

DOES A RURAL LOCATION MATTER FOR INNOVATIVE SMALL FIRMS?

How rural and urban environmental contexts shape strategies of agri-business innovative small firms

STRUCTURED ABSTRACT

Purpose

In this paper we present qualitative evidence on strategies undertaken by 34 innovative small firms.

Design

The sample of innovative firms is solely recruited from the agri-business sector and are located in contrasting environments varying from rural areas with low urban influence to areas with high urban influence and ‘main’ urban or city areas. We discuss strategies in the light of a theoretical approach that incorporates a resource-based view, dynamic capabilities and social network theory.

Findings

Although there is diversity in strategies across our 34 innovative small firms, irrespective of their ‘rural’ or ‘urban’ environment, qualitative evidence sheds light on differences in the way that strategies are pursued.

Research Implications

The study indicates that small firms in rural environments can be just as innovative as their counterparts in urban environments, however, we demonstrate that they adopt different strategies, that have been shaped by their environment, to achieve innovation. We use our qualitative evidence to develop the theory of dynamic capabilities and classify our sample into four clusters which marries the environmental context and innovative dynamic capabilities.

Originality and Value

The paper makes a contribution to a research gap on the way that the environment can shape management strategies in innovative small firms. It contributes to a limited literature in this area.

KEYWORDS

Innovation, customer co-creation, private equity, early adopters, rural and urban environments

INTRODUCTION

In this paper we examine how innovative small firms are able to achieve innovation in the context of urban and rural environments. It is arguable that research with innovative small firms in a rural environment is a neglected area of study. North and Smallbone (1996), now two decades ago, completed research with manufacturing firms in the North of England, and Patterson and Anderson (2003) with manufacturing firms in Northern Ireland. Innovative small firms have the potential to contribute to the rural sustainable environment, yet there remain only a few research studies with innovative small firms in a rural setting, most studies have been concerned with innovative firms and urban or city environments (Oakey, et al. 2013; Glaeser 2011). We argue that previous research that compares the innovative activities of small firms in contrasting environments has been limited and previous evidence has suggested that small firms in urban environments have advantages over their rural counterparts. Theoretically, small firms in urban areas should have resource and opportunity advantages arising from access to ‘thicker’ networks and larger local markets (Freel, 2003). However, there have been few studies that directly compare similar innovative small firms from the same sector which face similar issues in terms of access to resources and markets and development issues in the innovative process. Therefore, this paper directly addresses this research gap. The paper contributes to knowledge by comparing how the environmental context shapes innovation

strategies of small firms. This is an important issue since there have been calls for more work, in the relevant literature, to reveal insights into the importance of environmental context and entrepreneurship (McKeever et al, 2015). This paper uniquely compares strategies to achieve innovation with innovative small firms contrastingly located in urban and rural environments.

If we take McElwee and Henry's contention that there is little difference between rural enterprises and other enterprises at face value (McElwee and Henry, 2014), then it is arguable that rural innovative small firms will be similar to those in urban environments. However, the rural environment is clearly different from urban environments and this context needs to be recognised as providing a distinctive environment. For example, rural environments compared to urban environments are noted as having:

- More limited sources of skilled labour, although a firm's staff may be more loyal than in an urban environment.
- A more ageing workforce and demographics.
- Thin as opposed to 'thick' social networks which are more likely to have 'structural holes' that can be difficult to bridge (Burt, 2000).
- A more limited extent of weak social ties, which an innovative small firm will need to access information (Granovetter, 1973).
- More scarcity of sources of venture capital, although a close relationship may exist with commercial banks.
- Greater distance from major markets.
- More stretched and limited capability communication media including broadband.

A developing literature on entrepreneurial ecosystems lends support to the view that innovative entrepreneurs face greater challenges to access and reconfigure resources in rural environments

which suggest such ecosystems will be less developed than urban areas with a weaker and more dispersed innovation ‘milieu’, for example, see Spigel, (2017).

The sample of innovative small firms were located in New Zealand, which has contrasting rural and urban environments, these are explained later in our section on rurality. We examine qualitative evidence on the process of innovation and business growth with a sample of 34 innovative small firms which are almost evenly split between rural and urban localities. It should be noted that these two sub-samples are not matched apart from that we hold the sector constant, as the full sample of 34 small firms were all recruited from the agri-business sector. More comment on the sample is made in the methodology section. In our literature review we develop a theoretical framework, this forms a basis for analysing findings and for a discussion section.

The rest of this paper is organised as follows: We provide a literature review that covers definitions of rurality, a theoretical framework and a brief review of previous research, then we describe our methodology and findings before a discussion and a conclusion section. In the discussion section we draw on the qualitative case evidence to extend and develop dynamic capabilities theory.

LITERATURE REVIEW

Rurality

Statistics New Zealand (2004) developed a classification of urban and rural New Zealand that is not only based on population size, but on proximity to and dependence upon main urban areas. The classification acknowledges the increasing diversity in communities i.e. those that are geographically rural and rely predominantly on primary production compared to those that are geographically rural but rely on employment in nearby urban areas. As a result, a seven point graduation from main urban areas to highly rural areas was developed (Statistics New

Zealand, 2004). This has been up-dated more recently with an additional category added, that of ‘area outside urban/rural profile’ to capture a number of other areas outside the urban/rural profile (Statistics New Zealand, 2012).

<Take in Table 1 here>

This classification of rurality is used as the basis for the categorisation of our sample firms which is shown in Table 2. In terms of our research design we group together all innovative small firms that are located in the three urban categories (in practice two categories) to compare with a rural grouping (in practice two categories).

