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INTRODUCTION

It has long been accepted that innovative capacity plays a key role in long-term economic prosperity (Krugman 1997; Moretti, 2012); it is also widely acknowledged that the outcomes of knowledge-based activity are becoming spatially more polarised (Florida, 2005; McCann, 2008; Glaeser, 2011). This study investigates how an innovation intermediary - an organisation whose remit is to broker relationships between “seekers” (of challenges or problems, typically larger firms) and the “providers” (of ideas and potential solutions, SMEs, freelancers, universities) in a “matchmaking” process. Moreover, the influence of these innovation intermediaries is less understood in peripheral economies like Wales (the context for this study) where the focus is typically on the direct technological outputs of SMEs, rather than their potential contribution as facilitators of the innovation journey of their clients (Morgan et al, 2020; Clifton et al, 2020).

This study builds on existing knowledge in the area (Aquilani, Abbate and Dominici, 2016; Kokshagina, Le Masson and Bories, 2017) by seeking to understand how the innovation broker, in this case an SME utilising a digital platform, engages and explores value creation for partners in this innovation environment. This shift in perspective, usually observed from either the instigator/recipient (Bervanakis & Dešić, 2013; Brunswicker & Chesbrough, 2018) or the conciliator/provider (Santoro, Ferraris, Giacosa, & Giovando, 2018) provides new knowledge. In doing so it seeks to answer the following two research questions; how and why does an innovation intermediary facilitate innovation, and what is the observed “occupational mandate” of the innovation intermediary? We employ auto-ethnographic data capture consisted of 3 months of observation 20 recorded observation events, alongside 2680 analysed terms and a total of 24,680 words gathered over a 3-month observation period. Semi-structured interviewing was completed with all intermediary employees totalling 7 interviews to triangulate findings of the ethnography.

The results of this study allow the construction of a professional mandate for the innovation intermediary and an improved understanding of how an intermediary facilitates innovation. The occupational mandate for this innovation intermediary is formed through the 3 key areas of culture, co-creation and relationships as suggested by Fayard, Stigliani and Bechky, (2017).

LITERATURE REVIEW - INNOVATION INTERMEDIARIES

The emergence of digital solutions to innovation as an alternative model of innovation delivery is gaining further attention from academics (Aquilani, Abbate, & Dominici, 2016) and practitioners (Hill & Bingham, 2020). One such model is that of the intermediary which are described in a variety of terms; innovation consultants (Bianchi, Croce, Dell’Era, Di Benedetto, & Frattini, 2016; Wright, Sturdy, & Wylie, 2012), boundary organizations (O’Mahony &

Bechky, 2008), specialist knowledge providers (Tether & Tajar, 2008), virtual knowledge brokers (VKBs) (Verona, Prandelli, & Sawhney, 2006), and third parties (Howells, 2006).

For the purpose of this study, the role of the intermediary will be defined broadly as brokering and transferring knowledge into the recipient organisation through the mechanism of a digital platform (K. Boudreau, 2010; Hossain & Islam, 2015; Kokshagina, Le Masson, & Bories, 2017), described in Billington and Davidson (2013, p. 1464), as online networks that enable the “rapid pairing of firms seeking knowledge to address a wide range of functional or business process challenges”. This is to broaden the definition from a technology transfer process (Howells, 2006; Lichtenthaler & Ernst, 2008) to a more encompassing perspective of modern innovation which contains people (Hossain, 2012), process (Amabile & Pratt, 2016; Von Krogh, Netland, & Wörter, 2018) and product (Colombo, Dell’Era, & Frattini, 2015).

The role of the intermediary in an innovation relationship is important for this study given the relatively limited successes of public sector policy interventions in both innovation and entrepreneurship. The core needs of customers wishing to innovate are around speed and distance (Afuah & Tucci, 2012) of the knowledge transferred (Kokshagina et al., 2017). In fact, this speed alters the relationship and proximity of the solution providers and the innovation recipients as “intermediaries may bring employees and community participants into such a close relationship that community can no longer be clearly distinguished from firm.” (Lauritzen, 2017, p. 293). This overlaying of institutional/crowd boundaries can be viewed both positively and negatively as the externality brings risk and uncontrollable resources (Chesbrough, 2003), while the enveloping of these communities into the internal fold creates better solutions and an intrinsic motivation to provide suggestions and ideas (Eckhardt, Ciuchta, & Carpenter, 2018).

Digital platforms also shorten the space between these elements transforming the ability and proximity of innovative collaborators turning “the distant search into local search, thereby enabling firms to enjoy the many benefits of distant search without having to endure many of its costs” (Afuah & Tucci, 2012, p. 356). However, the openness of this search also has limiting factors; “the benefits to openness are subject to decreasing returns, indicating that there is a point where additional search becomes unproductive” (Laursen & Salter, 2006), p132) This point of no return in terms of the openness of the search is difficult to pinpoint (ibid), and the geographical bounds are even more complex to define. But this concept of proximity has particular prevalence to regional economics as the reach of an innovation platform can put organisations from a less-developed economic region in the same virtual space as a large corporate entity from a more economically developed region which potentially benefits both parties.

In tackling the distance, or proximity, of the actors and the environment(s) in the process of innovation, Lichtenthaler and Ernst (2008) investigate the role of a third-party consultant initiating technology transfer in an organisational environment. The authors suggest that “technology intermediaries should be regarded as a complement to internal activities, and they do not represent a substitute for internal resources” (Lichtenthaler & Ernst, 2008, p. 1027). However, Hossain (2012, p. 576) makes the case that “intermediaries have more complete knowledge than firms regarding the various technologies in which they operate” and the inherent technological value transferred through open innovation is well documented (see also Howells, 2006). The importance of the intermediary and the rationale around the influence of external actors, such as medium-sized enterprises, suggested by Lichtenthaler and Ernst (2008)

will be tested in general terms through the course of this study, as the research seeks to understand the potential of open innovation delivered in this way in this specific regional environment.

The importance of the role that these intermediaries take in the process of innovation is integral to the success of any proposed innovation. Colombo, Dell’Era and Frattini (2015, p. 126) outline the responsibilities of these intermediaries as “brokers, mediators, collectors and connectors”. This ability to broker relationships between “seekers” (of challenges or problems, typically larger firms) and the “providers” (of ideas and potential solutions, SMEs, freelancers, universities) in a “matchmaking” process (Holzmann et al., 2014, pp. 612–613) is again a site of contention between scholars. The physically-based approach outlined by Holzmann, Sailer and Katzy (2014) in their study of the innovation in BMW is focused on an intermediary who assesses the needs of these providers and actually facilitates pitching, and then client management after contract award. While Kokshagina, Le Masson and Bories (2017) and Randhawa *et al.*, (2017) focus on the online platforms that act as the matchmaking tool enabling organisation to extend their search and reach into new innovative solutions and provide further automation than the more human driven Holzmann et al. (2014) solution. But this digital utopia is also challenged by Randhawa et al. (2017, p. 1331) whose findings state that, “along with providing digital platforms to clients, intermediaries also have to develop their ability to leverage this platform as a tool for meaningful community engagement.” The solution to this challenge of the digital intermediary is both human and technologically-centred, as the authors make it implicit that human interaction in the process better supports the transfer of knowledge between organisations. However, the development of chat-bots, and the management through moderation and user-experience of online communities strengthens the hand of the technologists. The impact of technology on the intermediary’s open innovation process will also be explored through the ethnographic element of the study.

