Why Are Some Venture Founders Better at Pivoting Than Others? The Influence of Motivation and Identity on Strategic Change

by Shari L.S. Worthington

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APPROVED

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Dr. Steven S. Taylor, Committee Chair, Foisie Business School, WPI

_____

Dr. Frank Hoy, Dissertation Committee, Foisie Business School, WPI

_____

Dr. Adrienne Hall-Phillips, Dissertation Committee, Foisie Business School, WPI

_____

Dr. Alan Carsrud, Dissertation Committee, Åbo Akademi University

DEDICATION

For my daughter, Nikki, who has been a boundless source of creativity and inspiration her entire life.

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1.0 ABSTRACT

Businesses struggle to develop strategies that provide a competitive advantage in the face of continuous technological change, disruptive threats, and intensified competition. This applies to firms of all sizes and lifecycle stages, but is especially acute for new ventures, which often face increased risks and uncertainties. Entrepreneurs may envision clear goals when they start their ventures, but precise definitions of new products and availability of resources can change as previously unavailable information becomes known and new mental models are created to facilitate understanding of markets, competitors, and strategies.

When new products and innovative processes do not yield growth and efficiencies, firms increasingly turn to business model innovation (BMI) to reinvent the business itself. Business models are iterated to refine the value delivered and create an advantage for the organization. A core component of the business model innovation process is feedback involving such issues as product functions, distribution channels, and customer needs. This feedback process can be influenced by internal and external parties, including the venture founder and other members of the founding team. Early decisions by the founder(s) can have a lasting impact on future outcomes of the firm. But entrepreneurs can be resistant to input, even if the intent is to increase sustainability and growth. This leads us to ask, why are some venture founders more likely to pivot their business models than others?

This dissertation develops and tests a theory of how entrepreneurs influence the evolution of their ventures' business models. I examine the oral histories of technology venture founders in order to explore the relationship between an entrepreneur's founder identity and the degree of BMI exhibited as they create and develop a new venture. In paper one, I operationalize and test (using fuzzy set Qualitative Comparative Analysis) a founder identity classification based on entrepreneurs' personal values, goals for the firm, and passion. The findings reveal a core set of identities that motivate entrepreneurs: (a) power/financial success, (b) achievement/innovation, (c) stimulation/solving big problems, (d) universalism/social cause, (e) self-direction/independence, and (f) security/organization. In paper two, I create a definition of the business model innovation construct and its four primary dimensions: strategic

planning, BMI depth (innovation), BMI breadth (business model value components), and BMI novelty. In paper three, I operationalize and test (using natural language processing) the dimensions of BMI, and then analyze the relationship between the two core constructs: founder identity and BMI. The results show that those founders most likely to discuss business model innovation are driven by the core motivational components of achievement/innovation, stimulation/solving big problems, and/or self-direction/independence. Those founders least likely to discuss business model innovation are driven by no core motivational components or by universalism/social cause. The motivational component power/financial success only appears to drive business model innovation when paired with stimulation/solving big problems.

The goal of this dissertation is to increase our understanding of what it means to be an entrepreneur and how that relates to the creation of new venture strategies. For practitioners, this provides a common language for understanding entrepreneurial motivations and their role in new venture strategies. This can increase entrepreneurial self-awareness and help individuals decide whether to venture, where to venture, and how to assemble needed resources. For academics, this research contributes to the entrepreneurship, strategy, and psychology literatures by: (a) creating a more robustly developed founder identity framework that can be examined in the context of a variety of entrepreneurial decision-making situations, as well as with respect to firm performance, (b) developing a more comprehensive and consistent view of business model innovation that can be used to systematically investigate the impact of changes to individual dimensions of BMI, as well as to changes to multiple dimensions, and (c) providing a novel and robust examination of how the identities of entrepreneurs can influence the strategy development process of new ventures.

Keywords: entrepreneurship, founder identity, business model innovation, pivoting, new ventures, technology entrepreneurship

2.0 INTRODUCTION

2.1 Background to the research

I have worked with technology entrepreneurs over several decades, helping them fine-tune their product ideas and pull together the resources needed to launch new ventures. As expected, a variety of challenges emerge along the way. Tech entrepreneurs tend to be innovators who form ventures to bring new inventions to market (Ferreira, Ferreira, Fernandes, Jalali, Raposo, & Marques, 2015). They are often well-versed in the technology and product functions, but can have trouble articulating a customer value proposition. One entrepreneur I know has been regularly attending meetings of The Venture Forum (Worcester, MA) for decades. His specialty is custom microcontrollers. He would like to move into volume production of microcontrollers but has yet to settle on a target customer profile.

This is in line with recent research by the Kauffman Foundation (2020) that shows finding customers is the challenge most often cited by entrepreneurs (62%), followed by finding skilled employees (53%), acquiring funds to grow the business (49%), acquiring funds to start the business (46%), navigating laws, policies, and regulations (46%), and establishing networks and connections (45%). The relative importance of the challenges varies based on where the person is in the entrepreneurial journey. This same study found that aspiring entrepreneurs, like my friend from The Venture Forum, state that the biggest challenges are finding funds to start the business (92%), finding funds to grow the business (86%), establishing networks and connections (74%), overcoming self-doubt and fear (69%), and, then, finding customers (65%).

A variety of issues can prevent individuals from launching a business or hinder growth once it is established. This is where education, network connections, and mentors can be valuable, providing guidance based on experience overcoming these challenges. Yet even with feedback from experts, entrepreneurs like my friend can get stuck. He has talked with many experts from different professions over the years, but still struggles to put the pieces together into a cohesive business model.

Pivoting one's business idea can be problematic, regardless of the stage of development. Even large firms struggle to change their strategy in order to remain relevant, like GE's push to figure out the benefits of data-driven products for their industrial customers (Colvin, 2018).

A core component of the pivoting process is the feedback loop, where information is provided to the entrepreneur with the intent of improving the firm's ability to create and extract value for a product or service (Harrison & Rouse, 2015). This feedback loop assumes that the entrepreneur is willing to receive new information, evaluate it, and then respond. Receptivity varies, however. The founder of a sustainability financing services firm I interviewed was not happy about the negative feedback he was receiving, especially from venture capitalists: "We had a VC who said there's [sic] no projects. All the projects have been done. We're like, are you serious? That actually came out of a guy's mouth. He's like there's no real opportunity in this industry. The feedback I've received has been mostly negative and demoralizing, especially at the beginning. However, lately we have had more positive than negative feedback, even from VCs." This stands in stark contrast to the founder of a rapid-growth video conferencing company who embraces interactions with stakeholders to improve the product-market fit. He states, "Our goal is to just keep getting as much feedback into the problem that we're trying to solve no matter what touch point we take advantage of." Both of these founders are experienced entrepreneurs who have launched multiple ventures, yet they have different ways of engaging in and responding to feedback.

My curiosity about the psychology of feedback led me to research on the characteristics of entrepreneurs and their relationship to venture founding and firm success. I quickly discovered this is a controversial area. After analyzing more than a decade of research on the psychology of the entrepreneur, including self-efficacy, personal values, risk-taking propensity, and the Big Five personality traits, Brockhaus and Horwitz (1986) concluded that the literature did not support a generic definition of the entrepreneur that distinguishes them from non-entrepreneurs. Soon after, Gartner (1988) called for entrepreneurship research to move away from a study of individual traits and instead look at entrepreneurial behaviors. This led to a literature stream focused on the activities that lead up to and include the launch of the new venture (McKenzie, Ugbah, & Smothers, 2007). In the meantime, questions were still being raised about the individual entrepreneur, but not necessarily being addressed. Shane and Venkataraman (2003) asked about the individual and strategy in the same breath, "How do the

characteristics of firm founders influence the development of new technology companies? What strategies enhance the performance of new technology companies?" (p.184).

Two studies that were among the first to apply meta-analysis techniques to the study of entrepreneurial personality traits were influential in redirecting my research back to the psychology of the entrepreneur. Zhao and Seibert (2006) found significant differences between entrepreneurs and managers on four of the Big Five personality traits; entrepreneurs scored higher on conscientiousness and openness to experience, and lower on neuroticism and agreeableness. Rauch and Frese (2007) found that business creation and business success were correlated with entrepreneurs' need for achievement, generalized self-efficacy, innovativeness, stress tolerance, need for autonomy, and proactive personality. This encouraged me to embrace a psychology lens when considering the entrepreneurial feedback process.

According to Rouse (2013), entrepreneurs can be resistant to external input related to their creative ideas, even if the intent is to increase viability. Externally imposed changes can challenge the self-concept of the individual associated with that work, which can produce protective behaviors toward the idea, potentially undermining its success. This is indeed the reaction I was seeing in a number of the entrepreneurs I was working with. But where was that response coming from? These were all intelligent people who appeared to embrace an innovation mindset. This reluctance to embrace feedback and reflect it in the new venture's strategies was already having an impact on whether there would even be a new venture launch, let alone if it would be viable over the long run.

I find it interesting how a few key pieces of research can have a major influence on one's direction. In addition to Zhao and Seibert (2006) and Rauch and Frese (2007), a turning point for me was the discovery of Fauchart and Gruber (2011), one of my earliest encounters with the entrepreneurial identity literature. This paper explores the social identity of venture founders and shows how their identities shape key decisions as their self-concepts imprint on their firms. The authors suggest three types of founder identities: darwinians, who are focused on self-interest, often based on wealth; communitarians, whose goal is to bring something useful to a specific community; and missionaries, who are driven to advance a particular cause. An analysis of my data set -- tech entrepreneur founder stories --

in light of these identities produced numerous gaps. A serendipitous conversation at an AOM Conference with economics and entrepreneurship scholar Henry Sauermann encouraged me to pursue a new look at founder identity that would hopefully explain more of my data set. Soon thereafter, I discovered a rich set of findings in the entrepreneurial cognition literature that supported my observations that early decisions by an entrepreneur are influenced by their motives, values, aspirations, history, and personal circumstances (Murnieks & Mosakowski, 2007; Fauchart & Gruber, 2011; Cardon, Wincent, Singh, & Drnovsek, 2009; Carsrud & Brännback, 2011).

This is the path that led to this research, which investigates the relationship between founder identity -- an entrepreneur's individual values, goals for the firm, and entrepreneurial passion -- and the degree to which an entrepreneur adapts, or pivots, their firm's business model. In paper one, I employ fuzzy set Qualitative Comparative Analysis to create a method for measuring the founder identity core construct of my research; the end result is a founder identity typology. In paper two, I create a model detailing the dimensions of BMI, the other core construct of my research. In paper three, I add a method for measuring BMI via text classification and natural language processing (NLP), and then examine the specifics of how founder identity and BMI relate using rank order analysis and thick, rich descriptions based on the founder interviews.

2.2 Research problem and justification

Much of the research on business model change, or pivoting, is based on work in large organizations. Decisions and processes embedded within large organizations are built on the motivations, skills, and experiences of key managers (Chesbrough, 2010; Amit & Zott, 2012; Sosna, Trevinyo-Rodriguez, & Velamuri, 2010; Schneider & Spieth, 2013). Similarly, strategy and execution in new ventures are driven by the motivations and talents of founders or founding teams (Covin & Slevin, 1991). The difference is that we know new ventures evolve in a distinct manner due to the cognitive capacity constraints and resource limitations faced by many entrepreneurs (Gartner, 1985; Delmar & Shane, 2004). This can have an impact on the development of key processes critical to firm survival, such as strategy

development. However, little is known about the connection between strategic processes, such as business model creation and adaptation, and individual- and team-level psychological factors, including cognition and motivation (Wirtz, Pistoia, Ullrich, & Gottel, 2016; Foss & Saebi, 2017; Tripsas & Gavetti, 2000).

According to Yitshaki and Kropp (2018), "A key challenge in entrepreneurship research is understanding entrepreneurial motivations and their impact on entrepreneurial processes and actions," (p.124). Entrepreneurial motivation incorporates cognitive factors, affective components, compassion, as well as self and social identities (Yitshaki & Kropp, 2018). These motivations influence entrepreneurial behaviors, such as opportunity recognition, perceived feasibility, and decision-making styles (Carsrud, Brännback, Elfving, and Brandt, 2017). Given the complexity of the interactions between cognition, motivation, values, goals, and behavior, scholars have called for additional research on their roles in entrepreneurial processes (Carsrud, et al., 2017; Carsrud & Brännback, 2011; Shane, Locke, & Collins, 2003; Fayolle, Linan, & Moriano, 2014). The objective of this research is to address aspects of these key issues and provide practical insights for entrepreneurs that will help increase cohesion and reduce conflict with stakeholders -- whether employees or investors or customers -- with a goal of increasing effectiveness as they create and develop their ventures and associated strategies.

Academically, this research provides a new avenue for understanding the venture creation process. The results expand our understanding of the psychology of the entrepreneur by demonstrating how personal values, goals for the firm, and passion interact to create a founder identity. This research also provides insight into the how new ventures adapt their strategies by examining the relationship between founder identity and the entrepreneur's cognitive processes related to business model innovation. It can also serve as a platform for research on team cognition, decision-making, and conflict in the early stages of new ventures, when founders attempt to organize an overload of industry and technology information into a plan for sustainable organizations.

