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Valuing innovation in SMEs: Towards a theory of entrepreneurial innovation value

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Abstract:

Entrepreneurship and small business management are relatively new fields of academic research. Despite significant growth over recent decades (Shane, 1997; Shane & Venkataraman, 2000; Shane, 2012), more work remains to be done, particularly in the development of theory relating to the actual behaviour of small entrepreneurial firms (Tan et al. 2009). This paper brings together concepts developed in earlier research and extends the understanding on valuing innovation. Strategic management theories have seen significant application to large enterprises and firms historically while SMEs are not covered to the same extent. Recent theory including resource-based view (RBV), dynamic capabilities and theories of entrepreneurship have opened new opportunities for research in small to medium enterprises (SMEs). The paper focuses on the concept of entrepreneurial 'rent' and brings in theories of effectuation, bricolage and the concept of lean start up to discuss innovation value recognition, creation and exploitation.

Keywords: valuing innovation, SMEs, entrepreneurship, rent, commercialisation, theory.

INTRODUCTION

Competitive advantage is the goal of all businesses and innovation is the key to gaining this advantage (Teece, Pisano & Shuen 1997). Small to medium enterprises (SMEs) in particular have been recognised as playing a key role in the development of innovations and are also significant contributors to economic growth (Foster, Haltiwanger & Krizan 2001). The innovation occurring within SMEs is typically driven by an entrepreneurial leadership style prevalent in such businesses (Varis & Littunen 2010). There have been a number of studies on the subject of innovation (Porter & Ketels 2003) with evidence that maximising value is dependent upon the organisation's management of the innovation process (Balachandra & Friar 1997; Cooper 1979; Ernst 2002; Di Benedetto 1996; Globe et al. 1973; Griffin 1997; Rothwell 1992). The research has generally been fragmented across disciplinary areas and focussed to large organisations (Adams, Bessant & Phelps 2006).

An innovation assessment process, initially proposed by Santi et al. (2003) and further developed by Mazzarol and Reboud (2011), examined the decision making process that an entrepreneur within an SME might follow when making early investment decisions over innovations. This process examined how the entrepreneur might engage in a systematic assessment of the innovation's market potential, as well as the firm's competencies and resources with which to commercialise it. The objective of the research was to develop a framework that could assist innovative SMEs make better decisions without the need to rely on conventional financial assessments of risk-return, which were difficult for them due to a lack of reliable data. The framework developed used strategic rather than financial assessments to estimate the potential 'rent' that might be obtained from an innovation.

This paper examines the framework proposed by Santi et al. (2003) and Mazzarol and Reboud (2011) with a view to comparing their work with other contemporary theories and models of new venture creation and commercialisation (e.g. Sarasvathy 2001; 2008; Alvarez & Barney 2004; Baker & Nelson 2005; Mazzarol & Reboud 2005; 2006; 2008, 2011; Alvarez 2007; Blank 2013; Alvarez et al. 2013; Mazzarol et al. 2014). It draws together the concepts outlined in these previous works and extends them with a discussion of the process of how to value innovation within an SME.

THEORETICAL FOUNDATIONS

The strategic management literature

The contribution of SMEs to the development of innovation within a national economy has been recognised by governments since at least the 1980s (SBA 1986; OECD 2013). However, such firms usually find it difficult to gain investment at appropriate valuations prior to market launch and consequently do not fully realise on their innovation. The ability to understand the factors that drive value will assist entrepreneurs and SMEs with innovation projects to better determine the future potential of their innovations in the early stages of commercialisation. It will also provide a better understanding of the decision making processes that managers within SMEs undertake during the process of commercialisation; an area that is a poorly reported within the extant academic literature. To emphasise this point Tan, Fisher, Mitchell and Phan stated:

> "One of the most significant opportunities now facing those doing entrepreneurship research in general, and innovation and technology strategy research in SMEs in particular, is to engage in more systematic pursuit of theory-building research using the setting of small entrepreneurial firms as a context to generate theory".

The evolution of the business enterprise and in particular the SME brought with it a co-development of the field of strategic management theory (Hoskisson et al. 1999). Early studies by Selznick (1957) and Penrose (1959) underpinned the development of this area through their research on the roles of managers and the internal operations of the enterprise. For example, Chandler (1962) offered the notion of "structure = strategy" and set the scene in defining strategic management as a distinct domain from the general field of business policy. Ansoff (1965) extended the focus on the enterprises' internal strengths. A further substantial contribution from Learned et al. (1969) continued this theme, setting out identifying enterprises' 'best practices' for success. These early works and numerous others, provide the foundations of today's theories on strategy.

The influence of industrial organisational economics (IO) over strategy became significant with research moving to a more quantitative 'scientific' methodology supported by major statistical analyses (Hoskisson et al. 1999). The origins of IO can be traced back to Mason (1939) and Bain (1956) and their models of competitive advantage of the enterprise. The Bain/Mason paradigm detailed "structure-conduct-performance" (S-C-P) as the key to sustained competitive advantage (Scherer & Ross 1990). Porter (1979; 1980; 1981; 1990) utilised S-C-P and discussed the way an enterprise gains a competitive advantage. This shift in thinking took the focus over to the external factors impacting the enterprise and away from internal factors espoused by earlier theories on competitive advantage.

Since then competitive advantage theory has seen a debate on the role of strategic groups within industries and whether they have a mutual dependence or not (Barney & Hoskisson 1990). Further research examined the role of Williamson's (1985) transaction costs economics and Fama's (1980) agency theory, both being related to transactional relationships with the enterprise. This work brought the discussion back to the internal attributes of the enterprise culminating in the analysis of internal resources by Barney (1991) and his Resource Based View (RBV). Barney (1991) detailed the principles of competitive advantage and conditions that enable enterprises to capitalise on their advantages. He outlined four conditions, namely; control the resources, have something rare or valuable, ensure it is difficult for customers to substitute and it is difficult to copy. Enterprise resources include the key one of strategic leadership (Finkelstein, Hambrick & Cannella 2009) as well as entrepreneurial concepts (Alvarez & Busenitz 2001).