Conversely, Billington and Davidson (2013, p. 1468) see the challenge of innovation adoption through intermediaries as not just technical adoption of a platform, but fundamentally transforming ways of working as “there are still significant costs of creating and maintaining internal routines and capabilities...to amortise investment”. In developing new internal processes there also needs to be a “centralized structure” to support the implementation (Ades et al., 2013, p. 15). Digital intermediaries offer support with this implementation allowing administrators of the system to track the status of innovative projects from idea to action and the return on investment of the innovation.

These organisational cultural hurdles are not only managed by the innovation intermediary, but are sometimes created by them; “Open Innovation can be considered an organizational innovation in itself” (Christensen, 2006, p. 35). These barriers can be around corporate culture and the approach to “risk-taking” as open innovation requires a “continuous process of experimenting, adapting and learning in order to proactively define its context”(Aquilani, Abbate, & Codini, 2017, p. 450). While the propensity to change, evolve and transform is important, the question of the internal organisational impact of innovation intermediaries is especially relevant. In assessing the level of resource needed to support these virtual knowledge brokers, companies have previously “underestimated the internal resources (time and know-how) needed to support scientists in working with the innovation intermediary” (Sieg, Wallin, & von Krogh, 2010, p. 285). The time and cost implications of working with these brokers are

shown over the longer term to reduce and are helped by digital platform delivery (Brunswick & Chesbrough, 2018; Schäfer, Antons, Lüttgens, Piller, & Salge, 2017; Verona et al., 2006).

As demonstrated above the impact of the intermediary is dependent on factors such as resource, role, responsibility, and reach. While each of these factors are explored individually there is little focus on the how intermediaries “mediate knowledge collaboration between organizations and online user communities” (Randhawa et al., 2017, p. 1294). This study will, in part, examine and explore how the innovation intermediary mediates this knowledge through observations within IdeaBox¹, which takes the study into the bounds of new knowledge. Hossain and Anees-ur-Rehman's (2016) systematic literature review of open innovation highlights the novelty of this approach suggesting the methodology to explore this; “Open innovation disciplines can be enriched by borrowing research techniques from other disciplines [including]... ethnography”. This study adopts this methodology for the first phase of data capture and in doing so, seeks to gain insights from the inside of this relationship between intermediary and the innovation process.

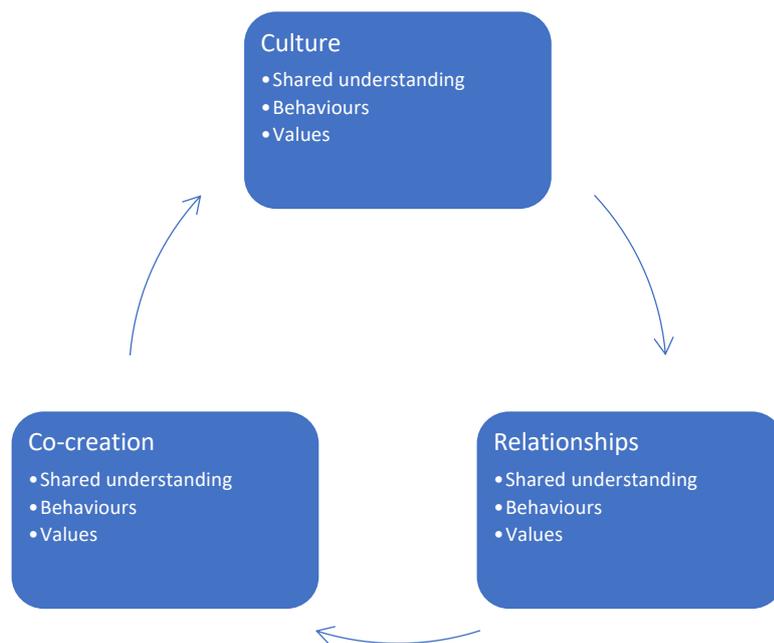
CONCEPTUAL FRAMEWORK FOR ANALYSIS – THE “OCCUPATIONAL MANDATE”

In order to study the actions, behaviours and values of an innovation intermediary this paper seeks to construct what Fayard, Stigliani and Bechky (2017) call an “occupational mandate”. To construct this mandate requires individuals to internally develop shared understanding, behaviours, values, thinking and culture. Existing literature on innovation intermediaries is extensively focused on services provided by the intermediary (Aquilani et al., 2016); benefits derived from the intermediary's services (Hossain & Islam, 2015); challenges of working with intermediaries (Kokshagina et al., 2017); and the perspectives of solution providers (Hossain, 2018). The perspective of the intermediary and how they support the innovation process is not presently covered within the literature and requires investigation to build upon this knowledge. There is value in understanding how this mandate influences the innovation process in the digital space as the chosen intermediary uses a digital platform to support innovation.

Innovation processes are described by Garud, Tuertscher and Van De Ven (2013) as co-developed, relationship based, experienced from multiple perspectives and actors, and most importantly a bi-product of organisational culture. The observational approach of this study allows the researcher to explore the constituent parts of this conceptual framework, represented in the diagram below. The conceptual framework is made up of organisational culture, relational dynamics and the co-creation of innovation from an intermediary's perspective, therefore adding to the understanding of the innovation process and the influence of an innovation intermediary which is new to the field of study.

¹ A pseudonym for the company involved

Figure 1. Conceptual Framework Diagram



This study uses this conceptual framework to understand how an innovation broker uses a digital platform to create value for partners, its clients, through the development and refinement of an innovation process. In this case study the anonymised innovation intermediary is IdeaBox, a software-as-a-service SME providing innovation intermediary services based in Wales. The company provides a digital platform to link private, public and third sector organisations around challenges provided by typically large corporate entities. The organisation has been in business for four years with the majority of the existing customer base coming from the public sector. Recently, the organisation has strategically developed from supporting entrepreneurial education into supporting digital innovation and this has meant a diversification towards a private sector customer base and supporting organisations with both open and closed innovation. Open innovation, according to Chesbrough (2003, p.35), is defined as the approach for developing increased research and development (R&D) activity to commercialise “ideas through channels outside of their current businesses to generate value for the organization”. Whereas closed innovation, which is standardised and internally resourced R&D, is described by Chesbrough, (2003, p. 36) as a philosophy of “control” and “self-reliance”. This approach to innovation allows the management of risk and reward internally within an organisation. This change in focus for IdeaBox has also meant that understanding the mechanics of developing, creating and executing innovation has gained significant importance for the company as it becomes the main business driver of the organisation leading to the exploration of the following research questions:

Research Question 1: How and why does an innovation intermediary facilitate innovation?

Research Question 2: What is the observed occupational mandate of the innovation intermediary?

In order to answer these research questions, the researcher completed a 3-month observation exercise recording behaviours, actions, and activities alongside interviews with key staff members. This unparalleled access to an innovation intermediary allowed the study to establish

a professional mandate for the intermediary and gain a better understanding of how the intermediary influences the innovation process.

