A Microfoundational View of Open Innovation: Investigating the Role of the Lower-level Managers

Ralf Wilden
Macquarie University
Macquarie Business School
ralf.wilden@gmail.com

Krithika Randhawa
University of Technology Sydney
UTS Business School
krithika.randhawa@gmail.com

Siggi Gudergan
University of Waikato
Waikato Management School
siggi.gudergan@waikato.ac.ny

Abstract

Existing open innovation (OI) research has largely focused on the organizational level, with fewer studies addressing individual-level behavior and characteristics necessary to deploy OI in organizations. In this study we draw routines and microfoundational thinking, and use a multiple case study design to identify microfoundations that underpin OI within organizations. We find that these microfoundations rest on lower-level managers who deploy performative OI routines drawing on their ostensive counterparts. In combination, these two routine aspects make up the organization’s OI capability. Our results indicate that the proficiency of this OI capability is a function of the recursive nature of these performative and ostensive routines that are based on learning and generative mechanisms that leverage three memory elements characterizing ostensive OI routines. These mechanisms are initiated by tensions that lower-level managers face when deploying OI. This paper advances the OI literature by clarifying that OI routines that make up an OI capability involve both performative and ostensive aspects, and the microfoundations literature by specifying the distinctive role of lower-level managers (as opposed to senior-level managers) and by outlining how tensions experienced by lower-level managers prompt learning and generative mechanisms that shape the development and deployment of OI routines.
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**Introduction**

Open innovation (OI) discusses organizations’ openness to knowledge flows across organizational boundaries (Chesbrough, 2003a), and stresses the specific routines designed to *purposively* manage the search and transfer of such external knowledge as the key to bolster innovation (Dahlander and Gann, 2010; West and Bogers, 2014). The majority of existing studies has focused on the organization as the unit of analysis, addressing organizational-level antecedents to OI such as absorptive capacity (De Faria et al., 2010) and organizational-level mechanisms for obtaining (searching, enabling, acquiring) external knowledge (Lopez-Vega et al., 2016). However, research that examines OI at the micro level, rather than the organization level (Bogers et al., 2018; Randhawa et al., 2016), is sparse, leaving us with little knowledge about the role individuals (within an organization) play in OI (Bogers et al., 2017; West and Bogers, 2017).

While research has started emphasizing the “human side” of OI (Bogers et al., 2018; Gassmann et al., 2010), the focus has largely been on studying individual-level attributes such as how employee and managerial characteristics affect their ability to combine internal and external knowledge for OI. Previous research has studied the impact of individuals’ human capital (employees’ work history and diversity of educational background) on organizational-level knowledge flows (Bogers et al., 2018) and individual-level competencies on brokering OI solutions (Chatenier et al., 2010). Despite recent clarifications, research with a focus on *individual-level activities* that determine organizational proficiency in conducting OI is still lacking (Bogers et al., 2017). In particular, a wider understanding of OI’s microfoundations – that is, how individuals, processes and structure shape aggregate OI routines and capabilities – is sparse (Bogers et al., 2018; Felin et al., 2012; Foss and Lindenberg, 2013).
The present study distinctively advances our knowledge of OI by making four chief contributions. First, academic research has paid little attention to the challenges that individuals face in the daily pursuit of OI. As a result, how individuals navigate these challenges in enacting OI routines remains unexplored (Salter et al., 2014). OI calls for a significant shift in the way organizations engage in innovation. In some organizations the change to openness is embraced, whereas others experience resistance to it (Antons and Piller, 2015; Ford et al., 2008) with OI efforts being stalled due to internal barriers within these organizations (Randhawa et al., 2018). Individuals operating on the front line of OI often face challenges in overcoming such internal barriers so as to implement OI successfully. However, we know little about their efforts in this regard. Thus, our focus in this paper is on how individuals responsible for implementing OI in organizations act to surmount challenges in their daily practice of OI.

Second, we integrate resource-based and routine thinking into the discussion of OI and the individual, to elucidate the microfoundations of OI, as alluded to in previous works (Bogers et al., 2018; Randhawa et al., 2016). We clarify how individuals enact OI routines by unpacking the ostensive and performative aspects at the individual level (Feldman and Pentland, 2003). In particular, we reveal how individuals enact performative OI routines by drawing on three types of memory – transactive, declarative, and procedural – that characterize the ostensive OI routines, in overcoming challenges arising from organizational-level barriers to OI. From this, we outline how organizations can put in place ostensive elements that make it easier for individuals to cope with OI challenges and enable individuals to better perform their OI tasks.

Third, we extend the discussion around microfoundations of routines and capabilities (e.g., Abell et al., 2008; Biesenthal et al., 2018; Zollo and Winter, 1998). Specifically, our findings extend Felin et al.’s (2012) categorization of microfoundations as (1) individuals, (2) processes and interactions, and (3) structure, by linking them with the routines and capabilities
that support OI. We add to the literature by specifically clarifying the role of individual-level tensions, such as those imposed by structure, and how that shapes the recursive nature of ostensive and performative aspects in the process of routine formation – which is hitherto unaddressed in the microfoundations literature.

Finally, different to previous research on the individual-level, we neither focus on senior managers (e.g., Ahn et al., 2017) nor on technology experts/R&D professionals (Salter et al., 2014), but rather investigate individual lower-level managers’ “bottom-up” influence, to improve our understanding on how they facilitate OI in the organization by enacting OI routines. This focus is in line with research in the management literature that stresses that these managers contribute to strategic renewal by experimenting with novel practices and championing initiatives to top managers, such as OI (Glaser et al., 2016; Heyden et al., 2015). While research in strategy, organizational theory and design, and organizational behavior has focused on middle managers, innovation-related research, and especially research on OI, has hardly done so.

**Theoretical Background**

Most of existing research on OI has been conducted at the organizational level; providing us with valuable insights into the antecedents, processes, and outcomes of OI at that level. We know, however, significantly less about OI at the individual level as little “attention has been paid to the “micro-foundations” of OI, the choices and behaviors of individuals involved in the successful exploitation of external ideas, and how these individual actions shape aggregate strategic and managerial outcomes” (Salter et al., 2014). The focus of microfoundations research lies on disaggregating collective organizational elements to uncover how individual-level factors affect organizations, how individuals’ interactions form organizational-level outcomes and ultimately performance, and how relationships between macro elements are mediated by lower-level processes (Abell et al., 2008). Felin et al. (2012, p. 1353) state that “the microfoundations of
organizational routines and capabilities include constituent components (i.e. main effects) – individuals, processes, and structure; and interactions within and across components (i.e. interaction effects) – the interactions of individuals, processes, and structures that contribute to the aggregation and emergence of the collective constructs.”

Routines are defined as “repetitive, recognizable patterns of interdependent actions, carried out by multiple actors” (Feldman and Pentland, 2003). Organizational routines comprise ostensive and performative aspects. The former aspect follows the logic of routines as structure (Felin et al., 2012). The performative aspect comprises the deployment of a routine in time and space (e.g. Feldman and Pentland, 2003) by an individual. The recursive nature of these two aspects of routines are the foundation of understanding higher level outcomes and change (Feldman and Pentland, 2003). Winter (2000) states that an organizational capability resembles a high level routine or collection of routines, interpreting routines as inputs to capabilities. As stated above, individuals, processes and interactions, and structure form the main categories of microfoundations. The limited research, which has specifically investigated microfoundations of OI, focusing on the role of the individual, found that individual inventors’ openness to external knowledge sources affects their idea generation in R&D, and that individual’s human capital in terms of knowledge breadth positively affects OI (Salter et al., 2015). Dahlander et al. (2016) revealed that individuals who attended to people inside the organization were more innovative. However, if individuals reach out to external knowledge and allocate sufficient attention to those external sources, they are more likely to innovate. Bogers et al. (2018) find that individuals’ educational diversity is positively related to organizational-level openness, whereas individuals’ diversity in previous work experience has no impact.

