A rapid design-led approach to innovation readiness: advantages and challenges

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The purpose of this paper is to report on an ongoing suite of research that aims to develop a design-led approach to help small and medium sized enterprises (SMEs) understand their innovation readiness. At present, a number of tools are available to organisations when carrying out an audit to determine their innovation readiness, however none of these methodologies have been connected to the practice of design-led innovation. This paper begins to address this gap by presenting a review of a twelve-hour intervention carried out in collaboration with a fund management organisation located in the North East of England as part of an EU funded research and innovation programme, Creative Fuse.

The paper utilises a qualitative approach guided by case study principles, semi-structured interviews and action research to reflect on the proposed design-led approach to assessing innovation readiness. Advantages and challenges to the approach are considered with the intention of developing a practical approach to assessing innovation readiness within SMEs, which builds on design principles in order to rapidly outline the opportunities and potential barriers facing organisations when it comes to identifying areas for future innovation.

Keywords: *Innovation readiness, Design-led innovation, SMEs*

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1.0 Introduction

Small and medium sized enterprises (SMEs) are critical to the growth of a number of national economies (Wolff and Pett, 2006), however the ability of these enterprises to contribute to this growth is highly dependent on their innovativeness (Nowacki and Staniewski, 2012). Innovation is seen as a key source for competitive advantage, particularly in relation to ensuring survival in difficult market conditions, where it is necessary to compete against much larger firms (Van De Vrande et al., 2009). Innovation is therefore an important undertaking for SMEs, not least to ensure survival, however it has also been described as a 'difficult undertaking, especially for firms with little experience and limited resources' (Hadjimanolis, 1999, p.561). This difficulty is underpinned by the presence of common barriers to innovation projects within SMEs, which typically revolve around a lack of funding, prohibitive risks and costs of technology (Nowacki and Staniewski, 2012). Furthermore there are fundamental barriers surrounding the availability of human resources, where there are often not enough qualified staff or free time available to focus on innovation projects (Kaufmann and Tödtling, 2002).

Due to the importance and difficulty of purposeful innovation to SMEs, the concept of innovation readiness has emerged from current discussions surrounding open innovation, innovation systems and networks of innovation (Zerfass, 2005), whereby innovation readiness is the concept of providing an evaluation of the extent to which a company can sustain their ability to innovate (*ibid.*). This type of evaluation is particularly important as the success of most innovation projects typically depends on multiple factors such as: people, information and communication technology, knowledge management processes, culture, organisation structure, management systems, process of assets allocation and research and development expenditure (Biloslavo, 2005). Thus, an understanding of a complex operating environment is critical in outlining a strategy to achieve or sustain purposeful innovation; particularly when conditions move beyond a 'steady state' in terms of market, technology or other dimensions (Bessant, 2008).

Whilst an understanding of factors surrounding innovation readiness exists within the literature, much of the focus is grounded in business theory and neglects to consider the impact that being design-led can contribute to both the innovation process and attempts to understand innovation readiness across firms. This is unfortunate due to increasing prevalence of design in solving business problems in a multitude of organisations (Brown,

2009; Martin, 2009). The aim of this paper is to address this gap by presenting a discussion of an ongoing piece of research that carries out an innovation readiness assessment guided by a design-led approach. The innovation readiness assessment was carried out in the form of a twelve-hour, design-led intervention with a fund management organisation in the North East of England, facilitated by academics from Northumbria University, as part of an European Union (EU) funded research and innovation programme, Creative Fuse. The next section will begin with a discussion of relevant literature from the domains of business and design to establish an understanding of innovation readiness and its assessment.

2.0 Understanding innovation readiness assessment

The concept of innovation readiness is closely related to the concept of understanding readiness for change within organisations, which Armenakis *et al.* (1993) define as involving people's beliefs, attitudes, and intentions regarding the extent to which changes are needed and their perception of individual and organisational capacity to make those changes. In this instance, readiness is defined as the state of mind about the need for innovation and the capacity to undertake technology transfer (Backer, 1995, p.22). Organisation readiness for change is a multi-faceted construct, involving collective action from many people in the face of various contextual factors including the culture, resources, experiences and structure of an organisation (Weiner, 2009). To successfully understand an organisation's readiness to innovate, methods must successfully understand these contextual factors and the impact that they can have on new innovations.