The opportunity to study an innovation intermediary in situ allows this study to understand the professional actions, behaviours and values present within the organisation that influences the process of innovation for clients. Specifically, this paper gains an understanding of the actions, behaviours, and values in relation to processes of open innovation. The need and opportunity to study open innovation from the perspective of an innovation intermediary using ethnography (Hossain & Anees-ur-Rehman, 2016) provides an interesting and novel perspective on intermediaries beyond the case study approach currently adopted in the literature. By investigating this from an ethnographic perspective it was possible to gain new insights around the use of Business Support Organisations (BSOs) in this process (who are aggregators of start-ups/SMEs) and the impact of technology on the intermediary's process of innovation.

METHODOLOGY

The innovation intermediary for this case study was IdeaBox, an SME based in South Wales. This company was readily available as a study subject as a partner of Cardiff Metropolitan University in a European-funded Knowledge Economy Skills Scholarship (KESS2) which involves linking companies and organisations with academic expertise.

In order to consider the areas of analysis outlined in the conceptual framework this study has adopted an ethnographic methodology. The use of ethnography is in part due to a need to understand intermediaries, and the process of innovation from a novel perspective and therefore add to the body of knowledge. The majority of literature relating to the innovation intermediaries has been thus far collected through qualitative case-study (Aquilani et al., 2016; Colombo et al., 2015; Hossain, 2018; Kokshagina et al., 2017) and quantitative survey methods and secondary data (Hutter, Hautz, Repke, & Matzler, 2013; Lee et al., 2010; Lichtenhaler & Ernst, 2008; Park, 2018). The use of an ethnographic methodology allows the uncovering of what Prosser and Loxley (2008, p. 4) call the “the diversity of human experiences” and dives beyond the surface meaning as it is viewed less threatening than verbal feedback from direct events or emotion (Miller et al., 1987). This methodology provides an advantage compared to the use of a case-study approach due to both the specificity of the research question it seeks to answer, and the ability to explore the occupational mandate of the innovation intermediary from a close proximity.

This study uses a variety of methods to build a picture of the innovation intermediary. The study began by gathering observations of the intermediary in the physical workplace and then in the digital space using the Slack (Searchable Log of All Conversation and Knowledge) messaging system, before semi-structured interviews were undertaken with employees to challenge the findings of the observational data. The following sections explore each of these methods individually as part of the broader ethnographic methodology.

Observational Data Capture

In order to capture observational data, the study employs Martinko and Gardner's (1985, p. 676) widely used criteria for observational methods to capture data that; (a) “relies on observation by a person other than the subject”; (b) “the use of category systems”; and (c) “does not use randomized activity sampling procedures”. Taking each of these points in turn this study (a) relies on an individual who is both a researcher and then has become a member of staff at the organisation under study. This draws a particular bias into the process as the researcher is at once both the observer and the observed as a “complete participant” (Roller &

Lavrakas, 2015, p. 173). This position goes a step further than the participant-observer, who builds “rapport” and “acts “in such a way as to blend into the community” (Kawulich, 2005, p. 2), to a position where they are both an embedded part of the culture and a researcher. Unfortunately, this can lead to an “over-enmeshment” of the researcher to a space where the personal/subjective intertwines with the detached/objective perspective (VanderStoep & Johnston, 2009, p. 202). The findings will also note the presence of this bias in constructing the narrative around the conclusions. Minimising this bias is aided in part by keeping a self-reflective learner journal “reflecting on and in action” to create a critical distance from the subject (Smith, 2006, p. 210). The researcher has also ensured that participants gave informed voluntary consent in line with the Association of Social Anthropologists of the UK and the Commonwealth (ASA) Ethical Guidelines for Good Research Practice (2011).

The data capture also utilised Martinko and Gardner’s categorisation of activities (b), which were created using Spradley’s (1980, p. 85) exemplar for recording data and uses categorisation of observations with factual data around the time, date, and participants involved, alongside the observed behaviours and motivations. The choice of Spradley’s checklist for recording data was chosen for broad applicability across physical and online observations and to provide some reliability in terms of data collected to protect against the common issue of observational researchers who “write down what you see and hear...since it is impossible to take account of everything” (Hammersley & Atkinson, 2019, p. 156). The use of Spradley’s checklist rather than, for instance, the less structured broader guidance of Gray (2002) and Madden (2010), who seek researchers to record mostly narrative information, enables a more coherent comparison across digital and physical observations, providing more robust results, and enabling future studies to replicate the method in other innovation intermediaries.

The study used Spradley’s checklist to collect information on each relevant observation which was captured in written form in a log format before transcription into electronic form in an anonymised format. The categorised data was then imported into NVivo and put in thematised groups for structured analysis and reporting.

Online Observations

Another original element of this study is the use of the Slack business communication tool to capture ethnographic data. The use of Slack channels to allow cross and collaborative working at different sites stemmed from video games development. Slack is used as a messaging system to discuss and convey information in real time across teams, in effect it has replaced inter-company email communication, meetings, and informal discussion in the host environment. Formal decisions are discussed and approved using this channel and therefore its inclusion in this study is essential in forming a complete picture of linguistic interaction. The focus and use of digital tools as the predominant mode of communication has also taken on greater importance due to the Covid-19 workplace restrictions and makes the inclusion of this data essential in forming a coherent picture of workplace culture and behaviours.

There are a limited number of available texts around the use of Slack in research settings and appropriate methodologies (K. E. Anderson, 2016; Gofine & Clark, 2017; Lin, Zagalsky, Storey, & Serebrenik, 2016; Perkel, 2016; Tuhkala & Kärkkäinen, 2018) as the technology has only been in existence since 2014. The study of higher education students’ use of Slack, in Tuhkala and Kärkkäinen, (2018) is the closest in methodological approach to this study, using a qualitative approach to analyse text thematically within the platform, alongside ethnographic reflections. To build synergy with the method used for capturing the physical observations, and to allow integration and comparison of the data, the online observations were categorised utilising a modified Spradley (1980) observation checklist to capture a combination of factual information and motivations and agendas.

Slack data is grouped into several thematic channels to ensure a broad base of coverage across areas that would feature discussions around the company’s approach to the process of innovation and illustrate the occupational mandate. The channels chosen were Marketing, Sales, Technical Fixes and Research. This ensured a broad coverage across both product development/creation and customer focused channels. Other channels were deselected, including Random and Office, due to relevance in relation to the research question. Although a future study could include wider data to give a total picture of organisational culture in relation to innovation.

The results of both the physical observation and the online observations were then profiled and grouped using keyword frequency testing using NVivo software to provide a broader picture of the organisational approach to innovation aligned with the culture, values and co-creation outlined in the conceptual framework. Combining these online observations with the physical observations allows for the gathering of a more complete understanding of the company and how the innovation process is created and managed at IdeaBox.

Sample

The final Martinko and Gardner criteria for observation (c) is around the fixed nature and selection of the sample. In this case the sample is formed of one company with 10 members of staff (including the researcher), so is a selected and fixed sample. Further study taking place at other innovation intermediaries would help evidence this phenomenon in a more holistic method, but due to the geographical specificity of this intermediary and the scope of this project, this was not possible. Participants have been anonymised and are summarised for reference in Table 1.