Sjödin et al. (2018) focus on inbound OI and their inductively derived process model centers around an individual’s absorptive capacity and how individuals filter external knowledge, leading to either knowledge exploitation, knowledge termination, or knowledge being ‘stuck’ in
limbo. Related, Pollok et al. (2018) provided valuable insights by investigating how OI capabilities develop. By focusing on crowdsourcing capability as a mechanism of OI, they find that three types of lower-level organizational elements may affect gains from crowdsourcing: informal organizational roles, formal organizational roles, and knowledge processes. Finally, we have learned that organizational coping strategies may assist individuals in overcoming barriers to implementing OI (Salter et al., 2014). These studies on the individual level in OI have provided us with valuable insights; however, they have focused on either senior managers, scientists, R&D professionals or technology experts, with no research looking at the role of middle and lower-level managers in the OI context, although they play a crucial role in implementing strategies and deploying (Balogun and Johnson, 2005; Wooldridge et al., 2008).

Research Design and Methodology

In order to study the microfoundations of OI – a phenomenon that has received limited research attention – we use a qualitative research design (Patton, 1990), which is suitable to developing and refining theory, as such an approach is consistent with the process-character of OI and how OI is embedded in the organizational context (Eisenhardt and Martin, 2000; Lee, 1999; Schilke et al., 2018). More specifically, our research design is inductive and embedded in a broader study aimed at understanding OI intermediary-client relationships, organizational barriers to OI, and related organizational-level OI mechanisms. While that study revealed certain barriers at the organizational and project levels, it also uncovered that individuals and their activities were essential in OI, and crucially, that individuals struggled in engaging in OI practices. Subsequent to this revelation, we followed up with additional data collection to delve deeper into the activities and challenges of individuals when enacting OI. Thus, in this paper, we interpret and build on insights that emerged from analysis of data from the wider study of OI and draw on further analysis of supplemental data at the individual level within the same organizations and additional organizations, to clarify how individuals deal with challenges in enacting OI.
Data

Our sample comprised key individuals working in Australian public sector organizations that have used the services of the same online OI intermediary, which we label Nexus in this paper. From more than 200 clients of the intermediary, we identified 94 that had conducted one or more OI projects. This context is well-suited to address the research question for this study as public sector organizations are known to face internal barriers to innovation (e.g., Maiolini and Naggi, 2011; Micheli and Neely, 2010), and particularly in implementing OI (Dixon, 2010; Lee, Hwang, and Choi, 2012; Randhawa et al. 2018), which allows us to investigate how individuals deal with the day-to-day challenges that these organizational barriers bring to their efforts in implementing OI, and how they respond to these challenges. Following a theoretical sampling logic, we chose 21 clients for this study, ensuring variance in clients’ OI engagement behavior (high, medium, or low—as specified by Nexus and further validated by our own observations of client projects), when they commenced OI projects and total projects implemented.

Data for this study comes from three rounds of fieldwork. The overall data collection spanned two years: (1) 24 semi-structured interviews with lower-level managers (e.g., community engagement managers) responsible for OI in the sample organizations and 27 with intermediary managers; (2) online observations of past and ongoing OI projects; (3) archival data including policy documents, websites, press releases; and (4) follow-up e-mails and informal conversations to track ongoing processes in real-time. The lower-level managers interviewed included those who were tasked with the job of implementing OI in their respective organizations and were directly responsible for day-to-day tasks and decisions related to running OI projects. Intermediary managers included those that directly dealt with the interviewed lower-level managers in client organizations on the operational aspects of OI projects (e.g., client engagement manager), but also those who engaged with these individuals on a strategic level such as the Chief Technology Officer and Chief Practice Officer. This allowed us to get
complementary perspectives on the same activities and choices of the individual lower-level managers in these organizations, strengthening the validity of our findings (Yin, 2003).

During the initial phase, we conducted interviews with 8 Nexus executives. We also reviewed client case studies on Nexus’s website and the clients’ OI projects. This provided initial content for choosing client organizations for our sample. In the second phase, we conducted 11 interviews with Nexus managers and 18 interviews with community engagement managers of the organizations. The latter interviews included open-ended, non-directive questions about their overarching motivation to engage in OI, processes, challenges and critical success factors in implementing OI. Interviews were supplemented by and triangulated with online observations of OI project sites and archival data such as OI policy documents of the organizations, their websites, and other publicly available data. Insights from this phase revealed that there were barriers to OI at the organizational and project levels, it also became evident these barriers posed challenges for the individual lower-level managers in implementing OI. The interviewees often discussed the day-to-day struggles of these managers in implementing OI, and their varied efforts in dealing with these struggles, highlighting the critical role these individuals played in the success of OI in these organizations. Intrigued by these insights, we launched a third round of supplementary data collection to further understand the OI-related challenges faced by individuals, and their approaches in dealing with them. Accordingly, in the third phase, more than a year after the initial data collection, we collected supplementary data at the individual level. First, we conducted 14 additional interviews. These included 5 follow-up interviews with Nexus and 6 with lower-level managers included in the previous data collection round. In addition, we had access to 3 other organizations during this phase and interviewed their managers as well. Second, we used peer debriefing and spent a prolonged time in the field (i.e., three months) to enhance our understanding of individuals’ OI activities, their organizations, and their external contexts before collecting and analyzing the final-phase interview data (Creswell,
2003). Finally, we extensively reviewed the organizations’ OI project sites and archival data such as internal OI policy documents to triangulate findings. All interviews were led as guided conversations (Yin, 2003), lasted an average of 1 hour, and were recorded and transcribed.

Analysis

We combined theoretical lenses discussed in OI, microfoundations literature, routines literature, and the resource-based view. Based on our initial theoretical reasoning of microfoundational factors of routines affecting how organizations perform OI, we evaluated this logic against the data. We iterated between data and theory to anchor emergent themes in extant literature (Eisenhardt, 1989). Ultimately, we identified patterns of recurrence in the data (Miles and Huberman, 1994) that reached theoretical saturation (Yin, 2003). We followed a multiple-case analysis logic (Eisenhardt, 1989). First, we created individual case histories. Then, we disconfirmed or confirmed inferences drawn across cases. Multiple informants described the same challenges in OI implementation, and activities enacted in response by individuals, suggesting a collective relevance beyond a specific organizational context. Accordingly, we identified patterns of regularity in the data (Miles and Huberman, 1994) to construct first-level themes, which in turn aggregated into theoretical constructs. We triangulated interview data with secondary data, and data from the intermediary’s employees to establish a detailed understanding of the phenomena under investigation and to improve the validity of our findings (Denzin and Lincoln, 2000). This triangulation of data between multiple sources provides greater accuracy and depth to our findings (Yin, 1994). We informed interviewees of our results to establish agreement of our interpretations to ensure the internal validity of our study (Yin, 2003).

