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Exploiting social capital and path-dependent resources for organisational resilience: preliminary findings from a study on flooding

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Abstract

When faced with challenging conditions, rapid access to various forms of resource can be a key determinant of organisational resilience. The concept of social capital offers the potential to provide insights into this process and thereby gain a better understanding of organisational resourcefulness in a time of major disruption. Although disaster research has shown social capital to influence the resilience of place-based communities who suffer impacts of earthquakes, floods, power outages and domestic water supply contamination, bringing the concepts together in an organisational or business context has received little attention. Drawing upon data gathered as part of an ongoing EPSRC funded project, our paper presents some emerging findings from the project. We show how small and medium sized businesses (SMEs) in a UK case study were able to exploit their social capital for the necessary resources to help them survive the impacts of a severe flood event. Further, the nature of the resourcefulness may display a level of path-dependence related to the type of business. These preliminary findings show that firms which managed to recover quickly tended to demonstrate high levels of resourcefulness and problem solving capability. We find that flexibility, organisational culture and certain mindsets associated with particular professions e.g. engineering, appear to have a positive effect. Leveraging social capital, that is, the ability to utilise relationships and networks outside of the firm also emerges strongly as a critical factor which allowed some firms to respond and recover more quickly than others. This combined with bricolage, the ability to adapt and create necessary resources and solutions from internal resources and/or resources outside of the firm, characterises firms that minimised the period of flood disruption.

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1. Introduction

In recent years flooding has emerged as a significant endemic risk facing individuals and organisations across the UK. Indeed, the autumn and early winter of 2000-01 saw the worst flooding in the UK since 1947; the 2007 floods resulted in the greatest loss of essential services since World War II; Cumbria and Aberdeenshire suffered severe flooding in 2009; and more recently the UK experienced its wettest winter for 250 years with the Chairman of the Environment Agency referring to extreme weather as “the number one challenge facing the nation” (Smith, 2014). Hazards such as modern day flooding require novel response and regulation (Hood et al, 2000), and urgently, given that milder wetter winters and localised extreme weather events are likely to be an ongoing feature of both national and global climate patterns (Stern, 2006; Pitt, 2008; UKCIP, 2010). The UK’s National Risk Register (2013) highlights flood as a source of significant and widespread impact on people, business, infrastructure and essential services. Whilst business, broadly, is vulnerable to the impacts of major disruption from flooding, small and medium-sized businesses are particularly so as they are less likely to be prepared for a flood event in comparison to their larger counterparts, and also have fewer resources to mobilise in response (Pitt, 2008; Woodman and Musgrave, 2013).

Moreover, SMEs are a key economic driver in Western economies and the backbone of the UK economy and local communities. In 2013, of the 4.9M private sector businesses in the UK, 99.2% were categorised as small (0-49 employees), 0.6% medium-sized (50-249 employees) and 0.1% large (≥ 250 employees). Small business can be broken down further to differentiate those organisations at the lower end – micro-businesses (0-9 employees) which in 2012 accounted for 95.5% of the recorded 4.6M private sector businesses in the UK. Government figures (BIS, 2013) show that the SME sector is responsible for 59.3% of UK private sector employment and 48.1% of turnover. SMEs are important to the economy in promoting economic growth and new job opportunities, often operating in niche markets and innovative in terms of new products, services, processes and work practices.

Despite all of this, organisational business continuity and resilience is as yet an under-developed area of research with a limited range of empirical data to draw upon, and even less research on SMEs (Herbane, 2013, Runyan, 2006, Sullivan-Taylor and Branicki, 2011). This paper addresses this gap in knowledge and presents some preliminary findings from an ongoing project which examines SMEs’ operational response, and longer term preparedness to, flooding in urban areas. The structure of the paper is as follows: firstly, we present our review of the relevant literature before going on to outline the research methods used. We then present some emerging findings before concluding with some thoughts on the implications of these findings and future research directions.

2. Literature review

2.1. *Small and medium sized enterprises (SMEs)*

A SME is not a ‘little big business’. The sector itself is highly heterogeneous, with firms ranging widely in scale, scope and market focus. More specifically, there is significant difference with large businesses in their ownership and management structure (entrepreneurial with a flatter structure); culture and behaviour (open and homogenous culture and organic); systems processes and procedures (simple, informal and adaptive planning and control processes), the management of human capital (Wong and Aspinwall, 2004) as well as being informationally opaque (Grunnert and Norden, 2012). They typically depend upon a smaller customer base within largely local or regional markets (Supuyenyong et al, 2009). In comparison to large business, SMEs are limited in the resources they possess (Sullivan-Taylor and Branicki, 2011) and have a concomitant lack of organisational slack, with cash flow and/or access to finance central to sustainability, leading them to be bank dependent (Grunnert and Norden, 2012, Zurich Re, 2013). Nevertheless, they do possess some practical advantages over large business organisations in their lack of bureaucracy, rapid decision-making, quick and effective internal communication, shorter decision chains, flexibility and adaptability (Vossen, 1998).