Table 1: IdeaBox Participants

Unique Identifier	Participant Name	Role
PT1	Participant 1	Chief Executive Officer
PT2	Participant 2	Chief Technology Officer
PT3	Participant 3	Head of Research and Development
PT4	Participant 4	Business Development Manager
PT5	Participant 5	Product Experience Manager
PT6	Participant 6	Software Engineer
PT7	Participant 7	Software Engineer
PT8	Participant 8	Marketing Officer

Semi-structured Interviewing

The findings of the physical/online observations were then explored further with all members of the IdeaBox staff using semi-structured interviewing. This was to ensure that the subjectivity of the physical/online observations from this researcher, were explored and challenged through the participants’ own reflections on the findings.

The choice of semi-structured interviewing was selected for this element of the study due to the need to accurately reflect the findings of the previous ethnographic research with participants using precise wording to ensure the validity of the responses and minimise researcher bias. The semi-structured interviewing process also allows the researcher to explore responses in a way that would not be possible in prescriptive structured interviewing methods.

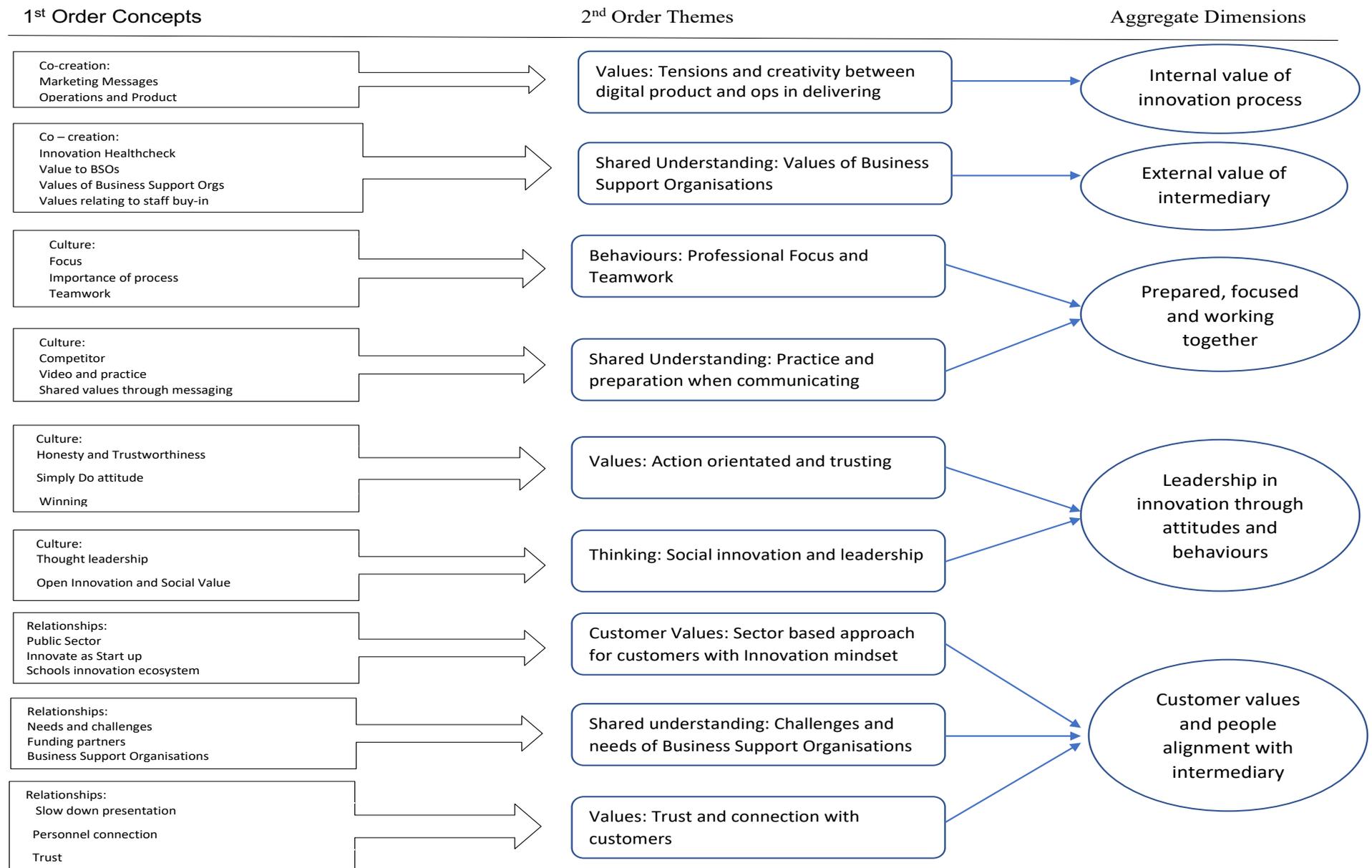
Question banks were created based on a combination of theory around innovation intermediaries and initial findings of analysis of the physical/online observation, and subjected to critical review by the project's supervisory team. The interview was piloted with two members of staff who worked as consultants with IdeaBox, but unlike the participants, were not contracted members of staff. This proved problematic in terms of reflections on previous findings, but proved a useful exercise to refine questions to ensure understanding by participants. A finalised list of 23 questions was prepared and discussed with participants from IdeaBox, with all 8 members of staff interviewed. Individual and company names were anonymised and replaced with alternative identifiers.

Analysis - approach

To analyse the physical and online observational data, the study utilised Corley and Gioia's (2004) framework for analysis by theming the data in the first instance into 1st Order Concepts (using keywords and vocabulary of the raw data to elicit the initial set of themes as per Strauss and Corbin (1998)), then broader '2nd Order Themes' which are derived from the concepts, before 'Aggregate Dimensions' are formed which groups the thematic data again to form "a process that eventually reduces the germane categories to a more manageable number" (Gioia, Corley, & Hamilton, 2013, p. 20). This manageable number of aggregate dimensions have been created within the NVivo software systems as nodes, or as the Gioia model describes, concepts, themes and dimensions, presenting an overview of the findings aligned with the conceptual framework features; culture, co-creation and relationships (see Figure 2).

Initial analysis of both the physical and online observations contained over 20 recorded observation events, alongside 2680 analysed terms and a total of 24,680 words gathered over a three-month observation period. This data was then coded in NVivo into 26 top-level concepts, or themes, nine sub-groups, or concepts, and then finally five core areas of exploration.

1.1.1 Figure 2. Summary: Semi-structured interviews, Physical, and Online Observation Data Analysis based on Corley and Giola (2004)



FINDINGS AND DISCUSSION

In line with Giola analysis presented in Figure 2, and the completion of the occupational mandate outlined in the Conceptual Framework and Figure 1 this paper will focus in turn on the 3 areas of the occupational mandate; (1) Co-creation, (2) Culture, and (3) Relationships. The findings of this research illustrate the creation of an occupational mandate for innovation intermediaries constructed by Culture, Co-Creation and Relationships across the conceptual framework. With appropriate theoretical underpinning, each of these areas are discussed in turn below, with reference to the research questions and aims of this paper.