3.0 Philosophical and theoretical foundations

3.1 Philosophical foundation

As you read through this dissertation, you can see both my critical realist and social constructivist perspectives at play. This dichotomy began early in life. When I was in grade school, I read an article about women neurosurgeons and became fascinated with the interplay between mind and body. As an undergraduate, I embraced this tug-of-war between the objective and subjective with a double major in biology and psychology. My senior research project was an investigation of the role of the ventral noradrenergic bundle (a set of nerves in the brain) in hyperphagia (strong sense of hunger). The experiment, which involved brain surgery on rats, was my attempt to find positivist roots for a behavior that many scholars at the time saw as rooted in the psychology of the individual (Polivy, & Peter, 1976; Brosin, 1953).

Fast forward to today and I bring that same foundation to my research in entrepreneurship. According to Gartner (1985), new ventures are a gestalt of four variables: (a) the individual who starts the organization, including subjective motivations and objective past experiences, (b) the characteristics of the new firm itself, (c) environmental factors that impact the firm, and (d) the individual's process for launching the venture. My research focuses on the individual's role in entrepreneurship and is based on a critical realist perspective: an assumption that reality exists independent of an individual's thoughts and beliefs, and even independent of an individual's knowledge of their existence, but is interpreted through social conditioning. Specifically, entrepreneurship draws on objectivist assumptions of a social phenomenon that has an existence independent of the individual actors, yet that phenomenon is created based on the perceptions and subsequent actions of those actors, the entrepreneurs.

According to Bhaskar (Houston, 2001), the role of critical realism is to uncover psychological mechanisms as well as the underlying structures that determine and constrain people's activities. Bhaskar's perspective is based on three levels of reality: (a) empirical experienced events, (b) actual events, whether experienced by an individual or not, and (c) causal mechanisms that generate events. This view accommodates what Bhaskar refers to as the "central paradox of science," that people produce knowledge through social activities and this knowledge is just as dependent on the source of its production as tangible goods, such as automobiles and books, are on the people who produce them

(Danermark, Ekström, & Karlsson, 2019). It is the social scientist's job "to interpret other people's interpretations, as people's understandings and actions are an inseparable part of the object of study" (Danermark et al., 2019, p.36) In order to understand an individual's actions, we need to discern the meanings they attach to those actions.

Critical realism provides a useful lens for entrepreneurship, given the central role of the entrepreneur. Naive and scientific realism, by comparison, maintain that reality exists independent of our knowledge; therefore, they lack the ability to fully account for the part that entrepreneurs play in defining their experiences. While natural science attempts to explore a value-neutral world, social science investigates a value-filled world of social phenomena that people interpret through language and concepts that change over time and across contexts (Danermark et al., 2019). This is more conducive to investigations of the psychology of the entrepreneur, which is a complex mix of overlapping constructs, such as cognition, motivation, personality traits, identity, and affect.

Social constructivism also provides a useful lens for entrepreneurship. Individuals use active construction processes when viewing and interpreting their world, but what this means to each actor can differ (Randolph-Seng, Mitchell, & Mitchell, 2015). According to Gergen (2015), it is within our social relationships that we each construct our interpretation of the world. Unlike radical constructivism, which sees reality as based only on what people construct on their own terms, social constructivism holds that actors "understand the world through mental categories, but we acquire those categories through social relationships" (Gergen, 2015, p.30). This blends well with Bhaskar's critical realism, which is described as a moderate social constructivism -- reality exists regardless of how we think of it and our knowledge of it depends on language concepts that are constructed through social processes (Danermark et al., 2019).

This serves as the foundation for my research. Entrepreneurial motivation and founder identity emerge from the languages and living patterns of the entrepreneur as they relate to the world. This can start at an early age and continue throughout their life as family members and role models influence the development of the entrepreneur's vocabularies, values, assumptions, and theories about the nature of the world and how they can interact with it to further their entrepreneurial goals. These values and theories

are reflected in the actions the entrepreneur takes to launch and grow their new venture, including strategy development and business model innovation.

Critical realism and social constructivism provide a pragmatic approach to my research methodology as I attempt to reduce some of my own biases while elevating the sensemaking of the entrepreneurs studied. In paper one, I employ fsQCA, a qualitative / quantitative analysis technique, to analyze interviews with founders and create a classification for measuring entrepreneurial motivation, which is both a personal and a social experience. In paper two, I create a model detailing the dimensions of BMI based on the capabilities of entrepreneurs to understand their environment and dynamically create strategies, roles, and boundaries. In paper three, my investigation of the relationship between founder identity and BMI continues the pragmatic theme. I employ a quantitative analysis using natural language processing (NLP) to reduce researcher bias in combination with a qualitative thematic interpretation to simplify and connect the founder stories.

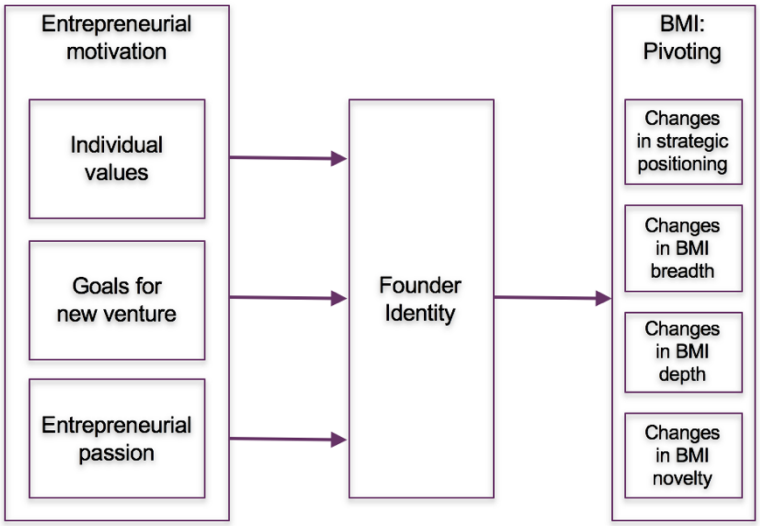
3.2 Theoretical foundation

This dissertation is framed from multiple literature streams in the entrepreneurship, psychology, and strategic change fields as I investigate the relationship between the entrepreneur's founder identity and the decisions they make related to adapting or pivoting the venture's business model. Founder identity is examined as a function of entrepreneurial motivation, including the individual's values (Schwartz, 1992), goals for the firm (Latham & Locke, 2007), and passion (Cardon et al., 2009; Vallerand, 2015). Business model innovation is examined in the context of dynamic capabilities (Teece, Pisano, & Shuen, 1997) that help entrepreneurs integrate, build, and reconfigure internal and external resources to address evolving customer preferences, competitor activities, and external feedback.

The psychology of the entrepreneur is a complex mix of overlapping theories and constructs. Prior research has demonstrated the heterogeneity of entrepreneurs with respect to motivations, aspirations, attitudes, and self-perceptions (Shepherd, Williams, & Patzelt, 2014; Carsrud & Brännback, 2011), yet few studies have looked at whether there are discernable patterns to the interactions between

motivations, identity, and behaviors in entrepreneurs. I focus on motivation and identity because inconsistencies in the entrepreneurial literature make it appear as somewhat of a "which came first, the chicken or the egg" situation. According to Murnieks and Mosakowski (2007), "While we know that entrepreneurs are intrinsically motivated individuals, we still struggle to understand what drives these motivations" (p.5-1). A number of entrepreneurship studies are based on Stryker and Burke's (2000) social identity theory, which emphasizes the process of internalizing social roles and associated expectations into an individual's self-concept. This process leads to the formation of identities within the individual, which motivate behavior (Murnieks & Mosakowski, 2007; Fauchart & Gruber, 2011; Sieger, Gruber, Fauchart, & Zellweger, 2016). Yet in the context of entrepreneurship, a founder identity only forms once an entrepreneur launches a new venture (Cardon et al., 2009). This implies that the entrepreneur is motivated to launch the venture before founder identity is formed. The question then is which motivations are relevant to this context -- internal, external, or a combination of the two? Research into prior literature streams on entrepreneurial goals, personal values, and passion have left gaps that are addressed with the model I employ in this dissertation: entrepreneurial motivation (values + goals + passion) informs founder identity, which then influences business model innovation.

Figure 1. The founder identity construct, derived, at least in part, from the individual values, goals for the firm, and passion of the entrepreneur, influences the degree of change (number of changes) related to the firm's business model.



There are a number of alternative foundations that I considered, including the Big Five personality traits and cognitive dissonance. As discussed in Section 2.1, the Big Five personality traits have already been examined in numerous studies in the entrepreneurial psychology literature from a variety of angles, including their relationship to business creation and business performance. Likewise, individual characteristics, such as entrepreneurial self-efficacy (Chen, Greene, & Crick, 1998), cognitive biases (Baron, 1998), and psychological ownership (Grimes, 2018) have been studied. Cognitive dissonance, a motivational state produced by the psychological discomfort that arises when two cognitions held by an individual are at odds (Festinger, 1957), has also been studied in the entrepreneurship literature, although to a lesser degree (Wood & McKinley, 2010). I decided against studying cognitive dissonance at this time as my initial interest was in what fuels the perceptions and thoughts that can feed dissonance and, thus, impact decision-making. The intersection of feedback, cognitive dissonance, and entrepreneurial decision-making is an area I am interested in investigating in the future.

The foundation for the BMI component of this research is based on strategic change with a dynamic capabilities lens (Teece, 2007). The spotlight is on the capabilities of entrepreneurs to understand their environment and dynamically recombine and reconfigure leadership roles, strategies, and resources towards a goal of profitable growth. An adaptive learning approach could have been taken, but that has already been explored by numerous scholars. For example, Minniti and Bygrave (2001) proposed a model of entrepreneurial learning involving a series of choices based on experience with successes and failures. Barton (2010) discovered that "as founders learn from experience, receive feedback and advice, and respond to unexpected events, they make changes to the venture" (p.xiii). My experience is that not all entrepreneurs make such changes and those that do, embrace those changes to varying degrees. This then led to my interest in the presence or absence of the dynamic capabilities that lead to the ability to change.

4.0 Literature review overview

4.1 Founder identity

According to Bird (1992), "Ventures get started and develop through initial stages largely based on the vision, goals, and motivations of individuals. New organizations are the direct outcome of these individuals' intentions and consequent actions, moderated or influenced by environmental conditions" (p.11). Goals are mental representations of behaviors or outcomes associated with positive affect that are the object or aim of a person's actions (Dijksterhuis & Aarts, 2010; Locke, Shaw, Saari, & Latham, 1981). Entrepreneurs express their goals as what they hope to accomplish through their new ventures, e.g. addressing a market need or societal problem. Values are a broad, relatively stable subset of goals that guide perceptions, attitudes, and behaviors over time and in different contexts (Allport, 1961; Schwartz, 1992).

Goals and values are seen in an entrepreneurship context in the form of entrepreneurial motivation, the short- and long-term goals an entrepreneur seeks to achieve through the perceptions, attitudes, and behaviors associated with owning a business (Robichaud, McGraw, & Roger, 2001).

Entrepreneurial motivation guides decisions about engaging in activities related to venture creation and development that are congruent with the individual's personal values (Holland & Shepherd, 2013; Bardi & Schwartz, 2003). This can help explain why people facing similar situations may not make the same decisions and instead take divergent actions (Schwartz, 2006), such as entrepreneurs reacting to changes in customer needs with different products.

Personal, role, and social identities take on an important function in guiding the decisions and behaviors related to venture creation and development, especially under conditions of uncertainty or ambiguity, as commonly encountered by entrepreneurs (Carsrud & Brännback, 2014; Navis & Glynn, 2011). As an individual creates a new venture, they develop a founder identity, which drives much of their decision-making related to the firm (Mathias & Williams, 2017; Fauchart & Gruber, 2011). Founders behave in ways that are consistent with their identities and they imprint components of their self-concepts on key dimensions of their firms (Fauchart & Gruber, 2011), such as product development and business models.

4.2 Business model innovation

Firms tend to employ a dynamic process of adjusting to risk, uncertainty, and environmental turmoil by questioning, verifying, and redefining their interactions (Miles, Snow, Meyer, and Coleman, Jr., 1978). This process is based on the choices made by top managers in response to change (Porter, 1980), such as in customer demographics or access to funding via the capital markets. These environmental changes and managers' responses can have a direct impact on the activities of an organization and its long-term viability.

A firm's business model is a potential source of competitive advantage. It represents a reflection of "management's hypothesis about what customers want, how they want it, and how the enterprise can organize to best meet those needs, get paid for doing so, and make a profit" (Teece, 2010, p.172). Innovating the business model, BMI, refers to the discovery of different ways to create, deliver, and capture value for an organization (Markides, 2006; Casadesus-Masanell & Zhu, 2013). While there is no

agreement in the literature as to the dimensions of the BMI construct or the intensity of variation needed to create a "different" business model, there is a fair amount of common ground in four key areas: strategic positioning, depth of innovation, breadth of innovation, and novelty of innovation.