<Take in Table 2 here>

A theoretical framework

It is arguable that there are a number of theoretical considerations, due to distance and environment, that will affect the strategies of rural and urban innovative small firms. A resource-based view (RBV), for example, would contend that innovative small firms in rural areas can be expected to be ‘resource poor’ due to limited scarce resources and a restricted technological base in rural environments (Barney, 1991; OECD, 2007). Theoretically, innovative capability may be limited by both resources and opportunity (Smallbone, et al. 2002). Consequently writers such as Vaessen and Keeble (1995) and Smallbone, et al. (2002) have suggested that innovative small firms in rural locations, compared to those in urban locations, will be: smaller in size, slow to innovate, have limited networks with higher rates of self-employment and family labour (Cosh and Hughes, 2000).

Locational studies suggest that firms have a greater incentive to locate in urban or ‘city’ areas because of ‘externalities’, that is, innovative activity is higher, networks and clusters provide greater spin-offs and resources are easier for firms to obtain (Glaeser 2011). McCann (2007) suggests that location of firms depends on the frequency of innovation. However, Fearne et al,

(2013, p. 1305), from a study of agro-food micro and small firms in the Valencia region of Spain, claim that: “rural areas do not pose a handicap for firms to undertake innovative actions.” Other literature has suggested that firms can ignore innovative activities of their neighbours (Freel, 2003), nevertheless the predominant view is that innovative activities of small firms will be higher in resource rich environments such as cities and urban areas (Glaeser, 2011) and in industrial districts. For example, Capasso, M. and Morrison, A. (2013) examine the determinants of innovation in an Italian industrial district and find that innovation is driven by firms which are focused on core competences and high value-added activities.

A social network theory (SNT) perspective is closely related to the RBV and suggests that business networks in rural locations are likely to be thinly dispersed and limited in the extent of strong and weak ties, firms involved may lack centrality and networks are more likely to have structural holes. The number of business-related events will also be limited, although this does not mean that other opportunities may exist through specialised events such as rural craft fairs and farmers’ markets. A business can gain value from a network through strong or weak ties (Granovetter, 1973). Strong ties build trust and are important for transferring tacit knowledge, such as knowledge of innovations, weak ties are more important for transferring information about complex knowledge. In rural areas, networks will be thinner and lack weak ties, which are important for the innovative capability of small firms. Structural holes in a network exist when individuals are unable to gain access to information contained in the broader social network (Burt, 1992), for example, start-up businesses may have limited access or knowledge to networks of VCs, but a business incubator or independent agency may be able to ‘bridge’ such a structural hole, something that is more difficult for those firms without easy access to such agencies. According to Burt (2000) a firm’s or individual’s ability to bridge structural holes enables them to extract value from a network. It can, for example, explain a firm’s decision to recruit a specific individual with expertise to gain access to networks in target

export markets. Centrality refers to a central position in a network in relation to communication and the exchange of information (Freeman, 1978) implying that location in a social network matters to gain the benefits of membership. Applied to the location of innovative small firms, it means that firms may need to avoid the periphery of personal networks (which often apply in rural areas) to ensure access to key markets and potential customers. It is arguable that innovative small firms in rural localities will find it difficult to bridge structural holes.

Networks, in rural areas, however, can provide testing grounds for new business ideas and new products without the risk of larger nationwide launches (Cameron, 2005). In addition, once a business network is established, it will be able to generate profile for local businesses in rural areas. This may be achieved by on-line business networks (Galloway, et al. 2004). It is arguable that such networks may be more responsive to their business members' needs than those in urban areas and levels of trust may also be higher. For entrepreneurs and directors, social network relationships include the following: personal networks of relationships with friends and family and voluntary relationships; associative networks of relationships with other members of associations to which the entrepreneur/director belongs; professional networks of relationships with staff, suppliers and customers and institutional networks of relationships with different private and public sector institutions (Johannisson, 2008; Hernández-Carrión, et al. 2016).

The dynamic capabilities literature adds a dynamic perspective to the static RBV approach (Fitjar, et al. 2013). New product development (NPD) involves distinct development stages including R&D and prototyping which are all part of a dynamic innovation process that will have considerable diversity across innovative small firms. Considering dynamic capabilities allows modification of the RBV approach to address this issue and focuses on a firm's ability to renew and reconfigure its resource base.

The dynamic capabilities literature recognises that environments and opportunities facing firms change over time and management has a distinctive role in the strategic reaction to changing opportunities (Teece, 2007). Helfat and Peteraf (2003, p.997) define dynamic capabilities as a firm's capacity to 'build, integrate and reconfigure other resources and capabilities (including) all organisational capabilities'. Management of firms have to decide how to re-organise internal resources such as staff and information and combine these with partnerships external to the firm, for example links to research institutions (Teece, 2009). Innovation is a complex process that may require the coordination of information across a number of groups and organisations over time (Fitjar, et al. 2013). The dynamic capability view focuses on a firm's capacity to renew and reconfigure its resource base in the light of changing environments (Eisenhardt and Martin, 2000; Ambrosini, et al. 2009).

The dynamic aspect refers to intentional change of the firm's resource base rather than changes in the environment (Ambrosini and Bowman, 2009), implying that firms can build their resource base to respond to changing opportunities. A firm's competitive advantage still lies with its resource base, but capabilities are now determined by management's capability to learn from practice and experience (Teece and Pisano, 1994). Applying a dynamic capabilities approach to innovative small firms in contrasting environments, suggests that a greater premium will be placed on the entrepreneur's leadership and capability to organise and reconfigure resources over time in rural areas compared to urban areas and, as indicated earlier, this may be achieved in rural areas, but it may be more difficult to respond and may take longer in rural areas. However, as mentioned in the introduction, there has been little specific work that addresses *similar* small firms in different environmental contexts despite a burgeoning dynamics capability literature.