Culture

Shared understanding: Leadership in innovation is people and technology led

This shared understanding that innovation is both people and technology led is explored by Hosseini *et al.*, (2017) who configures a theoretical open innovation capabilities framework (OICF) which includes both people and information technology. The interrelationship is formed by not only the people but by their specific innovation leadership competencies. In constructing this OICF, Hosseini places leadership within the recipient, or beneficiary, of the innovation, whereas the evidence expressed by Participant 8 (Physical Observation); *“Great opportunity to be projected as thought leader by an influencer”* and Participant 1 (Online Observation), *“we’ve got to hand hold them through this by understanding the market and the providers, lead them to the same conclusions as we make.”* illustrate the importance of leadership of the intermediary in this innovation process, and how this leadership helps to develop further value for their clients, and understanding of their occupational mandate (RQ2).

The importance of innovation leadership is also emphasised by Foray *et al.*, (2012, p. 41) who suggest that the intermediary should support the development of “collaborative leadership skills” with the innovation recipient to support the development of “animateurs of innovation”. This rather transactional process is further developed by Barchi and Greco's (2018, p. 368) literature review as a “multidimensional competence” that informs “relationships among skills, context and success”. This concept of multidimensionality is prominent within the observational findings with the intermediary driving “social and economic impact” (Participant 4, Online Observation), “thought leadership” (Participant 8, Physical Observation) and “quality improvement” (Participant 1, Online Observation) through leadership in the space. The importance of people in the leadership process of innovation is also echoed by the evidence presented in semi-structured interviewing with Participant 2 stating that; *“people [are] driving the components of the innovation process...there is need to recognise that innovation intermediaries lead”*, and Participant 1 *“technology...creates a barrier to someone being innovative. People are an enabler, more than anything else”*. This facet of people-led innovation remains an important feature of this intermediary’s occupational mandate.

The other side of this multidimensional relationship is the influence of technology on the process of innovation. Participant 3 suggested in semi-structured interviewing that *“when you're talking about reaching international markets, none of that is possible without the technology and we're talking about collaboration – you can only collaborate physically so far.”* IdeaBox uses a digital platform to support this global process of innovation and the importance of this technological tool was highlighted by participants as a series of needs; ‘differentiating technologically’, being ‘smarter’, and incorporating ‘sexy tech’ to support customers in their journey. Literature in the space (Aquilani *et al.*, 2016; Hossain, 2012; Hossain & Islam, 2015) highlights the function and outputs of these innovation tools, but little

attention is paid to the complex interaction between the intermediary and the digital platform they are developing, creating and deploying to support the innovation process. The importance of the technology in this process has however been highlighted by Kokshagina, Le Masson and Bories (2017) and Randhawa *et al.*, (2017, p. 1331) as supporting “community engagement”. But the results presented in this paper illustrate a movement beyond simplistic notions of solution providers just using and engaging with the technology in order to take part in the innovation activity, and towards an understanding of how the people behind the intermediary’s product influence the design of both the product and the process of innovation to ensure the optimal response from solution providers. These findings add depth to the innovation intermediary’s occupational mandate (RQ2) and provide support in understanding how they facilitate innovation (RQ1).

Shared understanding: Practice and preparation when communicating

The findings of this research indicate that IdeaBox’s mandate features a shared understanding of the importance of practice and preparation when communicating with the different audiences of the innovation process. Participants 5, 6 and 7 describe the ‘*required preparation*’, ‘*practice it until its nailed on*’, and ‘*dump everything else to focus on getting this right*’ that illustrates the organisational approach regarding practice and preparation of related innovation activity. Existing literature on innovation intermediaries does not give coverage to this area of an intermediary’s practice, in part due to the methodological constraints of qualitative and quantitative studies, instead focusing on the broad concept of communication as an action between the parties in an innovation activity. Even the case studies of Colombo, Dell’Era and Frattini (2015); Kokshagina, Le Masson and Bories (2017); Hossain (2018) feature little exploration of the intermediary’s approach and communication activity. The importance of communication in the innovation process is described by Fayard, Stigliani and Bechky (2017, p. 292) as delivering essential facilitation to new product and process creation, but that this is “unusual in many traditional design disciplines”. This emphasis on the importance of communication is apparent in IdeaBox’s observed actions and provides insight into how the intermediary views communication as an activity requiring preparation and professionalism to enable facilitation of innovation. This is an important observation as digital intermediaries could be viewed as simply providing a software solution, rather than a consultancy-style (Aquilani *et al.*, 2016) combination of software and soft skills. This study does however stop short of understanding this ‘unusual’ contribution of the innovation intermediary because the ethnography in this case focuses on one intermediary and establishing the usual or unusual facilitation of an innovation requires at least a benchmark from another similar company.

Behaviours: Professional Focus and Teamwork

In exploring the occupational mandate of this innovation intermediary, the presence of language surrounding professional focus was illustrated repeatedly with terms like “laser focus”, “minute detail” and “first-class infrastructure and processes” describing their work. This professional approach seeks to support “managing tensions arising from the innovation process”(Lauritzen, 2017, p. 293). In highlighting professionalism as part of the occupational mandate we also confirm Lauritzen’s earlier findings from his innovation intermediary case study that “professionalism and personality as equally important for the innovation process” (Lauritzen, 2017, p. 293). When married with the team-based behaviours expressed across this ethnographic study this forms a clear behavioural profile for this occupational mandate (RQ2).

This importance of teamwork was also highlighted in comments such as “#DreamTeam. Nice work both” from PT1 (Online Observation) and PT6 (Online Observation) “well done team” as an essential part of the innovation intermediary’s practice. Both in connecting work across the intermediary but also in the delivering value for the customers. Team work leads to more

creativity which is an important part of innovation activity (N. Anderson, Potocnik, & Zhou, 2014; Hon & Luior, 2016). The concept of teamwork within this environment also extends to the solution providers within the innovation process as PT6 expressed “*think most of the innovation kind of comes in with...speaking to customers*”. The work of Aquilani, Abbate and Codini (2017) suggest the intermediary provides a series of functions in breaking down barriers between organisations involved in innovation such as collectors, brokers and connectors, but stops short of being an integrator. This more interactive role is where the IdeaBox team see themselves; PT1 “*we have like customer involvement and kind of mingled in amongst the middle because some of these things... feed off each other*” and PT6 “*we’re fostering that kind of culture of innovation, is around change management*”. This more integrative role should be explored from the solution provider’s perspective in more depth in a future study, as this will provide a more rounded perspective to the impact of the integrative approach of the intermediary.

Values: Action orientation and Trust

This occupational mandate of this innovation intermediary includes action orientation with PT2 stating that the team “*feel[s] confident enough to do it*” and PT5 echoing this in stating that “*It is very fast-paced, you do tend to get pulled in quite a few different directions*”. But PT7 highlighted a slightly more coercive action orientation; “*innovation is getting people to do it or forcing that mind-set*”. This action-orientation and the line between innovation process and commercial necessity is unclear and ethically troubling and is further explored in the co-creation section of this occupational mandate.