Results

**Performative** and **ostensive** aspects of routines are linked as a duality in a recursive relation; that is, they shape each other. Individuals within organizations play a crucial role in implementing these routines (Felin et al., 2012; Miller et al., 2012). Our data shows that lower-level managers
implement OI routines by performing and coordinating OI activities on a day-to-day basis. To do so, they enact performative practices, which are guided by established ostensive elements, to form OI routines, which are microfoundations ultimately accumulating into an organizational OI capability (Felin et al., 2012). We find that some OI routines in organizations are well-established, and in these cases, the lower-level managers did not perceive any challenges in implementation. Here, the individuals treated OI implementation as ‘business-as-usual’, with a focus on ‘doing’ rather than ‘changing’ routines. In these cases, the performative practices were guided by stable ostensive aspects and the focus is not on new routine formation.

Our data also reveals that lower-level managers face challenges in implementing OI, usually triggered by the general absence of a set of shared holistic ostensive routines in their organization (Feldman and Pentland, 2008), guiding how OI needs to be conducted. Here, we find that these individuals enact routines to navigate the tensions emerging from these challenges. To do so, they draw on three types of memory – procedural (know-how), declarative (know-what) and transactive (know-who) – which shape the interplay between ostensive and performative routines (Miller et al., 2012). Our findings reveal differences in how lower-level managers respond to OI-related challenges; that is, in the way that they form and enact ostensive and performative routines and draw on the three individual memories. These differences have a bearing on the proficiency of organizational OI capabilities. From these differences we developed our framework of the microfoundations of OI presented in Figure 1.

Challenges faced by Individuals in OI Implementation

Our findings show that individual lower-level managers faced two issues – lack of OI knowledge and skills and attitudinal resistance in OI adoption – that affected their daily practice of OI.
These, in turn, manifested as four different challenges that hindered their day-to-day efforts in OI implementation. We now discuss these aspects (see Table 1).

Lack of OI knowledge and skills in self

A key challenge for individuals tasked with OI is that they lacked knowledge and skills to perform their day-to-day job, largely because their organizations did not provide adequate clarity. One lower-level manager recalled: "When I came on board I didn't understand the gravity of the role that I took... about six months into my job, whilst I was employed to support and practice [OI] for the organization, there was not enough job role clarity." (LLM, Org N)

This meant that there was not sufficient guidance on job tasks, or formal training and development opportunities, leaving junior-level managers to find their own way. In many cases, this individual-level challenge stemmed from a lack of buy-in for OI at the organizational level, due to which project-level competence and frameworks for OI also lacked. One intermediary manager further explained that “…even if there's a framework [for OI], many of the times that's what they build themselves. It means that they have to create that know-how as they go along and in many cases they have got to keep moving.” (Product Engagement Manager, Nexus)

Lack of OI knowledge and skills among peers

Individuals also had to deal with peers who lacked OI knowledge and skills. Again, this challenge was related to competency gap in project teams and was the result of the general absence of organizational buy-in for OI. This often meant a tactical reshuffling of OI to different departments as organizational structures changed. An intermediary manager related that “sometimes [OI] gets moved to the IT department, and then you find that you've got that misfit of capacity with IT team taking over an [OI] platform that has no knowledge of engagement.”
(Client Engagement Manager, Nexus) A related reason for paucity of knowledge and skills in OI teams is due to high staff turnover and the resultant lack of workforce capacity, which posed additional barriers to coordinating tasks internally for OI implementation, as “there's a lot of tacit knowledge that goes away with you when you leave an organization. But the most impactful thing is over the years I've developed relationships and built trust with people and communities and organizations. They are the things that get broken and take time to rebuild” (LLM, Org H)

Attitudinal resistance in OI adoption from peers

Junior-level managers also faced resistance from peers which further hindered their efforts in implementing OI. This challenge stemmed from the not-invented-here syndrome among peers thinking that “…. they need to be the experts on how to better manage the community. And they need to understand that we can guide a lot better in some areas” (LLM, Org O). Driven by the broader lack of organizational buy-in, peers were often reluctant to embrace OI activities, which had a bearing on their attitude towards junior OI managers. In some cases, peers simply lacked the time to dedicate to OI tasks due to staff turnover, resource constraints and overall lack of workforce capacity. This further exacerbated their attitudinal resistance to OI. A junior manager shared: “[My peers] would just brush me off and say, I am too busy or we'd make a meeting and they wouldn't see me or they would listen and go, "This is not important to me and wouldn't buy in." (LLM, Org H)

Attitudinal resistance in OI adoption from senior managers

Attitudinal resistance from senior executives posed a major challenge for lower-level managers to perform their job effectively, and this too was related to the overall lack of organizational buy-in for OI. One junior-level manager remarked: "I reached the ceiling where [senior managers] basically said, “No more. We don't want to spend more budgets” […] If I had to list a number of things to embed [OI] in an organization, number one would be senior level buy-in and support...it does enable us to do our jobs better" (LLM, Org E) The general reluctance to
embrace OI meant that lower-level managers had to work harder to justify the business value of OI to top management. Another manager elaborated that “...although [senior managers] like the idea of [OI], they don't quite like the meaning behind it [or] what it gives. It would make our life a lot more meaningful...day to day pursuit of community engagement would be more meaningful if we had more full support from the top." (LLM, Org O). Thus, inadequate support for OI from top management translated into a lack of work satisfaction among lower-level managers.

**Individual responses to OI challenges**

Our framework of the microfoundations of OI indicates how lower-level managers respond to challenges through recursive interplay between the ostensive and performative elements of OI routines. We find that when faced with a challenge in OI implementation, individuals act to solve this problem and navigate tensions related to the challenge. Our data reveals that individuals vary in the extent to which they are able to do so; and this variance is related to the differences in the way they build and draw on their three memories, to shape ostensive and generate performative routines, which in turn is driven by the strength of the learning mechanisms and related cognitive capacities. This process ultimately determines the level of alignment between ostensive and performative OI routines, and in turn the proficiency of OI capabilities. The variance we observe in our data, translated into two different patterns in how individuals enact routines to manage tensions associated with each OI-related challenge described in the previous section: one in which they were able to navigate these tensions effectively, and the other in which they could not. We now discuss these routines and related differences in enactment (see Table 2).