Dynamic capabilities as a term reflecting the rapidly changing business environment and acknowledges the need for better internal and external business skills (Teece et al. 1997). This area of competitive strategy builds on the underlying work of Schumpeter (1934; 1939; 1954) and in more recent times Amit and Schoemaker's theory of strategic assets (1993). Decisions involving the enterprises' resources and capabilities are normally made in settings characterised by uncertainty, complexity and intraorganisational conflicts (Amit & Schoemaker 1993). Likewise a continuous flow of new products in rapidly evolving enterprises is seen as a key factor for success (Schoonhoven, Eisenhardt & Lyman 1990), and enhances the enterprises ability to raise funds from public markets (Deed, Decarolis & Coombs 2000). The makeup of the research team is also of critical importance

(Henderson & Cockburn 1994), as is the leadership of the enterprise, in that it understands the business, though is separate from the scientific team (Hambrick, 1994). SMEs operating in such turbulent environments have a distinct pattern in their mode of operation. This is characterised by high levels of informality and operationally it is chaotic and idiosyncratic (Mazzarol & Reboud 2006) with management strategy of limited extent, determined almost exclusively by the entrepreneur (Mintzberg & Waters 1982).

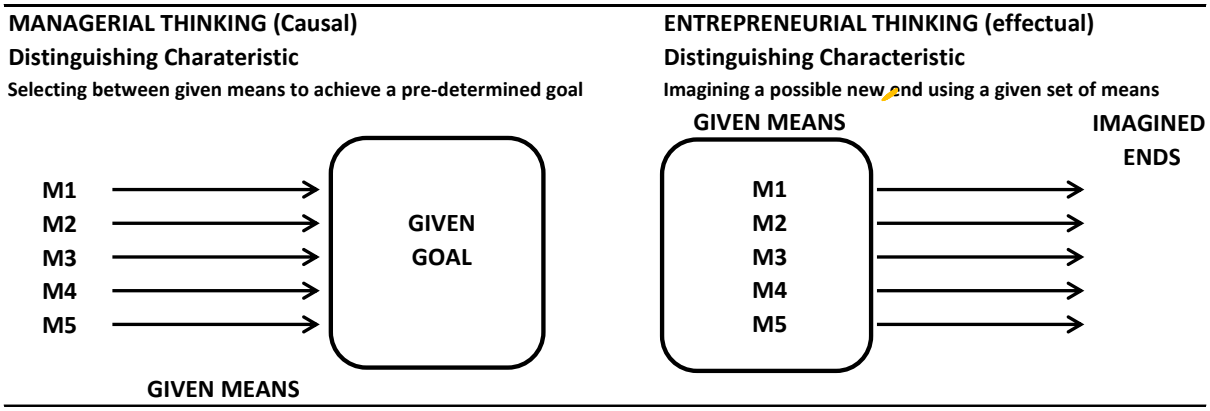
Entrepreneurship literature

As noted above, entrepreneurship and the entrepreneurial firm have been the subjects of research over several decades (Casson 2012). However, only recently have theories been proposed in relation to the entrepreneur, the entrepreneurial process and the entrepreneurial firm (Mishra & Zachary 2011; Shane 2012). Entrepreneurship theory and entrepreneurial action has historically been based around economic thinking (Khilstrom & Laffont 1979). Entrepreneurs have identified an opportunity where demand for a product or service exceeds supply and determined whether or not to exploit the opportunity (Venkataraman 1997). If a decision to proceed is made the gathering of resources to establish an enterprise and produce a product or service and generate returns follows (Shane & Venkataraman 2000).

Entrepreneurship is about the individual and entrepreneurship theory reflects a methodology based around the individual (Casson 2010). This traditional approach has also seen the need for judgements to be made by the entrepreneur when there is no obvious correct path to take (Casson 1990). This judgement draws upon intuition, the entrepreneur's relevant experience, limited sources of objective information, and is often made with key facts missing (Casson 1990). The more the business environment is rapidly changing and evolving the more the uniqueness and novelty of the decisions and the judgement applied (Simon 1983). This traditional theoretical base on entrepreneurship is now being questioned by a number of new theoretical perspectives (Fisher 2012) that seek to compete with and expand on the traditional theoretical base (Eisenhardt et al. 2010). Fisher (2012) proposes these theories suggest entrepreneurs behave differently when identifying and exploiting opportunities. Sarasvathy (2001) discussed effectuation, Baker and Nelson (2005) wrote on entrepreneurial bricolage, Alvarez and Barney (2007, 2013) proposed creative perspective and the discovery versus creation approach whilst Shah and Tripsas (2007) centred on user entrepreneurship.

Sarasvathy (2008) proposed effectuation as "a logic of entrepreneurial expertise, a dynamic and interactive process of creating new artefacts in the world". As shown in Figure 1 the traditional approach of "causation" focuses on achieving a desired goal through a set of specific means. By comparison effectuation is based on using a set of evolving means to achieve new and different goals. The four key points to Sarasvathy's theory of effectuation are: i) entrepreneurs start with means as opposed to establishing goals; ii) applying affordable loss instead of expected return when evaluating options; iii) leveraging relationships instead of competitive analysis when assessing relationship with other individuals and organisations, and iv)exploiting and not avoiding contingencies (Sarasvathy 2008).

Figure 1: Causal reasoning compared to effectual reasoning



Source: Adapted from Sarasvathy (2008)

Running parallel with Sarasvathy is the research from Baker and Nelson (2005) and their theory of entrepreneurial bricolage, which they define as "creating something from nothing by making do with what is at hand to solve problems and uncover opportunities" (p. 352). The basis to the theory is that entrepreneurs have three options when confronted with harsh operating environments without sufficient resources, namely: i) gain additional resources from outside the enterprise; ii) avoid new challenges by not engaging or deliberately retiring, and iii) use the current resources to meet the new opportunities. This theory is most suited to entrepreneurs operating under conditions of resource constraint, and in this regard is for the person that can "make do" to deliver their product or service. Penrose (1959) noted that resources were idiosyncratic to enterprises explaining differences in how some SMEs survive and succeed whilst others in similar circumstances do not achieve the same results. The opportunity for the entrepreneur is to leverage resources in unique and novel ways.