The concept of action is hugely important to the innovation process as Reinig, Briggs and Nunamaker, (2007, p. 144) note in their definition of ideation quality, it is the “degree to which an ideation activity produces ideas that are helpful in attaining a goal”. The process of innovation in this attainment context is enhanced by the IdeaBox system profiling users based on their preferences and then prompting them through both digital communications and consultancy-style support to contribute solutions to challenges. This action orientation is important for solution generation, but with a note of caution, as the concept that the quantity of ideas produced will lead to the better quality of ideas has been challenged by Baruah and Paulus (2008) and Reinig and Briggs (2013). The challenge, or the instructions given to the user to prompt the creation of the solution, is actually more influential in the innovation process according to more recent literature (Vasconcelos, Neroni, & Crilly, 2018). Unfortunately, due to the relative newness of the innovation intermediary platform and the spread of customers across different sectors (therefore number of variables) this is difficult to meaningfully assess in the time-period for this study.

Co-creation

A number of values statements are expressed by participants, such as “*value-driven approach to innovation*” (Participant 8, Online Observation) and “*structured innovation process will reduce the time, cost and risk of innovation*” (Participant 5, Online Observation). These statements stress the value of co-creation and collaboration as part of the innovation process, which is part of the oppositional binary that Felin, Lakhani and Tushman, (2017, p. 130,) state exists against “competition”. Brunswicker and Chesbrough (2018, p. 31) develop a further set of binaries to create an axis of value with collaborative versus transactional and multi-actor versus bilateral. The host company focuses on crowdsourcing solutions, which relies on the participation of both users and organisations collaborating effectively in an open innovation space, so multi-actor and collaborative in Brunswicker and Chesbrough parlance. Interestingly though, gamification elements within the IdeaBox application, alongside competition structures to find the best solution to a challenge do breed a natural competitiveness. So the

Brunswick and Chesbrough (2018) axis could potentially need another element to add to its growing construct, something potentially like ‘coopertition’ (Lombard & Morris, 2012). Still, the application and the concept of open innovation really relies on the freedom of sharing solutions, and to some extent the intellectual property without the usual institutional or competitively sensitive industrial perspectives.

Value of Business Support Organisations

The need to recruit solution providers and challenge setters is at the core of the intermediaries offer to the market. One of the novel ways of attracting these solution providers discussed by IdeaBox was the use of Business Support Organisations, which are incubators, managed science parks or business support networks that aggregate a number of SMEs within their institutional bounds. They form an important part of the innovation process as Participant 8 (Physical Observation) stated they need too; *“Hand-hold get them [BSOs] to engage”* and Participant 1 (Online Observation) added that BSO need a *“tangible exchange for pushing out the [IdeaBox] platform to their members.”* Specifically, the use of a further middle-agency, such as a Business Support Organisation (BSO), is seen as both a risk and benefit for the organisation. The importance of these companies in creating knowledge is crucial as they offer *“expertise on a particular technology”* (Hossain, 2013, p. 33) that exists outside a company’s innovation status quo. Variety in solution providers is also of importance to broaden the horizons of innovation, but as Boudreau (2013, p. 66) notes *“it lacks cohesiveness. Companies create cohesion with structures and systems (such as incentives) that align values.”* In utilising the BSO model to source an element of the solution crowd, the innovation intermediary is creating an element of cohesion through both the organisation of the BSO and the SMEs that reside in them, making their involvement in the co-creation process of innovation an important part of this intermediary’s occupational mandate (RQ2). Literature remains relatively sparse around the impact of these BSOs on the process of innovation (Hossain, 2013; Lichtenthaler & Ernst, 2008) and a further study could explore how specific sector BSOs support innovation effectiveness in comparison to individual companies or other participants in the innovation process

Values: Importance of digital product and people in delivering innovation

The importance of this combination between people and product in the innovation process is also highlighted repeatedly as the innovation intermediary looks for the *“collaboration between technology and humans”* as *“people”* and *“software is in the centre”* of this process. This ability to combine people and product to create a *“matchmaking”* innovation process (Holzmann et al., 2014, pp. 612–613) is again a site of contention between scholars. The physically-based approach outlined by Holzmann, Sailer and Katzy (2014) in their study of the innovation in BMW is focused on an intermediary who assesses the needs of these providers and actually facilitates pitching, and then client management after contract award. While Kokshagina, Le Masson and Bories (2017) and Randhawa *et al.*, (2017) focus on the online products that support this process, this digital-only approach is also challenged by Randhawa *et al.* (2017, p. 1331) whose findings state that, *“along with providing digital platforms to clients, intermediaries also have to develop their ability to leverage this platform as a tool for meaningful community engagement.”* The solution proposed by IdeaBox is both human and technological. For example Participant 6 (Interview) says a *“company would be able to innovate because, I think, of the people themselves – if we suddenly didn’t have a product anymore”*. While Participant 3 (Interview) highlights the importance of the product in the innovation process; *“collaboration between technology and humans, so not just looking at how I would work with someone else, but also how I would work with a piece of software”*. This focus on the software is also echoed by PT4 *“the software is in the centre of it, because it’s the one that’s innovating I guess.”* This focus on the product and the understanding of the

importance that the product, or software, contributes to the innovation process is an important finding and an interesting value to contribute to the professional identity and mandate of this innovation intermediary.

These findings make it explicit that human interaction is needed to bridge the gap between digital and people to create community engagement. This understanding of the importance of product and people is vital to defining the occupational mandate of this innovation intermediary and will develop further as digital products are better able to both replace and facilitate human interaction within innovation processes.

Value: Intrinsic financial value should be present to enable collaboration

The observations above centre around the co-creation process involving solution providers, their needs, and interactions with the innovation intermediary. This concept of organisational alignment, expressed here by IdeaBox Participant 3 (Online Observation) through the need to “*make money*” and Participant 1 (Online Observation) need to generate “*commercial value*” is important in embedding the outcomes of an innovation process. This development of a culture to propagate innovation is due to “a profit-maximizing strategy that targets both value creation and value appropriation.” (Gambardella and Panico, 2014, p. 909). In Edquist's (2001) description of a taxonomy of innovations, organisational factors such as financial outputs are granted the same importance as technological and product inputs. This parity with these factors has huge importance in enabling collaboration between the solution providers and the recipients of innovation with “shared values” (Huggins & Thompson, 2017, p. 8), rather than on purely research or commercial reasons. In seeking to ensure clients have a heuristic alignment and “a culture of collaboration”, the innovation intermediary ensures the opportunity of positive financial outcomes and customer satisfaction (Ramírez-Montoya & García-Peñalvo, 2018, p. 15).

The liberalism of putting these parties together and the outputs in terms of incremental or radical innovation is potentially at the cost of thinking about the financial needs of the solution provider, and the company paying for the innovation activity (Hossain & Islam, 2015; Mladenow, Bauer, & Strauss, 2014). Therefore, it is important for the occupational mandate that the innovation intermediary in this ethnographic study has focused time and attention on understanding where their model of open innovation makes financial returns for customers.