- Strategic positioning is the creation of a unique and valuable position in the market that differentiates a firm from its competitors and contributes to improved performance (Porter, 1980; Allen & Helms, 2006). According to Porter (1980), a firm's strategic position can take one of three forms: (a) overall cost leadership, (b) differentiation, or (c) a focused position based on cost or differentiation.
- Depth of BMI helps us understand the innovation adoption behavior of an organization as it relates to business model components. BMI innovation has been previously described as incremental, radical, or disruptive levels of change (Damanpour, 1991; Govindarajan and Kopalle, 2006; and Osiyevskyy & Dewald, 2015).
- Breadth of BMI is an indication of the scope of change to a firm's business model with respect to the value created, delivered, and captured. Some scholars define this at a fairly granular level in terms of number of individual components of a business model that are changed, such as the nine elements of Osterwalder and Pigneur's (2005) business model canvas representation (Pedersen et al., 2018; Cortimiglia, Ghezzi, & Frank, 2016). Others take a higher level view based on which value elements are changed, such as value proposition or value delivery (Velu & Jacob, 2016; Saebi, Lien, & Foss, 2017; and Gerasymenko, De Clercq, & Sapienza, 2015).
- Novelty of BMI is generally used to indicate the creation and use of a business model that is new to a particular context. The context can range from new to the company (Spieth & Schneider, 2016; Bock, Opsahl, George, & Gann, 2012; Johnson et al., 2008), new to the market (Taran et al., 2015), new to the industry (Santos et al., 2009), or never seen before and, therefore, new to the world (Taran, Boer, & Lindgren, 2015).

5.0 Research questions

The goal of this research is to provide new insights into an underexplored phenomenon -- why some founders pivot their business models more or less than others. I propose that the motivation of the entrepreneur plays a key role in the formation of their founder identity. This identity then establishes corridors that confine potential behaviors, such as how to respond to feedback from customers or investors. For team members, the degree of similarity of these corridors can be a fundamental source of cohesion or conflict. This can impact the launch of new ventures as well as the long-term viability of the organization. Cohesion among team members with similar motivations and identities can lead to complementary priorities when defining the components of the firm's business model, such as strategic positioning, new product development, and resource allocation. On the other hand, conflicting motivations and identities can be damaging when they interfere with decision-making processes, especially in fast-moving, technology industries (Eisenhardt, 1989; Shepherd & Haynie, 2009). This can lead to founders not soliciting feedback from key stakeholders or, if feedback is sought, to founding teams not coalescing around a united response. Thus the central question of this research:

How does variability of founder identities relate to the strategic decision-making process of business model innovation in new ventures?

In order to address this question, I needed to better understand and operationalize the founder identity construct. There is little agreement among scholars about entrepreneurial motivations or how these relate to founder identity. Researchers do agree than there is a heterogeneity of ways to explain why actors engage in entrepreneurial ventures. These range from wealth creation to independence to self-realization (Yi & Duval-Couetil, 2018; Cardon, Glauser, & Murnieks, 2017; Kuratko, Hornsby, & Naffziger, 1997; Carter, Gartner, Shaver, & Gatewood, 2003; Cassar, 2007). This led me to ask:

How can we create a more robust classification of founder identity types in order to better understand what drives entrepreneurial behaviors in new ventures?

This resulted in the creation of a more robustly developed founder identity classification in paper one that could be examined in the context of a variety of entrepreneurial decision-making situations, including opportunity recognition, social network formation, venture performance, and, for this research, business model development.

I ran into a similar challenge with BMI. Like entrepreneurial motivation and founder identity, there is disagreement in the business model innovation literature about definitions and dimensions. I needed a way to better understand and operationalize the BMI construct. This led me to ask:

How can the core dimensions of the business model innovation construct be consolidated and classified in a way that can be used to guide future research?

This resulted in the creation of a model that defines the dimensions of the BMI construct in paper two and a method for operationalizing its use in paper three. This more comprehensive view provides a basis for systematic investigations of the impact of changes to individual dimensions of BMI as well as to changes in multiple dimensions. Once the two core constructs were further defined, I could return to the central investigation, the relationship between founder identity and business model innovation, which is explored in paper three.

6.0 Conclusion

6.1 Major findings and discussion

The creation of a founder identity classification (paper one) reveals a core set of identities based on values, goals, and passion that motivate entrepreneurs: (a) power/financial success, (b) achievement/innovation, (c) stimulation/solving big problems, (d) universalism/social cause, (e) self-

direction/independence, and (f) security/organization. From these motivations, founder identity personas emerge. For example, the Hero identity describes founders who are motivated to create and explore; they tend to focus outside themselves, dedicating themselves to understanding and protecting the welfare of others, such as building an organization for their employees, or creating social impact with their new venture. More prominent among males, Problem Solving Overachievers are problem solvers who have a strong sense of independence and are action-oriented; they are willing to take on big challenges and causes in order to achieve success, which they define in terms of control over people and resources. For females, Harmonious Overachievers tend to value harmony and relationships over excitement; they also have a strong sense of independence, are action-oriented, and are willing to take on causes that protect the welfare of others. Unlike males, they are more likely to focus on achievements related to creating a stable organization for themselves and their employees. Community Builders are non US-born founders who create successful organizations that build on communities, both inside and outside the firm, akin to the "communitarians" identified by Fauchart and Gruber (2011). For US-born entrepreneurs, two personas surface. Seekers value building an organization, but they also look for excitement in the form of big challenges; this is similar to the "discoverer" identity discussed by Zuzul and Tripsas (2019). In line with the "revolutionary" identity from Zuzul and Tripsas (2019), Trailblazers value self-direction and independent thoughts and actions, which push them to explore as well as build. Independence may also produce some level of tunnel vision, such that they are less likely to adapt the organization based on external feedback or changing industry conditions.

Operationalization of the business model innovation construct (papers two and three) provides a view of BMI along four primary dimensions: strategic planning, BMI depth, BMI breadth, and BMI novelty. While founders show a heterogeneity of interest in BMI, there is variation in the areas of interest; strategic planning and BMI breadth are discussed to a much greater extent than BMI depth and BMI novelty. It is not surprising that strategic positioning (how we differentiate) and BMI breadth (what we make and for whom) are top of mind, as founders were asked to focus on the early stages of their

ventures. Innovation and novelty are mentioned less, but appear to be an assumed part of the conversation, as all the entrepreneurs are creating ventures that employ innovative, new technologies.

Overall BMI is discussed more by females than males. Within BMI dimensions, strategic positioning is discussed more by males while the other three dimensions are discussed more by females. This may indicate that males show more concern about their position vis-a-vis competitors (strategic positioning), while females focus more on customer value and the innovativeness of their products (BMI breadth, depth, and novelty). These findings are in line with prior research that demonstrates females are less competitively inclined than males, more likely to start businesses in less competitive industries, and less willing to take risks, especially in the role of nascent entrepreneurs (Alves, Galina, Macini, Cagica, & Costa, 2017; Bonte and Piegeler, 2013; Heilbrun, 2004). The variations in mentions of innovation are interesting, given that the founders in this sample are all creating new technologies. Prior research shows conflicting results. Hyrsky & Tuunanen (1994) found that females have higher levels of innovation preference than males. Mueller & Thomas (2000) found that females are less likely to demonstrate an innovative orientation than males.

US-born founders discuss overall BMI and feedback more than non US-born founders. Curiously, non US-born founders discuss innovation far more than US-born. This may be the result of language pattern differences between native and non-native English speakers. Alternatively, it may be a result of gender differences as females are 42.9% of the non US-born sample vs. 17.6% of the US-born sample. Na and Shin (2019) found that female owners in emerging markets are more positively related to innovation measures than males, including product, process, R&D, organizational, and marketing innovation.

The final step in this research is an analysis of the relationship between founder identity and BMI in venture founders. The results show that founders whose identities incorporate the core motivational components of achievement/innovation, stimulation/solving big problems, and/or self-direction/independence are most likely to engage in discussions about BMI. On the other hand, founders whose identities incorporate the core motivational components of universalism/social cause, power/financial success, or no core motivations are least likely to engage in discussions about BMI.

These findings align with the motivation research by Schwartz (1992) and Bardi et al. (2008). Individuals whose motivations relate to achievement are looking for success; this may encourage them to pivot their business models in order to better align with market needs and, thereby, increase revenues and customer satisfaction. Those who are motivated by stimulation tend to embrace novelty; as a result, they may be more likely to adopt new and different adaptations of the firm's business model. While I expected those who are motivated by self-direction to be less likely to accept feedback, Schwartz (1992) defines this motivational value as independent thought and action based on choosing, creating, and exploring; these actions align with a dynamic capabilities mindset that can foster BMI. In contrast, founders motivated by power are more likely to fixate on power and control; this can be at odds with the flexibility needed to adapt to a continuously changing environment. Similarly, individuals motivated by universalism are more concerned with unity, justice, and equality; this can be reflected in an attitude of appeasement which results in longer periods of deliberation and consensus-building, putting a company at a disadvantage vs faster moving competitors.

6.2 Recommendations and future research

In stepping back and considering the entirety of these studies, several gaps emerge for future research. These were not apparent when considering the individual studies, which analyze founder values and goals in the context of motivations to launch a firm.

One question that arises is what role do entrepreneurs' values and goals play when considering other contexts, such as how new ventures react to major shocks that affect virtually all organizations in all industries, as happened with the coronavirus pandemic? Some scholars speculate that the millions of small business closures that occurred in 2020 will encourage start-up activity in the near future, similar to responses seen after prior recessions (Wagner, 2020; Stangler, 2009). Will entrepreneurs respond in distinct ways based on differing values and goals? How will this be reflected in firm business models? Are we more likely to see less innovation as entrepreneurs attempt to replace closed businesses or will they embrace a more revolutionary mindset to entrepreneurial opportunities? A study by MIT Lincoln

Laboratory (Foy, 2020) uncovered higher demand for personal protective equipment (PPE) than expected. As a result, state and federal officials are encouraging local businesses to launch PPE firms and existing firms to convert some of their production capacity to PPE. How will different founder identities react to this feedback?

There is also an opportunity to consider how founder identities relate to leadership styles, such as transformational vs. transactional vs. laissez-faire (Eagly, Johannesen-Schmidt, & van Engen, 2003). Are universalism/organization identities more likely to embrace a laissez-faire style, which generally fails to take responsibility for managing, including strategic planning? Are power/financial success identities more likely to be transactional leaders that appeal to their own and others' self-interests by establishing exchange relationships with them? Does this more conventional sense of manager/subordinate responsibilities diminish feedback that could impact adaptations to the firm's business model? Are achievement/innovation and simulation/solving big problems identities more likely to engage in transformational leadership styles that mentor and empower followers to contribute more capably to the organization?

Founder values and goals also relate to how organizations attempt to navigate ethical issues. For instance, organizations around the world are attempting to discover more productive and less disruptive methods for engaging internal and external stakeholders in conversations about civil unrest and discrimination. Nike is reported as setting the tone for many brands as it advocates for social justice reform (Roberts, 2020). Tech brands like Apple, Amazon, and Facebook have issued similar statements, but with varying degrees of acceptance from the public (Peters, 2020). How much of this has to do with founder or top management values vs. attempts to garner favorable publicity by advocating a popular position? (Mull, 2020).

Considering gender and country of origin perspectives, there is an opportunity to explore the increased engagement of females and non US-born founders with BMI innovation. Does this relate to entrepreneurial traits like self-efficacy (Nikou, Brännback, & Carsrud, 2019)? How do high vs. low levels of self-efficacy relate to levels of BMI? Might differences in engagement with BMI innovation be an

indication that these founders are more likely to choose blue ocean vs. red ocean entrepreneurial opportunities?

Additional information is provided in the attached three papers, which detail this dissertation's research:

- Paper one. Developing a robust founder identity classification using fuzzy set Qualitative Comparative Analysis.
- Paper two. The evolution of business model innovation: Classifying dimensions and intensity of change.
- Paper three. Why do some venture founders pivot to a greater or lesser degree than others? The influence of founder identity on business model innovation.

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Paper 1: Developing a Robust Founder Identity Classification Using Fuzzy Set Qualitative Comparative Analysis

By Shari L.S. Worthington

PhD Candidate

Foisie Business School

Worcester Polytechnic Institute

100 Institute Road

Worcester, MA 01609

sharilee@wpi.edu

July 2020

Dissertation Committee Members:

Dr. Steven S. Taylor, Committee Chair, Foisie Business School, WPI
Dr. Frank Hoy, Dissertation Committee, Foisie Business School, WPI
Dr. Adrienne Hall-Phillips, Dissertation Committee, Foisie Business School, WPI
Dr. Alan Carsrud, Dissertation Committee, Åbo Akademi University

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1.0 ABSTRACT

Entrepreneurs have been shown to be motivated to launch new ventures to fill a heterogeneity of needs, including a variety of motivations, aspirations, attitudes, and self-perceptions. Yet few studies have looked at whether there are discernable patterns to the interactions between these needs. I propose that heterogeneity in entrepreneurs' personal values, goals for the firm, and passion, expressed in their founder identities, can help explain motivational differences. This study employs a configurational approach, based on fuzzy set Qualitative Comparative Analysis (fsQCA), to create a classification of founder identities based on values, goals, and passion. The results reveal six sets of value-goal identity conditions that predict entrepreneurial passion in entrepreneurs with high levels of consistency and coverage: power/financial success, achievement/innovation, stimulation/solving big problems, universalism/social cause, self-direction/independence, and security/organization. Differences in the configurations of conditions are found when gender is considered and when country of origin is considered. Taken together, the findings indicate that a fuzzy set analysis provides a more robust approach for understanding the combined and complex effects of the value and goal conditions leading to entrepreneurial passion, and contributes a framework for using all three constructs to understand and research entrepreneurial motivation and founder identity.