Of the entrepreneurship theories of causation (traditional), effectuation and bricolage, the latter two more directly relate to the environments that innovative SMEs operate within (Myers and Marquis 1969). Fisher (2012) points to implications in entrepreneurial actions and behaviours that could assist in the entrepreneurial process. He reports four findings being: i) opportunity recognition that focuses on the resources that should assist in the selection of opportunities that can be undertaken; ii) the research reinforces the need for ongoing action within the enterprise; iii) entrepreneurs should personally benefit from building a team of interested people around the project, and iv) the need for funding balance so the entrepreneurial creativity is not lost if too many resources are made available.

Recent research by Alvarez et al. (2013) examines the processes by which opportunities are formed and exploited by entrepreneurs. They discuss opportunities that are formed by exogenous shocks to a market and then discovered by entrepreneurs (Discovery Process) and opportunities that are created endogenously by entrepreneurs and subsequently exploited (Creation Process). The creation process identifies with Santi et al. (2003) and Mazzarol and Reboud (2010) new venture commercialisation model where the opportunity reflects an innovation.

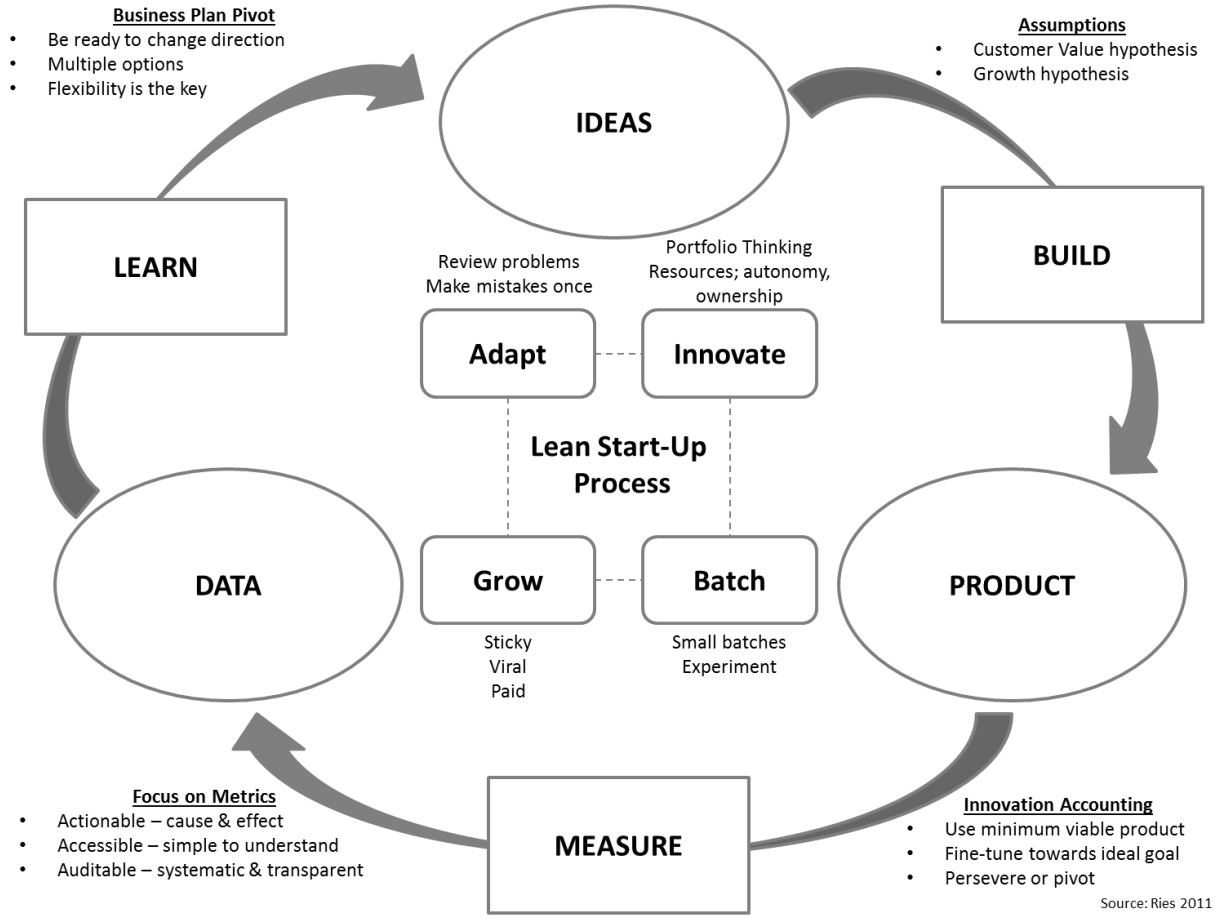
Previous work by Miller and Friesen (1980; 1982) in their entrepreneurial model of innovation discussed the need for enterprises to continually innovate. This continual innovation can also apply to both high and low technology enterprises (Hansen & Serin 1997). In low technology SMEs the key emphasis is often design, product and process adaptation, and to innovate in collaboration with customers (Pavitt 1984). More recently Ries (2011a) has introduced the 'Lean Start-up' concept of rapid commercialisation and continual innovation. Originally put forward as a model for high technology companies the philosophy has been expanded to apply to enterprises commercialising new products or services (Blank 2013). The core strategic element in the Lean Start-up concept is the 'pivot'. Here Ries (2011a) details the concept of a structured course correction to the product or service of the enterprise. In this way the pivot correction tests a new hypothesis about the product and fine tunes the innovation opportunity (Ries 2011a).

