamming processes and associated IT	Whittington et al. (2011); Matzler et al. (2014a); Whittington (2015); Morton et al. (2016a); Tavakoli et al. (2017)
Online surveys	Used as a means of collecting strategic ideas and opinions of stakeholders	Morton et al. (2016b); Dobusch and Kapeller (2017);
Social software/social media and online platforms	IT identified as social software platforms, social media or online platforms generally	Matzler et al. (2014b); Baptista et al. (2017); Tavakoli et al. (2017)
Web 2.0 platforms	IT identified as Web 2.0 platforms and used specifically for strategic interaction and ideation	Matzler et al. (2014a); Amrollahi and Ghapnchi (2016)
Wiki platforms	Used specifically for strategic idea generation, and publishing of strategic outputs (e.g., final strategic plans)	Baptista et al. (2017); Dobusch and Kapeller (2017); Heracleous et al. (2017)

Table 2. Types of IT used for open strategy

Whilst we recognise that the open strategy literature is already rich with meaningful theoretical and practical insights in relation to the potential role of technology in strategising, this review and organising of IT types emphasises the varying treatment of IT in extant studies in considerably more detail. In doing so, this chapter not only furthers our understanding as to the positioning of IT in enabling strategic inclusion and transparency, but also provides a useful first step in expanding the meaning of IT use more specifically in relation to open

strategy.

4. Thematic areas and IT in-use for open strategy: Open strategy scope, scale, suitability, and structure

We now outline four themes that further connect open strategy and IT types with IT in-use. The first area explores the ‘scope’ of open strategy activities in relation to IT. Second, ‘scale’ considers the role of IT in relation to participation in open strategising. Third, ‘suitability’ examines why particular types of IT might be used to enable open strategy, and last, ‘structure’ links open strategy and IT with notions of organisational structure and strategy content, particularly in relation to ownership and control in open forms of strategising. Ultimately, we propose that these four areas of concern – as summarised in Table 3 – warrant deeper exploration and serve as a platform to develop further research at the intersection of strategic openness and the enabling role of technology. We develop these areas to review and identify latent gaps as the second important stage towards crafting a comprehensive research agenda for open strategy and IT.

	Themes in open strategy and IT	Central tenets of each theme
IT-based factors affecting open strategy	Scope- IT and internal and external forms of openness in strategy	Further understanding the relationship between IT and the different forms of internal and external openness which it enables. Significant here is positioning why and how particular IT-driven open strategy practices might operate in relation to such boundaries, and whether they cover part of an organisation, the whole organisation, or operate between multiple organisations.
	Scale- IT and participation in open strategy	Exploring the scale of participation and how and why this varies. Table 2 shows there is variation in terms of how many people across different organisational functions participate in open strategy practice. The role of IT in delimiting the scale of open strategy is also a pivotal theme.
	Suitability- IT and analogue tools for enabling openness in strategy	Explicating why organisations might adopt particular technologies, and thus central here is the propriety of different IT tools for enabling openness in strategy, and understanding why certain strategising tools are used to enable openness in different situations or contexts. This might also include how IT is coupled with more traditional, analogue forms of strategising, in contrast to suggestions that IT is always the central enabler for

		open strategising activity.
	Structure- Open strategy, IT and organisational structure	The significance of structure in relation to open strategy and IT can help to unpack concepts of ownership in open strategy in relation to strategising and the generation of strategy contents through IT. Thus, important here are notions of IT, open strategy and strategy content; specifically, who holds influence and control of strategy when strategic content is open and changeable via IT.

Table 3. Themes in open strategy and IT

Theme i) Scope - IT and internal and external forms of openness in strategy

The ‘scope’ of open strategy warrants attention so as to further understand the relationship between IT and the different forms of internal and external openness that it enables. This builds on more general trends in the strategy literature regarding the way in which IT is changing organisational strategy work in many ways (Powell and Dent-Micallef, 1997; Haefliger et al., 2011). Core concepts of inclusion and transparency in the open strategy literature emphasise internal and external organisational boundaries, and whether IT is deployed to enable openness across internal or external boundaries is indeed a central consideration (Chesbrough and Appleyard, 2007; Whittington et al., 2011). Birkinshaw (2017), for example, presents a framework as a useful device to highlight aspects of strategy that can become open. Both within and across these aspects, there are choices to be made concerning how particular IT-driven open strategy practices might operate and whether they cover part of an organisation, the whole organisation, or operate between multiple organisations.