Backer (1995, p.28) notes a number of behavioural science-based methods that have been employed for assessing readiness for innovation, specifically: survey instruments, focus groups, clinical interviews, site visits and community profiles. Surveys appear to be the most commonly utilised tools across both academia and professional practice. One such example is that of Dworkin and Spiegel (2015), who adopt a survey approach to assessing innovation readiness to rank existing innovation efforts on a scale (from lagging, to following, to leading) in four key areas: constant energy, creative friction, flexible structure and purposeful discovery. Once the survey is completed participants receive advice based on their score in relation to other participating organisations, with guidance provided for

both leaders of organisational change and team members who are also involved in the process. This approach is based on previous research from Ashkenas and Spiegel (2015), who contemplate necessary conditions for making innovation teams more successful.

A similar approach is adopted by Biloslavo (2005), who proposes an innovation capability audit survey based on a six-stage framework capable of helping an organisation evaluate its current innovation processes, identify which areas of the organisation support the innovation capability and identify which areas represent an opportunity for an organisation to improve. This approach is promoted as a tool for rapid assessment of an organisation's innovation outcomes and knowledge management processes, however it is suggested that for a detailed audit to be carried out an organisation needs to take part in follow-up interviews, focus groups and other related methods in addition to careful analysis of the questionnaire (*ibid.*, p.17).

A survey approach to research provides multiple benefits that make it valuable as a tool for rapidly identifying organisational readiness to innovate, especially within SMEs. In particular, surveys offer administrative convenience (Marshall and Rossman, 2006), as they are a low cost option that are quick for organisations to carry out and can offer immediate results. This is particularly useful within SMEs that face constraints surrounding the time and resources that are available to commit to both innovation projects and assessments of their own innovation practices. On the other hand, Biloslavo (2005) pinpointed the need for additional methods of enquiry in order to provide organisations with a detailed account of their innovation practices. Alternative methods such as focus groups and interviews provide similar information to surveys, however they require extra time at the cost of participating organisations. Furthermore, whilst these tools provide organisations with an overview of their situation in relation to readiness to innovate, they fail to provide a specific roadmap for successful innovation based on the findings, outside of highlighting potential areas based on generalised findings from previous cases that are not always specific to the organisation taking part in the audit.

3.0 How can design contribute to assessing innovation readiness?

Developing an understanding of innovation readiness is fundamentally a strategic undertaking for any organisation. Whilst research into the impact

of design on innovation has typically centred on the development and differentiation of new products (Dell'era and Verganti, 2009), recent trends have developed an understanding that design can add significant value to the strategic capabilities of organisations (Borja De Mozota, 2003). In particular, design management is being used to drive corporate strategic goals through creating a strategic vision and orchestrating collaboration across disciplines in order to add value to stakeholders (Holland and Lam, 2014). Wrigley (2017) notes that this union of design thinking and strategy is referred to as design-led innovation, which acts as a process for business transformation and facilitating the creation of new competitive advantages in a fast-paced global marketplace (Bucolo et al., 2012).

Within design research one of the closest areas to management literature that seeks to understand innovation readiness falls under the domain of maturity frameworks, which seek to document both the strategic value of design and the way in which the influence of design changes over time within an organisation. Generally, this research focuses on understanding the capacity of an organisation to integrate design into innovation processes rather than identifying opportunities to carry out innovation within the existing boundaries of a firm. Tools such as the Danish Design Ladder (Danish Design Centre, 2015), the Design Function Maturity Grid (Gardien and Gilsing, 2013) and Innovation Capability Maturity Model (Essmann and Du Preez, 2009) all offer normative stages through which design occurs in most organisations, ranging from non-design to design as strategy. Whilst these frameworks highlight that a transition from non-design to design as strategy is important for achieving design-led innovation, they are often vague in their descriptions and fail to offer best practices that adequately describe the development of design practice within an organisation (Backes and Wolff, 2016). One potential explanation for this is that the approach to carrying out design-led innovation differs for every company (Bucolo, 2016, p.137), however it is also compounded by design-led innovation being a relatively new field of knowledge that has grown from a need to reposition and redefine the way design value is implemented in business (Doherty et al., 2014, p.6).