Managing uncertainty with 'Lean Start-up'

Uncertainty is defined where the outcomes of the innovation investment decision and the probability are unknown (Knight 1921). It is considered that entrepreneurial businesses often operate under conditions of uncertainty (Simon 1997). This is considered to be the case with new start-ups (Audretsch 1995). The entrepreneur who operates in conditions of uncertainty cannot follow a causal logic as they have little idea what their end goal is likely to be. Their best option is to follow an effectual logic and work from their available means to their imagined goals (Sarasvathy 2001). The level of uncertainty in the firm's task environment plays an important role in determining how it will approach the commercialisation of an innovation (Alvarez & Barney 2005). Further research by Alvarez and Barney (2013) outlined the 'creation approach' to entrepreneurial opportunities. Opportunities are created endogenously by entrepreneurs and hold uncertainty. The model put forward by Santi et al. (2003) and extended by Mazzarol and Reboud (2011) is designed to help the entrepreneur from an innovator SME remove the level of uncertainty by providing for the transition through three-stages of rent assessment. Ries (2011b) has proposed the 'Lean Start-up' method as a means of reducing the level of uncertainty in the management of the commercialisation process. It draws together several key concepts such as the 'lean canvas' business model framework developed by Osterwalder, Pigneur and Tucci (2005), that seeks to provide a set of building blocks for the creation of a competitive business model (Osterwalder & Pigneur 2010). The main elements of the Lean Start-up process are illustrated in Figure 2.

Lean Start-up has become popular as it offers a systematic process for the development of early-stage ventures and new products. It offers entrepreneurs a potential means to manage within highly uncertain task environments. However, the concept draws its conceptual origins from the work of W. Edwards Deming and Taiichi Ohno in the 1950s (Trimi and Berbegal-Mirabent, 2012). It also owes much to the work of Miller and Morris (1999) who developed the notion of '4th Generation R&D'. This proposed companies should adopt new approaches to product development targeting customer needs, linking customers and suppliers into collaborative R&D and new product development, with the view to creation of new value. The aim was to generate a new 'dominant design' much faster than competitors (Miller 2001). However, this 4G R&D model was essentially targeted at the larger established enterprise rather than the small entrepreneurial one.

Figure 2: The Lean Start-Up Process



Source: Adapted from Ries (2011)

At the core of the model is the need to rapidly develop a minimum viable product, get it to the customer and obtain feedback that allows the innovator firm to determine if the product will be adopted or not. There is a need for good data capture to base any future decisions on market-based evidence rather than supposition. Of critical importance is the need for the enterprise to adapt to market feedback and 'pivot' within their business plan, making changes that might see the innovation revised and rebuilt to better suit the needs of the targeted customer. The major objective of the 'Lean Start-up' method is to generate a viable business model within the shortest possible time. Engagement with the customer and a process of co-creation of the product with the end-user are all essential parts of the 'Lean Start-up' and 'Lean Canvas' processes for business model development (Trimi & Berbegal-Mirabent 2012). They offer an iterative and effectual process for the commercialisation of innovations that seek to place structure around the theory of effectuation.

DEVELOPING A VALUE ASSESSMENT FRAMEWORK FOR INNOVATION RENT

The concept of 'economic rent' has its antecedents in the work of Ricardo (1821), which identified the notion of the economic return that can be obtained from the rental of an area of land. It does not refer to the actual rental payments made by tenants for use of a parcel of land, but the economic return that can be obtained from the land under rent as compared to using it for other

purposes (rent free) given that all other inputs of labour and capital remained equal. When land is scarce it can command premium prices and this can apply to any resource, either tangible like land, or intangible like intellectual property (IP) (Schoemaker 1990).

Within the RBV theory the concept of 'economic rent' plays an important role in explaining why some firms are able to obtain higher rent streams via their control over unique or valuable resources that cannot easily be replicated or substituted (Barney 1991; Mosakowski 1998). In the literature surrounding the strategic management of the firm, at least two types of economic rent have been recognised. The first is 'Ricardian rent', which is related to bundles of tangible and intangible resources over which the firm can secure ownership or control. The second is 'Schumpeterian rent', which relates to the firm's ability to create unique and valuable opportunities through the reconfiguration of existing resources, some of which it may not directly control (Makadok 2001). RBV theory is consistent with the 'Ricardian rent' concept as it relates to the firm's ability to appropriate existing resources from which it can secure above average rents (Penrose 1959; Wernerfelt 1984; Barney 2001). By contrast, 'Schumpeterian rent' is more consistent with the theory of dynamic capabilities, because it relates to how a firm configures its resources and capabilities to exploit opportunities (Amit & Schoemaker 1993; Teece et al. 1997). It is the concept of 'Schumpeterian rent' that has the most relevance to SMEs engaged in the commercialisation of innovation, while those engaged in more stable and predictable task environments will have more in common with the concept of 'Ricardian rent' (Lim et al. 2013). Innovation for the entrepreneurial SME creates rents through the ability it has to generate a source of competitive advantage, which makes it a fundamental objective of entrepreneurs (Alvarez & Barney 2004). An 'innovation rent' allows an entrepreneurial SME to secure a monopoly position over a process that will justify future investments (Milgrom & Roberts 1992). According to Miles et al. (2003) 'innovation rent' can be defined as:

> "...returns that arise from the existence, discovery, and successful commercial exploitation of entrepreneurial opportunities". (p. 394)

Alvarez (2007) has examined the notion of 'entrepreneurial rents' and suggests that they are generated through a process whereby entrepreneurs and other partners collaborate in combining existing resources to create innovations that offer enhanced value. However, this takes place under conditions of uncertainty, which makes their value difficult to predict with any certainty prior to their launch into the market. Once the market engagement has occurred and there is less uncertainty but a more predictable risk, they become 'quasi-rents'. The key 'strategic assets' that enable the maximisation of rents are: complementarity, scarcity, low tradeability, limited substitutability, inimitability, durability, appropriability, and closeness of overlap with the industry features (Amit & Schoemaker 1993).