The scope of open strategy practice and IT is also important because types of IT are used in different ways in relation to organisational boundaries. This has been emphasised, for example, in terms of commons-based production (Chesbrough and Appleyard, 2007), and radical agenda-setting and decision making by voluntary contributors (Lueducke et al., 2017). Others have examined how IT is used to provide input to decision making within, and beyond, organisational boundaries (Morton et al., 2016a; Baptista et al., 2017). The scope of open strategy practice matters therefore as to how different types of IT might enable internal and/or external openness. This is consistent with theoretical contributions in the literature

that have explored how such types of openness might emerge (both voluntarily and involuntarily) through the adoption of social IT (Haefliger et al., 2011; von Krogh, 2012).

Accounting for these forms of openness remains rudimentary in the extant literature, and could be translated into more specific modes of open strategy enabled by IT (Gegenhuber and Dobusch, 2017), thereby potentially extending notions of inclusion and transparency along a continuum of openness (Hautz et al., 2017). Considering the array of IT used for open strategy, as we have detailed in Table 2, questions of how IT enables certain directional forms of communication and collaboration between strategic actors is also a potentially central means of further unpacking the concept of IT use in open strategy, as particular types of IT might enable different dynamics of activity to occur in the pursuit of distinct strategic goals as mediated by IT (Henfridsson and Lind, 2014; Jarzabkowski and Wolf, 2015).

Theme ii) Scale - IT and participation in open strategy

Strategic management studies have long focused on strategy as being the province of senior executives and managers (Hambrick, 1981; Carpenter, 2002), including macro-environmental considerations of how technological advancements might help enable new opportunities (Itami and Numagami, 1992) and facilitate competitive advantage (Porter and Millar, 1985). In contrast, aspects of 'scale' of strategy praxis and practice in (and/or between) organisations is often at the very heart of the motivation to develop open strategy. Put simply, this involves the inclusion of different (i.e. non-elite) and more stakeholders in aspects of strategising and/or rendering these aspects visible to many more organisational stakeholders (Whittington et al., 2011). Whilst various types of participation have been portrayed in open strategy work to date (e.g., Hutter et al., 2017; Seidl and Werle, 2017), we suggest that it is pertinent to not only explore *who* is involved in open strategising, but to also understand *what role* differing types of IT have in enabling participation (Tavakoli et al., 2015; Hutter et al., 2017). As such, participation in open strategy might be understood in terms of diversity in the scale of user participation (Surowieki, 2004; Koch et al., 2013). Examples in the open strategy literature, such as focus on strategy 'jams', have documented situations where there have been tens of thousands of participants involved in strategising (e.g., Whittington et al., 2011; Matzler et al., 2014a), whilst other examples such as in the public and third sectors have

considered much smaller scale involvement (e.g., Amrollahi and Ghapnchi, 2016; Morton et al., 2016b). This focus might yield insight into intricacies of how IT is used to enable different levels of participation and across different aspects of open strategising. There is also the potential to explore how different types of IT enable strategic inclusion and transparency of varying scale. Indeed, the role of strategic actors external to the organisation require increasingly more attention, including, for example, how external actors might provide open strategy services (Whittington et al., 2011), or how types of IT for open strategy are delivered by facilitators of open strategy (Morton et al., 2016b; Tavakoli et al., 2017). Such a focus on [an increasingly diverse set of] external stakeholders has a long tradition in innovation management, and studies of open innovation (Chesbrough, 2006; Gassmann et al., 2010). Examples in the nascent open strategy literature have included organisations working with consultancy firms to create online strategy platforms (Newstead and Lanzerotti, 2010; Tavakoli et al., 2017), and the facilitation of strategic discussions hosted by volunteer interest groups (Morton et al., 2016b). Not only will exploring differences in IT use according to scale of participation aid our understanding of the field, but will also provide insight as to how IT might be adapted to enable, or indeed rely upon, the participation of different practitioners and groups.