Frameworks have been devised to exploit this gap, by explaining the way in which design can assist companies to explore the strategic value that design can bring to a business. For example, Bucolo and Matthews (2011) identify the relationship between insights, competitive strategy, observations and brand as core features in outlining an organisation's value proposition. Similarly, Acklin (2010) offers a 'design management travel

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guide', which aims to help SMEs assess their level of design integration whilst creating a basic design strategy to improve market positioning and customer focus, with the support of a design consultant. Ultimately, the focus of these frameworks has been on readiness to adopt design into organisational innovation practices and strategy, as opposed to utilising design practices to understand readiness to innovate in a similar sense to that of management literature.

One area in which there is closer alignment with the management understanding of innovation readiness is the concept of design sprints, which were recently popularised by Google Ventures and exist as a methodology for exploring opportunities in a short timespan, specifically through prototyping and testing ideas with customers (Knapp, 2016, p.9). Knapp (*ibid.*) describes the sprint process as a way of applying lean development or design thinking philosophies in a practical way over a structured period of five days; which involves five distinct phases: setting a goal, sketch competing solutions, decide on the best solution, build a realistic prototype and test with target customers. The sprint process can be utilised in a variety of ways, in a variety of timespans with examples ranging from a few hours to several weeks (Banfield et al., 2015); yet there is a predominant focus on utilising the sprint process in the creation of new product innovation as opposed to informing the development of new strategy. O'donnell and Bucolo (2016) begin to bridge this gap by highlighting a process that utilises the sprint methodology as a means to raise awareness and capability of design-led innovation within a global engineering firm to identify opportunities for new product and service offerings. The findings, however, are again skewed towards product development, with a strategy focus outlined as the next phase of their work.

The design-led approach documented in this paper was inspired by the philosophy of design sprints and informed by previous research in the domains of both management and design. The philosophy attached to the design sprint process of utilising design-thinking methods in a restricted time frame in order to rapidly outline and assess solutions to a problem was critical to the approach, due to the limited time and resources of SMEs in carrying out innovation activities (Nowacki and Staniewski, 2012). Management literature was also critical in determining areas for innovation, resources that need to be in place for innovation to be successful and identifying potential barriers that could occur. The rest of the paper will outline the process that was used to carry out an innovation readiness

assessment within an SME as part of an ongoing research project, with the next section describing the methodological implications of the work.

4.0 Research methodology

This paper has adopted a research methodology consistent with the principles of case study research. Yin (2014) describes case study research as a method of empirical enquiry that investigates a contemporary phenomenon in depth and within its real-world context. This paper utilises a single case design, whereby the focus is placed on the particularity and complexity of a single case in order to understand activity within particular circumstances (Stake, 1995). Flyvbjerg (2013) advocates the single case approach as a way of investigating a phenomenon with sufficient depth in order to accurately understand the causes and outcomes of particular phenomenon as well as understanding the context and process in order to foster new hypotheses and research questions.

The focal question at the heart of the study can be defined as 'how can a designerly approach be utilised to help organisations assess their innovation readiness?' Section 4.0 seeks to outline the methodological implications of the study, including the criteria for case selection, the specific methods utilised for data collection and the layout of the design-led intervention.

4.1 Case selection

The case study is the result of a collaboration between a UK based University and a fund management organisation located in the North East of England. The organisation specialises in providing funding solutions to small and medium-sized businesses across the North East of England, which contributes to the growth of the local economy through the funding of business plans, the creation of jobs and the attraction of further investment to the region. The collaboration occurred as a result of an EU funded innovation programme, Creative Fuse. The innovation programme is a multidisciplinary action research project focused on the strength, diversity and nuanced nature of the North East's creative, digital and IT sector. As part of the programme, multiple strands of support are available to SMEs, freelancers, cultural organisations and creative practitioners across the North East of England. This case focuses on one specific type of innovation support offered within the wider programme of work, named 'Get Ready To Innovate'.