Assessing 'innovation rent' in SMEs

Santi et al. (2003) model for measuring innovation value is through a process of rent appropriation. The initial research involved case studies with a small number of enterprises in France undertaken by LINEN-HEC for the national intellectual property council (INPI). The model covers the various types of innovation from product, process, market to administrative (Mazzarol 2014; Mazzarol & Reboud 2011). Assumptions to the nature of the innovation encompass innovations that substitute existing

products to those that create new markets. Essentially the model accounts for innovations of an incremental type on one side right across to those of a highly radical disruptive nature on the other. Santi et al. (2003) centred their research on small innovator enterprises and the SMEs competitive situation in being able to launch the innovation into the market and their ability to gain financial return or rent (Miles et al. 2003).

Five key issues for the assessment process were considered. The first of these is the speed with which the market would adopt the innovation which can be influenced a by a range of market factors (Brown 1969; Mahajan et al. 1990; McGrath & Zell 2001). Here the main points of focus are around the level of market demand, how the innovation fits with the target customer's perception of value, whether substitutes exist, whether there are any legal or regulatory barriers to overcome, and if there are any complementary actors who might assist with the market entry and adoption process.

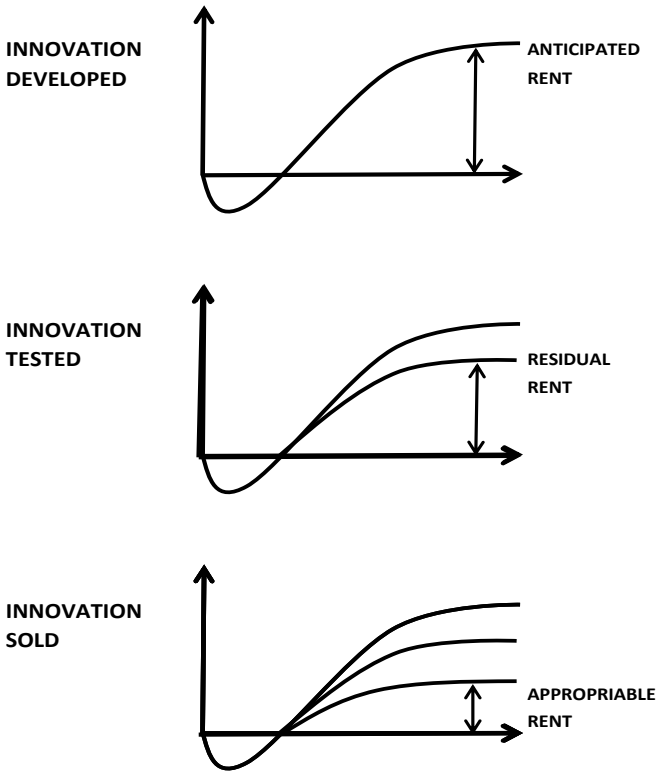
A second issue is the level of experience within the targeted customer segments of adopting new ideas, which has been identified as a potential barrier or facilitator of innovation diffusion (Rogers 1976; 1995). Also important is the technological basis of the innovation. For example, a highly complex technology is potentially difficult to replicate or copy. This helps to create isolating mechanisms that protect the firm's innovation and enhance its ability to appropriate above average rents (Alvarez & Barney 2004). A fourth issue is the innovation intensity found within the target market. The intensity of innovation relates to the level of investment that is made in new technologies and has been measured with the amount of money funding put into R&D as a proportion of total turnover (OECD 2009). For example, low-tech industries are those where enterprises invest less than 3% of annual turnover into R&D, mid-tech industries between 3% and 5%, and high-tech industries over 5% (Hirsch-Kreinsen et al. 2005). Industries that have a rapidly changing technology base are more likely to adopt new innovation than ones that have more stable conditions (Chiesa & Frattini 2011).

Finally, there is the issue of whether the SME has the necessary resources to fully commercialise the innovation without outside help. Where it can proceed without outside support it probably should as this will allow the enterprise to appropriate all available rent. However, if it cannot proceed without third-party support it will need to create 'isolating mechanisms' such as IP rights protection regimes (e.g. patents, trademarks) that will grant it some bargaining power (Alvarez & Busenitz 2001; Alvarez & Barney 2004; Hanel 2006).

The initial model developed by Santi et al. (2003) had three stages through which an innovator SME might move in order to assess its potential rent return. These are illustrated in Figure 3.

As shown, the first stage is the 'anticipated rent' where the firm makes an initial assessment of the future potential rent they might anticipate based on some forecasts of the size of the future market and the 'volume' of potential sales that might be obtained. Also assessed is the 'rate' of profit that the firm anticipates it might make from the innovation once it has been commercialised. There is also the anticipated 'length' of the innovation's product lifecycle.

Figure 3: Erosion of Rents



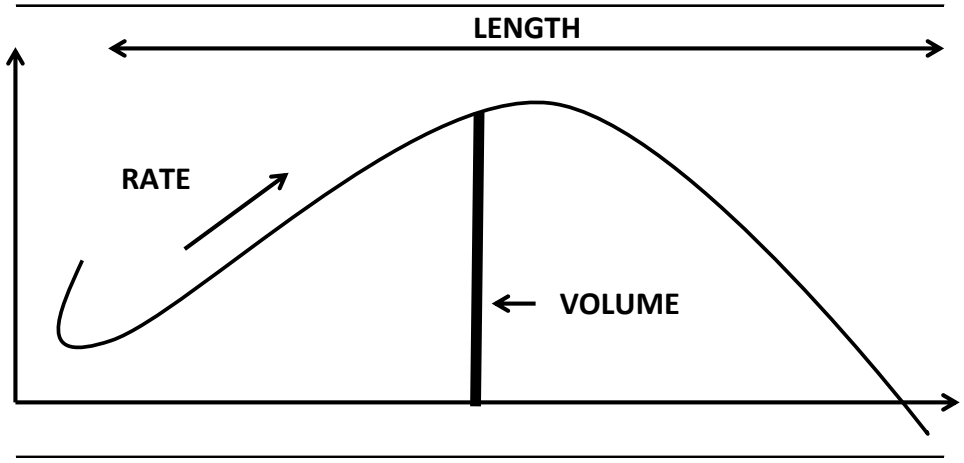
Source: Adapted from Santi et al (2003)

Factors that influence the 'volume' are the size of the market and the geographic diffusion of the innovation. The 'rate' of profit is influenced by the firm's ability to offer value and a rare or unique innovation as well as the cost of production counterbalanced by the price sensitivity of the market. The 'length' of the innovation lifecycle is determined by the firm's ability to create isolating mechanisms through legal or technical processes that reduce the chance of copying or substitution (Teece 1986; Reed & DeFillippi 1990). According to Santi et al. (2003) the three key elements that determine the 'innovation rent' are: i) 'volume' of sales; ii) 'rate' of profit margin; and iii) 'length' of the innovation product lifecycle. This generates a diffusion curve as illustrated in Figure 4.