There are a number of limitations and deficiencies with the existing empirical work on innovation and small firm innovation performance. First, the majority of studies exclude

smaller firms, making the assumption that smaller firms (fewer than 20 employees) will not be able to practice organisational learning (OL), such as team-based learning. Acquisition of OL is used as a proxy for acquiring dynamic capability. Second, being survey-based, they rely on respondents' recall to measure firm performance over time, such as sales and employee growth and are 'distant' in nature. Third, indirect measures are used as a proxy for firm performance, such as increases in entrepreneurial orientation or internationalisation activity. Fourth, the inclusion in such studies of internal processes within the firm that affect activities such as learning and innovation are limited, since they are difficult to identify and measure in small firms through survey-based and quantitative studies (for example, see Frank, et al, 2012).

This study is qualitative and arguably more appropriate for examining dynamic capabilities of entrepreneurs in response to different environments. Therefore, this paper contributes theoretically to the dynamic capabilities literature by examining contrasting responses of entrepreneurs in small firms in their strategic responses in different contexts.

In summary, combining RBV with social network theory and a dynamic capabilities perspective provides a theoretical framework which suggests that in rural environments compared to urban environments: a greater premium will be placed on an innovative entrepreneur's capability to access information and knowledge from local networks, to reorganise and reconfigure resources over time and to be resourceful, it may mean making resources stretch further, it will mean learning to cope with limited resources. Innovation will still be achieved but it may take longer and it may require a more resourceful approach.

RESEARCH METHODS

A qualitative approach was employed. This approach was appropriate because our objectives were to understand the role of factors affecting the process of innovation and the perceptions of entrepreneurs within the subject community (that is, entrepreneurs of innovative small firms)

(McKeever, et al, 2015; Pratt, 2009). The qualitative approach also provided a way of locating the issues in context, both conceptually and empirically: we used theory (based on the literature) as the framework for asking the questions, and we went beyond description to seek explanations about factors affecting the role of innovation and about the variety of responses to this from our respondents.

Our sampling was purposeful (Gartner and Birley, 2002; Pratt, 2009), with 34 principal respondents from a diverse range of agri-business firms. Conceptually, our sample comprised entrepreneurs known to be actively engaged in technological developments in the agri-business sector. Some were identified from local knowledge and from contact with local business development organisations and incubators; the presence of the researchers in the various communities allowed identification of additional respondents through snowball sampling. The choice of new respondents was driven primarily by what they might contribute to the emerging theory (Alvesson and Skoldberg, 2000; McKeever, et al., 2015).

For data collection, we undertook a qualitative in-depth interview programme, with face-to-face interviews (Appendix, Table 3). The interviews with respondents were conducted using an open-ended interview guide which was used to investigate the role of factors affecting innovation in the context of issues and challenges faced by the respondents. The interviews were loosely structured, starting with broad questions about the individual respondent's business and innovative activity, with subsequent questions arising through dialogue between the researcher and respondent. It was important for the interviews to be sufficiently open-ended to allow for the exploration of additional themes from the data. The further nine interviews with key informants were used to provide thick description (Geertz, 1973; McKelvey, 2004; Jack, 2005, McKeever et al., 2015) and a general picture of the agri-business and technology environment. The research approach allowed for significant patterns to emerge as they cut across multiple experiences of respondents (Patton, 2002). Low risk ethical approval was

obtained from Massey University's Human Ethics Committee and interview respondents were offered the opportunity to review the transcripts and make subsequent changes before analysis of anonymised transcripts was undertaken.

The interviews ranged between one and two hours in length and were recorded and transcribed verbatim. Besides the notes taken during the interviews, an expanded account was made within four hours of the interview, to fill in details and to recall things that were not recorded on the spot. The authors met to discuss these experiences and recordings, forming an introspective record of field work, enabling the authors to take into account personal biases and feelings, and to understand their influence on the research (Emerson, Fretz and Shaw, 1995; Salvato and Corbetta, 2013).

As is typical in inductive research (Miles and Huberman, 1994), we analysed the data by first building individual summaries, by synthesizing and comparing the interview transcripts and our field notes collected after the interviews. Analysis was undertaken with QSR Nvivo qualitative data analysis software, utilising nodes derived from theory, but also allowing new codes and nodes to be established from the data. Respondents were offered the opportunity to review the transcripts and make subsequent changes before analysis of anonymised transcripts was undertaken. Although a number of firms could be described as mature, in a small number of cases their activities comprised a period of non-technological development as they were still engaged in R&D for new products¹.

FINDINGS

Theoretically, using RBV and dynamic capabilities perspectives we can expect such firms in rural locations may have to adjust the organisation and reconfiguration of resources over time

¹ This illustrates the difficulty of applying terms such as 'early stage' and 'mature' to innovative small firms as their stages of development can differ and are not necessarily correlated with the age of the business.

more than those in urban locations. These firms may have more limited access to networks and limited customers, although more strong social ties may exist in rural localities. These theoretical propositions are used to discuss the qualitative findings.

Access to resources and the capability to reconfigure

Table 3 (see Appendix) lists and describes the strategies adopted by innovative firms in rural areas using the Statistics New Zealand summary classifications of rurality. Table 4 (see Appendix) provides a grouped summary. For example, the tables indicate whether companies undertook R&D internally or were able to utilise partners, whether they were involved with customers with co-creation of new products and whether the companies were able to rely on early adopters for feedback and development of their product. Access to resources includes external private equity for finance or whether the company was reliant on internal funding, indeed in some cases having to resort to bootstrapping and for staff the tables indicate whether firms sought to recruit and were able to acquire skilled labour or whether they were reliant on recruiting local (unskilled) labour and in-house training. It should be noted that an individual firm may have combination of such strategies so there is some double counting in Table 4.