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**Self-directed learning from and with external partners**

Given a lack of personal knowledge and skills, and in the absence of established ostensive routines to guide OI implementation, lower-level managers resorted to *self-directed learning*
from and with external partners. Individuals that could fully negotiate the tensions associated with the lack of OI knowledge and skills in self proactively reached out to and immersed themselves in external knowledge sources including the OI intermediary, consultants, industry experts and associations to learn about industry best practice in OI: “All I got was a budget – that was it. There was no specific guidance, but a lot of it was self-learnt through my own networks and [industry body] seminars. I did have a good relationship with a practitioner who [...] had done similar work for others. So, she helped to put that in my organization’s context. Nexus was also good in linking other people that were doing similar work.”(LLM, Org, G)

Furthermore, some managers resorted to formal external training for skill development, and also actively formed and leveraged informal industry peer communities to share and learn knowledge. In this way, these individuals strongly tapped into their transactive memory (know-who) to reach out to key external networks in order to build their own procedural memory (know-how) and declarative memory (know-what) on OI, which they then draw on to perform their roles and achieve better outcomes: “[One] would just rely on those people who were natural collaborators and sharers. Over time, I’ve found myself quickly reaching back to these networks, because every time you did it and something came out of it, I probably stored it in the back of my head that, ”oh, this person’s the best to reach out for this,” And then the next time the opportunity or the situation arose where I needed to reach out to somebody for help or guidance, I found myself going, ”oh, I know somebody that I can go to”(LLM, Org H)

Thus, experiential learning led to the development and retrieval of know-what and know-how from their procedural and declarative memories, which over time translated into more consistent, codified ostensive elements, as can be gathered from this remark: “When I started, I did not know what this role was about and what I needed to do on a day-to-day basis. There weren't any real processes. I learnt from that and it was a very steep learning curve, but I certainly made a point of making sure [my colleagues] didn't have that experience, so when they
came onboard I tried to impart that [OI] knowledge as well as information about the rest of the [organization]. So it wasn't just, "here are a few templates," but there was a little bit more of embodying knowledge and experience.”(LLM, Org D)

Interestingly, this reveals that the backward-looking experiential learning process in these individuals is bolstered by their forward-looking cognitive capacity to envision, shape and clarify an expanded understanding of their own job role and tasks (Felin and Zenger, 2009; Gavetti and Levinthal, 2000). These cognitive efforts in turn also affected their formation of values and beliefs, which in turn informed their (future) performative actions. Some individuals in our sample, however, had difficulty in negotiating the tension related to the lack of OI knowledge and skills in self. We find that these individuals made limited effort to tap into external knowledge sources, and also rarely formed and leveraged peer communities and networks to build OI expertise. For example, one lower-level manager remarked: “We don’t have a dedicated [OI] person, the [OI] component is only 30% of my role. So, even though I am the [manager], I wouldn’t log in [to the OI platform] every day. I hardly reach out to [Nexus managers] as I don’t have the time and don’t see it as a priority” (LLM Org N). Moreover, the few individuals who tapped into external knowledge sources, and drew on this for future performative actions, did so rather reactively. Here, their focus was not to build their own OI knowledge, skills and expertise, but to meet short-term operational outcomes. Thus, these individuals, unlike the other group in our sample, failed to draw on their transactive memory (know-who) to develop their procedural (know-how) and declarative memory (know-what) on OI. Moreover, not tapping into external knowledge sources meant that these individuals mostly depended on their prior experience alone to make everyday decisions: “It’s the way I have understood or interpreted how I need to be doing things over time, which is maybe not the same as what the policy says. So basically, I go back to what I remember about how things were done
in the past, or I see how others are doing. So, that's the way I make decisions when there's not much clarity about how [OI] is to be done.” (LLM, Org P)

These individuals did not establish strong ostensive understandings to inform their (future) performative actions related to self-directed learning from and with external partners. One intermediary manager further clarified that “...these [managers] are project owners – [but] they're like the messenger. They don't necessarily influence the content. They are not invested in making the changes. They just [think of themselves as a] facilitator or the channel to put stuff. So they just go along with it [...] thinking it's all too hard and just think there is no time” (Client Engagement Manager, Nexus). Thus, the weak backward-looking experiential learning process that operated can also be explained by the lack of their forward-looking cognitive capacity to envision, shape and clarify an expanded framing of their job role and tasks.

Transferring and assimilating external knowledge

To address the challenge of lack of OI knowledge and skills among peers, lower-level managers focused on transferring and assimilating external knowledge on OI. Individuals in our sample who had fully negotiated tensions associated with this challenge established robust routines. These managers tapped into the declarative memory (know-what) and procedural memory (know-how) gained through their own self-directed learning, to develop templates, frameworks and systems for effective OI implementation. This process helped in codifying OI knowledge useful to coordinate knowledge transfer and scale knowledge assimilation internally, in turn, developing the know-how and know-what of peers. These efforts thus also aided the development of tangible, stable ostensive elements from individual performative practices, which over time translated into sustainable OI routines and capabilities for the organization.

These individuals also adopted a novel, collaborative approach to develop these OI systems and frameworks. One lower-level manager related: “I had to develop an [OI] process and the first thing was developing an engagement strategy for the organization. And I could have written
that, but [...] when I sat down and went, 'How do I do this?' I went-- well, the policy is needed to be built by staff, endorsed by [management], delivered by staff and received by community. So they all needed to be involved. And I designed an interim process, where I went out to all of those groups to meet and talk with them and made different alteration of the strategy each time. And then we ran workshops to build the framework” (LLM, Org D).

This approach in turn helped the manager build and draw on transactive memory (know-who) to build know-what and know-how on OI. These managers also launched other creative initiatives to actively promote peer-based learning, to further scale internal assimilation of OI knowledge and skills. For example, one strategy was an informal group of “internal champions” – people who were handpicked or self-nominated to spearhead OI in their departments, with the lower-level managers updating them on new tools and processes to help them move their work. Through this network, the junior managers helped build a transactive memory system within the organization (Argote and Ren, 2012). Accessing such a network of ‘know-who’ further aided the development of know-what and know-how among peers, feeding into (future) performative actions, and thus scaling workforce capacity for OI. Overall, our findings align with previous research that found that individuals who allocated attention to people inside the organization were more innovative (Dahlander et al., 2016). Another manager explained how such initiatives achieved effective knowledge transfer and assimilation: “Obviously I was hearing a lot of [...] best practice from my external networks. But then the tension was that internally people didn't know, and they probably didn't care until I brought them on the journey with me. So to be able to actually have some impact and get traction, I had to navigate that tension by first bringing them into my zone so-to-speak and then getting them to actually do stuff” (LLM, Org A).

Strong experiential learning was at play, and more crucially, the effect of these learning mechanisms was bolstered by strong forward-looking cognitive capacity to imagine novel options and strategies for problem solving. This aligns with previous research that showed that
these cognitive efforts fed into the individuals’ set of values and beliefs, in turn shaping (future) performative actions (Felin and Zenger, 2009; Gavetti and Levinthal, 2000).

On the contrary, individuals that could not overcome challenges put limited effort into establishing systems and processes for transferring external OI knowledge and skills back into the organization. Attention to codifying tacit knowledge into templates was lacking. Therefore, ostensive routinization of individual performative practices was absent. These junior managers provided training and support to peers, mostly on a transactional basis. An intermediary manager explains this reactive approach in one such organization: “People would come to them saying, "I need some help," and what they do is go, "Here's the process, here's the form, fill it out, and off you go,” that is making the assumption that everyone was on the same understanding, and what they should realize is that everyone is different” (Client Engagement Manager, Nexus)

They also did not promote peer-based learning or any initiatives that promoted knowledge-sharing among peers to scale internal assimilation of OI knowledge and skills. In general, efforts to drive self-motivated change by involving multiple stakeholders were absent. As a result, unlike their effective counterparts in our sample, they did not build and draw on transactive memory systems. The activities they engaged in for developing OI knowledge and skill in peers were largely based on their own know-what and know-how, as this staff indicated: “[the OI manager] took us around and introduced us to the main project managers that we'd be dealing with, which was a nice introduction to the role...there was a bit of sharing based on her previous experience” (LLM, Org M). Overall, the experiential learning process in these cases was relatively weak and not supported by individuals' cognitive capacity to seek novel strategies and systems for internal transfer and assimilation of OI knowledge and skills.