In the second stage is the 'residual rent' which follows from the innovation having been taken to market and evaluated by customers. Factors that will impact here are the level of demand the customer has for the innovation, where the innovation fits within their 'value chain' and the 'value proposition' that can be created for it. Whether there are substitutes, regulatory or legal impediments to diffusion, or the availability of complementary actors who can assist the commercialisation process. Finally, the enterprise moves to the third stage of 'appropriable rent', which emerges once the enterprises management has examined the market feedback from stage two and examined their competitive situation, the reaction of competitors and the resources they possess to proceed with the innovation's commercialisation. According to Thuy et al. (2014) these three stages of rent appropriation equate to the concepts proposed by Alvarez (2007). The

'anticipated rent' conforms to the 'entrepreneurial rent' concept, the 'residual rent' to the 'quasi-rent' concept, and the 'appropriable rent' is either a 'Ricardian rent' (generated from control over assets), or 'Schumpeterian rent' (generated from capabilities).

Figure 4: Innovation Diffusion Curve



Source: Adapted from Santi et al (2003)

DEVELOPING AN ENTREPRENEURIAL INNOVATION THEORY

The work undertaken by Mazzarol and Reboud (2005; 2006; 2008; 2011) focused only on the first stage of the Santi et al. (2003) innovation assessment process of the 'anticipated rent'. Historically the anticipated or 'entrepreneurial rent' has always been difficult to value at this initial stage (Rumelt 2005). The key issue for the entrepreneur in maximizing the value of the innovation is managing market conditions of uncertainty (Alvarez & Busenitz 2001; Alvarez & Barney 2005). Anticipated rents are created under conditions of uncertainty (Alvarez & Barney 2007).

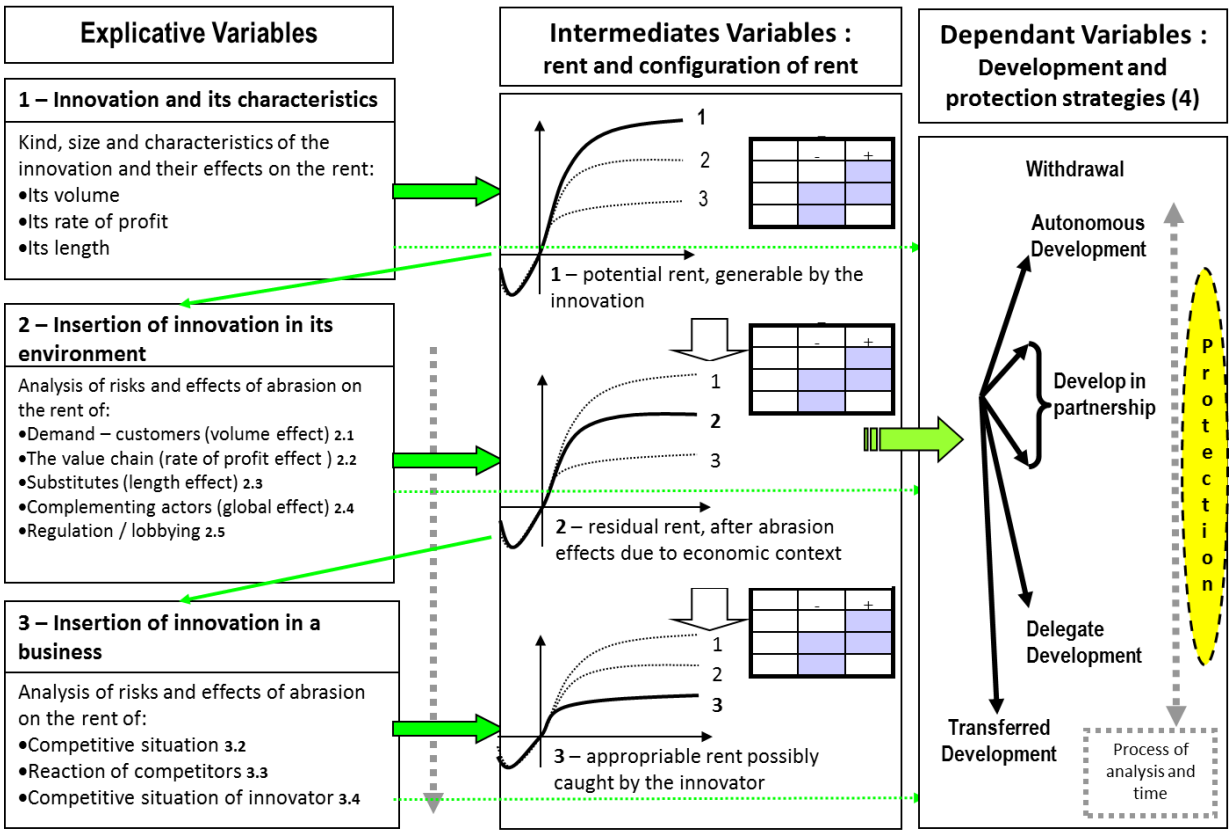
In the second stage of commercialisation the innovation is able to be assessed as a 'residual' or 'quasi-rent' which has to be managed more as a risk process than one of uncertainty (Alvarez 2007). Customer demand impacts sales volume, and the market's price sensitivity and perception of value will determine rate of profit. The length of the innovation lifecycle will also be easier to determine as the firm will have a better understanding of substitution and new market entry threats. SMEs often have mixed commercial success with innovation and accordingly it is essential for entrepreneurs to understand the anticipated returns prior to embarking on an investment program (Wong & Tong 2012). Essentially SMEs need to utilise their resources in a measured way to ensure they are able to capitalise on the innovation (Sandberg, Robinson & Pearce 2001). By obtaining market feedback they will be better placed to make such assessments.