2.0 INTRODUCTION

2.1 Background

Entrepreneurs are unlikely to get their new venture's strategy perfect out of the gate. For instance, first selections of business models often have to be abandoned or adapted as initially unavailable information becomes known (Andries & Debackere, 2006). Early decisions by the founder about the products created, industries served, and customer needs addressed, as well as the degree to which they are adapted to fit market opportunities, can have a lasting impact on future outcomes of the firm (Bird, 1992; Mathias, Williams, & Smith, 2015). These decisions are influenced by the entrepreneur's idiosyncratic set of personal, role, and social identities, which are based on motives, values, aspirations, history, and

personal circumstances (Murnieks & Mosakowski, 2007; Fauchart & Gruber, 2011; Cardon, Wincent, Singh, & Drnovsek, 2009; Carsrud & Brännback, 2011). During the process of creating a new venture, the entrepreneur develops a founder identity, which drives much of the entrepreneur's decision-making related to the firm and then imprints on the emerging organization (Mathias & Williams, 2017).

This study investigates an expanded view of founder identity that incorporates three motivational constructs: individual values, the entrepreneur's goals for the firm, and entrepreneurial passion. When taken together, the combination of values, goals, and passion inform entrepreneurial motivation as well as the entrepreneur's founder identity. Fuzzy set Qualitative Comparative Analysis (fsQCA, Ragin, 2008) is used to show the relationship between values, goals, and passion. FsQCA is a set theoretic analysis technique designed to explore complex phenomena in more detail than other linear techniques, such as regression analysis (Covin, Eggers, Kraus, Cheng, & Chang, 2016), providing a more holistic view of the relationships between multiple elements (Skarmeas, Leonidou, & Saridakis, 2014). In the case of entrepreneurial motivation, values, goals, and passion create a complex pattern of motivation, as demonstrated by existing research that shows conflicting results. This pattern can best be represented as multiple causal configurations (equifinal pathways) that predict the presence of passion. The resulting causal configurations produce a classification that provides a robust framework for understanding entrepreneurial motivation and founder identity.

2.2 Research problem and justification

This research attempts to provide new insights into a poorly understood phenomenon – the relationship between motivational values, goals, and passion, and the impact on entrepreneurs and their new ventures. The central question of this research is: **How can a more robust classification of founder identity types be created in order to better understand what drives entrepreneurial behaviors in new ventures?**

There is little agreement in the literature about entrepreneurs' motivations, other than that there is a heterogeneity of ways to explain how actors behave in an entrepreneurial context, such as personal

interest, intrinsic and extrinsic rewards, independence, innovation, financial success, competition, social cause, and self-realization (Yi & Duval-Couetil, 2018; Cardon et al., 2017; Kuratko et al., 1997; Carter, Gartner, Shaver, & Gatewood, 2003; Cassar, 2007). The formation and growth of new firms is a complex process. According to Shane, Kolvereid, and Westhead (1991), "the process can only be identified by in-depth investigation at the microlevel of the new firm and the new firm founder(s)" (p. 431). Given the complexity of the interactions between values, goals, motivation, cognition, and behavior, scholars have called for additional research on their roles in entrepreneurial processes in order to explore such questions as: what motivates different types of entrepreneurs to form different types of businesses, e.g. tech, social, or services; how do different entrepreneurial motivations impact new venture performance; or how are entrepreneurial values and goals linked to new venture intentions (Carsrud, et al., 2017; Carsrud & Brännback, 2011; Shane, Locke, & Collins, 2003; Fayolle, Linan, & Moriano, 2014). This research addresses that call and proposes that heterogeneity in entrepreneurs' personal values, goals for their firm, and passion express their entrepreneurial motivation, which is incorporated into their founder identities as they launch a new venture. These founder identities then drive much of the decision-making processes in the early days of the firm.

The goal of this research is to address aspects of these key issues and provide insights for practical decision-making for entrepreneurs and their support systems as new ventures are created and developed. People often look for greater alignment between their current and future identities, attempting to find a better fit between personal values and practices (Rae, 2005). This can propel entrepreneurs to move from dissatisfying roles to more satisfying ones as they create new ventures. Entrepreneurial education and support that encourage entrepreneurs to articulate their self-identities can help them better define opportunities and business practices that are congruent with their identities (Mills & Pawson, 2011). An identity also tends to establish restrictive corridors for potential behaviors, such as how to respond to external feedback (Powell & Baker, 2014). This can be a fundamental source of conflict in entrepreneurial ventures and can undermine the long-term viability of the organization. Such conflict can lead to conflicts between founding team members, such as confused priorities when defining new

products, inefficiencies in allocating resources, and mixed messages in branding, all of which can be detrimental to the viability of the firm. This study provides insights for practical decision-making for entrepreneurs, new venture teams, and investors related to decision-making. The more opportunity there is for open discussions about personal values and motivations and how these can affect the new venture, the more likely effective decisions can be made and damaging levels of conflict can be avoided.

Academically, this study provides a new avenue for understanding the venture creation process. The results of this research create a more robustly developed founder identity classification that can then be examined in the context of a variety of entrepreneurial decision-making situations, including opportunity recognition, business model development, social network formation, and venture performance.

This paper proceeds as follows. A review of the entrepreneurial motivation literature is organized around the core constructs of values, goals, and passion. Limitations of existing literature are addressed, and then a theoretical model and propositions are developed to address these gaps. fsQCA is used to test the propositions and create a founder identity classification. This set-theoretic approach provides the ability to handle high degrees of complexity in the way that different causal conditions combine to bring about an outcome (Ragin, 2008). Recent studies suggest that applying fsQCA in entrepreneurship can offer new insights into causally complex issues (Nikou, Brannback, Carsrud, & Brush, 2019; Kraus, Ribeiro-Soriano, & Schussler, 2018; Dimov, 2017; Beynon, Jones, & Pickernell, 2016; Coduras, Clemente, & Ruiz, 2016; Munoz & Dimov, 2015; Krause, Acharya, & Covin, 2014; Balodi & Prabhu, 2014), such as entrepreneurial motivation and founder identity.

2.3 Delimitations of scope and key assumptions

This research focuses on the primary founding entrepreneur in technology ventures. This provides an opportunity to examine the behavior of those responsible for the majority of decisions in the early stages of the company's formation. Concentrating on technology ventures allows examination of decisions within organizations that are often routinely exposed to uncertainty, risk, and hostile

environments. In such situations, wrong decisions can have a large impact on the new venture, as there is often a limited time horizon for generating revenue and profits. The impact of identities from multiple founders, or a founding team, is briefly discussed, but is beyond the scope of this study.

Throughout this paper, values, personal values, and individual values are used interchangeably. Likewise, goals, individual goals, and the entrepreneur's goals for the firm are used interchangeably, all referring to the founder's goals they seek to accomplish through the new venture. Motivation and entrepreneurial motivation are both used to indicate the application of motivation to the new venture context. Founder identity is used to refer to the identity of an entrepreneur who has founded one or more new ventures. Entrepreneurial identity is used to refer to the identity of an entrepreneur who is considering or planning to launch a new venture but has yet to legalize the new organization. Prior literature occasionally uses the terms entrepreneurial identity and founder identity interchangeably.

3.0 LITERATURE REVIEW: Entrepreneurial motivation and founder identity

3.1 Introduction

There is no doubt that the entrepreneur is a vital component of the entrepreneurial process (Baron, 2007; Shook, Priem, & McGee, 2003). Research shows that early decisions by the entrepreneur in their role as venture founder can have a lasting impact on future outcomes of the firm, such as the products created, industries served, and customer needs addressed (Bird, 1992; Mathias, Williams, & Smith, 2015). These decisions are influenced by the entrepreneur’s idiosyncratic set of personal, role, and social identities, which are based on values, motives, goals, history, and personal circumstances (Murnieks & Mosakowski, 2007; Fauchart & Gruber, 2011; Cardon, Wincent, Singh, & Drnovsek, 2009; Carsrud & Brännback, 2011).

Early research on the personality traits of entrepreneurs and their relation to venture creation and success found mixed effects (Brockhaus & Horwitz, 1986; Gartner, 1989; Carsrud, Olm, & Thomas, 1989; Low & MacMillan, 1988). Yet both investors and entrepreneurs point to personal characteristics as reasons for success (Hitt, Ireland, Camp, & Sexton, 2001; Smith & Smith, 2000). Recently, there has been

a resurgence of interest in entrepreneurial characteristics. Some scholars are applying new analysis techniques to studies of entrepreneurial personality traits with mixed results (Zhao & Seibert, 2006; Rauch & Frese, 2007; Konon, Fritsch, & Kritikos, 2018) and others are moving beyond traits to study motivation, cognition, and behavior with more positive results (Baron, 1998; Busenitz & Barney, 1997; Baum & Locke 2004; Fayolle, et al., 2014).

3.2 Personal values and goals for the firm

Goals are mental representations of behaviors or outcomes associated with positive affect that are the object or aim of a person's actions (Dijksterhuis & Aarts, 2010; Locke, Shaw, Saari, & Latham, 1981). Studies show that goals serve as a standard for evaluating performance and, thus, affect satisfaction and persistence (Latham & Locke, 2007; Kuratko, Hornsby, & Naffziger, 1997). Setting goals increases performance at the individual, team, and organizational levels, with specific and high goals leading to higher performance (Locke & Latham, 2002; Latham & Locke, 2007). For entrepreneurs, goals are reflected in what the individual is hoping to accomplish through the new venture, e.g. commercialize a new technology or address a societal problem.

Values, a subset of goals, are broad, relatively stable goals that guide perceptions, attitudes, and behaviors over time and in different contexts (Allport, 1961; Schwartz, 1992). Research shows that executives' cognitive processes, such as how they approach strategic decision-making, often emerge based on personal values and identities. For example, the Lycos founding team formed the firm's strategy based on a combination of their personal values and their mental models of the Internet industry (Gavetti & Rivkin, 2007). The personal identities of textile and apparel firm founders influenced their strategic responses to an industry decline (Powell & Baker, 2014). Scholars have demonstrated that personal identity influences the way executives strategize, including how they attend to and interpret information, and how they incorporate their values into the process (Fauchart & Gruber, 2011; Tripsas & Gavetti, 2000).

Similar to other cognitive concepts, values vary in terms of concreteness, breadth, and accessibility (Maio, 2010). Values have been shown to be an important factor contributing to behavior and they relate more consistently when people think of specific ways the values can be expressed (Bardi & Schwartz, 2003; Maio, 2010; Cieciuch, Schwartz, & Davidov, 2015). Schwartz (1992) expanded early research on values and motivation by proposing and testing a theory of the structure of human values. Broadly tested, his classification incudes 10 motivational types of values that can be found across many societies. From these, Bardi, Calogero, and Mullen (2008) operationalized the values and created a "value lexicon" that can be used to analyze natural language in interviews and documents to address questions about the presence and importance of values (see Table 1).

Table 1. Schwartz's (1992) 10 values based on motivational types, their higher order value types, and the associated value lexicon developed by Bardi, et al. (2008).

Value Types	**Values**	**Definition**	**Value lexicon**
Self-enhancement	Power	Social status and prestige, control over people and resources	Power, strength, control
Self-enhancement	Achievement	Personal success through demonstrating competence according to social standards	Achievement, ambition, success
Self-enhancement, openness to change	Hedonism	Pleasure for oneself	Luxury, pleasure, delight
Openness to change	Stimulation	Excitement, novelty, challenge in life	Excitement, novelty, thrill
Openness to change	Self-direction	Independent thought and action; choosing, creating, exploring	Independence, freedom, liberty
Self-transcendence	Universalism	Understanding, appreciation, tolerance, and protecting welfare of others and nature	Unity, justice, equality

Self-transcendence	Benevolence	Preservation and enhancement of welfare of people who are in personal contact	Kindness, charity, mercy
Conservation	Tradition	Respect, commitment, acceptance of customs and ideals of traditional culture or religion	Tradition, custom, respect
Conservation	Conformity	Restraint of actions and impulses that might upset or harm others and violate social norms	Restraint, regard, consideration
Conservation	Security	Safety, harmony, and stability of society, relationships, and self	Security, safety, protection

Goals and values can be applied to the entrepreneurship context in the form of entrepreneurial motivation, which is defined as the short- and long-term goals an entrepreneur seeks to achieve through the perceptions, attitudes, and behaviors associated with business ownership (Robichaud, McGraw, & Roger, 2001).

According to Carsrud, et al. (2017), "entrepreneurs have the same motivations as anyone for fulfilling their needs and wants in the world; however, they use those motivations in a different manner – they create ventures rather than just work in them" (p. 187). Entrepreneurial motivation guides decisions about engaging in activities related to venture creation and development that are congruent with the individual's personal values (Holland & Shepherd, 2013; Bardi & Schwartz, 2003). This can help explain why different people facing similar situations may make diverging decisions and take alternate actions (Schwartz, 2006).