Theme iii) Suitability- IT and analogue tools for enabling openness in strategy

Strategic management scholarship has a long-standing reputation of developing applicable frameworks and tools, driven by different traditions and the practice of strategy (Hoskisson et al., 1999). Classic examples include the *Balanced Scorecard* (Kaplan and Norton, 1992), *Five Forces framework* (Porter, 1979), and *PEST (Political, Economic, Socio-Cultural and Technological) analysis* (Aguilar, 1967). Similarly, the IS literature has streams focused on assessing the suitability of technology developments and their development and design for use in certain situations (Nunamaker et al., 1990; Martinsons et al., 1999). Here, we argue that such themes of 'suitability' in relation to open strategy and IT also warrant closer attention. Current literature has done little to explore why certain types of IT are used, and why organisations might adopt particular technologies through which open strategising activity can be driven. Whilst the themes of scope and scale imply the possibility for managers to make

decisions about the design or nature of openness, the theme of suitability addresses *why* organisations might adopt particular types of IT in certain situations based on the scale of participation and scope of activities involved.

Within the theme of suitability, we argue that there should be deeper interrogation of the propriety of different IT tools for enabling openness in strategy, and also efforts to build a deeper understanding of why certain IT-based strategising practices are used to enable openness in different situations or contexts (Tavakoli et al., 2017). In theory, it should be that openness stems from the use of more traditional, analogue forms of strategising (such as aforementioned strategy frameworks and tools, away days, board meetings, or presentations) incumbent within organisations (Whittington et al., 2016; Baptista et al., 2017), or indeed a combination of IT and analogue tools. Therefore, more research is required to explore potential combinations of the IT and analogue tools being used for open strategy, such as through face-to-face and roundtable discussions (Friis, 2015; Dobusch and Kapeller, 2017), and strategy workshops (Santalainen and Baliga, 2014; Mack and Szulanski, 2017). Given the well-documented importance of IT in open strategy, furthering theoretical knowledge about particular choices of IT and analogue means of strategising and their bundled features (Demir, 2015; Jarzabkowski and Kaplan, 2015) is significant. It must be acknowledged that open strategy is not exclusively based in the digital realm. Researchers must also address the deficit in attention being paid to the potential importance of analogue tools in open strategising activity (Baptista et al., 2017). Closer examination of analogue-digital ensembles is an important counterbalance and could be harnessed in order to provide a more substantiated understanding of the *doing* of open strategy and their combination in strategy praxis, comprises choices made by the organisation. This is, perhaps, more conscious and intended across different cases of open strategy and warrants further study.

Theme iv) Structure- Open strategy, IT and organisational structure

The final theme we outline here, that of 'structure', interplays with the long-standing narrative in strategic management studies that concern the challenges of IT and its potential impact on organisational strategy. Considering the focus of this work, we follow examples in strategy and stress that open strategy and the centrality and enabling features of IT present vividly

different, and potentially problematic, approaches to strategising. We use the term structure to address the interplay between established, expected and designed structures that pervade organisations and the variety of efforts we have seen to produce open strategies. More specifically, this area can help to unpack concepts of structure which might be blurred by openness in strategy, including notions of ownership and generation of strategic content or knowledge transfer in relation to open strategising through the use of IT (Whittington et al., 2011; Luedicke et al., 2017). For example, Mack and Szulanski's (2017) study shows that the nature of open strategising both affects and is affected by an organisation's structural characteristics. They show contrasting approaches in terms of stakeholder inclusion compared to participation in centralised *versus* decentralised structures. Further, the literature to date has highlighted varied dynamics for how strategy is open in relation to emerging strategic content (Appleyard and Chesbrough, 2017; Tavakoli et al., 2017). Some authors have indicated that openness through IT lies primarily in stages of ideation in open strategy (Whittington et al., 2011; Matzler et al., 2014a). Others have emphasised openness expanding to the potential ownership in decision making processes (Mount and Pandza, 2016; Luedicke et al., 2017) and the impact IT might have in guiding or indeed hindering competitiveness and organisational legitimacy (Appleyard and Chesbrough, 2017; Gegenhuber and Dobusch, 2017).