The primary aim of the Get Ready To Innovate project is to assist organisations in determining their innovation readiness by utilising a suite of design-led tools in order to challenge current thinking within an organisation as well as generating new ways of creating value. In addition to generating new ideas, participants are also guided through a reflective process that aims to provide a roadmap for turning these potential ideas into tangible strategy. Due to the nature of the project funding, several conditions dictate the nature of collaborations between Northumbria University and participating organisations. Most prominent is the allocation of time with potential participants, with twelve hours of contact time budgeted for each organisation. The innovation programme and subsequent suite of research are still ongoing, however this paper reflects on an initial collaboration between the University and a participating fund management organisation.

4.2 Subordinate methods of data collection

Eisenhardt (1989) notes that multiple methods of data collection are often utilised within the boundaries of case study research, including both qualitative and quantitative techniques. The primary data for this study was collected in a qualitative manner through both a semi-structured interview and reflections derived through an action research based approach. Semi-structured interviews are commonly applied in qualitative research (Kitchin and Tate, 2000) and also feature prominently within design research (Michlewski, 2008; Gray, 2014; Røise et al., 2014). Within this study, a semi-structured interview was carried out with the Chief Executive Officer (CEO) of the fund management organisation. The interview was carried out following the final intervention and lasted an hour and fifteen minutes, with questions seeking to collect feedback on the approach to assessing innovation readiness as well as to determine whether the approach had any impact on the day-to-day practices of the organisation. To ensure anonymity and a fluent reading of the narrative in the remainder of the paper, the CEO will be provided with the pseudonym 'Claire', based on a randomly selected name using the initial letter of their job title.

Semi-structured interviews are supplemented by an action research approach in the form of facilitator observations from the authors. Action research is a self-reflective inquiry that researchers undertake to improve on the practices in which they participate and the situations in which they find themselves (Baum et al., 2006). According to Reason and Bradbury (2001, p.1) action research aims to combine action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to

issues of pressing concerns to people and communities. For the purpose of this paper, the action research approach is evidenced in reflections from the researchers that have influenced the refinement of the design-led approach to assessing innovation readiness.

4.3 Layout of the intervention

Influenced by the funding stipulation that twelve hours of contact time must be allocated to collaborations as part of the programme, the intervention was split into four individual sessions. The first and last of the sessions lasted two hours each, whilst the middle pair of sessions lasted for four hours. Figure 1 visualises the layout of the intervention, including the methods used in each session as tools for aiding understanding of innovation readiness.
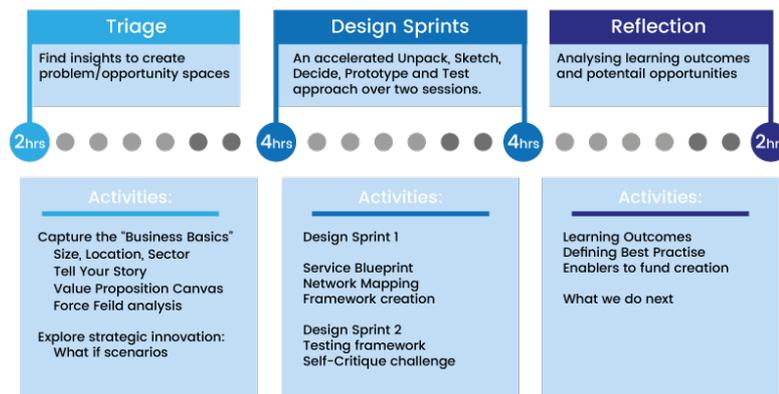

Figure 1: Visualisation of the innovation assessment method

5.0 Discussion

The aim of the paper is to report on the ongoing progress of a suite of work designed to help organisations understand their innovation readiness levels utilising a rapid design-led approach. The previous section documented the process used in collaboration with a fund management organisation as part of an EU funded innovation programme. This section will discuss participant and facilitator reflections of the process to determine the strengths and weaknesses of this approach in an effort to identify the

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ways in which a rapid design-led approach can be used to carry out this type of innovation readiness audit in the future.

5.1 Strengths of the rapid design-led approach to assessing innovation readiness

5.1a Value in understanding innovation readiness

The initial goal of creating a rapid design-led approach to assessing innovation readiness was to create a method capable of supporting SMEs in undertaking this type of audit; specifically in relation to understanding existing innovation capabilities, identifying areas for potential growth and developing strategies to realise this potential. It is therefore worth remarking that, to a large extent, the twelve-hour intervention has achieved these goals with the fund management organisation.