Prior research shows that entrepreneurs are motivated to launch new ventures to fill a heterogeneity of needs, as shown in Table 2. Over time, a variety of scales have been developed by scholars, each influenced by the authors' differing perceptions of entrepreneurial motivations or roles. Some used factor analysis to create general categories of motivation, such as creation, personal interest, and management (Yi & Duval-Couetil, 2018), or extrinsic rewards, intrinsic rewards, independence / autonomy, and family security (Kuratko, et al., 1997). Others are based on more detailed lists of

motivations consolidated from prior research, such as innovation, independence, recognition, roles, financial success, and self-realization (Carter, Gartner, Shaver, & Gatewood, 2003; Cassar, 2007). Among the smaller set of studies focused on technology entrepreneurs, there is general agreement on only one motivation, the desire to innovate / explore new technologies.

Table 2. Motivational factors that lead entrepreneurs to launch new ventures.

				ENTREPRENEURIAL MOTIVATION FACTORS											
AUTHORS	**SAMPLE**	**COUNTRY**	**METHODS**	**Financial success**	**Innovate / technology**	**Indepen-dence**	**Self-realization**	**Recogni-tion**	**Role model**	**Social cause**	**Challenge/ learning**	**Leader-ship**	**Commun-ity contri-bution**	**Market need**	**Family security**
Lasso, Mainardes, & Motoki, 2018	Founders and owners of nascent tech startups	Brazil	Survey	√	√		√					√			
Yi & Duval-Couetil, 2018	Engineering undergraduate students	USA	Scale construction & analysis	√	√		√	√		√		√		√	
Yitshaki & Kropp, 2016	High-tech entrepreneurs, social entrepreneurs	Israel	Interviews		√					√					
Staniewski & Awruk, 2015	Students who are potential entrepreneurs	Poland	Survey	√		√	√								
Fauchart & Gruber, 2011	Founders of sports-equipment firms less than 8 years old	Switzerland, Germany, France	Interviews	√						√			√		
Edelman, Brush, Manolova, & Greene, 2010	PSED database, nascent entrepreneurs	USA	Secondary data analysis	√	√	√	√	√	√						
Clarke & Holt, 2010	Entrepreneurs of firms less than 5 years old	UK	Open-ended survey	√	√	√		√		√	√	√	√		
Cassar, 2007	PSED database, nascent and actual entrepreneurs	USA	Secondary data analysis	√	√	√	√	√	√						
Carter, Gartner, Shaver, & Gatewood, 2003	PSED database, nascent entrepreneurs	USA	Secondary data analysis	√	√	√	√	√	√						
Douglas & Shepherd, 2002	University alumni with business degree	Australia	Survey			√									
Robichaud, McGraw, & Roger, 2001	Owner-managers of service/retail businesses 5+ years old	Canada	Scale construction & analysis	√		√	√	√			√				√
Amit, MacCrimmon, Zietsma, & Oesch, 2000	High-tech entrepreneurs	Canada	Survey, interviews		√	√					√				
Kuratko, Hornsby, & Naffziger, 1997	Entrepreneurs / small business owners	USA	Scale construction & analysis	√		√		√			√				√
Birley & Westhead, 1994	Owners/managers of new businesses	UK	Survey	√		√	√	√	√						
Shane, Kolvereid, & Westhead, 1991	Entrepreneurs	UK, New Zealand, Norway	Survey			√		√	√		√				
Roberts, 1991	High-tech spinoffs from MIT and related research labs	USA	Survey, interviews	√	√	√	√								
Corman, Perles, & Vancini, 1988	High-tech entrepreneurs	USA	Interviews		√			√						√	
Scheinberg & MacMillan, 1988	Entrepreneurs	11 countries	Survey	√		√	√	√					√		

While the creation and implementation of values and goals are motivational forces for entrepreneurs, they create a complexity of interactions (Carsrud, et al., 2017). There can be reciprocal relationships between motivation, goals, and cognition. Cognition incorporates beliefs, desires, intentions, and motives (Perwin, 2003). At the same time, motivation can influence goals as well as entrepreneurial cognition. This can take the form of opportunity recognition, perceived feasibility, self-efficacy, social norms, and decision-making styles (Elfving, 2008). Given this complexity, a number of scholars have called for additional research on the role of values and motivations in understanding entrepreneurial cognitions and behaviors (Carsrud, et al., 2017; Carsrud & Brännback, 2011; Shane et al., 2003; Fayolle, et al., 2014; Holland & Shepherd, 2013; Baum & Locke, 2004; Perwin, 2003). This research addresses that call and proposes that heterogeneity in entrepreneurs' motivations in terms of personal values and goals for the firm, as expressed in their founder identities, provides a framework for exploring differences in decision making.

3.3 Passion

Exploring entrepreneurial motivation also raises a question about the role of passion. What is the nature of passion? Is it an emotion or something else? This question has been debated among scholars since the early Greek philosophers. Yet as a scientific discipline, research into passion is in its infancy, initiated by motivational psychologist Vallerand in his early studies on the duality of passion (Vallerand, Blanchard, Mageau et al., 2003). While passion can lead to more positive emotions, it is not considered an affect or a trait. Most researchers view passion as an intense positive motivational state that is directly tied to an individual's values, goals, and identity. According to Vallerand (2015), passion is "a strong inclination toward a specific activity, concept, object, or person that one loves (or at least strongly likes), highly values, invests time and energy in on a regular basis, and that is part of one's identity" (p. 833).

Passion can be defined by six core elements: (a) passion is directed toward a specific activity, (b) passion involves a deep and enduring liking or love of the activity, (c) the activity is highly valued and meaningful for that person, (d) passion is motivational rather than emotional, (e), passion provides high

levels of psychological energy and persistence, and (f) passion emerges when the activity is internalized in the person's identity (Vallerand, 2015).

Vallerand and Houlfort (2019) make a case for at least three forms of motivational states. Intrinsic motivation is liking an activity for its own sake or for the fun of it. Extrinsic motivation involves doing something for a future reward, such as wealth or free time. Achievement motivation, based on McClelland's (1965) need for achievement, involves working toward a standard of excellence; pleasure occurs when the activity is performed well. Passion emerges as an additional form of motivation that is something other than intrinsic, extrinsic, or achievement motivation. Passion is differentiated from intrinsic motivation because intrinsically motivated activities do not need to be internalized in the person's identity; they are activities that the person finds interesting, but require elaboration and refinement through an integrative process to become part of the identity (Deci & Ryan, 2000). Passion is differentiated from external motivation in that external motivation does not incorporate a love of the activity (Vallerand & Houlfort, 2019). Passion is differentiated from achievement motivation in that passion arises from a love of the activity being performed, whether it is being performed well or not (Vallerand & Houlfort, 2019).

Several theories of passion exist. The dualistic model of passion, initially proposed by Vallerand et al. (2003) and since demonstrated in numerous studies, separates passion into harmonious and obsessive passion. Harmonious passion is under the person's control, in harmony with the person's life, and leads to positive outcomes; obsessive passion, on the other hand, controls the person, causes conflict with their life, and can lead to less positive or negative outcomes (Vallerand & Houlfort, 2019). Other theoretical models see passion as a unidimensional construct (Chen, Ellsworth, & Schwarz, 2015; Baum & Locke, 2004). In entrepreneurship, the theory of entrepreneurial passion defines passion as a consciously accessible, intense positive feeling related to a motivational state that is experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur (Cardon, Wincent, Singh, & Drnovsek, 2009).

In line with Cardon et al. (2009), this study considers passion as a unidimensional construct that motivates entrepreneurs to engage in activities that are meaningful and relevant to their identity. I see no compelling need to distinguish harmonious from obsessive passion in this study. While it is generally agreed that harmonious passion leads to more positive outcomes than obsessive, numerous studies have demonstrated that both can lead to improved performance and engagement in demanding activities, such as those involved with launching a new venture (Vallerand et al., 2007; Bonneville-Roussy, Lavigne, & Vallerand, 2011; Verner-Filion, Vallerand, Amiot, & Mocanu, 2017).

3.3.1 Passion for work

In a business setting, passion for work is often obvious. Passionate employees tend to be self-directed and show high levels of energy and enthusiasm, needing little or no encouragement to work long hours on a project they like. Passion is increasingly discussed by senior management in organizations as passionate workers are perceived to be more productive and have been shown to create a more conducive environment for efficient and effective operations (Ahmad, Hameed, & Mahmood, 2016). Additional positive outcomes of passion include increased concentration, enhanced work flow, emotional engagement, work satisfaction, increased performance, and reduced burnout (Vallerand & Houlfort, 2019; Trepanier, Fernet, Austin, Forest, & Vallerand, 2014). Engaged people who are passionate about their job and the organization they work for are more likely to promote the company and its products, and to commit to long-term employment (Subramoniam, 2013).

While passion in an individual cannot be created by an organization, it can be nurtured by leaders (O'Doherty, 2007). Research shows that passion for work can result from a variety of personal and social factors, including engagement of personal strengths, an autonomous personality, and emotional intelligence as it relates to a person's goals, self-knowledge, and social awareness (Hardgrove, 2019; Mayer, Salovey, & Caruso, 2004). Goleman, Boyatzis, and McKee (2002) contend that understanding a person's goals is integral to the value that person places on an activity and can produce "passion, energy, and excitement about life" (p. 115).

3.3.2 Entrepreneurial passion

Sustained motivation, or persistence, is especially important in entrepreneurship (Cardon & Kirk, 2013) as the venture creation process can be challenging and lengthy (Reynolds & Curtin, 2008). People persist longer in pursuing their goals when they enjoy the process and/or when they identify with the values represented by their goals (Deci & Ryan, 2000; Baron, 2007). Entrepreneurial passion impacts persistence because it involves both positive affect and identification with the activities that produce these feelings (Cardon et al., 2009; Houser-Marko & Sheldon, 2006). Passion also affects outcomes. Entrepreneurs and venture capitalists report that entrepreneurial passion is an important reason for success (Eisenhardt & Tabrizi, 1995; Mitteness, Sudek, & Cardon, 2012), along with goals, decision-making, and actions (Smith & Smith, 2000).

Although passion is generally seen as a positive state, it is not a fool-proof signaling function. People with past successes were found to be less likely to change business strategies, even in the face of radical industry changes (Audia, Locke, & Smith, 2000). Passion in combination with a strong sense of self-efficacy can lead new venture founders to dismiss negative signals relevant to their business (Locke & Baum, 2019), such as feedback from customers or the viability and size of target markets.

According to Locke & Baum (2019), emotions have three inputs: the object of the emotion, the beliefs about the object, and personal values. For entrepreneurs, this ties together the founder's activities, their goals for the firm, their value judgments about their activities and goals, and the energy that provides the drive to persevere in the face of a wide range of challenges, from defining target markets to creating distribution channels to raising money from investors. From this, "passion is ultimately revealed in action over time in the long hours worked during the venture startup and growth phases and in the tendency for entrepreneurs to experience their venture's successes and difficulties as essential to their sense of self" (Locke & Baum, 2019, p. 456).

Passion is a core motivational construct and central to identity development in entrepreneurs (Cardon, et al., 2013). While there is a significant relationship between passion and identities, they are not

interchangeable constructs (Murnieks & Cardon, 2019). Vallerand et al. (2003) argue that identity formation occurs prior to the development of passion. Yet for entrepreneurs, new venture activities, such as product design or business model development, can begin long before the venture takes shape and with varying levels of passion (Cardon et al., 2005). I argue that, for entrepreneurs, it is a more dynamic process where interest and engagement in pre-venture entrepreneurial activities produce positive or negative feedback; positive feedback results in positive affect which then fuels entrepreneurial passion and identity development.

3.4 Personal vs role vs social identity

Identity theory posits that "identities emerge as one categorizes oneself as an occupant of a societal role" (Murnieks & Cardon, 2019, p. 71), such as new venture founder. An identity provides an individual with a frame of reference through which they can interpret the world around them, as well as their actual and potential behaviors (Tajfel & Turner, 1979).

Identities can be viewed through different lenses. A personal identity is a sense of oneself that has been created over time as an individual pursues projects and goals that are separate from their involvement in any communities (Hewitt, 1979). Personal identity is produced through commitments to values, "desirable transsituational goals" (Schwartz, 1994, p. 21) that are deeply personal and serve as guiding principles in an individual's life (Hitlin, 2003).

Role identities focus on the role-related behaviors of an individual that are tied to certain societal positions; they are based on goals, values, beliefs, and norms (Stryker, 1980; Sloss & Ashforth, 2007). Such roles can include parents who provide support for their children, teachers who provide career advice for their students, managers who monitor employee performance, and entrepreneurs who create new ventures. Greene and Brush (2018) developed a typology of entrepreneurial identities based on their research related to female entrepreneurship and the prior work of Vesper (1980), Neck et al. (2009), and Nel et al. (2010). Their entrepreneurial types are: starter, acquirer, runner, take-off artist, turnaround artist, innovator, champion, intrapreneur, industry captain, mumpreneur, and social entrepreneur. Cardon

et al. (2009) classified entrepreneurial role identities into three categories: inventor, founder, and developer. Zuzul and Tripsas (2019) described two founder identity types: revolutionaries, who build novel ventures to drive radical change, and discoverers, who identify and exploit new opportunities.