2.2. Business continuity (BC)

There is a dearth of research upon the resilience of small and medium sized enterprises (SMEs) to major disruption (Sullivan-Taylor and Branicki, 2011). However, there is broad consensus that effective response to disruption through preparedness can mitigate the impact of a major flood event on an organisation. This approach forms a cornerstone of a recognized business process - business continuity (BC) management (International Standard, 2012). BC is acknowledged to be an important tool for organisational resilience, indeed for organisational survival, in the face of disruption (Elliott, Swartz and Herbane, 2010; Herbane, 2010). BC is defined as [A] “holistic management process that identifies potential threats to an organisation and the impacts to business operations, those threats, if realised, might cause, and which provides a framework for building organisational resilience with the capability for an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities” (ISO 22301, 2012:s3.4). Effective BC can reduce organisational down-time and facilitate more rapid return to normality thereby lessening the economic impact at the level of the organisation and beyond. The independent review conducted in the wake of the 2007 floods highlighted the role of BC as part of any successful organisational flood response (Pitt, 2008). However, in the UK organisational engagement with BC remains patchy with less take-up by SMEs and third sector organisations, relative to larger organisations and public sector bodies (Woodman and Musgrave, 2013).

2.3. Resilience

Moving beyond the purely business process focus of BC, resilience has been defined more broadly as the ability to maintain positive adjustment under challenging conditions (Weick et al, 1999). However, whilst BC is clearly defined in a globally adopted standard, there is greater debate around a definition of resilience. This reflects distinct variation, across different disciplines, in the assumptions underpinning the nature of resilience. At one level, this diversity in conceptualization is most evident in the ‘tension’ between equilibrium and adaptation based perspectives. For example, in engineering, resilience can mean the ability to absorb energy in the elastic range (Nash, 1998; Pytel and Kiusalaas 2003), whereas ecological resilience envisions ecosystems as constantly changing and focuses on renewal and reorganisation processes rather than stability or equilibrium (Holling, 1973; Walker et al, 2004). This tension can also be seen in the single, albeit wide-ranging, domain of organisation studies. Wildavsky (1991:77) described resilience as “the capacity to cope with unanticipated dangers after they have become manifest, learning to bounce back”, whereas Lengnick-Hall and Beck (2003) argue resilience extends beyond ‘bouncing back’ and suggest it is an organisation’s transformational capability comprising a complex blend of perspectives, behaviours, processes and contexts. Sutcliffe and Vogus (2003) suggest positive adaptation over the long term, which they interpret as evidence of resilience, requires organisations to manage the trade-off between ‘growing’ (enhancing variation, innovation) and ‘building competence’ (efficiency, honing existing competencies). Scholars agree that achieving resilience demands rapid access to, and effective use of diverse ‘resources’.

Resourcefulness has been described as the capacity to identify problems and mobilise resources that threaten the system (Bruneau et al, 2003). The relationship between resourcefulness and resilience is evident in engineering (Bruneau et al, 2003), communities (Paton, 2000; Norris et al, 2008), organisations (Sutcliffe and Vogus, 2003; Lengnick-Hall and Beck, 2003; 2005) including SMEs (Demmer et al, 2011; Sullivan-Taylor and Branicki, 2011).

2.4. Social capital

When organisations (SMEs) are faced with challenging conditions, rapid access to various forms of resource can be a key determinant of organisational resilience. The concept of social capital offers the potential to provide insights into this process and thereby gain a better understanding of organisational resourcefulness in a time of major disruption. Social capital has been defined as “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or a social unit” (Nahapiet and Ghoshal, 1998). Nahapiet and Ghoshal’s (1998) framework comprises three inter-related dimensions: a structural dimension (network ties and configuration) providing access to resources; trust, norms and identification make up a relational dimension; and a cognitive dimension speaks of shared codes, language and narratives

providing shared representations, interpretations, and systems of meaning among parties. Although disaster research has shown social capital to influence the resilience of place-based communities who suffer impacts of earthquakes (Aldrich, 2012; Shaw and Goda, 2004) floods (Buckland and Rahman, 1999), power outages and domestic water supply contamination (Murphy, 2007), bringing the concepts together in the context of SME resilience has received little attention.