**Enhancing professional and social identity of peers**

Despite all efforts to learn, transfer, and assimilate OI knowledge and skills, lower-level managers still faced challenges related to adoption of OI systems and processes, owing to
attitudinal reluctance among peers. To overcome this, we find that they resorted to enhancing professional and social identity of peers. Individuals who had fully negotiated tensions associated with this challenge were able to launch novel initiatives designed to actively promote professional and social identification of peers with their employer and the community through OI job roles and tasks. For example, one manager designed a collaborative engagement program and had over 90 peers volunteer, which changed their perception of OI, and promoted their professional identity: “This group of 90 people loved getting out and about [...] having them suddenly champion and demonstrate and participate [...]. And suddenly that became a group that people wanted to be a part of. So, the tension was over time broken by the excitement that was built around people being a part of this [OI] process” (LLM, Org H).

This induced a sense of purpose in their daily jobs, so as to garner their buy-in and acceptance of OI. Through such initiatives, lower-level managers also actively built transactive memory systems: “[The collaborative engagement programs] gave people an opportunity to know each other, and build social connections, which helped them professionally. But I found that this helped me in my role, as well. We're building relationships, [and] they are seeing us as the experts in [OI]. That helps in developing that trust that you need to encourage learning” (LLM, Org C). These transactive memory systems helped renew peers’ procedural memory (know-how) and declarative memory (know-what). Moreover, providing opportunities for peers to activate and tap into their cognitive capacity to re-frame their own job roles and induce more meaning and purpose in their daily work life was also the key to activate these processes. This forward-looking cognitive capacity in turn bolstered their backward-looking experiential learning.

However, those managers in our sample that could not manage this challenge successfully did not launch such initiatives to promote professional and social identification of peers through their OI role. There was no effort to induce more job satisfaction, and a sense of
purpose in the daily work life of peers, so as to garner their buy-in and encourage a more involved implementation of OI system and processes. As a result, these individuals continued to encounter reluctance from peers to embrace OI, and moreover were unable to tap into their cognitive capacity to come up with novel initiatives and improvise through experiential learning.

Individuals rarely encouraged social interaction among peers to build transactive memory systems for peers to draw on. Manager and peers mostly depended on their limited prior experience and existing procedural and declarative memory. One manager related: "The project team thought "oh my god, could you just stay out-- get your fingers out of our pie" But that's when we had to call in the big guns, we had to call in our manager, who is very influential. So it was basically a phone call and then e-mail from my manager. And they gave in to me. And that happened on maybe three occasions and they kept declining the offer, and so that's when we called in manager. Generally, it's up to such negotiation” (LLM, Org R). Such a restricted approach meant that the experiential learning process was weak among these lower-level managers, and there was limited opportunity for peers to activate their cognitive capacity too, to re-frame and induce more meaning and purpose into their own job roles.

Championing OI amidst senior managers

Finally, to overcome the challenge of attitudinal resistance from senior managers, lower-level managers took to championing OI amidst senior managers. We find that those individuals that could successfully overcome this challenge proactively launched initiatives designed to legitimize OI activities with senior managers, as part of their effort to justify the business potential of OI. To do so, they actively engaged in advocacy and "bottom-up" selling of OI to senior managers, spreading know-what and know-how of the value of OI, so as to overcome their negative outlook and not-invented-here syndrome. Over time, this process helped individuals know who to approach to lobby for support, and also to develop their procedural and declarative memory in this regard. This in turn helped achieve maximum influence among both
seniors and peers. This finding is in line with previous research which highlights that lower-level managers need to engage with senior managers, to access critical information and resources when deploying the OI capability (Seidel et al., 2000). Salter et al. (2015) explain that in the context of OI, ties to senior managers can enable the individual to win the support of the wider organization for an idea and to influence the stage-gate selection process. These efforts of lower-level managers succeeded in garnering the buy-in and support of senior managers, which ultimately drove bottom-up organizational change: “When you've got a CEO and their ceiling's right high, then you need to drive change and if you have a good person down at the bottom driving change, then I think it happens” (LLM, Org H).

These findings are line with research on the bottom-up perspective of organizational change (Wooldridge, Schmid, and Floyd, 2008), which stresses the critical role of lower-level managers in this process (Burgelman, 1983; Glaser, Stam, and Takeuchi, 2016; Huy, 2001). Thus, experiential learning was bolstered by individuals' cognitive capacity to envision an expanded framing of their own job role by viewing themselves as organizational change agents, which in turn allowed them to earn more satisfaction and meaningfulness in their job.

Conversely, among those junior-level managers that could not overcome this challenge, there was limited effort to raise awareness of internal constraints in OI implementation to senior management. These individuals rarely engaged in advocacy and "bottom-up" selling of OI to senior managers. They mostly depended on their prior experience and limited procedural and declarative memory to choose actions: “The only way it works is top-down approach. Bottom-up only takes note when it comes from top-down. Because I don't want to waste the time on doing things that I don't believe that the top will actually support or value, or why do the extra work?” (LLM, Org R). The experiential learning process was hence weak, and there was lack of individuals' cognitive capacity to envision an expanded framing of their own job role.
Individuals did not know who to approach to lobby for support, and there was little effort to build and draw on transactive memory.

In summary, in cases where challenges were overcome, we find that individuals could successfully draw on their ‘know-who’ to develop the ‘know-how’ and ‘know-what’. It is thus evident that transactive memory is critical to build individuals’ declarative and procedural memories, and also give rise to shared understandings on what OI-related tasks need to be accomplished, how these tasks can be accomplished, and where expertise to learn and accomplish particular tasks resides outside and inside the organization. Overall, these individuals were able to learn and draw on their three memories underpinning ostensive routines, through which they became better in their performative aspect of OI. Crucially, we find that this is a function of the strong experiential learning mechanisms that operated, that is, the individuals’ ability to: learn from experience, store knowledge, tap into memory and evolve performative routines. Such backward-looking experiential learning is in turn conditioned by their forward-looking cognitive capacity. Over time, this process allowed individuals to develop and deploy OI routines, which in turn form the basis for the organization’s OI capability. Moreover, this process enabled the individuals to overcome challenges imposed by the broader structure, allowing them to enact OI routines effectively, and in turn enhancing the proficiency of OI capability. Overall, our results reveal that the proficiency of OI capability is a function of its microfoundations.

Discussion

Summing up, we find that routines enacted by individuals are characterized by tensions stemming from the challenges that individual lower-level managers face when engaging in organizational-level OI. We develop a framework of the microfoundations of OI that shows how individual lower-level managers build and draw on the three memories that underpin their ostensive understandings, to shape and enact performative routines, in order to navigate tensions that they experience in OI implementation (Figure 1). In doing so, we reveal the role of
individual-level tensions, or challenges, and how they shape the recursive nature of ostensive and performative aspects of OI routines, which is not addressed in the OI and microfoundations literatures till date.

Theoretical Implications

Our study contributes to the small but growing body of literature on the role of individuals in OI (e.g., Pollok et al., 2018; Sjödin et al., 2018) by providing an in-depth discussion of how individuals deal with the challenges they face in their daily pursuit of OI, that stem from wider organizational barriers to OI. The core contribution of this study is the development of a framework comprising the central microfoundations of OI routines and capabilities. The framework adds to our knowledge of OI in four ways.