Building and reconfiguring capability meant learning from trial and error, the respondent from company #12, located in a rural area with moderate or low urban influence, discussed how the company has been able to build and reconfigure capability from previous experience and thereby improve the company's capacity:

The machine that we have built is capacity wise five times faster than anything that we've got so it's a large capacity operation and the beauty of going somewhere to do it was obviously we were constrained on size and volume and building size here, but more importantly the idea was to go to the North Island because all our by-product from our production currently gets shipped up there anyway. #12

The innovative small firms in rural areas also needed to find novel ways in which they could reconfigure resources. However, pragmatic and novel solutions were still in evidence from innovative small firms located in urban areas who needed to reconfigure the company's resources to be more mobile. For example, the respondent from company #32, located in a satellite urban area, discussed how they were able to make their machinery more adaptable. From an originally static operation, they had found that adapting their machinery to work in a mobile manner, they could access more staff and build knowledge of operation with potential customers, a pragmatic solution to make machinery work in new applications:

We not only get to see the managing director and the production guy, we get to see the chief engineer, we also get to see the apprentice because they'll drag the apprentice out, he might be told we need you to go and sort that thing out on that machine down there, he'll come and say remember that thing on that trailer I saw a few weeks back, he says that's what I need on that machine, whereas we might not have got that sort of enquiry, and that apprentice or the young engineer or whatever who never gets to see our technology, all of a sudden he's getting to see that and he can relate it to what he requires in his work and hopefully he gets into a position of power one day and decision making, he might remember us. We can start to build that relationship. #32

However, making machinery work in novel ways or finding solutions to innovation without large scale investment and R&D was more in evidence in the firms located in a rural environment. This willingness to reinvest was accompanied by resourcefulness and ingenuity. For example, with case #14, located in a rural area with low or moderate urban influence, the company had to make the equipment work, not in their premises, but to be mobile and operate in different locations. This illustrated the nature of 'trial and error' identified in our literature review, but also capability and ingenuity to make it work successfully.

There are some advantages, size of the operation, speed the ability to process quickly and also where we can do it from. In the event this place burnt down tomorrow we would still be up and running, so there's lot of advantages to having it and we have found it very handy lately when we've had some really big orders we've got to produce we can just crank it up and get them out in a week which whereas our existing facility it would take us a month to do it. #14

Theoretically, we may expect more limited access to sources of finance in rural areas and similarly expect innovative small firms in such localities to rely more on internal resources, although relationships with bank managers may be closer compared to innovative small firms in urban areas. In this study, across both urban and rural innovative small firms, entrepreneurs were willing to search for and obtain private equity investors through their own network of contacts, which were preferred to seeking angel or VC funding. However, it was noticeable that there was a reluctance to seek external funding from those firms located in rural areas. An example is provided from the respondent with company #14, located in a rural area with just moderate or low urban influence, who was prepared to manage the pace of innovation and change development of his company rather than for example, seek borrowing or large scale equity investment:

And so I grew out of earnings, I never borrowed to grow and it meant that I grew a bit slower than some companies, but it meant that if anything went wrong, I wasn't going to lose my house and I wasn't going to lose my shirt. #14

A high level of patience was also in evidence from innovative small firms who were prepared to undertake a search procedure for private equity investment. An example of a search process that was undertaken from start-up, is provided by the respondent from company #17, located in a similar rural environment, again patience was exercised until they could form a team of

investors that had local knowledge and earned the company's trust, an important part of local networks and social capital:

From the time we started [the company], we knew we had to get some investors on board. My co-founder and I, we had a little bit of seed funding that we had put into it, but right away we started looking for an angel investor group – we were looking for \$200k mainly to get some early pilot skilled studies done in mastitis and to get some sales efforts going in human health. It ended up taking us two years, so we ended up funding it a lot longer than we had planned, but it didn't grow as nearly as quickly as we had hoped because we had limited funding. We finally secured a local group of investors along with the New Zealand SCIF² Scheme. We've had them on board for 2½ years,... in the end they came back and it's been great because they are local. #17.

Noticeable in rural environments was the gradual emergence of dedicated business angel networks (BANs) within the agri-business sector, something that had been encouraged by local development agencies, recognising the need for more dedicated sources of venture capital. One company that found such a local solution is described to us by the respondent from company #29, a company located in a rural area with only low to moderate urban influence:

It was my company and I did an Angel Investors pitch and got the new shareholders in, because I'd taken (name of company) as far as I could go myself –it was long winded, it was a hell of a lot more involved than what I thought it would be, but I think the benefits far outweigh the negatives. They are all enterprise angels which are Tauranga based, all of them, apart from one, which is SCIF– the seed capital investment fund – the rest of them are either associated with the kiwi fruit industry, there's a lawyer who

² The SCIF Scheme is a Fund operated by New Zealand Venture Investment, an early stage Co-Investment Scheme, which encourages early stage business angel financing through matching co-investment partners (see <http://www.nzvif.co.nz/seed-co-investment-overview.html>)

was involved in Zespri, but now in private practice, and there's a merchant banker and director, so they're different roles but they bring different skill sets. #29

Access to networks

Table 3 (see Appendix) gives an indication of the importance of personal and professional networks of the entrepreneur/director using the classification given by Hernández-Carrión, et al. (2016). These are used primarily to build and acquire social capital including strong and weak ties. Networks are important for identifying and working with partners for R&D and for using customers as early adopters. Although access to networks is important across all categories of rurality, dynamic aspects are important and there were indications that information, knowledge and expertise were acquired over time.