The final stage of innovation's commercialisation involves the launch into the market. Here the real appropriable returns from the innovation are realised through control over the innovation, with the product lifecycle dependent on the technology and the ease of being able to be copied (Teece 1988). Santi et al. (2003) suggested that this stage would require that the management of SME make a decision as to whether they could proceed with the full commercialisation of the innovation alone,

whether they would need partners, or even the delegation and transfer of the innovation to a third-party. This accords with the theoretical concept proposed by Alvarez and Barney (2004), who suggest that if an entrepreneurial firm has the necessary resources to proceed alone it should do so and 'arbitrage' all the potential value. However, if they lack sufficient resources they need to work with others and this raises the question of what control they have over their intellectual property or their ability to build effective 'isolating mechanisms'. If the firm lacks strong IP rights or the protection of 'isolating mechanisms' the bargaining position is weakened. It is thereby forced into a 'hierarchical' relationship with the stronger partners.

This question of how to value innovation in SMEs using the concept of rent is affected by the process entrepreneurs in SMEs work through, and how they engage in systematic market and internal resource analysis before making decisions outlined in the conceptual model shown in Figure 5.

Figure 5: The Process and General Model of Rent Appropriation



Source: Santi and Reboud (2003)

Originally proposed by Santi and Reboud (2003) the model suggests that the three stages of the rent appropriation process will be determined by the 'explicative variables' of the innovation and its characteristics (e.g. rent typology). Once inserted into the market the feedback from customers and the firm's assessment of the potential demand, profit return from where it can be placed within the value chain (e.g. customer value perception and value proposition) lead to a reassessment. Also important are the threat from substitutes that might erode the innovation lifecycle, and the impact

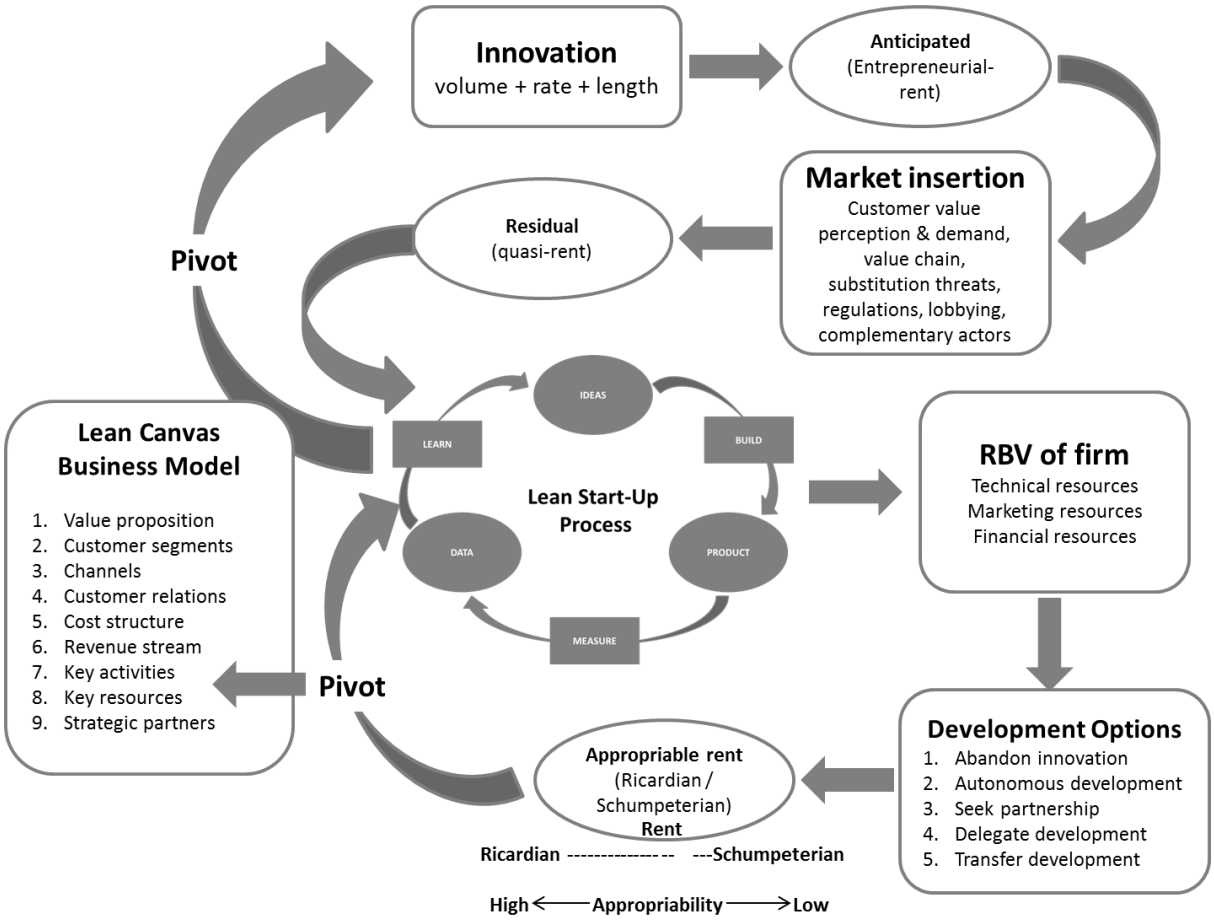
of competitors, government regulation and the possible 'lobbying' by actors who are either supportive or opposed to the innovation. This market feedback results in a revaluation of the innovation towards the 'residual' or 'quasi-rent'. It is now moved from a situation of managing uncertainty, towards a situation of managing potential risk as the level of information available to the firm has increased.