First, we contribute to the OI literature by applying ideas from microfoundations thinking (Abell et al., 2008; Felin et al., 2015) and the literature on routines and capabilities (Felin et al., 2012; Teece, 2012; Zollo and Winter, 1998). We clarify that an organization’s OI capability is made up of ostensive and performative OI routines, and that these microfoundations form the key to determining the proficiency of OI capabilities. More specifically, we identify the ostensive and performative aspects of the underlying routines enacted by individuals tasked with the role of implementing OI. These routines enacted by lower-level managers are characterized by tensions that enable us to shed light on the recursive nature of the ostensive and performative aspects of routines, and in particular understanding the role of the three individual memory aspects – procedural, declarative and, transactive – in OI routine formation and enactment. We further clarify that individual learning mechanisms and cognitive capacities are key facets of OI routines and hence core to OI capabilities. We thus apply the microfoundations perspective to the OI context, to show that proficiency of OI capabilities is a function of its microfoundations. We
extend it by specifically clarifying the way that ostensive and performative routines emerge and are used based on individual-level challenges or tensions – which has not been covered in existing literature. In doing so, we contribute by providing insights into how organizations can overcome barriers to OI. Previous research has identified organizational-level barriers (Randhawa et al., 2019) and individual staff members’ barriers to using OI and how organizations can enable individuals to overcome these barriers (Salter et al., 2014). However, no research has looked at the individual level mechanisms that managers involved in OI deployment leverage to overcome such barriers. We also extend Sjödin et al.’s (2018) discussion about ‘Championing knowledge integration’, by integrating the performative and ostensive aspects of OI routines. We find that in order to champion OI within the organization, lower-level managers need to proactively launch initiatives designed to legitimate OI activities with senior managers, as part of their effort to justify the business value of OI. To do so, they use the ostensive elements and underlying memories in the following ways: Individuals draw on their transactive memory to identify who to approach to lobby for support, and actively engage in advocacy and "bottom-up" selling of OI. Over time, this helps individuals also develop their procedural and declarative memory in this regard. This in turn helps shape the strategic intent and buy-in of senior managers for OI, and to garner their support for OI activities. Furthermore, these “championing” efforts of individuals also translate into meaningfulness in their job. Overall, this experiential learning is bolstered by individuals' cognitive capacity to envision an expanded understanding of their own job by framing themselves as organizational change agents. Thus, we find that lower-level managers, in overcoming their challenge to OI implementation, also enable the firm to overcome firm-specific barriers such as a restrictive organizational structure or culture, including the ‘not-invented-here syndrome’ (Antons and Piller, 2015).

Second, we extend the discussion around microfoundations of routines and capabilities (Abell et al., 2008; Felin et al., 2012; Miller et al., 2012; Teece, 2012). We add to this literature
by explaining how the two OI routine elements are shaped and enacted through individuals’ learning mechanisms and cognitive capacities, to overcome challenges that individuals face. Some routines enacted by individuals are straightforward and are required for OI implementation – here there are no tensions and established ostensive routines can act as a guide. However, we show that some others are characterized by tensions between ostensive and performative aspects, emanating from individual-level challenges to OI implementation. Microfoundations literature has not discussed the role of tensions or challenges and how that shapes the recursive nature of ostensive and performative aspects of routines; we make a contribution in this regard. Specifically, our findings extend Felin et al.’s (2012) categorization of microfoundations as (1) individuals, (2) processes, and (3) structure, and that these affect routines and capabilities. We synthesize two complementary literature streams: the routines literature and the microfoundations literature to clarify the roles of individuals in carrying out OI processes through enacting ostensive and performative OI routines, where these routines (that make up the organization’s OI capability) are triggered by, and eventually overcome, individual-level challenges that emerge from barriers embedded in the wider organizational structure.

Third, through the above contributions we advance the discussion about the role of the individual in OI. Existing OI research has focused on individual-level attributes such as how employee and managerial characteristics affect OI outcomes (e.g., Bogers et al., 2018; Ahn et al., 2017), with little focus on individual-level activities that determine organizational proficiency in conducting OI. Recent research has begun to examine the role of individuals in the development of OI (Pollok et al., 2018). We focus on improving our understanding of their role in the deployment of OI. Still, academic research has paid little attention to the challenges that individuals face in this daily pursuit of OI. Consequently, we add to this limited knowledge about how individuals deal with these challenges (Salter et al., 2014). We find support that in some of our case organizations the change to OI was received with open arms, whereas other
organizations resisted (Antons and Piller, 2015; Ford et al., 2008). These organizational-level barriers translated into individual-level challenges in OI implementation. We provided insights into how individuals who are responsible for implementing OI in their organization work actively to overcome their challenges and in turn organizational barriers, to implement OI.

Finally, we contribute to innovation and wider management research by improving our understanding of the role of lower-level managers in the OI process. We advance literature by distinguishing senior from middle/lower level managers. While extant microfoundations literature has emphasized the role of senior managers, we provide and synthesize empirical insights revealing the role of middle/lower-level managers. These managers play a crucial role in implementing senior management’s strategies, but they can also affect strategy implementation (Balogun and Johnson, 2005; Mantere, 2008; Wooldridge et al., 2008). Deploying OI capability often requires lower-level managers to overcome organizational barriers, such as attitudinal resistance in OI adoption from peers and senior managers. This resistance is common when implementing organizational change, as it requires redirecting resources and capabilities through reshaping firm structures and systems (Teece, 2012). Ensuring support from the peers and senior managers remains difficult for any manager tasked with organizational change (Van Riel et al., 2009; Wooldridge and Floyd, 1990). Our findings lend support to previous research highlighting that lower-level managers can initiate and implement change (Glaser et al., 2016; Heyden et al., 2015) in the face of OI challenges, by shaping ostensive and performative OI routines subject to effective learning and generative mechanisms. This is in line with previous management research, which found that middle managers can champion the rethinking of strategies, processes, and strategic capabilities (Dutton and Ashford, 1993; Galunic and Eisenhardt, 2001).

Conclusion and Future Research
This research has several limitations which may provide ideas for future research. Other individual-level elements related to their psychological processes (e.g., emotions and affect), characteristics (e.g., gender, IQ) and abilities (e.g. sensing, creating) are also likely to be important (Felin et al., 2012) – which future research can investigate. Management research has highlighted the role of managerial cognition (Eggers and Kaplan, 2009), which comprises the belief systems, mental models, and activities underlying individuals’ decision making (Helfat and Peteraf, 2015; Prahalad and Bettis, 1986). Delving deeper into the role of these components of managerial cognition in innovation in general, and in conditioning OI routine formation and enactment in particular is a fruitful area of future research. Given our findings that individual level characteristics affect organizational change in the context of OI, future research may also benefit from integrating OI thinking with dynamic capability research (Teece, 2014; Wilden et al., 2016). Previous research on dynamic capabilities has stressed the importance of dynamic managerial capabilities (Helfat and Martin, 2015; Kor and Mesko, 2013), transactive memory systems as an organizational construct (Argote and Ren, 2012) and heuristic decision-making (Artinger et al., 2015; Loock and Hinnen, 2015; Maitland and Sammartino, 2015) when facing uncertainty and change.