In reflecting on the position of the organisation prior to the assessment process, Claire highlights that the business was 'broken' in terms of innovation practices, however there was little understanding as to what the specific problems were and subsequently how to go about correcting them. By taking part in the intervention, the design-led approach was capable of explicating some of the internal barriers facing the organisation, specifically in relation to information and knowledge flow surrounding the existing decision making processes within the business. Claire felt that developing an understanding surrounding these barriers was one of the key concepts developed throughout the workshop, in that it enabled her to go back to the company and communicate these barriers to others within the business, creating a shared responsibility for improving the organisational paradigm. In this sense, the intervention has succeeded in identifying existing innovation barriers within the organisation as well as providing a sense of clarity regarding strategies for correcting their existing situation into one that is more supportive of innovation.

Furthermore, the approach also identified areas for improvement within the organisation's current working practices. As an example, the workshop identified that the way in which the business currently shared information with clients was perhaps not the most effective way of communicating by the business. External communications were created by accountants in order to convey financial information, thus they were heavily reliant on spreadsheets and numbers to express information. Through the workshop process, they realised that the people reading these communications don't necessarily like to receive numerical information, which can be

incomprehensible to someone who is not familiar with financial information. As a result, a strategy focused on graphical representation was developed so that new funds could be effectively communicated to clients.

Finally, the workshop provided the organisation with exposure to processes that could be applied to future problem situations. In particular, the notion of failing early and often through a rapid prototyping approach to problem solving made an impact on the mindset of the company. Claire highlighted that this approach was something that she typically associated with digital tech or manufacturing business and as a result failed to realise its potential application to problems within her own business. This shift in thinking opened up new methods and approaches to problem solving that the business had little awareness of or misunderstood.

5.1b The strength of the method in relation to existing assessment methodologies

Whilst the approach has merits in relation to helping organisations to understand their innovation readiness levels, the approach also offers additional value by helping organisations to develop strategies that seek to exploit opportunities that arise as a result of the audit process. For several reasons, this is a significant advantage over the business methodologies outlined in Section 2.0. Most notably, the approach is beneficial in comparison to surveys that offer an insight into innovation problems within an organisation that then require management consultants to offer suggestions as to how organisations can then fix these problems.

Adopting a design-led approach, whereby problems and solutions co-evolve, to conduct the innovation readiness intervention presents an opportunity in which the organisation can identify an innovation challenge to address throughout the twelve hour intervention. In doing this, the approach can then provide the organisation with a greater understanding of the problem, potential solutions, potential innovations and finally potential tools, approaches and mindsets that can help them to be more innovative as a result. In this respect, the innovation readiness audit adopts a co-creative approach to simultaneously facilitate learning and doing throughout the process.

5.1c Overcoming inherent barriers to assessing innovation readiness within SMEs

Several authors have outlined obstacles to SMEs in terms of evaluating and conducting innovation, as well as engaging with design as part of

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organisational innovation practices. In particular, there is a perceived lack of time and resource to commit to this type of work, which is often considered to be high in risk (Nowacki and Staniewski, 2012). The Cox Report (2005) finds that similar obstacles are in place for organisations that seek to engage with design, with the addition of a lack of in-house design or creative skills and a lack of access to external designers further contributing to organisational innovation struggles. The way in which this work was packaged and advertised to participants is valuable in overcoming a subsection of these barriers.

The rapid approach to understanding innovation readiness was created as a method of helping organisations to assess their innovation practices in a short time frame, whilst maximising the business value offered to the participants. In this respect, the approach finds a middle ground between management studies that seek to audit innovation readiness through surveys and design research that seeks to provide detailed business strategy advice through longer interventions. Time commitment to this type of work was a critical factor for the fund management organisation, with Claire expressing that as the CEO of a small organisation there is pressure to justify spending time on projects outside of the day-to-day operation of the company. Claire indicated that carrying out these type of activities needs to produce knowledge for the whole company, otherwise it will be seen as a waste of time. The rapid approach generally helps to mitigate this perceived risk in comparison to longer interventions as there is less perceived commitment on behalf of the organisation.