Strategy content has also been shown as an area that requires further attention in open strategy studies, particularly by going beyond particularities of open strategising activities and towards a focus on the way in which openness affects the content of strategy (Hautz et al., 2017). Thus, in considering the significance of structure, future endeavours might examine more closely the salient organisational structures with regard to who holds influence and control of strategy when strategic content is open and changeable via IT (von Krogh, 2012; Marabelli and Galliers, 2017). Additionally, there has been recognition of different 'branches' of open strategy research, including one that is concerned with content that is interested in how organisations might sustain themselves economically through open approaches to strategy and innovation (Chesbrough and Appleyard, 2007; Appleyard and Chesbrough, 2017). Within this distinction, there also remains conjecture as to whether the relationships of open strategy initiatives with strategy are passive or active (Hutter et al., 2017). We suggest that further research should be more specifically guided towards whether the aim of strategising

relates directly to organisational or operational levels, and whether contents are directly strategic (Whittington et al., 2011; Luedicke et al., 2017) or relate more indirectly to innovation and business model renewal, for example (Chesbrough and Appleyard, 2007; Stieger et al., 2012; Matzler et al., 2014a). Whilst such dualities present issues in the defining and understanding the core purpose of open strategy, they also enable distinct paths through which the phenomenon can be developed. The role of IT in enabling different types of strategy content through strategising is also underrepresented, and thus the question of how IT-driven open strategy unlocks types of content relating to different structures and levels of strategy in organisations remains nascent, as does the question of how and why this might affect firms and their structure.

In sum, the four themes of scope, scale, suitability, and structure offer a platform from which to add breadth and depth of research that can help to more definitively unpack the significance of IT in open strategy. In the following sections, we review the possible contribution from strategic management and IS in outlining a more specific and guided agenda for open strategy and IT research.

5. Considerations for future research: Social and material perspectives on issues in IT-use and open strategy - A practice-based research agenda

In outlining an explicit programme for future work emerging from understanding of IT in-use for open strategy, we are able to organise some of our reflections on and criticisms of the current literature into a structured guide for scholars. To do so we present analytical devices that can assist in addressing the themes outlined in the previous sections.

Tavakoli et al. (2017, p.5) establish open strategy as a practice-based phenomenon; that is a phenomenon that is constituted “less on the deterministic functional properties of IT than on how IT artefacts are used (enacted) differently within different practices”. As such, and in consideration of existing calls for coaction between strategy and IS scholars, we craft a research agenda that places practice centre stage, with the *doings* of practitioners forming the very nature of open strategy in organisations. As has been explored in the preceding sections of this chapter, open strategy research has gained much attention in the past decade.

Furthermore, a nuanced understanding of the dynamics and dimensions of open strategy work in particular have been brought to fruition through scholarly research efforts, from across different disciplines. Whilst IT has been highlighted as being an imperative driver of openness in strategy, there has been a lack of systematic examination of the significance of different IT types in enabling the *doings* of open strategising. For this research agenda, practice is key to uncovering particular features of the open strategy and IT dynamic, consistent with practice-based work in strategy and IS (Peppard et al., 2014; Whittington, 2014). In more specific terms, we turn to recent advancements where IS strategising scholars have brought to the surface the key role of everyday practices (e.g., Arvidsson et al., 2014; Peppard, et al., 2014; Whittington, 2014). Such research builds on the strategy-as-practice literature (e.g., Jarzabkowski, 2004; Vaara and Whittington, 2012) and suggests that to more fully understand how strategy unfolds in practice it is relevant to look at micro-level aspects (Johnson et al. 2003). To analyse IT use in open strategy at a granular level, the uptake of this joint agenda (Whittington, 2014; Peppard et al., 2014) would elevate IT from silent partner to a pivotal enabler in open strategising activity.