For example, the entrepreneur from company #15, located in a rural area with moderate or low urban influence, a provider of technology-based services to the farming sector, commented on how his local knowledge and networks enabled the development of the company.

I guess I have been involved in the industry for 10 or 12 years, it's just utilisation of those networks I guess --- so some people probably see the business and think that it's had huge growth and it's accelerated growth, but it's a result of 10 or 12 years of networking within the industry and then sort of pulling all that together in a short time.

#15

As might be expected theoretically access to partners to jointly undertake R&D was more in evidence in areas with a high urban influence. For example, company 31, located in a main urban area, indicated that they collaborated with other companies in the sector:

Because they don't see us a competitor, so we've collaborated on making (product) with other breweries, and we've bounced ideas off them and they've given us export

contacts, and given us leads on tap outlets to get our product into different bars and outlets which has been great as well. #31

Within local networks, the role of early adopters in local markets and local networks was important, not just as a testing ground, but also for demonstration purposes. The comments from the founding entrepreneur with company #05, located in a main urban area, indicated that their customers (New Zealand dairy farmers) were early adopters who can provide information to other potential customers.

The other strategy we have is really trying to use, because the majority of our customers we know are early adopters and are recognised as such in their communities, to actually use them as the centre of the sale and to actually focus their bits on working out from there because farmers sell to farmers, so they like to be able to go and talk to someone who has got it. #05

Our qualitative findings indicate diversity in strategies and practices of innovative small firms across both rural and areas with a strong urban influence. The summary table, (Table 4) indicates no clear pattern of particular strategies by location. **There is also no clear pattern of industry sub-sector effects (Table 5, Appendix).** We turn to discuss these results in more detail in the light of the theoretical framework in our discussion section.

DISCUSSION

Theoretically firms in rural environments that have a low or moderate urban influence face a leaner environment than firms in environments that have a high urban influence. A theoretical framework that involves a combination of the RBV approach, dynamic capabilities and social network theory suggests that innovative small firms may have to pursue subtly different strategies to acquire resources and achieve innovation in contrasting rural and urban environments. We discuss the qualitative evidence in the light of this theoretical framework.

In more rural environments with low to moderate urban influence we can identify a number of strategies that were subtly different across contrasting rural and urban environments and these are contained in the summary comparison table, Table 4. These include the following: *stretching resources*, through techniques such as bootstrapping and bricolage; *developing resources* such as training local unskilled labour, *sharing resources* by working with partners on R&D, *accessing information and resources* through networks, such as access to private equity investment, and *recruiting customers as resources* through customer co-creation and the utilisation of early adopters.

Stretching resources. Faced with a lean rural environment there are a number of ways that innovative small firms were able to stretch their resources. For example, this may involve making assets and existing equipment work in different ways as was described earlier for companies #14 and #15, located in a rural area, they sought to apply machinery in new ways. However, such bricolage was also demonstrated by company #32 from a more urban area, but in a subtly different way ensuring that their existing machinery could be adapted to operate to meet different needs of existing customers rather than seeking new customers. Bootstrapping, of course, may be undertaken by all firms irrespective of location and may have more association with the stage of development of the firm, for example, being utilised at an early start-up stage when a track record is yet to be established. Hence there is no particular pattern across different environments. However, it is noticeable as might be expected, that accessing external private equity was more noticeable in areas with a high urban influence. Such resources were achieved over time as networks became more established for innovative small firms in areas with less urban influence.

Developing resources. The last point in the previous paragraph, illustrates that resources can take longer to acquire for innovative small firms in rural areas and areas with low urban influence. Partly, this is because social networks take time to develop in more rural areas, as

would be suggested by social network theory, however, having been developed over time, they may consist of strong social ties which can be used to gain information and direct resources such as external finance. It was noticeable that only those firms that were in the main urban areas or satellite urban areas actively sought skilled labour as strategy to enhance their innovative capability. Firms in areas with lower urban influence relied upon training local labour as a strategy. Such strategies support the dynamic capabilities approach to firm innovation. Small firm entrepreneurs were able to recruit and reconfigure resources, in areas with low urban influence this had to be in a flexible manner, again over time, recruiting unskilled labour and relying on in-house training.

Sharing resources. Innovative small firms may undertake collaborative R&D with partners, such a strategy effectively shares resources between firms and spreads the costs of R&D. Theoretically innovative small firms in urban areas should have more opportunity to undertake such a strategy. However, Table 4 indicates that there was still evidence that this occurred in rural areas where there were existing links that could be exploited. For example, as with companies #20 and #25 links were maintained so that R&D could be jointly undertaken. As might be expected in rural areas that have only a low urban influence, opportunities for such collaboration are rarer and may require a longer search process to establish.

Accessing information and resources. The development of personal and professional networks were important to all the firms to access information and resources, irrespective of their locational environment. However, there were some noticeable differences in the way that networks were used. In the more rural environments, networks depended on strong social ties that took time to establish. For example, we have company #15, located in a rural area with low urban influence that accumulated knowledge and information over more than a decade. We have company #16 located outside the main urban centres that was prepared to follow a strategy of paced expansion, relying on internal resources, that allowed the entrepreneur to

build social capital through personal networks. In practice then, how innovative small firms access information and resources depends on the approach of their founding entrepreneur which can vary from seeking early partners to building resources and knowledge more slowly over time.