Additionally, the funding acquired to support the work offered businesses an opportunity to access experts without restrictive costs. Claire expressed that training and consultants for small businesses generally tend to be particularly expensive and therefore out of reach for her company in particular. Access to this project through the EU funded innovation programme was ultimately critical in enabling Claire to justify the necessary time commitment from herself and members of her organisation. This has implications at a policy level, given the importance of innovation within SMEs to national economies. If rapid design-led interventions are capable of stimulating innovation within SMEs, it could offer an area for targeted investment for policies to stimulate economic growth.

5.1d Creative functionality

Another outcome of the work is that it has provided evidence supporting the concept of 'creative functionality'. Creative functionality is defined as a

value frame that supports enterprises by facilitating the adoption of an entrepreneurial attitude to innovation by capitalising on latent capabilities and capacity to shift the mindset of the organisation (Bailey *et al.*, 2018). Furthermore, creative functionality aims to establish organisational structures and routines that support this entrepreneurial attitude (*ibid*.). The initial attitude towards innovation within the fund management was restrictive, as noted by Claire, who highlights that employees of the fund management company typically come from an accounting or banking background where training ensures that skills such as creativity are associated with negative connotations and handled in a risk-averse manner. Ultimately, creativity has the potential to be something that people lose jobs for, which has created an internal environment in which there is a conservative attitude and strong priority on maintaining the traditional way of doing things.

Throughout the intervention, design-led multidisciplinary co-creative activities encouraged a shift in the innovation mindset of the organisation towards a culture that was more supportive of both creativity and innovation. At the strategic level of the business, the board of directors had previously identified the creation of a more innovative mindset as one of the objectives through which success could be identified. Whilst accepting that it is a difficult area to quantify, the board felt that the work done to assess the innovation readiness of the company was sufficient in creating this mindset across the business to the extent that the strategy required changing to reflect that the business culture had changed.

5.1e Impact of the work on organisational structure and processes

There is also evidence highlighting that the organisation has attempted to integrate design principles into their day-to-day working practices as a result of the workshop. Claire talks about the creation of an 'innovation room', which is located in one of the organisation's conference rooms. The space has been furnished with materials designed to improve the innovation mindset of the employees; with easy access to books on innovation, large rolls of paper, colourful pens and post-it notes an important feature of the space. The space acts as a visual reminder to employees of the innovative culture Claire is attempting to foster within the organisation. Claire has utilised her position as CEO to enforce a rule whereby all internal meetings must take place within the innovation room in order to further reinforce the

importance of creativity to the internal decision making process of the company.

Furthermore, aspects of the work has also been integrated into staff appraisals. For example, the workshop identified a service blueprint methodology that was valuable in solving one of the organisation's problems. In this respect, the workshop demonstrated the way in which a service blueprint could be useful to solve the particular problem at hand, however it also led to a realisation that the process could be useful to the business in solving problems going forward. As a result, Claire integrated aspects of the framework into the appraisal of the marketing executive to ensure that the framework was appropriately utilised in the future. This is important as it provides staff with a sense of ownership over the innovation process, whilst again reinforcing the importance of innovation to the decision making process of the company going forward.

5.2 Areas for further refinement

5.2a Restrictions surrounding time commitments

The way in which the project was funded led to a stipulation whereby twelve hours of support was required with participating organisations. This meant that there was no space to develop the approach across numerous time domains. It is therefore possible that the optimal method of utilising a design-led approach to assess innovation readiness does not fit precisely within a twelve-hour timespan.

The way in which the twelve hours were divided also needs to be considered. The sessions were split into an initial two-hour session, followed by two four hour sessions and a final two-hour session. Feedback from Claire suggested that the four-hour sessions proved to be difficult in keeping participants engaged, in particular when the issues at hand were considered to be strategic big picture issues. Although this was the case, it is the belief of the facilitators that a four-hour timescale is the minimum requirement for this type of work, in order to understand the challenges facing a business with the sufficient detail required to derive meaningful solutions for the business. Nevertheless, it has highlighted the need for facilitators to place a greater emphasis on comfort breaks, alternative activities and managed down-time during the longer sessions where it can be difficult to sustain energy.