The practice-based view stems from ANT (actor-network theory) and post-feminist theories (e.g., Butler, 1988; Barad, 2003) and was brought to sociology and management fields first (Schatzi, 2001), before being widely adopted by strategy and IS scholars due to the pioneering work of Whittington (1996; 2006), Orlikowski (2007; 2008), and Iacono (Orlikowski and Iacono, 2001) where 'sociomateriality' was first conceptualised as a theoretical perspective (Cecez-Kecmanovic et al., 2014). This perspective (and theorising) accounts for people and 'objects' as being equally important and pertinent. It can be adopted, in line with the IS literature, to unpack the significance of IT artefacts in (open) strategy praxis. IT artefacts are viewed as actively involved in organisational processes and practices rather than tools that actors employ (or exploit) to achieve objectives in open strategy work. Further, the notion of sociomateriality can be a means by which the 'social' (people) and the 'material' (objects) in open strategy are viewed as interwoven rather than merely interacting, and are thus imbued in practices (Orlikowski, 2006). One of the most relevant contributions in this literature attributes agency to both social and material actors (Orlikowski 2007). This implies that both human and material agency have the ability to reconfigure organisational practices in the

accomplishment of open strategy activity (Leonardi 2012). Drawing on Foucault (1977; 1980) and Latour (1986), and also relevant to our practice-based agenda, are notions that sociomaterial theorising acknowledges the relevant role of power, here conceived as a relational construct (Hardy and Thomas, 2014; 2015) that is produced through discursive and material aspects of practices (Nicolini 2009). Therefore, sociomaterial practices (entanglement between people and objects) are interwoven with power dynamics. For instance, technology adoption and exploitation for open strategising can be seen as a practical accomplishment (performed through various actions/interactions where the protagonists are human and material agency). Power is imbued in these sociomaterial practices as people adopt and exploit technologies (e.g., an enterprise system) to achieve organisational goals (Marabelli and Galliers, 2017), and this understanding can be extended to explicating how managers enact IT in their experimenting with open approaches to strategy.

With the rationale for a practice-based research agenda considered, we order the agenda in line with our earlier outlined themes for open strategy and IT. The first area we propose for future research thus focuses on the *scope* of IT and open strategy. Here, researchers might wish to capture more exacting practices of IT for opening particular dynamics in strategy praxis. For example, future work might usefully explore how IT enables openness in strategy to occur within and between different organisational boundaries (Chesbrough and Appleyard, 2007), and how IT and associated practices enable certain directional forms of communication and collaboration between strategy practitioners (Henfridsson and Lind, 2014). Further, future studies might position the ways in which IT-enabled open strategising practice contradicts traditional theories of strategy and the firm (Powell and Dent-Micallef, 1997), and why the scope of strategising might be relevant in such conjecture. Theoretical notions of power in strategy work might also inform research endeavours, particularly by explicating the differences in the role of power in dealing with top-down, planned, *and* bottom-up, emergent strategising practices.

In outlining a second step in this agenda, we consider the significance of *scale* in our review, emphasising work at the nexus of IT and participation. The potential to explore the scale of participation and how and why this varies is important (Hutter et al., 2017). Questioning how

the number of people participating in the practice of open strategy varies across different organisational functions is one notable route to understanding scale. Further, and complementary to this, is interrogation of the role of IT in delimiting the scale of open strategy praxis. In addition, scholars might extend existing research to focus on practitioners of strategy, particularly by following the example of open innovation scholars and exploring what role external facilitators might have as intermediaries in enabling open strategy through IT (Whittington et al., 2011; Morton et al., 2016b). Different contextual settings will be key to understanding when open strategy requires scale to reach beyond internal boundaries to bring those outside of the firm into everyday practices (Johnson et al., 2003). It is also notable that the practice lens, as demonstrated in strategy and IS work, will be central to focus attention on what people do with particular technologies in their ongoing and situated activity (Orlikowski, 2007; Whittington, 2014), and future work exploring scale in open strategising might study IT in a tightly defined stream of praxis over time (Jarzabkowski and Wolf, 2015) to understand participation at key stages in the continuum from closed to open strategy (Hautz et al., 2017; Tavakoli et al., 2017).