In the third stage the innovation's commercialisation will need to be assessed in relation to the firm's resources and competencies. Critical issues here are the firm's ability to proceed with the commercialisation of the innovation alone, or whether it needs to collaborate with others. Does the firm have the necessary technical, marketing and financial resources and competencies required to commercialise alone? The competitive situation in the market, competitor reactions and the innovator firm's own capacity will need to be evaluated. The 'abrasion effects' of this internal analysis building on the stage two external market assessment, will potentially determine how the firm proceeds. Possible outcomes from this process are that the firm will abandon the project and withdraw the innovation, proceed with the commercialisation alone, seek to form a partnership with one or more firms to assist with the commercialisation, delegate (e.g. licence) or transfer the commercialisation. The ability of the firm to create isolating mechanisms that strengthen its bargaining position with any alliance partners is critical (Alvarez et al. 2006).

In a study involving a series of 13 longitudinal case studies undertaken with SMEs engaged in commercialisation Mazzarol, Clark, Gough, Olson and Reboud (2014), examined their approach to valuing the rent returns from their innovation. This highlighted the importance of IP rights appropriation and the value of formal or at least systematic approaches to commercialisation. However, formal systems were not a guarantee of success. Agility and the ability to adapt quickly to unforeseen problems were more important factors in determining successful outcomes. The study also found that lack of resources and the firm's perception of the uncertainty in the market environment played a key role in determining the decision over whether or not to proceed with the commercialisation. Firms that did not proceed to commercialisation were not deemed to be failures; in most cases their decision to withdraw was based on rational and well-considered judgments over the likely rent return that might be obtained from the innovation given the prevailing market conditions and the firm's resources (Mazzarol et al. 2014).

Figure 6 provides a conceptual model of the potential interplay between the Santi et al. (2003) rent appropriation process and the 'Lean Start-up' framework of Ries (2011a). The model suggests that the 'anticipated' entrepreneurial rent from the innovation is assessed following its initial insertion into the market leading to the estimation of the 'residual' quasi-rent. At this stage the minimum viable product generated from the initial prototype will be evaluated through the 'Lean Start-up' process with a view to assessing its commercial viability. The firm's internal assessment (RBV of the enterprise) of its technical, marketing and financial resources and competencies generate development options for the commercialisation of the innovation. Here the important considerations are the level of 'appropriability' that can be secured by the firm around the innovation's underlying intellectual property. Unless the firm can appropriate the rights to this IP it will not be able to secure a strong competitive advantage (Collis & Montgomery 1995).

Figure 6: Towards a theory of Entrepreneurial Innovation Value



An innovation that offers high appropriability follows a 'Ricardian rent' model and can be more easily delegated or transferred. By contrast an innovation that has weak appropriability will follow a 'Schumpeterian rent' model. This will require the firm to co-create the commercialisation outcome with third-parties and its bargaining position will be weak and uncertainty high. These potential outcomes should lead the firm's management to assess the business model that underpins the innovation. Assessment tools like 'Lean Canvas' (Osterwalder & Pigneur 2010), used in conjunction with the 'Lean Start-up' process, should assist in making decisions over whether the firm should 'pivot' and the nature of these 'pivots' in the context of the commercialisation process. Either the firm will continue to loop through the 'Lean Start-up' process assessing innovation's rent appropriation through its three stages suggested by Santi et al. (2003), or it will abandon the innovation.

Future research questions

Despite the research that has been undertaken over recent years into the process of business model development, start-up processes and entrepreneurial decision making, there remains a gap in the literature over the process of commercialisation within SMEs. Given the important role such firms play in the national economy there is a need to better understand their approach to

commercialisation. Following on from the examination of the available research outlined above we can pose at least five research questions that require further investigation:

1. What is the process followed by innovator SMEs in determining the 'anticipated' or entrepreneurial rent from an innovation prior to commercialisation?

2. How do innovator SMEs assess market conditions and what impact does this have on their determination of 'residual' or 'quasi-rents' from an innovation prior to commercialisation?

3. How are the internal resources and competencies for the commercialisation of an innovation assessed by innovator SMEs, and what influence does this have on their determination of 'appropriable' rent from an innovation?

4. What role do isolating mechanisms play in determining the development options available to innovator SMEs seeking to commercialise an innovation?

5. How can tools such as 'Lean Start-up' and 'Lean Canvas' assist innovator SMEs to assess the value of an innovation and the potential rent return when engaged in the process of commercialisation?

CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

This model outlined in Figure 6 brings into play recent entrepreneurial research resulting in the modification of the innovation by the SME to take account of resource capabilities. It is suggested commercialisation of innovation by SMEs demonstrates a modified approach to previous theory. The opportunity to evolve the rent model to a theory of entrepreneurial innovation value is the new area of research that flows from research from Santi et al. (2003), Alvarez and Barney (2004, 2007, 2013), Baker and Nelson (2005), Mazzarol and Reboud (2005, 2006), Alvarez (2007), Sarasvathy (2008), Ries (2011), Mazzarol and Reboud (2011), Blank (2013) and Mazzarol et al. (2014). These studies all move towards addressing the second and third steps to Santi at al. (2003) model of innovation rent which link with the theoretical concepts of Alvarez (2007) to generate a measurement for innovation value. Innovation value covers three steps from the first stage of pre commercialisation of the innovation to the second stage of the innovation being made available to the market to the third stage of market launch of the innovation. The theory of entrepreneurial innovation value is the key to unlocking access to commercialisation funding for innovative SMEs which are the power house for economic growth (OECD 2011).

The five research questions posed above offer a focus for future research that will investigate via longitudinal case analysis the decision making processes followed by innovator SMEs engaged in commercialisation. The aim of such research should be to gain an in-depth understanding of how SMEs manage the process of commercialising an innovation. It should also assess the work of Santi et al (2003) and others such as Mazzarol and Reboud (2011) who have attempted to build on this initial work. Further, it should seek to draw together the current popular applied process tools of 'Lean Start-up' (Ries 2011b) and 'Lean Canvas' (Osterwalder & Pigneur 2010) to explore their value to reducing uncertainty and assisting the managers of innovator SMEs to make more effective decisions over the value of innovations.

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