Additionally, Claire felt that the final session took place too close to the previous sessions. In the case of the fund management organisation, the

final 'follow up' session took place in the same week as the middle sessions. Claire suggested that it may be more beneficial to have the final session further into the future so that the business had the opportunity to implement some of the techniques discussed within the workshop. The follow up session could then be used as a chance to review progress and receive feedback on the strategies adopted since carrying out the initial work, as well as acting as a stimulus for further work, as opposed to acting as a conclusion for the work carried out in the previous sessions. Again it is the facilitators reflection that this proximity is necessary in order to reinforce the progress made throughout the intervention. However, in a scenario unrestricted by cost and time, further sessions placed strategically in the future would be valuable in supplementing the work done in the initial workshop.

5.2b Limited participation from the business

Throughout the project, three people were engaged with the work from the fund management organisation: the CEO (Claire), the company IT Manager and the marketing executive. This was at the discretion of the Claire, who was of the opinion that in addition to herself, the IT manager and marketing executive were likely to be the only people to approach the project with an open mindset and an enthusiasm for new ways of working. Claire felt that if she had brought members of staff with specialisms within financial services there may have been a negative reaction to the work, which had the potential to derail the project at the outset.

From the perspective of the facilitators, the participation of people with the creative confidence and enthusiasm to fully commit to the project was beneficial to the success of the work. On the other hand, the lack of input from other members of the organisation meant that the workshops had limited perspectives on the problems facing the business. This resulted in the creation of ideas that were not necessarily reflective of the views of the wider organisation. It is possible that wider participation in future projects could lead to conflicts surrounding sceptical views from certain members of staff, however it is necessary to engage these people in order to fully understand the internal operating environment of the organisation.

5.3 Other factors to consider as part of the research approach

5.3a Participant recruitment and the generalizability of the approach

As part of the funding requirements, the intervention was available to SMEs across the North East of England, at no extra cost to the organisations taking part. As such, the opportunity was widely advertised with SMEs encouraged to apply for support to receive help with their innovation strategy. Participants were advised that a team of design-led practitioners would be facilitating the workshop utilising a variety of tools to help challenge existing innovation within the organisation to create value. Subsequently, the design-led approach and an openness to challenge existing organisational paradigms was central to the recruitment of participants.

Due to the way in which the services are advertised, it is worth considering that the people who take part in the workshops are specifically seeking help with their innovation practices and are entering the intervention with an open mindset, both of which are important precursors for the work to be successful. This raises the question of whether the way in which the workshops are advertised acts as a natural selection process, whereby only open-minded people are approaching the university to take part in the work, filtering out people who are more sceptical to design's ability to add business value and are ignoring the opportunity as a result.

This has implications in terms of the generalisability of the approach, particularly applying the methodology to organisations that are not necessarily entering the work within these circumstances. Subsequently, at this stage of the work it is difficult to say whether the method could be applied to any SME and have the same positive impact.

6.0 Research implications, conclusions and recommendations for future research

This paper has presented a rapid design-led approach to understanding innovation readiness within SMEs, as well as documenting the strengths and weaknesses of the approach as part of an ongoing piece of research. The findings suggest that the design-led approach offered value to the fund

management organisation by helping them to assess their innovation readiness levels. Specifically, this value included the identification of existing barriers to innovation and areas for improvement in the organisation's existing working practices, whilst simultaneously co-creating a strategy designed to help the organisation address these challenges through providing tools that could be applied to future problem situations. Through this approach, training in design-led innovation has been delivered to the participants through practice and active participation in the workshops, which is beneficial over traditional innovation readiness audit methodologies.

Some of the benefits of the approach are inherent to the way in which the innovation project was funded, which has implications at the policy level in that it has created a set of conditions that encourage innovation and growth within SMEs; however these conditions would not occur naturally without the intervention of an external governing body. Similarly, some of the drawbacks to the approach are also inherently linked to the way in which the innovation programme was funded. Specifically surrounding time restrictions placed on interactions with participants.

In the short term, there is a need for further research to determine whether the positive effects seen within the fund management organisation can be replicated across multiple businesses to improve the generalizability of the findings. The intervention has also provided a rich area for future research further investigating the potential of a design-led approach to assessing innovation readiness levels. Initially, this could be determining the optimal timeframe for the delivery of this type of intervention. There is also potential to explore the ability to apply the methodology to multiple organisations simultaneously, which would further improve its attractiveness to external governing bodies.

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