Despite these limitations, our study improves our knowledge of how organizations may benefit from OI. By theorizing about how individual lower-level managers enable organizations to overcome barriers to OI, we shed light on how OI can support organizations to innovate using their OI capability. In explaining the microfoundations of the OI capability in terms of individual, structure, and processes, this paper provides further insights into the complexity of the firm’s OI capability.
Figure 1: Framework of the microfoundations of OI routines and capability formation
(based on Feldman and Pentland (2003))
<table>
<thead>
<tr>
<th>Individual-level challenge</th>
<th>Related Organizational barriers identified in existing literature</th>
<th>Illustrative Quotes and Evidence</th>
</tr>
</thead>
</table>
| **Lack of OI knowledge and skills:** In self | Lack of strategic framework for OI; Lack of buy-in from senior executives for OI; Competency gap in project teams for OI | "When I came on board, I didn't really understand the gravity of the role that I took. So about six months into my job whilst I was employed to assist and support, and practice [OI] for the organization, there was not enough job role clarity."
"We were told broadly what we needed to achieve. But there was not enough clarity on exactly what that broke down into and how we needed to go about doing that."
"On a day to day basis [the lower-level managers] may not get as much direction. There is a lot of work that they need to figure out for themselves."
"There was a budget thrown at me, and [my managers] were like, "We're here if need anything", but this is what you need to achieve" |
| Lack of clarity on job role and guidance on tasks | | |
| Among peers | Lack of strategic framework for OI; Lack of buy-in from senior executives for OI; Competency gap in project teams for OI | "There wasn't as much internal expertise of people I could go to, to seek support on a day-to-day basis because it was just me and no one had ever done any of this before. There were only a couple of people that had similar skills, and experience, and understanding about the value (of OI). So in regard to kind of some peer support, I had a few internally."
"I was pretty much by myself from October almost to January until [two team members] came on-board. So that was really difficult. There weren't any real processes. And that may have been because [my manager] wasn't very good at training. She admitted that herself. And also, we were still in a state of flux. So, it wasn't clear. So, I mean, we had a template certainly yeah but not much else"
"When I moved to the role...as many people leave each week and are employed. And so, you just got this constant chain that was quite challenging."
"There's a lot of tacit knowledge that goes away with you when you leave an organization. Then things kind of just stop and stall and the momentum is lost. But the most impactful thing that happens is actually the relationships with people and communities and organizations and groups within that community. So, over the three or four years I've developed relationships and built trust. They are the things that get broken and take time to rebuild" |
| Lack of internal skills and expertise | | |
| Dealing with staff turnover and lack of workforce capacity | Lack of staff capacity to implement OI | |

| 29 |
### Attitudinal resistance in OI adoption:

#### From senior management

<table>
<thead>
<tr>
<th>Issue</th>
<th>Consequence</th>
<th>Quote</th>
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<tbody>
<tr>
<td>Reduced capacity to perform job due to lack of support</td>
<td>Lack of buy-in from senior executives for OI; Lack of staff capacity to implement OI</td>
<td>&quot;I reached the ceiling where [the senior managers] basically said, No more. We don't want to start using fancy tools, we don't want to spend more budgets.&quot; And I'm, &quot;Oh, there's so much more that we can do,&quot; but I didn't have that authority anymore. I did have that support behind me to take things to the next level. If I had to list a number of things to embed [OI] in an organization, that number one would be senior level buy-in and support...it does enable us to do our jobs better.&quot;</td>
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<tr>
<td>Need for justifying the business value of OI</td>
<td>Lack of strategic framework for OI; Lack of buy-in from senior executives for OI</td>
<td>&quot;Sometimes there is the tension of senior managers saying, &quot;Don't waste your time on all this, just do the bare minimum&quot; Then there is that uncertainty, a lot of stuff I need to get done, but I need to do it all myself. I need to figure out how I need to do it.&quot;</td>
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<td>Lack of empowerment, satisfaction and meaningfulness in jobs</td>
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<td>&quot;It's more of: &quot;We've got to do this because we are mandated by policy to engage. So let's keep this as light as possible.&quot; at the moment 'the approach of senior managers] is quite symbolic...I've got to say I don't enjoy community engagement. I think it shouldn't be that [senior managers] should have such a strong influence on how we do our jobs but yet they do&quot;</td>
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<td>&quot;So every year there's a time when the [junior-level manager] makes all the difference to go and sell [OI] to their bosses that they need to shell the money out. I personally face the tension -- the question, &quot;What's the worth or return on this? Can you demonstrate some impact and justify why we need to keep going with this?&quot;</td>
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<td>So [this junior manager's] boss, I believe, doesn't understand the value of engagement, they're just doing tick the box engagement. So, you've got a senior management that don't get it. And then a [junior manager] with no power, or energy, and no understanding. And the last time I caught up with her, she was having a whinge around how tough it is and that she's looking for a new job, because she doesn't really understand engagement, and she doesn't know how to navigate the system for things to happen.</td>
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<td>&quot;In terms of who are tasked to the job of implementing the changes, that bit is actually quite rubbery. It depends on just how contentious it is. Essentially, it's [the senior management's] decision. And that's when we need to take a step back. And all of the decision is with them. I don't always think that we have an opportunity to influence. So, a good example is, community feedback getting pushed to the side and [senior management] making decisions for the community. They're going to make it look like they've taken the community's opinions and feedback into consideration. But really, what they're going to do is what they think is right and gather some more evidence as to why it has to [be that way]. &quot;</td>
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"Although [senior managers] like the idea of community engagement, they don't quite like the actual meaning behind it. It's the term they like, not potentially what it gives. It would make our life a lot more meaningful day to day..I guess the pursuit of community engagement would be more meaningful if we had more full support from the top."

<table>
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<tr>
<th>From peers</th>
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<td>Roadblocks in implementation of OI system and processes due to lack of buy-in</td>
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"There was a misconception from my manager that I would develop a system or a check plan, and then everyone would use it and we'd all be happy and holding hands and singing and dancing. The reality is that [my peers] would very much operate as silos and as individual departments...and stay within the parallel of what they did. And then they would just brush me off and say, I am too busy or we'd make a meeting and they wouldn't see me or they would listen and go, "This is not important to me and wouldn't buy in."

"From some peers, I didn't get a lot of traction and I didn't have any support. They were told to do it [by their managers], and essentially, it meant all work for them. And then they just that didn't buy-in at all and said, "No, we're not going to." So that was hard to manage."