Social identities emphasize connections to or disconnections from communal groups. As with personal and role identities, these can impact cognition and behaviors. Fauchart and Gruber (2011), for instance, showed that founders with different social identities (personal self-interest vs. community interest vs. political interest) had different views on how to define firm performance; these identities also had an influence on the type of industry the entrepreneur entered.

Personal, role, and social identities define who a person is and motivate behaviors that support and verify the identities. An individual's identities begin developing from an early stage and continue developing during their working life (Obschonka, Silbereisen, Cantner, & Goethner, 2015). All three types of identities take on an important role in guiding behavior, especially under conditions of uncertainty or ambiguity, such as those regularly faced by early stage entrepreneurs who are attempting to define new market opportunities and obtain much needed resources (Navis & Glynn, 2011). When an entrepreneur launches a new venture, they start with little more than their personal identity. As they create and grow their business, interacting with a variety of stakeholders – from customers to suppliers to investors – the entrepreneur finds that entrepreneurship is inherently a social process. Through these interactions, the entrepreneur creates an idiosyncratic set of role and social identities that are important and relevant to them based on values, goals, history, and personal circumstances (Murnieks & Mosakowski, 2007, Fauchart & Gruber, 2011, Cardon, et al., 2009).

3.5 Defining founder identity

According to Gartner (1985), new ventures are a gestalt of variables from four dimensions: (a) the individual who starts the organization, including their motivations and past experiences, (b) the firm that is started, (c) the surrounding environment, and (d) the individual's process for starting the venture. As an individual creates a new venture, they develop an additional identity – a founder identity. The founder

identity then drives much of the individual's decision-making related to the firm, which imprints on the emerging venture (Mathias & Williams, 2017; Fauchart & Gruber, 2011). Differences in the structure of founders' identities can lead to differences in how they interpret situations, such as reactions to changes in industry structure or adversity faced by their firm, and the resulting behaviors (Gruber & MacMillan, 2017; Powell & Baker, 2014).

The term "founder identity" first appeared in management literature in 2011 (Fauchart & Gruber, 2011), and has been gaining visibility ever since. Some scholars refer to this as "entrepreneurial identity," which first appeared in management literature in 1992 (MacNabb, McCoy, Northover, & Weinreich, 1992). Following the lead of Navis and Glynn (2011), this study defines **founder identity** as the claims surrounding the founder(s), organization, and market opportunity of a new venture that give meaning to the questions, "who we are" and "what we do." Founder identity emerges for both the individual and the venture through the values, motivation, intention, affective reactions, experiences, and expectations of the founder (Morris, Kuratko, Schindehutte, & Spivack, 2012). When a new venture is founded, organizational imprinting takes place through the activities of the founder or founding team (Johnson, 2007). According to Carsrud and Brännback (2014), "Firm-level 'behaviors' are the direct result of individual-level decisions and behaviors. Entrepreneurial strategy is set by individuals acting on behalf of the firm" (p. 88).

Values, motives, and skills interact to determine the behavior of entrepreneurs (Carsrud & Brännback, 2014). Founders behave in ways that are consistent with their identities and they imprint components of their self-concepts on key dimensions of their firms (Fauchart & Gruber, 2011), including product development and business models. As new ventures are typically small, decisions are made primarily by the founder(s). These decisions shape and have a relatively strong influence on the firm (Barney, et al., 1998). This research provides a classification that allows for a more complete understanding of the the combined and complex effects of the motivational components of founder identity, and produces a structure for investigating the influence of founder identity on the development and growth of new ventures.

4.0 THEORY DEVELOPMENT: CREATING A CLASSIFICATION FOR FOUNDER IDENTITY

While research continues to demonstrate the heterogeneity of entrepreneurs with respect to motivations, aspirations, attitudes, and self-perceptions (Shepherd, Williams, & Patzelt, 2014), few studies have looked at whether there are discernable patterns to the interactions between motivations, identity, and behaviors in entrepreneurs. A new stream of founder identity research connects social motivations and self-evaluations with strategic decisions in startups related to markets, customers, and capabilities (Fauchart & Gruber, 2011; Powell & Baker, 2014; Wry & York, 2017). Other scholars have shown that high levels of passion coordinate between entrepreneurial cognition and behaviors (Cardon, Gregoire, Stevens, & Patel, 2013; Yitshaki & Kropp, 2016; Brännback et al., 2006).

Yet methodology challenges persist in the entrepreneurial motivation and identity literature. For instance, Cardon et al. (2009) determined there were three types of entrepreneurial identities: inventor, founder, and developer. In a more recent study, they stated that "knowledge of the sources of passion is limited and focuses primarily on activities predetermined by scholars, rather than those generated by entrepreneurs themselves" (Cardon et al., 2017, p. 24). In the 2017 study, the authors used a phenomenological approach to examine the oral histories of entrepreneurs. From this, they expanded and reclassified the original three entrepreneurial identities to six sources of passion as motivation: growth, people, product or service, inventing, competition, and social cause.

Identities have a profound effect on the way entrepreneurs feel, think, behave, and what they aim to achieve; as such, scholars have called for a better understanding of its dynamics (Leitch & Harrison, 2016). "Given that a founder is likely to dominate the decision-making process during the firm's early years, it would be fruitful to examine empirically how founder identity influences their firms' subsequent perception and response to more complex patterns of feedback from the environment, and explore its implications for the adaptability of the venture" (Hong & Gimeno, 2010, p. 50). Others have called for additional research on founder identity and its role in various industry settings, in high-growth environments, and in relationship to radical innovation (Sieger, Gruber, Fauchart, & Zellweger, 2016;

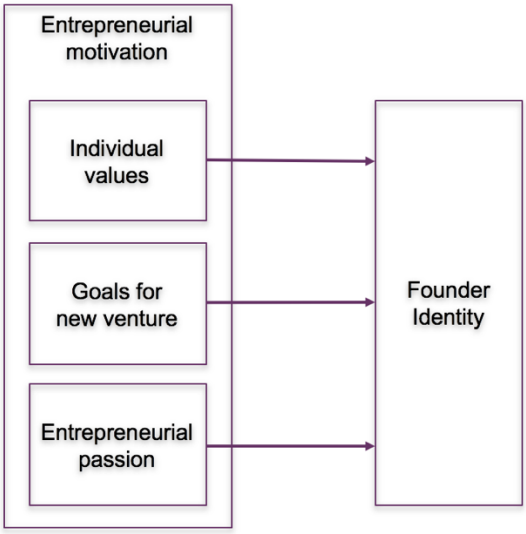
Powell & Baker, 2014; Fauchart & Gruber, 2011). This study responds to these calls by providing a more robust framework for understanding and researching entrepreneurial motivation and founder identity.

4.1 Theory development

The identity construct has been commonly employed in the psychology literature since its first use by Freud and later development by Erikson (1956), yet understanding of the role of founder identity in the venture creation and development process is at an early stage (Fauchart & Gruber, 2011). The bridging construct of "identity" connects the individual entrepreneur with the roles and social activity involved in creating a new venture and provides a way to examine who entrepreneurs are and what they do (Leitch & Harrison, 2016).

This study proposes that a more complete understanding of founder identity and improved construct validity will result from bridging the psychological research on personal values with the evolving literature on entrepreneurial motivation. As shown in Figure 1, and in line with Robichaud, et al. (2001), I propose that founder identity is at least partly derived from entrepreneurial motivation, which is comprised of the entrepreneur's values; the goals they seek to achieve through the perceptions, attitudes, and behaviors associated with business ownership; and the passion they bring to the new venture.

Figure 1. The founder identity construct is derived, at least in part, from the individual values, goals for the firm, and passion of the entrepreneur.



4.2 Entrepreneurial passion

The new venture creation process can be daunting; resources are often limited and it can take an extended period of time to generate a sustainable business model or profits (Reynolds & Curtin, 2008). Passion provides the entrepreneur with both positive affect and identification with the venture development activities that produce these feelings, motivating entrepreneurs to persist, even in the face of challenges (Cardon et al., 2009).

I propose that entrepreneurial passion is a necessary condition that must be present for an entrepreneur to be sufficiently motivated to create and nurture a new venture in the face of risk and uncertainty.

Proposition 1: The presence of entrepreneurial passion informs the founder identity of entrepreneurs.

While passion is a necessary condition, it alone does not provide sufficient cause for venture creation and development. An entrepreneur's values and goals for the firm must also be present in order to provide direction for the entrepreneur through the process.

4.3 Individual values

Personal identity, based on an individual's values, relates to a person's beliefs and the behaviors they desire (Hitlin, 2003). This creates, in a sense, an ideal self that is linked to values with motivational properties that guide cognition and behavior (see Table 1). Values can be especially important in the types of environments faced by entrepreneurs, where ambiguity and uncertainty can send misleading signals about such critical factors as the viability of the market opportunity, customer interest, or resource availability. In early stage ventures, before relationships are established with external resources, entrepreneurs' values can serve as the primary guiding force for decision-making.

Research on the specific roles of values and goals in entrepreneurship is scarce (Fayolle, et al., 2014). The scholarly literature on entrepreneurial goals found that entrepreneurs identify a range of public, social, and moral concerns based on values, in addition to more traditional goals, such as wealth, independence, and embracing challenges (Clarke and Holt, 2010). These personal values and goals can contribute to the passion that drives a variety of organization types, from growth-oriented for-profits to the more recently popular social ventures.

Entrepreneurs' personal values are motivating forces that shape cognitive processes and decision-making (Carsrud, et al., 2017). I propose that these values also serve as a core component of the entrepreneur's founder identity. Given the strong impact of founders and their identity during the early years of a venture, these "who we are" values provide direction for their organizations, complementing the "what we do" goals for the firm discussed in the next section.

Proposition 2: A heterogeneity of personal values inform the founder identity of entrepreneurs.

4.4 Goals for the firm

Goals are tools associated with positive affect that people use to guide behavior (Dijksterhuis & Aarts, 2010). Research has found that goals influence a person's satisfaction as they serve as a performance standard for evaluating results, and that specific high goals lead to higher performance

(Latham & Locke, 2007). The more important an individual's perception of a goal, the more likely they are to form plans to accomplish it (Fayolle et al., 2014).

Entrepreneurial goals are a key antecedent to entrepreneurial behavior, affecting a variety of outcomes, such as resource allocation and performance (Dunkelberg, Moore, Scott, & Stull, 2013; Baum & Locke, 2004). Early in the entrepreneurship literature, Pickle and Rungeling (1973) equated entrepreneurial goals with (a) profits, (b) financial satisfaction (profits, profits compared to competitors, return on net worth, return on hours worked), (c) financial security (profits and growth expectations), and (d) psychic rewards (work satisfaction, status satisfaction, and continuing operations satisfaction). Since then, much of the entrepreneurship literature assumes financial success is a primary motivating factor, even though empirical studies have demonstrated a wide range of goals. As shown in Table 2, investigated goals include an array of factors, such as financial success, independence, recognition, innovation / exploring new technology, and self-realization. This heterogeneous set of goals has expanded to incorporate a wide range of business practices, including supporting a social cause and expanding leadership skills.

Entrepreneurial goals are motivating forces that drive the effort and persistence of entrepreneurs. I propose that these goals also serve as a core component of the entrepreneur's founder identity. Given the strong impact of founders and their identity during the early years of a venture, these "what we do" goals provide direction for their organizations, complementing the "who we are" founder values discussed in the previous section.

Proposition 3: A heterogeneity of firm goals inform the founder identity of entrepreneurs.

4.5 Entrepreneurial motivation and founder identity

Motivation incorporates emotions and values, and evolves following a general pattern: sense perception, cognitive identification, value assessment, and emotional reaction (Locke & Baum, 2019). For entrepreneurs, the process involves entrepreneurial activities based on the founder's goals for the firm,

subconscious judgments of these activities based on personal values, and the entrepreneurial passion that provides the vitality and energy to persist, even in the face of challenging circumstances.

An entrepreneur's motivation directs their attention to contextual cues that can signal potential opportunities (Haynie, Shepherd, Mosakowski, & Earley, 2010). In entrepreneurship research, motivation is primarily treated as intrinsic and/or extrinsic (Elfving, 2008). When individuals are intrinsically motivated, they engage in behaviors because they are interested in and enjoy them, such as acquiring a new skill; when extrinsically motivated, they engage in behaviors for external reasons, such as receiving a reward (Carsrud et al., 2017; Eccles & Wigfield, 2002).

Much entrepreneurship research assumes entrepreneurs are motivated primarily by extrinsic factors, such as money and power, but some empirical studies have shown that entrepreneurs can also be motivated by intrinsic satisfaction, such as independence and self-realization, as shown in Table 2. On the surface, these appear to be conflicting results. I propose, instead, that they represent a complex pattern of motivation that can be represented by multiple causal configurations based on the entrepreneur's personal values, more socially-oriented goals for the firm, and passion. "Individuals are dynamic, flexible, self-regulating creatures who are sensitive to variations in their social and physical environments and who plan and implement a wide variety of personal and social goals for the pursuit of understanding and changing reality" (Jost et al. 1998, p. 138).

I argue that entrepreneurial motivation incorporates intrinsic factors in the form of values, extrinsic factors in the form of goals for the firm, and entrepreneurial passion. These interact and contribute to the formation and composition of founder identity.