Thinking: Strategic value of innovation is recognised

In understanding the motivations for innovators to co-create new products, processes and services it was interesting to explore the presence of strategic support for innovation with IdeaBox's clientele and how this potentially influenced the outcomes of innovation activity. AS PT1 stated; “*a challenge being linked to a strategy is really important*”, and PT5: “*OK, what's your strategic plan, where are you trying to go? What historically have been the pitfalls and stumbling blocks for you? Let's innovate against those.*” The findings expressed all indicate the presence and importance of strategy within the innovation process. Several authors maintain the importance of an innovation strategy, and in particular a strategy towards open innovation; “the development of appropriate culture and skills to enable the operation of an OI strategy is an area of significant interest” (Mortara and Minshall, 2011, p. 588). There should however be caution taken when deploying innovation strategically as Chesbrough (2006) highlights that two firms that deployed a purely open innovation strategy actually became financially insolvent. The presence of successful strategic innovation, he postulates, is dependent on the combination of riskier open innovation and more conservative closed innovation strategies. The intermediary in this respect does not differentiate between strategies for open and closed innovation, but instead describes a mostly open innovation scenario of

interactions between SMEs, academia and large private sector clients so the findings of this study can only be applied to strategy in the broadest sense. Exploration of the strategic picture of organisations deploying specifically open or closed innovation in their interactions with an intermediary would provide an interesting exploration for future study.

Relationships

Shared understanding: Sector based approach for customers who value innovation

In interpreting the results of physical, online, and semi-structured interviews it is important to note that for this intermediary, they differentiate the sector primarily on the basis of either public or private sector rather than industrial sectors. This limits the bounds of both this element of the occupational mandate, and more broadly the specificity of the innovation process. IdeaBox focuses on “*the public sector and corporate sector that behaves like the public sector*” (PT7) which means large private sector organisations who share the characteristics of public sector organisation because of their number of employees and departments. This commentary can be interpreted as indicating that in the company’s view the public sector is further behind the private sector in adopting open innovation practices, hence the customer base residing on that side of the divide. The majority of literature around open innovation focuses on the application of this methodology in private sector settings (Mortara and Minshall, 2011; Usman and Vanhaverbeke, 2017b; Brunswicker and Chesbrough, 2018; Santoro et al., 2018). The relationships with these organisations are somewhat a by-product of the background of the employees of the company as PT5 describes: “*they have a good footing in education*” and PT7 reinforces, “*I guess education has the same sort of culture, it’s the same – they’re looking for the same kind of thing*”. This is an interesting finding for the study as Bloch and Bugge (2013, pp. 135–136) state that there are a number of differentiated factors between the private and public sector innovation, which are that the public sector is “not driven by profit-seeking motives” and that they are driven by “providing services cost-effectively and creating societal wellbeing”(see also De Vries, Bekkers and Tummers (2016)) . The results presented here suggest that Bloch and Bugge’s (2013) binary between public and private sector values and outputs requires a more multifaceted, and less dichotomous relationship when viewed from the perspective of an innovation intermediary. The influence of intermediary’s values on the outputs of the innovation process and how they define both cultures internally and relationships with customers externally is valuable insight gained from this study and highlights an important facet of the occupational mandate of this intermediary (RQ2) as well as an avenue for future comparative study.

Shared Understanding: Knowledge diversity is important within the relationship

IdeaBox employees were asked about the challenges of engaging the knowledge required within the audience of solution providers to create an effective innovation process. They look for not only “*specialists in that sector*” (PT1, Interview), but “*we’re solving a problem rather solving a particular, specific industry challenge*” (PT6, Interview) with a “*richness... a perspective across, perhaps, different industries*” (PT1, Interview). The competency and knowledge required by audiences to innovate can be difficult to create as “the spatial proximity of innovation actors has become crucial for the success of innovation networks.”(Rodriguez Ferradas, Alfaro Tanco, & Sandulli, 2017, p. 1209). However, it is not necessarily the literal spatial dynamics of the innovation actors, but the importance of the proximity of the knowledge as Mahr, Lievens and Blazevic's (2014, p. 600) study into co-created innovation indicates “such relationship closeness may lead to a knowledge overlap”. This knowledge overlap is important

to the creative process of innovation and it is this combination of differing knowledge that creates the value for the IdeaBox customers.

Evidence presented also confirms the importance of diversity and the earlier assertion of Felin, Lakhani and Tushman, (2017, p. 124) that “Customers, users, and even individuals widely disconnected from the focal activities of the firm can provide valuable insights, ideas, resources, and knowledge”. This need for diversity is also reinforced by Schäfer *et al.*'s (2017) study, but this study adds further insight by outlining the presence of technology as an enabler of that diversity through both the design and functionality of the digital product. This literal ability of the IdeaBox platform to connect innovators across different sectors is made possible by users expressing interests in multiple sectors, but the enabling technology is two-fold with automated communications and collaboration features allowing solution providers to work on innovative ideas together. This enabling role that the technology provides in actually facilitating the diversity of knowledge is an important finding and contributes to the occupational mandate of these intermediaries (RQ2).

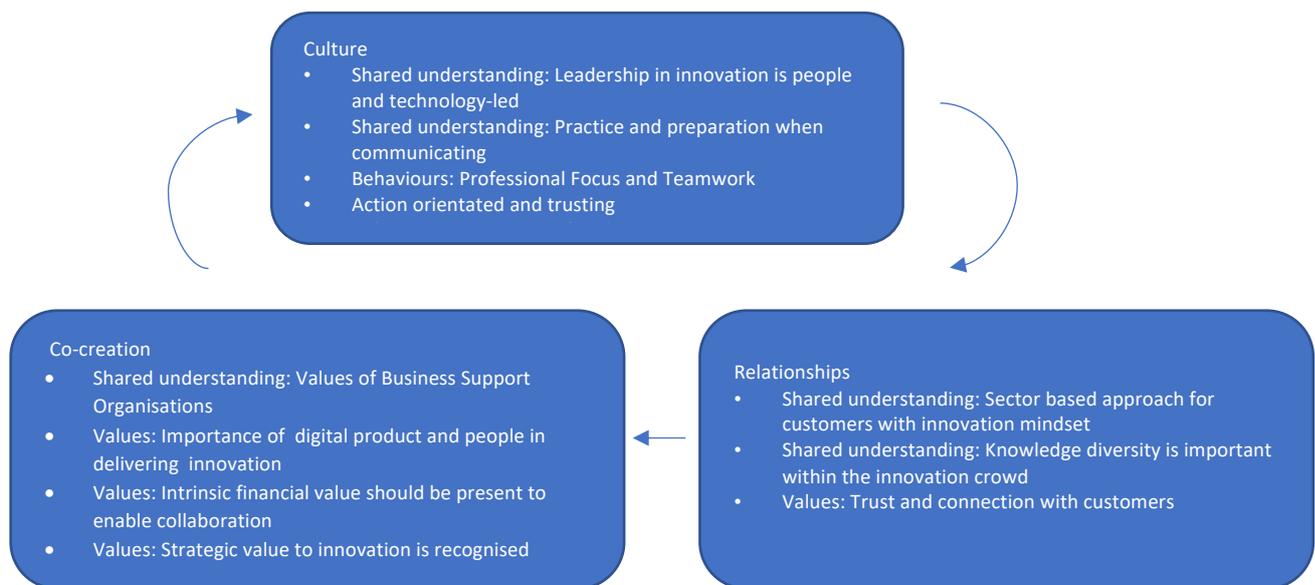
Values: Trust and connection with customers

The presence of trust in the relationship between IdeaBox and their customers and solution providers is crucial to the process of innovation, as evidenced by the comments of PT8 (Physical Observation) “*we need to build trust early doors*” and PT1 (Physical Observation) “*giving them trust*” in order to build “*an element of security, trust and more formal partnering between the two organisations*” (PT3, Physical Observation), Without this trust of from all the participants, the collaboration and openness needed for the actors within the process to share knowledge would not occur. Several previous studies also outline the importance of trust in generating outcomes (Colombo et al., 2015; Felin et al., 2017b; Palacios, Martinez-Corral, Nisar, & Grijalvo, 2016) with the benefits including not just the direct benefits of innovation, but also indirect benefits of saving time and money on monitoring partners (Ritala, Olander, Michailova, & Husted, 2015). The findings of this study also indicate a place for technology in building that trust as PT1 commented that customers “*need to keep their trust in the product*”. The trust relationship extends beyond the values of the solution providers and the recipients to the technology deployed by the intermediary, which is an important contribution to the innovation intermediary’s occupational mandate and explains in part how they facilitate innovation (RQ1).