Recruiting customers as resources. Strategically, customers can be used as a resource in a number of ways. They may be used to provide feedback on new developments of products, they may be used more actively as co-creators where their feedback is incorporated into R&D or they may be used in partnership as early adopters with prototype testing. In theory, firms in more rural areas have less accessibility to environments in which they can test prototypes and may use a limited number of local and trusted customers for such testing. This was the case for a number of our companies in the more rural areas who relied on trusted customers for testing prototypes. Of course, this is still a strategy that can be used in the main urban centres if the opportunity and linkages are appropriate, in the main urban centres, however, such a strategy was used where early feedback was important to the firm such as in software development or remote monitoring, whereas in the more rural areas such strategies were resorted to with farm equipment products or animal and plant applications that required longer R&D and prototype development times (see Table 3, Appendix).

An absence of industry sub-sector effects on location and implications for clusters

It is feasible to suggest that patterns of innovative small firm location may be influenced by the nature of the industry sub-sector in which they operate. For example, digital and software firms may be more flexible in locational requirements than manufacturing and engineering firms. Although, this issue is not central to this paper, it is worth noting, as shown by Table 5 (see Appendix) that there are no apparent industry sub-sector effects on location, apart from the need of fruit producers to be in more rural locations.

This absence of industry sub-sector effects implies that, for our sample of innovative small firms, there is little attraction to locate in 'clusters' of similar innovative firms where, theoretically, it has been claimed that innovative firms and local economies benefit from externalities, sub-sector networks and information spillover effects (Porter, 1998). Although firms do access information from networks over time, there is little evidence of direct information exchange from local networks and clusters. This paper supports the alternative view of Huber (2011) which has questioned whether clusters matter for innovation practice in firms.

Developing the Theory of Dynamic Capabilities

In this paper, we have taken an organisational capability perspective on small firms' innovative behaviour within two contrasting contexts of urban and rural environments. The dynamic capabilities (DCs) literature, recognises heterogeneity between firms and in different contexts and refers to a firm's capability to dynamically deploy a combination of resources (Amit and Schoemaker, 1993). Taking an organisational capability approach we have extended the theory of DCs (which itself builds upon and develops the RBV approach) through our discussion of the way that firms have been able to modify, develop and deploy resources over time through the strategies discussed in this section.

These are further illustrated in Figure 1. Combined with Tables 3 and 4, Figure 1 illustrates the importance of different contexts mapped against innovative DCs. Context becomes less urban and more rural on the horizontal axis, moving from main urban areas to rural areas that have moderate to low urban influence. On the vertical axis we can identify increasing innovative DCs which incorporate a range of strategies identified in our discussion section. We can represent this as moving from simply accessing information and resources at the lower end of the scale through developing resources, sharing resources, recruiting customers as resources

and eventually stretching resources (as identified through bootstrapping and bricolage) at the higher end of the axis. This produces a matrix of four clusters of our sample of small innovative firms:

Cluster I includes firms in urban classified areas (both main and satellite urban areas) that have engaged in sharing and stretching resources (including using customers as resources and early adopters). In cluster I we have classified eight firms (#02, #16, #22, #23, #27, #30, #31, #32).

Cluster II includes firms in rural areas (both those with high urban influence and low to moderate urban influence) that have engaged in sharing and stretching resources. In cluster II we have classified 13 firms (#01, #03, #05, #07, #10, #11, #12, #13, #14, #15, #25, #29, #33).

Cluster III includes firms in urban classified areas that have been able to access and develop resources locally or elsewhere, but have not had to engage in sharing and stretching resources. In cluster III we have classified seven firms (#08, #18, #19, #24, #26, #28, #34).

Cluster IV includes firms in rural classified areas that have been able to access and develop resources locally or elsewhere. In cluster IV we have included six firms (#04, #06, #09, #17, #20, #21).

<Take in Figure 1>

Figure 1 illustrates diversity in the pattern of the location of innovative small firms when combined with their strategies to achieve innovative dynamic capabilities. However, although there are examples of rural firms located in both clusters II and IV, the significant majority are located in cluster II, indicating that more are engaged in utilising, sharing and stretching resources. With urban firms, likewise there are examples of firms in located in both clusters I and III, but significantly there is an almost even split between these two categories. This confirms the overall heterogeneity of strategies in innovative small firms, but it does suggest

that those located in rural environments are more likely to engage in resorting to involving strategies such as bricolage, bootstrapping and recruiting customers as early adopters. There is less need for these strategies with innovative small firms in urban environments.

IMPLICATIONS, LIMITATIONS AND CONCLUSIONS

The study has a number of implications for policy makers and development agencies, entrepreneurs and small business owners of innovative small firms and for future research studies with innovative small firms.

First, for policy makers and economic development agencies, it is important to recognise the resourcefulness of small firm entrepreneurs in both rural and urban environments, but at the same time to recognise that strategies to achieve innovation are a response to accessibility of resources and reflect the dynamic capabilities of entrepreneurs in responding to contrasting environments. Thus policy should *not* be a one size fits all approach, but be dependent and flexible and responsive to different environments. For example, policies that have been successful in rural contexts have reflected the need to encourage relevant networks for similar firms increasing access to knowledge and potential private equity investors and support is virtual and online. At the same time, case studies of innovative small firms in rural areas could be used to ‘surface’ success and raise their profile for potential private equity investors. In urban environments networks will already exist, but there may be a need for more relevant management development programmes that are accessible.

Second, entrepreneurs and small business owners need to develop strategies that are appropriate for different contextual environments. In rural areas this may mean learning from existing firms, developing social networks with ‘peer’ groups and investigating and accepting that achieving innovation may require unique strategies that utilise additional resources such as customer co-creation. For rural entrepreneurs, it may mean that greater emphasis needs to

be placed on the role of early adopters for feedback, learning, trial and error and prototype development.