> *Proposition 4: A heterogeneity of values, goals, and passion inform founder identity of entrepreneurs.*

4.6 Gender

The literature presents conflicting results on the issue of gender differences in entrepreneurial motivations and behaviors. Some scholars found variation among genders, such as push vs pull

motivations (Jennings & Brush, 2013), predicting entrepreneurial intentions (Nikou, Brannback, Carsrud, & Brush, 2019), entrepreneurial learning patterns (Fenwick & Hutton, 2000), and the pursuit of economic vs. social and environmental goals (Hechavarria, Ingram, Justo, & Terjesen, 2012). Brush (1992) found that female entrepreneurs are more caring and relationship-focused, seeing their ventures as interconnected to other firms and groups around them. McClelland, Swail, Bell, and Ibbotson (2005) found that motivations for business start-up among women varied but included strong social motivations across all six countries studied. Other scholars found no differences between genders, such as values and attitudes toward business ownership success (Walker & Brown, 2004).

Additional complexity about gender-based motivations for starting a business can be introduced based on stereotypical beliefs about entrepreneurs, which tend to be associated with males and masculinity (Greene & Brush, 2018). These beliefs include a male preference for financial motivations, increased risk taking behaviors, a focus on high growth, and the presence of male-dominated business networks. In such an environment, the entrepreneurial path may be more easily chosen by individuals who tend to identify more readily with masculine characteristics. For those who identify more with feminine characteristics, such as nurturing and relationship-building, this can create identity conflict. Such conflict produces negative emotions that could discourage a female from considering entrepreneurship as an option or could result in a female questioning their more feminine motivations and reconstructing their self-identity.

I propose that the variation in findings related to entrepreneurial motivations based on gender presents a complexity that may be better represented as multiple causal configurations using fuzzy set analysis. While a variety of motivations drive both male and female entrepreneurs, differences in identity configurations will arise based on gender.

Proposition 5: Founder identity configurations will be affected by the gender of the entrepreneur.

4.7 Country of origin

An individual's values, attitudes, and perceptions are influenced by the cultural values in their society (Fischer, 2006). Culture is defined as a "collective mental programming distinguishing the members of one group or category of people from others" (Hofstede, 2001, p. 9). Hofstede (1980) found that cultural differences in values, beliefs, and work roles are key influences on individual motives and behavior across countries.

Much of the work on cultural norms and their impact on entrepreneurship is based on Hofstede's (1980, 2001) model of the dimensions of national culture: power distance, uncertainty avoidance, individualism/collectivism, masculinity/femininity, long/short-term orientation, and indulgence/restraint. Scholars have demonstrated that entrepreneurial motivations and intentions differ by culture, to varying degrees, along these dimensions (Bogatyreva, Edelman, Manolova, Osiyevskyy, & Shirokova, 2019; Minola, Criaco, & Obschonka, 2016; Shane et al., 1991; Scheinberg & MacMillan, 1988). Hayton, George, and Zahra (2002) assert, "In the context of entrepreneurship, theories of motivation are culture bound in that different cultures emphasize different motivational needs" (p. 41).

Entrepreneurial identity and passion for work have also been found to be context-specific based on culture, beliefs, and societal norms (Jones, Ratten, Klapper, & Fayolle, 2019; Burke, Astakhova, and Hang, 2015). Therefore, I propose that differences in cultures can produce differences in identity configurations based on country of origin.

> *Proposition 6: Founder identity configurations will be affected by the country of origin of the entrepreneur.*

5.0 METHODOLOGY: A CONFIGURATIONAL APPROACH TO FOUNDER IDENTITY

5.1 Modeling causal configurations

Past studies on the motivations and identities of entrepreneurs have generally employed one of two analysis techniques: (a) narrative analysis of a small sample of interviews that relies on researchers' differing perceptions of entrepreneurial motivations, and (b) regression analysis of surveys that assesses

the association between the outcome and one variable at a time (see Table 2). No other research appears to have examined the complexity of founder identity configurations that are possible. I propose that narrative data collection combined with a configurational analysis using fsQCA provides a more detailed understanding of the entrepreneurs' stories and the causal relationships among the motivational constructs that produce a founder identity classification.

Narratives and storytelling can provide valuable insight into motivations and identity as they are "the fundamental way in which people compose meaning, inter-relation, and connect to each other" (Fletcher, 2007, p. 653). Yet narrative analysis requires subjective interpretation by the researcher, which can mask the subject's story or can misinterpret the original intent based on the researcher's background, biases, and values (Creswell, 2014). For this reason, I added fsQCA as bridge between qualitative and quantitative analysis in order to more deeply explore the relationships between the founder identity motivational components of values, goals, and passion.

I chose fsQCA over other quantitative approaches as it is a superior approach for classifications. While fsQCA and regression both attempt to establish an association between causes and an outcome, fsQCA considers cases as whole entities, analyzing associations between combinations of conditions and the outcome (Ragin, 2008). In addition, regression analysis is not as effective a tool for creating a classification as it aims to identify one single model that best fits the data. fsQCA, on the other hand, allows the identification of multiple, equally important pathways to the outcome (Befani, 2016; Fixx, 2011), supporting the heterogeneity of previous findings related to entrepreneurial values, goals, and passion.

I chose fsQCA over factor analysis as factor analysis, with its lack of dependent or independent variables, is not useful for drawing causal inference. "The question one tries to answer with factor analysis is: Which set of different variables can be summarized into one index without distorting the underlying information too much? The question at stake in QCA and fsQCA, instead, is: Which combinations of conditions are linked to an outcome?" (Schneider & Grofman, 2006, p. 42). In addition, factor analysis requires a sample size of at least 300 (Field, 2018). It would be difficult and time-

consuming to collect in-depth start-up stories, such as those used in this study, from 300 or more entrepreneurs.

5.1 Sample and data collection

This research investigates the personal values, firm goals, and passion of experienced technology entrepreneurs using a mixed methods research design. The sample is based on a purposive sampling of experienced venture founders, those individuals who have started at least one technology company that is generating revenue but is still considered a small business with fewer than 500 employees (U.S. Small Business Administration, 2016). This sample represents entrepreneurs that have succeeded in garnering sales from customers, yet are not so large that the founder(s) has moved away from a CXO role in the organization. Introductions to entrepreneurs were made through my social networks, as I have extensive experience working with entrepreneurs in a variety of industries through venture development and investment organizations.

Detailed founder stories were collected from 25 experienced venture founders of SMEs in technology-related industries. A life-story/biographical approach to narrative methodology (Atkinson, 2007) is initially used in order to understand the subjective meanings of the experiences of technology entrepreneurs as they socially construct their ventures through interactions with others, such as team members, customers, and investors. As each entrepreneur tells their life story, they provide information related to key identity questions, such as, who am I, how did I come to be here, and where is my life going (McAdams & McLean, 2013), all of which contribute to their founder identity (Navis & Glynn, 2011).

The life-story approach has been found to help elicit new and contextual insights into the entrepreneurial process (Yitshaki & Kropp, 2011; Rae & Carswell, 2000). In this study, information was collected from entrepreneurs using semi-structured interviews with open-ended questions about the entrepreneurs' backgrounds, first experiences with entrepreneurship, and motivation for launching their venture(s). During interviews ranging from 30 to 120 minutes, each entrepreneur was asked to "tell their

story," an autobiography of sorts, about how they had come to found their most recent company. The goal was to elicit the founder's narrative process of recollection and sensemaking. This prompts the person to reflect and disclose more about significant periods and events, such as education, prior work history, and values.

Entrepreneurs were interviewed between June 2017 and April 2019. Each interview was audio recorded and a verbatim transcript (Poland, 1995) was produced by a professional translation service, then lightly edited by the researcher. The focus of the research is the content of the entrepreneur's story. Therefore, the transcription process leaves out the researcher's questions, uses standard spelling, creates sentence and paragraph structure, and leaves out background noises and verbal fillers, such as "um's" and "uh's" (Atkinson, 1998).

To better understand founders' goals for the business, data was also collected from secondary sources, including company web sites, social media profiles, and business presentations of the entrepreneurs. In addition, each participant was asked to complete a short survey with a mixture of open ended and multiple-choice questions about the company launch, number of employees at the time of the survey, number of distributors and resellers, description of target customers, and the customer feedback process in the event that such information was missed during the interview.

5.2 Measures

I propose that a founder identity classification can be derived from three entrepreneurial motivation constructs: the entrepreneur's values; the goals the entrepreneur seeks to achieve through the perceptions, attitudes, and behaviors associated with business ownership; and the passion they bring to the new venture (see Figure 1). There are two steps in the data analysis process.

(a) Quantitative content analysis is used to count keywords and phrases (Spurgin & Wildemuth, 2009) within the interviews as they relate to values, goals, and passion.

(b) In order to determine founder identity configurations, fsQCA (Ragin, 2008) is used to explore the relationships between the entrepreneurial motivation constructs. The analysis examines value and

goal conditions, akin to independent variables, and their degree of presence or absence with respect to passion as the required outcome, akin to the dependent variable.

Keyword counts were collected using NVivo version 12. The values keywords used correspond to the lexicon created by Bardi et al. (2008), based on the human values Schwartz (1992) found across all societies: power, achievement, stimulation, self-direction, universalism, and security. Schwartz's values of tradition, hedonism, and conformity were excluded as they have not been reported in prior literature as related to entrepreneurial motivation (Holland & Shepherd, 2013). The goals keywords used are based on the firm goals that lead entrepreneurs to launch new ventures according to those most cited in prior literature (see Table 1): financial success, innovation, solving big problems, social cause, independence, and organization. Passion keywords are based on the keywords, context, and subtext as defined by Cardon et al. (2017), supplemented with related synonyms obtained from the Oxford English Dictionary. The complete list of keywords can be found in Appendix A.

5.3 Descriptive statistics

The entrepreneurs studied have all founded at least one new venture, with an average of 2.72 ventures across the sample. Eighteen of the ventures (72%) were founded in the last eight years, between 2010 and 2018, and seven (28%) were founded between 1997 and 2009. The gender of the entrepreneurs varies; nineteen are male (76%) and six are female (24%). The origin of the entrepreneurs also varies; seventeen were born in the United States (68%) and eight were born outside the United States (32%), including Canada, India, Israel, Mexico, El Salvador, Pakistan, and Saudi Arabia.

For small-sample fuzzy set Qualitative Comparative Analysis, a minimum of five cases are needed per sample (Ragin, 2008). Both gender and country of origin provide sufficient numbers in this sample to allow a more in-depth analysis of the differences and similarities between these demographics.

Table 3. Demographics of the entrepreneurs participating in the study.

Company type	Transcript words	Founded	Ventures founded	Gender	Country of origin
Waste services	3,918	1997	1	F	El Salvador
Scientific instrumentation	2,816	2001	1	M	United States
Medical devices	9,326	2002	4	M	United States
High performance coatings	5,196	2004	2	F	United States
Video teleconferencing	7,656	2009	3	M	India
IT/web services	19,344	2009	1	M	United States
CRM	4,051	2009	4	M	United States
Game development (B2C)	3,607	2010	1	M	United States
Game development (B2C)	4,235	2010	1	M	United States
Game development (B2C)	6,925	2010	1	M	United States
Manufacturing instrumentation	4,216	2012	1	M	United States
Video teleconferencing	4,491	2012	5	M	India
Web development & apps	2,451	2012	5	M	Pakistan
Jewelry manufacturing	18,859	2013	7	M	Saudi Arabia
Drone services	3,232	2013	2	F	Canada
Tech incubator	16,783	2014	1	F	United States
Biomed/pharma	5,727	2015	3	F	Israel
Games & sw development (B2B)	7,670	2015	1	M	United States
Sustainability financing	7,575	2016	11	M	United States
Battery technology	2,885	2016	2	M	United States
Medical devices	2,599	2017	1	F	United States
Advanced manufaturing	5,780	2017	2	M	United States
Sales analytics sw	10,266	2017	1	M	United States
Mobile services app	3,852	2018	4	M	Mexico
Audio products	11,988	2018	3	M	United States
Total words	175,448		2.72		
Median words	5,196				

6.0 CONFIGURATION THEORY

6.1 Introduction

Fuzzy set Qualitative Comparative Analysis (fsQCA, Ragin, 2008) is used to explore the relationships between values and goals (akin to the independent variables) and passion (akin to the dependent variable). In this study, individual values, goals for the firm, and entrepreneurial passion are examined in order to determine founder identity configurations.

The fsQCA method uses Boolean logic (set theory) to bridge the qualitative and quantitative research worlds by exploring the complexity of relationships between an outcome and all binary combinations of the antecedent conditions. This study examines the relationships between the three

entrepreneurial motivation constructs that form the basis of founder identity: the passion outcome, and the value and goals antecedent conditions. The fsQCA software detects relevant configurations that produce a high confidence in the outcome condition, and whether values and goals are necessary or sufficient as part of the passion set (Ragin, 2008; Fiss, 2007). Unlike traditional linear methods, fuzzy set analysis recognizes that there may be more than one combination of conditions that leads to the outcome of interest. Referred to as equifinality, this allows for a better understanding of nuances by capturing multiple paths to the outcome, and can be particularly useful in creating typologies (Fiss, 2011).