2.5. Path dependence

For organisations, history matters (Teece, Pisano and Shuen, 1997), or as Barney puts it, “as firms evolve, they pick up skills, abilities, and resources that are unique to them, reflecting their path through history. These resources and capabilities reflect the unique personalities, experiences, and relationships that exist in only a single firm” (1995:53). These unique resources form the basis for sustained competitive advantage, with capabilities emerging from a series of path-dependent learning experiences (Helfat et al, 2007). For SMEs, typically operating within the context of resource constraints and a concomitant lack of organisational slack, flexibility and the ability to reconfigure limited resource in new and innovative ways reflects a key strategic capability for survival and long-term sustainability. Bricolage, or the making do with what is at hand (Lévi-Strauss, 1966; Baker and Nelson, 2005), in order to combine resource for new purposes, frequently requires the ability to improvise (Baker, Miner and Eesley, 2003). Bricolage and improvisation may take place within the boundaries of the firm, or can also draw upon external relationships in the form of ‘network bricolage’ whereby personal and professional networks represent ‘what is at hand’ (Baker, Miner and Eesley, 2003).

3. Methods

This paper draws upon data gathered as part of a larger inter-disciplinary project which comprises of a number of case studies of flooding in the UK. The findings reported in this paper relate to one of these project case studies, an area in Sheffield which is home to approximately 300 SMEs and which suffered severe flooding in 2007. An exploratory case approach (Denzin and Lincoln, 2003; Yin, 1994) was adopted in order to gain insights into, and understanding of, businesses’ response to flood events within their local, regional and national context, and particularly the behaviours of SMEs from their experience of responding to the 2007 flood event. One of the authors had some pre-existing relationships across business and government in the locale and this, together with a mixture of cold-calling and snowballing resulted in a total of 22 organisations, ranging across manufacturing and service sectors and including representation from business support bodies. Semi-structured interview was the chosen method of data collection to (i) give the interviewee the opportunity to develop ideas and expand on issues which emerged (ii) allow the interviewer the opportunity to probe interviewee responses as appropriate, and thereby (iii) generate rich data which would then inspire new ideas (Siggelkow, 2007). The outline structure for the interviews was derived utilising current business continuity literature, policy and current best practice e.g. ISO 23301. This structure offered benefits in allowing the exploration of different stages of the flood event; from the pre-event level of normal operations and existing preparedness, through response, recovery and longer term learning. Initial pilot interviews were conducted by the two authors together and the interview schedule was adjusted and refined as a result. Qualitative analysis of the data is ongoing using the software, Nvivo. Preliminary findings are presented below.

4. Findings and discussion

4.1. Lack of BC and formal preparedness

The large majority of businesses interviewed did not have any business continuity provision or what might be termed formal prepared measures. The following response from a trade/retail business encapsulates the experience of SMEs interviewed, “*we had nothing in place [plans/preparations] no. It [the flood] came as a right surprise actually*” (SME7). On probing as to why there was a lack of planning for major disruption, such as a flood event,

time and resource constraints were frequently cited, with some highlighting of a perceived lack of expertise or the knowledge needed to engage with such a process. For others, typically at the smaller size range of SMEs, the expertise required to enable a response to a major event was inextricably intertwined with a deep and ingrained knowledge of the business which resides in the consciousness of the managing director, for example, this managing director of a recruitment company employing 10 people at the time of the 2007 flood stated, *“we are such a small business, it’s [the business continuity plan] in the head”* (SME8). The impact of resource constraints on inhibiting the development of continuity planning in SMEs was echoed by those whose role was providing support to local business. Again, smaller businesses were seen as particularly vulnerable in this respect, *“for SMEs, quite often if it’s one person and they’re employing, you know, their secretary and their son part-time. They have to do absolutely everything and to come up with an emergency plan, it just can’t take top priority.”* (Spt2)

However, there is some evidence of a level of operational risk management which could be described as a form of BC process with respect to data management. So, for example, *“continuity plan, not really no other than we’ve always had back-ups of everything. ... I take one of these home every night, a different one, and that’s there, the entire system backed-up and that was the case in 2007”* (SME11).