Third, we suggest that a research agenda should include future research studies with innovative entrepreneurs that can expand on the current study in a number of ways, these include longitudinal studies through individual case studies of similar innovative small firms (or smaller samples) in different contexts over time to more fully capture the changing dynamic capabilities, learning and their effect on small firms' innovative activities. Further, there is a need to compare internationally strategies in different contexts and in different environments to recognise how different contexts can shape innovative strategies. These areas remain important research gaps.

Finally, although the current study has contributed importantly to our understanding of how innovative small firms' strategies are shaped by different contexts, it has limitations from the current paper's focus on qualitative empirical evidence. This focus has not allowed us to further develop RBV and dynamic capabilities theory. Despite the important conceptual work that has been achieved in the literature in this area, it can argued that it is still biased towards large firms, their greater access to resources and the assumption of urban environments. Therefore, there is a need for the development of an appropriate conceptual framework that takes account of rural environments, small firms' limited resources in such environments, markets and different strategies that are likely to be adopted.

We have examined the strategies adopted by 34 small firms to achieve innovation all operating in the agri-business sector, but located in different urban or rural environments. Table 3 indicates the diversity of such innovative small firms irrespective on their locational environment, so we need to be careful in drawing conclusions about the importance or influence of different locational environments. The predominant view in the literature is that

urban or city environments provide externalities and access to resources for entrepreneurs and small firms to be more capable of achieving innovation than might be the case in more rural environments. Management theories such as the RBV and dynamic capabilities reinforce such an expectation of small firms and their relative capability to achieve innovation across such different urban and rural environments. Despite these predominant views and expectations, however, we have presented qualitative evidence that suggests a rural location need not be a disadvantage to the capability of a small firm in achieving innovation. A rural environment, though, does mean that the entrepreneur and small firm has to adapt to that environment, it may mean that have to be more flexible and it may mean that they have to adapt their strategies to achieve innovation which may be subtly different from those adapted in more urban or city environments.

Strategies adopted by our sample of innovative small firms ranged across approaches to accessing, developing, sharing and stretching resources to improve their capability to undertake innovation. There were examples of similar strategies across different environments such as accessing local networks to develop resources, working with partners to share resources and developing techniques to stretch existing resources such as bootstrapping and bricolage. These were in evidence across different environments. Noticeably, however, in more rural environments the entrepreneur has to be willing to adapt strategies that utilise local networks and customers, these include active use of early adopters, access to information and unskilled labour from local networks over time indicating that how resources are reconfigured will be different in urban and rural environments. Such a dynamic capabilities perspective indicates that innovation is still achieved, irrespective of environment, but how it is achieved can be very different.

REFERENCES

Alvesson M and Skoldberg K (2000) *Reflexive methodology: New vistas for qualitative research*. London: Sage.

Ambrosini V. and Bowman C. (2009) “What are dynamic capabilities and are they a useful construct in strategic management?”, *International Journal of Management Reviews* vol 11, no 1, pp 29-49.

Ambrosini V, Bowman C, Collier N. (2009). “Dynamic capabilities: an exploration of how firms renew their resource base”, *British Journal of Management* vol 20, no 1, pp 9-S24.

Amit, R. and Schoemaker, P. (1993). “Strategic assets and organizational rent”, *Strategic Management Journal*, vol 14, no 1, pp 33-46.

Barney, J. (1991) “Firm resources and sustained competitive advantage”, *Journal of Management*, vol 17, no 1, pp 99-120.

Burt, R.S. (1992) *Structural Holes: The Social Structure of Competition*, Harvard University Press, Cambridge.

Burt, R.S. (2000) “The network structure of social capital” in *Research in Organizational Behavior*, Staw, B.M. and Sutton, R.I. (eds) Elsevier, New York, pp 345-423.

Cameron, A. (2005) “Farmers’ Markets as Small Business Incubators and ‘Reverse’ Incubators– Evidence from New Zealand”, paper presented to the 4th Rural Entrepreneurship Conference, Aviemore.

Capasso, M. and Morrison, A. (2013) “Innovation in Industrial Districts: Evidence from Italy”, *Management Decision*, vol 51, no 6, pp 1225-1249

Cosh, A. and Hughes, A. (2000) “British Enterprise in Transition: Growth, Innovation and Public Policy in the Small and Medium Sized Enterprise Sector 1994 – 99,” ESRC Centre for Business Research, University of Cambridge.

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (1995). *Writing ethnographic fieldnotes*. Chicago, IL: University of Chicago Press.

Eisenhardt, K.M and Martin, J.A. (2000) “Dynamic capabilities: what are they?” *Strategic Management Journal* vol 21, nos 10-11, pp 1105-1121.

Fitjar, R.D., Gjelsvik, M. and Rodriguez-Pose, A. (2013) “The combined impact of managerial and relational capabilities on innovation in firms” *Entrepreneurship and Regional Development*, vol 25, nos 5-6, pp 500-520

Fearne, A., Álvarez-Coque, J.M.G., Mercedes, T.L-G.U., and Garcia (2013) “Innovative firms and the urban/rural divide: the case of agro-food system”, *Management Decision*, vol 51, no 6, pp 1293-1310.

Freel, M.S. (2003) “Sectoral Patterns of Small Firm Innovation, networking and proximity”, *Research Policy*, vol 32, pp 751-770.