Third, our discussions regarding suitability highlight an area of considerable importance, which at present remains devoid of extensive and meaningful work in the growing open strategy domain. Here, we encourage and aim to inspire and guide future research towards more direct questions relating to *types of IT* in open strategy. For example, we echo calls for closer attention to be paid to the material in strategy praxis (Peppard et al., 2014; Whittington, 2014; Tavakoli et al., 2017) with empirical studies usefully examining the material features of IT and how these are inherently interwoven with strategy practitioners in the unfolding of openness in strategy. The significance of analogue tools in open strategy work to date means future endeavours might also explore what differences exist between use of IT and analogue tools for open strategising, with a view to understanding more clearly why particular tools are chosen for open strategy activity in different contexts. Again, this might involve paying more precise attention to those practitioners who initiate and drive open strategy in organisations, whilst unpacking the complexities of how IT is used in streams of open strategising praxis. Ultimately, suggestions that there exists a clear opportunity for IS researchers to help strategy-as-practice scholars to better understand the role of material technologies in strategy

are particularly pertinent to extending this area of open strategy research (Whittington, 2014).

As we emphasised through our earlier discussions of *structure*, the final theme in this proposed agenda raises several important directions for research. Key here might be improved understanding of how IT mediates activity between organisational actors in the generation of new strategy contents (Jarzabkowski and Wolf, 2015), and the broader affects openness, as enabled by IT, might have on organisations and their environments (cf., Porter and Millar 1985). Research might also explore how IT-driven openness alters power dynamics in strategy and those groups involved in strategising (Henfridsson and Lind, 2014), consistent with research in IS work and sociomaterial theorising involving people and ‘things’ (Marabelli and Galliers, 2017). The question of who holds influence and control of strategy when strategic content is open and changeable as a result of IT use is similarly relevant here, resonating with much research which has sought to understand the dynamics of open strategising and its potential effects on the structure of organisations over time (Morton et al., 2016a; Gegenhuber and Dobusch, 2017; Tavakoli et al., 2015; 2017). Other relevant ventures might pose what types of strategy content emerge from IT-driven open strategising, and how IT unlocks different forms of strategising between strategy content and strategy process, including whether openness and associated practices and outcomes applies to organisational or operational strategies, or to innovation more broadly. In addition, the significance that future empirical work might have towards understanding of how IT enables increased access to strategy for erstwhile non-strategists, consistent with studies, which have more explicitly focused on dynamics of transparency (Gegenhuber and Dobusch, 2017; Malhotra et al., 2017) is also noteworthy.

In concluding our agenda, we bring together some final, points from across the relevant literatures examining open strategy. We echo calls for more comparative case studies of open strategy (Hautz et al., 2017) and stress the need for longitudinal approaches to explore research at the intersection of open strategy and technology work (Vaara and Whittington, 2012). In order to further interrogate the relevance of IT for opening strategy, we argue that research needs to go beyond focusing on single contexts, as this limits the potential for understanding the significance of IT in-use. Indeed, research ventures might instead seek to

understand open strategy in different contexts by placing IT as the principal point of interest. For managers and executives, this would yield a variety of exemplary cases of IT and open strategy, providing greater clarification of which aspects of strategic work can be made open (or remain closed) in organisations. By expanding the number of studies, incorporating different contextual settings, managers can engage more fully with the numerous options provided by IT in open strategy. The differences in the use and effect of particular open practices through types of IT in distinct cultural and organisational contexts is also key, as are the significance of their mediating effect on (open) strategising (Jarzabkowski and Wolf, 2015). We argue that longitudinal approaches to researching open strategy are needed to show that not only can IT open-up strategic activities in organisations, but to show how IT is changing strategic work in organisations long-term. In this vein, open strategy might be studied over time to observe and capture ongoing dynamics where relationships between IT and people are constantly reconfigured (Orlikowski, 2007). This complements further a foundation for deeper understanding by managers in terms of how strategic work might change, what resources and capabilities are required (and how they should be orchestrated), as well as reinforcing the need for crafting coherent IS strategies in conjunction with business strategies. Whilst the state of research in the field is some distance from being able to prescribe specific performance outcomes from open strategy and IT, the review and agenda presented here offers an array of options for managers to consider before developing more open approaches to strategy. Specifically, we surface various types of IT and how they are used differently in open strategy (Table 2) and we connect IT to the central themes of scope, scale, suitability, and structure in open strategy. Indeed, we hope that our agenda, and the other considerations outlined in this chapter, might also help unpack the evolution of open strategy tools used in strategising activity over time, and help to emphasise how managers dictate the dynamics of openness, along the continuum between being open and closed (Hautz et al., 2017).

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