One might argue that the focus upon the protection of data is not wholly surprising given the penetration and embeddedness of information technology into business practice. This can be seen clearly when reviewing various surveys on business resilience in which data constitutes a key concern with data loss and systems failure frequently appearing high on the list of risks to be addressed in surveys on business resilience (Woodman and Musgrave, 2013). Whilst a lack of formal and established BC plans or process was a strong theme emerging from the case study, it was clear that the SMEs interviewed had managed a successful response and recovery to the 2007 flood event, albeit with varying degrees of speed and effectiveness. If, this was not achieved through formal preparedness measures, how then was it done?

4.2. Social capital

Our data shows that SMEs which found themselves facing major disruption from the 2007 flood were able to exploit their social capital for the necessary resources to help them survive its severe impacts. This allowed them to take action and mobilise resources needed to respond and recover which they had no planning for and which they did not possess in-house. SME12 is a property maintenance contractor. With no plans or flood defences in place the organisation’s main offices were inundated with flood water. Despite this, the organisation was able to use its social capital in the form of property maintenance network ties to access a rich pool of physical and human resources in order to initiate a rapid recovery process. Under normal conditions the organisation uses a nearby hire company for physical resources such as plant and equipment. SME12 was able to exploit its ‘purchasing power’ within this context to benefit from quick and preferential access to generators, dehumidifiers, and driers to facilitate a rapid office refurbishment. They were also able to access a rich pool of human resources,

“I mean the electrics were totally out, main breakers and everything. We had got a big generator down here, from Speedy next door. I think we got first pull on that because we do a lot of work with them, which was good. ... We cabled it all up. I would say that was back on by eleven o’clock, with a decent level of power which was pretty good to be honest.” (Operations Manager, SME12)

“We kind of used our own resources. This is the sort of thing we do, building, refurbishment works and things like that... So we have got the contacts there, it was getting the right kind of people in at the right time” (Operations Manager, SME12).

In describing “using our own resource”, the interviewee is referring to the organisation’s network of suppliers/contractors. More specifically, one might characterise this network as a form of social capital by which the SME can gain access to, co-opt or appropriate resource (Hamel and Prahalad, 1993) in the context of the exigencies of a major disruption. By leveraging their social capital SME12 were able to gain access to physical and human resources thereby facilitating a rapid office refurbishment and reducing the interruption to business.

SME5 is an independent commercial insurance broker which did engage in some limited business continuity planning. However, it is interesting to note that, leveraging of social capital was fundamental to their approach to this. This can be seen through the focus upon, and rapid utilization of the organisation’s contact list. Much of their business involves dealing with commercial property agents. When their offices flooded they were able to use their

business networks to quickly secure access to necessary resources including temporary use of alternative offices. This was achieved at a time of intense competition for a limited resource pool, when many other businesses were attempting to find alternative premises due to flooding,

“... we were quicker than HSBC and Halifax, who were trying to get the building that we got, we got there first... we got the premises sorted probably by 9, 9:30 the following morning” (Director, SME5).

The ability to secure rapid access to alternative premises has been achieved by a combination of simple BC planning in the form of a list of essential contact numbers constructed from their network of clients, and being able to exploit those network ties rapidly. This allowed them to access and appropriate necessary resources faster than other organisations.

SME15 is a sport and leisure facility. The facility includes a swimming pool which involves the storage of chlorine. The fire service has an interest in the facility because they will have to respond in the event of a Chlorine leak. Over time, a rapport has developed between the key personnel in the facility and the local fire service. So, for example, the fire service sometimes uses the facility for training purposes. In 2007, when the facility’s underground car park was flooded the fire service were ‘informally’ asked for their help. They pumped out the car park as a training exercise,

“And because of the relationship we have got with the fire brigade, and because we have got chemicals, chlorine gas and all sorts of stuff, we keep them very close to us. So we have got a very good relationship with them for several venues. They came down and did a training exercise and emptied our basement for us. Without that we would have been shut for months, not a week.” (Site manager)

The rapport and reciprocity between the sports facility and the fire service suggest a degree of social capital that can be appropriated in different circumstances and may be a useful and resourceful relationship during unexpected events. What emerges from the case study data is not simply that social capital is important in facilitating SME response and recovery but *how* it enables this in the form of resource access, co-opting and appropriation. Further, it allows rapid resource utilization, reflecting the need for urgent organisational action that characterizes one of the significant challenges posed by a major business disruption.