Frank, H., Kessler, A., Mitterer, G. and Weisner-Sammer, D. (2012) “Learning Orientation of SMEs and Its Impact of Firm Performance”, *Journal of Marketing Development and Competitiveness*, 6 (3), 29-41

Freeman, L.C. (1978) “Centrality in Social Networks: Conceptual clarification”, *Social Networks*, vol 1, pp 215-239

Galloway, L., Mochrie, R. & Deakins, D. (2004) “ICT-enabled collectivity as a positive rural business strategy”, *International Journal of Entrepreneurial Behaviour and Research* Vol 10, no 4, pp 247-259.

Gartner W and Birley S (2002) Introduction to the special issue on qualitative methods in entrepreneurship research. *Journal of Business Venturing* 17(5): 387-395.

Geertz C (1973) *The interpretation of cultures*. New York: Basic Books.

Glaeser, E. (2011) *The Triumph of the City: How our Greatest Invention Makes us Richer, Smarter, Greener, Healthier and Happier*. New York: Penguin Books

Granovetter, M.S. (1973) "The strength of weak ties", *American Journal of Sociology* vol 78 no 6, pp 1360-80.

Helfat, C.E. and Peteraf, M.A. (2003) "The dynamic resource-based view: Capability lifecycles". *Strategic Management Journal* vol 24, no 10, pp 997-1010.

Hernández-Carrión, C., Camarero-Izquierdo, C. and Gutiérrez-Cillán, J. (2016) "Entrepreneurs' social capital and the economic performance of small businesses: The moderating role of competitive intensity and entrepreneurs' experience", *Strategic Entrepreneurship Journal*, DOI:10.1002/sej

Huber, F. (2011) "Do clusters really matter for innovation practices in Information Technology? Questioning the significance of technological knowledge spillovers", *Journal of Economic Geography*, vol 12, no 1, pp 107-126

Jack S (2005) "The role, use and activation of strong and weak network ties: a qualitative analysis", *Journal of Management Studies*, Vol. 42, no. 6, pp. 1233-1259.

Johannisson, B. (2008) "Regional development as entrepreneurial networking: from rational choice to self-organizing", in Aranguren-Querejeta, M.J., Iturrioz-Landart, C. and Wilson, J.R. *Networks, Governance and Economic Development: Bridging Disciplinary Frontiers*, Cheltenham, Edward Elgar, pp 57-77.

McCann, P. (2007) “Sketching out a Model of Innovation, face-to-face Interaction and Economic Geography” *Spatial Economic Analysis*, vol 2, pp 117–134.

McKelvey, B. (2004). “Toward a complexity science of entrepreneurship”. *Journal of Business Venturing*, vol 19, pp 313-341.

McElwee, G. and Henry, C. (2014) *Contemporary Issues in Entrepreneurship Research, Vol 4: Exploring rural enterprises: New perspectives on research, Policy and Practice*, Emerald, Binley, UK.

McKeever, E, Jack, S, and Anderson, A. (2015). “Embedded entrepreneurship in the creative re-construction of place” *Journal of Business Venturing*, Vol. 30, no. 1, pp. 50-65.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.

North, D. and Smallbone, D. (1996) “Small business development in remote rural areas: The example of mature manufacturing firms in Northern England”, *Journal of Rural Studies*, vol 12, no 2, pp 151-167

Oakey, R. P., van der Sijde, P., Cook, G., Wakkee, I., During, W.E. and Groen, A. (2013) *High Technology Small Firms: a festschrift for Ray Oakey*, Amsterdam, Amsterdam University Press

OECD. (2007). Competition and regulation in agriculture: Summary of the discussion. *OECD Journal of Competition Law & Policy*, 9(2), 141-163.

Patton M (2002) *Qualitative Evaluation and Research Methods*. London: Sage.

Patterson. H. and Anderson, D. (2003) “What is really different about rural and urban firms? Some evidence from Northern Ireland”, *Journal of Rural Studies*, vol 19, no 4, pp 477-490

Pratt, M. G. (2009). From the editors: For the lack of a boilerplate: Tips on writing up (and reviewing) qualitative research. *Academy of Management Journal*, 52(5), 856-862

Porter, M. E. (1998) “Clusters and the new economics of competition” *Harvard Business Review*, November-December, pp 77-90

Salvato, C., & Corbetta, G. (2013) “Transitional leadership of advisors as a facilitator of successors leadership construction”, *Family Business Review*, vol 26, no 3, pp 235-255.

Smallbone, D., North, D., Baldock, R. and Ekanem, I. (2002) *Encouraging and Supporting Enterprise in Rural Areas*, Middlesex University Business School Research Report for the former DTI's Small Business Service, London

Spigel, B. (2017) “The relational organization of entrepreneurial ecosystems”, *Entrepreneurship, Theory and Practice*, vol 41, no 1, pp 49-72

Statistics New Zealand (2004). *New Zealand: An urban/rural profile*. Wellington, New Zealand: Statistics New Zealand.

Statistics New Zealand (2012) *New Zealand: An Urban/Rural Profile Update*, Wellington, Statistics New Zealand.

Teece, D.J. (2007) “Explicating Dynamic Capabilities: The nature and microfoundations of (sustainable) enterprise performance”, *Strategic Management Journal*, vol 28 pp 1319-1350

Teece, D.J. (2009) *Dynamic Capabilities and Strategic Management*, Oxford, OUP.

Teece D.J. and Pisano, G. (1994) “The dynamic capabilities of firms: An introduction”. *Industrial and Corporate Change* vol 3, no 3, pp 537-556.

Vaessen, P. and Keeble, D. (1995) “Growth-oriented SMEs in Unfavourable Regional Environments”, *Regional Studies*, vol 29, pp 489 – 505.