CONCLUSIONS

The study set out to establish how an innovation intermediary facilitates innovation (RQ1) and in doing so creates an occupational mandate (RQ2) for the innovation intermediary, which is expressed in Figure 3 below:

Figure 3. Occupational Mandate for Innovation Intermediary



The construction and population of this professional mandate supports the answering of RQ1 and RQ2, as the behaviours, values and shared understanding observed illustrates the influence intermediary organisations have on the innovation process. The occupational mandate for this innovation intermediary is formed through three key areas of culture, co-creation and relationships as suggested by Fayard, Stigliani and Bechky, (2017). The findings of this study then populate these broad areas with understanding, behaviours, values that are present, and tested, through multiple rounds of data capture as part of this study.

Culture

The culture that appears to be present in the interremediary features a leadership approach to innovation which is both people and technology-led. This is a new insight as previously literature focused on the technology outputs of innovation (Hossain & Islam, 2015) or the simple matchmaking nature of the technology (Colombo et al., 2015; Kokshagina et al., 2017; Randhawa et al., 2017), rather than the technology leadership and facilitation as an essential part of the innovation process. Aquilani, Abbate and Dominici (2016, p. 47) describe the intermediary as taking on the role of “full-range consultants” which the findings of this study support, but adds depth to this debate by highlighting the presence and influence of technology on this consultancy style activity. Although, it should also be noted that despite the presence of human and technology-centred perspectives within the innovation process there was little agreement from participants on the predominance of one element over the other.

The other cultural aspects of this intermediary’s occupational mandate, including action-orientation are present in many professional environments, but as illustrated above the importance of communication is specifically relevant for an intermediary given its position in

the relationship between solution providers and innovation beneficiaries. The ability to add value to the innovation process through professionalism (Lauritzen, 2017) is also reaffirmed by this study and when linked teamwork leads to further creativity (N. Anderson et al., 2014; Hon & Luior, 2016). This also leads the conclusions of this study to question the notions of team more widely within the innovation intermediaries practice as both the solution providers and the innovation recipients form part of this virtual team. Therefore, how best to extract, facilitate, and collaborate across these complex team dynamics is an avenue for further research.

Co-creation

The occupational mandate of IdeaBox is heavily influenced by both the customers that contribute income and the solution providers. Understanding both the internal and external process of co-creation provides fresh insight into the influence of the intermediary during the process of innovation. The findings of the observation data focused on the identification and importance of Business Support Organisations and the part that these aggregators of start-ups and SMEs play in the innovation process. Their influence on the process of co-creation is, as exhibited by the findings of this study, through the ability of the intermediary to attract and integrate these Business Support Organisations into the innovation process. The benefits of this approach offers a way of integrating with multiple companies through one point of contact, and at a scale that offers benefits of a vastly enlarged innovation ecosystem. The contribution of these findings to new knowledge in this field is significant as although studies in open innovation look at the general engagement of start-ups (Michelino, Cammarano, Lamberti, & Caputo, 2017; Usman & Vanhaverbeke, 2017) and SMEs (H. Chesbrough, 2003; H.W. Chesbrough & Crowther, 2006; Santoro, Ferraris, Giacosa, & Giovando, 2018; Spithoven, Vanhaverbeke, & Roijackers, 2013), little attention is given in the literature to impact of aggregators of these businesses which can involve networks such as the Barclays Eagle Labs, or the NatWest Entrepreneur Accelerators which house over 1000 businesses simultaneously incubating (NatWest, 2018). The involvement of these partners in the innovation process is important to the co-creation element of this professional mandate and supports knowledge and understanding of how an innovation intermediary facilitates innovation (RQ1).

Findings also suggest that, aligned with the findings of the Culture section of this occupational mandate, the innovation intermediary values the digital product and the contributions of its staff to the process of innovation with a similar importance reflecting the views expressed in Randhawa *et al.* (2017). The value of financial returns for partners in the innovation process is also identified, which aligns with literature in the area (Mladenow, Bauer and Strauss, 2014; Hossain and Islam, 2015; Ramírez-Montoya and García-Peñalvo, 2018). Finally, for this section of the occupational mandate, the importance of strategically supported innovation was identified by IdeaBox employees as part of the innovation process. This conclusion again aligns with previous studies, but still forms an integral part of this intermediary's occupational mandate.

Relationships

The relationships section of this occupational mandate illustrates the most complex set of conclusions for this study. Firstly, the influence of the intermediary's relationships with the public sector and how they support them is crucial to both the internal identity of the company, personified by its staff-base, and this is then projected onto its clients who are described by PT7 as the "*public sector and corporate sector that behaves like the public sector*". The findings of this study illuminate how the innovation intermediary's values can influence the relationship with the other partners in the innovation process and challenges the binary of private sector economic values and public sector social values expressed by Bloch and Bugge,

(2013); De Vries, Bekkers and Tummers, (2016). The influence of the intermediary on the relationships with its clients, and the multifaceted nature of the values and innovation process outputs establish new avenues for testing in a broader environment with other intermediaries.

In establishing relationships with innovators, IdeaBox seeks a diverse audience of solution providers which are both aligned with their customer's innovation needs, but also offer a difference in perspective (Felin et al., 2017b; Schäfer et al., 2017). The contribution to new knowledge in this area is gained through the understanding of the influence of technology on the relationships and ability to innovate. Further understanding of the design and motivations for these digital tools, and how they impact the relationship between intermediary, solution providers, and innovation recipients alongside the outputs of the innovation process are a valuable avenue for future study.

Also, the study can conclude that the intermediary seeks to build trust and connectivity as part of the relationship with partners in the innovation process in line with previous studies in the area (Colombo et al., 2015; Felin et al., 2017b; Palacios et al., 2016). Again, the influence of technology on building this trust is present within the findings and provides both new insight into the intermediary's professional practice along with enhanced understanding of the value of technology for the intermediary.

With regard to further research, it should be noted that this study cannot draw wider conclusions outside the bounds of the organisation in which the ethnography took place. So while the findings of this study are non-generalisable they do raise some interesting insights into the construction of innovation through an intermediary that can be explored in further ethnographic and wider longitudinal empirical studies. Moreover, both the existing literature in this space and the findings of this study do not shed light on how trust is actually built by innovation intermediaries but again future study can examine this underexplored area of the relationship.

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