4.3. Path dependence

Most of our respondents voiced low perceptions of risk prior to the 2007 event and as such, they had not invested in forms of formal planning to guide their actions during the flood. However, the evidence suggests they did have the necessary capability to survive the impact of the flood thereby demonstrating their resilience. So where did these capabilities come from and how were they developed? We draw upon Barney’s work (1995) to suggest their development may be path dependent and that this is evident in the following examples in which organisational behaviours, or problem solving solutions, can be seen to be linked to the mind-sets associated with particular types of businesses.

When one engineering company (SME19) became aware of the risk of flooding they intuitively closed large roller shutter doors at each end of the workshop to prevent water entering. When the owner/engineer became aware of the magnitude of the water pressure he used his practical and engineering knowledge and partially raised both doors to alleviate the pressure thereby reducing the risk of the doors failing and directing the water out of the other end of the building. In the event of the roller doors failing the organisation’s machines and equipment critical to continuity of operations would have been inundated thereby increasing the severity of business interruption. This example can be described as ‘counterintuitive action’, an element of behavioural resilience (Lengnick-Hall and Beck, 2003, 2005), underpinned by an engineering mind-set and problem solving capability. Another engineering business (SME13) which was flooded manufactures wire products for a range of commercial and household uses. When the factory and adjacent premises became inundated with flood water the staff utilised their wire and fixing devices to create a safety rope across a flooded road thereby enabling stranded workers to make their way to safety. The SME’s resourcefulness is an example of bricolage – “making do with current resources and creating new forms and order from tools and materials at hand” (Lévi-Strauss, 1966).

In general, our case study SMEs used various ways to gather information to learn of the developing floods. These included radio, TV, internet, messages from van drivers and outworkers. A transport/courier business (SME10)

routinely uses internet traffic cameras to monitor city wide congestion to advise their drivers accordingly. During the flood the transport/courier SME used the traffic cameras to observe the development of the flood and make preparations. When their warehouse became marooned, the operations manager utilised computer software designed to show efficient delivery routes to work out a navigable route to convey the stranded staff to safety and home, using a lorry was used to do this. In this example the traffic camera, software and lorry are all existing resources used in novel ways and is another example of path dependent bricolage – a potential source for resilience (Weick, 1993).

The sport and leisure facility described above requires three 11kv onsite transformers to power the plant and flood lighting. During the developing stages of the flood, the site manager/electrical engineer's (SME15) actions to isolate the electricity supply avoided a potentially catastrophic escalation of events,

"... I shut the site down before it blew up. So we were evacuating the building, get the public out, and minimise the staff because when you are in that state you have only got emergency lighting for three hours, and after that there shouldn't be anybody in the building at all." (Site manager/electrical engineer). Using his electrical engineering knowledge, and 20 years of experience, he understood the immediate risks and took the necessary action to avoid a serious situation escalating into a disaster of greater order. Weick and Sutcliffe (2001) define resilience as "intelligent reaction and improvisation. To be mindful about errors that have already occurred and to correct them before they worsen and cause more serious harm".

5. Conclusions

As noted by Van Gils (2005), in general, SMEs have limited resources in the form of time, money and human capital. This is echoed by Sullivan-Taylor and Branicki (2011) whose study found limited resourcefulness for resilience in SMEs. To some extent our findings collide with these findings. Our observations suggest a high degree of resourcefulness embedded within business networks that can be accessed using social capital. Our findings also suggest SMEs have a 'knack' of using resources in novel ways thereby demonstrating innovation or bricolage. It is plausible that the resourcefulness and resilience demonstrated in our case study is influenced by other characteristics noted of SMEs. For example, whilst 'firefighting' (Ates and Bititci, 2011; Seville et al, 2006) may not always be the best means of dealing with everyday problems it does represent a core competence for the SME. This core competence means that staff and managers, experienced or comfortable with 'firefighting', may be well equipped when a major crisis unfolds to exercise the innovation, flexibility and rapidity that characterises organisational resilience.

"... we have spent a lot of years reacting to things like that. So I don't think we are too bad to be honest at reacting to things whether it be pipes bursting or you have no power or you have no water and you're flooded - deal with it. We don't sit down with our head in our hands and cry. It's right, you do this, you do this, and you do this." (Operations manager).

We do not suggest that informal relationships enabling access to resources is in any way better than more formal means of contingency planning or managing unexpected events, but our findings suggest resources embedded within both formal and informal business networks, i.e. network bricolage, should not be overlooked when planning for various form of business interruption. Future research shall explore, in greater depth, the nature of these informal relationships in order to better understand the significance for a conceptualization of resilience in the SME sector as well as managerial implications for enhanced organisational resilience to future flooding events and other types of major disruption.

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