"Some of the struggles we have with [project teams] is that they think that they need to be the experts on how to better manage the community. And they need to understand that we are--we can guide a lot better in some areas"

"I feel a bit of resistance possibly from peers, our project teams, like I am roadblocking"
### Table 2: How lower-level managers overcome challenges

<table>
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<tr>
<th>Challenge giving rise to tension in OI implementation: Lack of OI knowledge and skills in self</th>
<th>Individuals fully negotiate tensions in OI implementation</th>
<th>Individuals do not negotiate tensions in OI implementation</th>
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<tr>
<td><strong>Routine enacted to negotiate tension:</strong> Self-directed learning from and with external partners</td>
<td><strong>Individual action (Performativ)</strong>&lt;br&gt;Active self-directed learning from and with external partners: Individuals proactively reach out to and immerse themselves in external knowledge sources (e.g., consultants, intermediaries and industry bodies). They also actively form/tap into external peer communities and networks to learn and share knowledge and expertise</td>
<td>Weak self-directed learning from and with external partners: Individuals reactively respond to inputs from external knowledge sources (e.g., consultants, intermediaries and industry bodies). They rarely form/tap into external peer communities and networks to learn and share knowledge and expertise</td>
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<tr>
<td><strong>Individual memory (Ostensive)</strong> Strong Transactive (Know-who) --- Strong Procedural (Know-how) + Strong Declarative (Know-what): Individuals actively tap into external knowledge sources to build their own OI knowledge, skills and expertise, which they draw on for future performative actions. This experiential learning process is bolstered by individuals' cognitive capacity to envision, shape and clarify their own job role and tasks.</td>
<td><strong>Learning mechanism</strong>&lt;br&gt;Strong experiential learning bolstered by strong cognitive capacity</td>
<td>Weak experiential learning accentuated by lack of cognitive learning capacity</td>
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<tr>
<th>Challenge giving rise to tensions in OI implementation: Lack of OI knowledge and skills among peers</th>
<th>Individuals fully negotiate tensions in OI implementation</th>
<th>Individuals do not negotiate tensions in OI implementation</th>
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<tr>
<td><strong>Routine enacted to negotiate tension:</strong> Transferring and assimilating external knowledge</td>
<td><strong>Individual action (Performativ)</strong>&lt;br&gt;Active internal transfer and assimilation of external knowledge: Individuals establish robust systems and processes to transfer OI knowledge and skills gained externally back into and within the organization. They also actively promote peer-based learning (e.g., via internal champions) to scale internal assimilation of OI knowledge and skills.</td>
<td>Moderate internal transfer and assimilation of external knowledge: Individuals do not focus on establishing systems and processes to transfer OI knowledge and skills gained externally back into and within the organization. They also do not promote peer-based learning (e.g., via internal champions) to scale internal assimilation of OI knowledge and skills.</td>
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<td>Individual memory (Ostensive)</td>
<td><strong>Strong Transactive (Know-who) --&gt; Strong Procedural (Know-how) + Strong Declarative (Know-what):</strong> Individuals actively codify tacit knowledge into templates, systems and processes, and also build transactive memory systems, which peers draw on for future performative actions. This experiential learning process is bolstered by individuals' cognitive capacity to seek novel strategies and systems for internal knowledge transfer and assimilation, and scale workforce capacity for OI.</td>
<td><strong>Weak Procedural (Know-how) + Weak Declarative (Know-what):</strong> Individuals do not codify tacit knowledge into templates, systems and processes. They also do not build and draw on transactive memory systems. The experiential learning process is weak and there is lack of individuals' cognitive capacity to seek novel strategies and systems for internal knowledge transfer and assimilation, and scale workforce capacity for OI.</td>
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<tr>
<td>Learning mechanism</td>
<td>Strong experiential learning bolstered by strong cognitive capacity</td>
<td>Weak experiential learning accentuated by lack of cognitive learning capacity</td>
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<td><strong>Challenge giving rise to tensions in OI implementation:</strong> <em>Attitudinal resistance from peers in OI adoption</em></td>
<td><strong>Individuals fully negotiate tensions in OI implementation</strong></td>
<td><strong>Individuals do not negotiate tensions in OI implementation</strong></td>
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<tr>
<td>Routine enacted to negotiate tension: <strong>Enhancing professional and social identity of peers</strong></td>
<td><strong>Active enhancement of professional and social identity of peers:</strong> Individuals proactively launch initiatives designed to actively promote professional and social identification of peers with their employer and the community through OI job roles and tasks, and induce a sense of purpose in their daily jobs, so as to garner buy-in and acceptance of OI from peers, and encourage their more involved implementation of OI system and processes</td>
<td><strong>Weak enhancement of social identity of peers:</strong> Individuals do not launch initiatives to promote social identification of peers with their employer and community through their OI job tasks. There is no effort to induce more job satisfaction, and a sense of purpose in their daily jobs, so as to garner buy-in and acceptance of OI from peers, and encourage their more involved implementation of OI system and processes</td>
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<td><strong>Individual action (Performative)</strong></td>
<td><strong>Strong Transactive (Know-who) --&gt; Strong Procedural (Know-how) + Strong Declarative (Know-what):</strong> Individuals actively encourage interaction among peers to build transactive memory systems, which peers draw on for future performative actions. Doing so in turn helps peers renew their procedural and declarative memory. This experiential learning process is bolstered by peers' cognitive capacity to re-frame and induce more meaning into their own job roles.</td>
<td><strong>Weak Procedural (Know-how) + Weak Declarative (Know-what):</strong> Individuals rarely encourage social interaction among peers to build transactive memory systems for peers to draw on. Peers mostly depend on their prior experience and existing procedural and declarative memory. The experiential learning process is weak, and there is lack of peers' cognitive capacity to re-frame and induce more meaning into their own job roles.</td>
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<tr>
<td>Individual memory (Ostensive)</td>
<td>Strong experiential learning bolstered by strong cognitive capacity</td>
<td>Weak experiential learning accentuated by lack of cognitive learning capacity</td>
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<td>Challenge giving rise to tensions in OI implementation: <em>Attitudinal resistance from senior managers in OI adoption</em></td>
<td>Routine enacted to negotiate tension: <em>Legitimizing OI amidst senior managers</em></td>
<td>Individuals fully negotiate tensions in OI implementation</td>
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<td><strong>Individual action (Performative)</strong></td>
<td><em>Active championing of OI activities amidst senior managers:</em> Individuals proactively launch initiatives designed to actively champion and legitimize OI activities with senior managers, as part of their effort to justify the business value of OI, so as to influence their strategic intent and buy-in for OI, and to garner their support for OI activities. This process also helps create a common understanding of internal constraints in OI implementation.</td>
<td><em>Weak championing of OI activities amidst senior managers:</em> There is limited effort by individuals to raise awareness of internal constraints in OI to senior management. However, they do not launch initiatives designed to actively champion and legitimize OI activities with senior managers, as part of their effort to justify the business value of OI, so as to influence their strategic intent and buy-in for OI, and to garner their support for OI activities.</td>
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<tr>
<td><strong>Individual memory (Ostensive)</strong></td>
<td><em>Strong Transactive (Know-who) + Strong Procedural (Know-how) + Strong Declarative (Know-what):</em> Individuals actively engage in advocacy and &quot;bottom-up&quot; selling of OI to senior managers. Over time, this process helps individuals know who to approach to lobby for support, and also to develop their procedural and declarative memory in this regard. This in turn helps achieve maximum influence among both seniors and peers, and earn more empowerment, satisfaction and meaningfulness in their job. This experiential learning process is bolstered by individuals' cognitive capacity to envision an expanded understanding of their own job role.</td>
<td><em>Weak Procedural (Know-how) + Weak Declarative (Know-what):</em> Individuals rarely engage in advocacy and &quot;bottom-up&quot; selling of OI to senior managers. They approach immediate managers for help when required. They mostly depend on their prior experience and existing procedural and declarative memory. The experiential learning process is weak, and there is lack of individuals' cognitive capacity to envision an expanded understanding of their own job role. Individuals do not know who to approach to lobby for support and there is little effort to build and draw on transactive memory. They exert limited influence among both seniors and peers, and do not feel empowered and satisfied in their job.</td>
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<td><strong>Learning mechanism</strong></td>
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Bibliography