Using fuzzy set analysis delivers high generalization and high accuracy (Woodside, 2010). In this study, this allows the research to approach the classification of founder identities with more confidence and, ultimately, higher validity than a pure thematic analysis provides. In this case, fsQCA is used to identify meaningfully related sets between values, goals, and passion. The output of the analysis produces a classification of founder identities based on entrepreneurs' personal values, firm goals, and passion. The software program fsQCA version 3.0 is used to perform the fuzzy set analysis in this study.

6.2 Calibration

Fuzzy set analysis examines the degree of membership in a set. Calibrating the measures is the first step. This calibration process transforms an integer variable to a continuous variable to indicate its degree of membership in a defined set that ranges from 0 to 1 (Ragin, 2008). The studied variables are six values conditions (power, achievement, stimulation, universalism, self-direction, and security), six goals conditions (financial success, innovation, solving big problems, social cause, independence, and organization), and one passion outcome.

It is recommended that calibration thresholds be set using existing theoretical knowledge. As the literature related to the conditions in this study does not provide guidance, the direct method is employed. Three qualitative breakpoints are used to structure the data into a "fully-in" fuzzy set membership (fuzzy set score = 95th percentile of keyword count), a "cross-over" point (fuzzy set score = median of keyword

count[1]), and a "fully-out" non-membership (fuzzy set score = 5th percentile of keyword count; Ragin, 2017). The fsQCA software then uses a logarithmic function to calibrate the original data into membership scores across an "S" curve from 0 to 1 (Ragin & Davey, 2017). Such an approach negates the effect of statistical outliers, providing them with nearly identical scores close to either 0 or 1 (Feurer, Baumbach, & Woodside, 2016). Original keyword counts and their corresponding fuzzy set score ranges are shown in Table 4.

Table 4. Descriptive statistics of the values, goals, and passion variables.

Identity components	fsQCA conditions	N	Keyword count range	Fuzzy set score range	Mean	SD
VALUE antecedents	Power	25	0 - 17	0.051 - 0.991	0.406	0.303
	Achievement	25	0 - 23	0.051 - 1	0.723	0.249
	Stimulation	25	0 - 6	0.051 - 0.971	0.328	0.530
	Universalism	25	0 - 1	0.051 - 0.991	0.126	0.255
	Self-direction	25	0 - 3	0.051 - 0.961	0.328	0.348
	Security	25	0 - 8	0.051 - 0.981	0.410	0.318
GOAL antecedents	Financial success	25	0 - 24	0.051 - 1	0.451	0.340
	Innovation	25	0 - 10	0.051 - 1	0.408	0.345
	Solving big problems	25	0 - 30	0.041 - 1	0.496	0.321
	Social cause	25	0 - 12	0.051 - 0.971	0.505	0.329
	Independence	25	0 - 5	0.051 - 1	0.397	0.342
	Organization	25	0 - 245	0.02 - 0.99	0.476	0.317
PASSION outcome	Passion	25	9 - 299	0.011 - 1	0.507	0.355

Note: Fuzzy set coding calculations: 95th percentile of original score range = full membership, median of original score = cross-over, 5th percentile of orginal score range = non-membership.

6.3 Necessity analysis

Once the measures are calibrated, an analysis is done to determine if any of the antecedent conditions are necessary (the condition is present in a majority of the configurations leading to the outcome) or sufficient (the presence of the condition guarantees the occurrence of the outcome; Fiss, 2007). The six value conditions, six goal conditions, and six super-conditions (values+goals) were examined. The software generates consistency values, which indicate the relevance of conditions; higher

[1] The laws related to the intersection of fuzzy sets make cases with scores of exactly 0.5 on a 0 to 1 scale difficult to analyze. As recommended by Fiss (2011), a constant of 0.001 was added to causal conditions below full membership scores of 1. This assures that no cases are dropped from the fuzzy set analysis.

scores indicate more relevance. Consistency scores above 0.90 indicate necessary relationships (Ragin, 2008). As shown in Table 5, no conditions meet the 0.90 threshold, but the value of achievement (0.882) is closest to being a necessary condition.

Table 5. Necessity assessment of causal conditions.

Condition	Consistency	Coverage
VALUES		
Power	0.571 (0.439)	0.771 (0.533)
Achievement	**0.882 (0.768)**	0.618 (0.524)
Stimulation	0.353 (0.443)	0.544 (0.665)
Universalism	0.233 (0.105)	0.937 (0.411)
Self-direction	0.407 (0.443)	0.629 (0.668)
Security	0.553 (0.492)	0.683 (0.591)
GOALS		
Financial success	0.668 (0.490)	0.751 (0.537)
Innovation	0.484 (0.624)	0.602 (0.607)
Solving big problems	0.671 (0.549)	0.686 (0.546)
Social cause	**0.706 (0.533)**	0.707 (0.521)
Independence	0.447 (0.506)	0.569 (0.629)
Organization	**0.709 (0.471)**	0.756 (0.489)
SUPER-CONDITIONS		
Power/Financial success	0.674 (0.504)	0.732 (0.532)
Achievement/Innovation	0.624 (0.551)	0.682 (0.587)
Stimulation/Solving big problems	0.665 (0.544)	0.698 (0.567)
Universalism/Social cause	0.657 (0.468)	0.741 (0.514)
Self-direction/Independence	0.580 (0.620)	0.615 (0.641)
Security/Organization	**0.713 (0.486)**	0.751 (0.498)

Note: The values of the conditions for the negation of the outcome are shown in parentheses.

6.4 Truth table construction

Next, a truth table is constructed using the fsQCA software in the form of a data matrix that lists all combinations of causal conditions based on the cases provided. In this study, a case is the values, goals, and passion data for each of the 25 entrepreneurs. The truth table has 2^k rows, where k is the number of causal conditions; each row corresponds to a configuration of conditions (Frambach, Fiss, & Ingenbleek, 2016). In this study, there are 2^6 or 64 combinations of causal conditions for each of the constructs: values, goals, and the super-condition of values+goals.

Combinations of causal conditions that are sufficient to lead to the outcome are represented as configurations of conditions. Each configuration indicates the presence or absence of relevant conditions, and scores for consistency (the degree to which the cases share that combination of conditions) and coverage (the degree to which the causal combination accounts for instance of the outcome, akin to r^2 in regression analysis).

As recommended for small sample sizes, this study sets the minimum frequency of cases analyzed at 1 (Ragin, 2008); the cases from the truth table that do not meet this minimum are deleted and not included in further analysis. The consistency threshold is set at the recommended 0.80. The data was also analyzed at the minimum acceptable consistency threshold of 0.75 with no significant difference in results; therefore, the higher consistency threshold of 0.80 is used.

6.5 fsQCA solution sets

The fsQCA software output includes three types of solution sets based on an analysis of the truth tables: complex, parsimonious, and intermediate. If a condition is present in both the parsimonious and intermediate solution sets, it is described as a core condition that has a strong causal relationship with the outcome of interest (Fiss, 2011). If a condition is present only in the intermediate solutions, it is described as a peripheral condition that has a weaker relationship with the outcome (Fiss, 2011).

The following notations are used in the fsQCA results: black circles (●) indicate the presence of a condition, white circles (O) indicate the absence of a condition, and blank spaces indicate "do not care" (Ragin & Fiss, 2008). Large circles indicate core conditions and small circles indicate peripheral conditions. For gender analysis, black circles refer to "male" and white circles refer to "female." For country of origin analysis, black circles refer to US-born entrepreneurs and white circles refer to non US-born entrepreneurs.

7.0 CLASSIFICATION FINDINGS

7.1 Introduction

To better understand more of the nuances of entrepreneurial motivation, separate analyses are done of: (a) the values of power, achievement, stimulation, self-direction, universalism, and security as they relate to passion, (b) the goals of financial success, innovation, solving big problems, social cause, independence, and organization as they relate to passion, and (c) the super-conditions of values+goals (power/financial success, achievement/innovation, stimulation/solving big problems, universalism/social cause, self-direction/independence, security/organization) as they relate to passion. The data is then segmented demographically to produce three views of values, goals, and passion: (1) all entrepreneurs without regard to gender or country of origin, (2) entrepreneurs by gender, and (3) entrepreneurs by country of origin.

7.2 fsQCA results for all entrepreneurs

The relationships between the conditions and the outcome for all entrepreneurs without regard to gender or country of origin are depicted below in Table 6.

VALUES: The results show five configurations of values that predict entrepreneurial passion. These five configurations provide an overall solution coverage of 0.76, which means these value conditions, taken together, explain 76 percent of entrepreneurial passion in this sample. The presence of achievement dominates all configurations, but only in configuration 3 is achievement considered a core condition. The presence of power is in three configurations and is a core condition in two of the three. Self-direction is present and absent in equal numbers, but is a core condition, regardless, in four of the five configurations. Of all the values, stimulation is the least present; the absence of stimulation is found in two configurations and is a "do not care" in the other three.

The configuration with the highest consistency, and therefore the highest explanatory power for the outcome, is: Power, Achievement, ~Self-direction, Universalism, and ~Security, with a consistency of 0.98 (~ indicates the absence of the value). Taken together, the results show that the six values of power,

achievement, stimulation, self-direction, universalism, and security are a representative classification for venture founder values.

Table 6. Five configurations explain the relationship between entrepreneurs' values and passion.

	Values: Antecedent Conditions for Entrepreneurial Passion							Coverage	
Configuration	Power	Achievement	Stimulation	Self-Directed	Universalism	Security	Consistency	Raw	Unique
1	●	•		O	o	•	0.84	0.39	0.17
2	•	•	o		o	o	0.76	0.30	0.04
3	o	●		●	o	O	0.88	0.29	0.06
4	o	•	O	●	o		0.88	0.28	0.04
5	●	•		O	•	o	**0.98**	0.17	0.08
Overall solution consistency			0.79						
Overall solution coverage			0.76						

Note: Black circles • indicate the presence of antecedent conditions. White circles O indicate the absence or negation of antecedent conditions.
Blank cells indicate ambiguous conditions. Large circles indicate core conditions. Small circles indicate peripheral conditions.
Frequency threshold = 1, consistency threshold = 0.80.

GOALS: The results in Table 6 show seven configurations of goals that predict entrepreneurial passion. These seven configurations provide an overall coverage of 0.63, which means these goals explain 63 percent of entrepreneurial passion in this sample. No one goal dominates all configurations, but organization is present in five of the seven configurations and is a core condition in all five cases. Social cause is also present in five of the seven configurations and is a core condition in three. Solving big problems is present in five of the seven configurations and is a peripheral condition in all cases. Contrary to the findings in prior research (see Table 2), financial success and independence are not dominant conditions. Financial success is present in four of the seven configurations, but is only a core condition in two. Independence is also present in four of the seven configurations, but it a peripheral condition in all cases. Also contrary to prior research, especially the research on tech entrepreneurs, innovation is an absent condition as much as it is present.

The configuration with the highest consistency, and therefore the highest explanatory power for the outcome is: Financial success, Solving big problems, Social cause, and Organization, with a consistency of 0.90. Taken together, the results show that the six goals of financial success, innovation,

solving big problems, social cause, independence, and organization are a representative classification for venture founder goals.

Table 7. Seven configurations explain the relationship between entrepreneurs' goals and passion.

	Goals: Antecedent Conditions for Entrepreneurial Passion							Coverage	
Configuration	Finanial success	Innovation	Solving big problems	Social cause	Independence	Organization	Consistency	Raw	Unique
1	•		•	●		●	**0.90**	0.46	0.19
2		•	•	●	•	●	0.87	0.22	0.03
3	●	O	o	•	o	o	0.84	0.20	0.04
4	●	O	•	•	•		0.89	0.20	0.01
5	•	•		●	•	●	0.85	0.20	0.03
6	o	•	•	o	o	●	0.88	0.18	0.05
7	O	o	•	o	•	●	0.82	0.16	0.001
Overall solutions consistency			0.86						
Overall solution coverage			0.63						

Note: Black circles • indicate the presence of antecedent conditions. White circles O indicate the absence or negation of antecedent conditions.
Blank cells indicate ambiguous conditions. Large circles indicate core conditions. Small circles indicate peripheral conditions.
Frequency threshold = 1, consistency threshold = 0.80.

SUPER-CONDITIONS: According to Navis and Glynn, entrepreneurial identity is the set of claims about the founder(s), the new venture, and the market opportunity that address "who we are" and "what we do" (2011). In the early stages of the venture, such decision-making is driven by the entrepreneur and can have a lasting impact on the organization (Bird, 1992; Mathias, Williams, & Smith, 2015). As such, this research proposes that "who we are" is initially defined by the founder's values and "what we do" is initially defined by the founder's goals for the firm. This leads to the creation of a set of super-conditions that combine the two into "values+goals."

When values and goals are run together as antecedents for entrepreneurial passion, we find nine configurations that provide an overall coverage of 0.71, which means these super-conditions explain 71 percent of entrepreneurial passion in this sample. Interestingly, different conditions come to the forefront in this analysis (see Table 8). Self-direction/independence are present in seven of the nine configurations and always as peripheral conditions. Universalism/social cause are present in six of the nine configurations and always as core conditions. This is surprising, given that the sample is focused on tech entrepreneurs running for-profit businesses, none of which were founded to directly support social causes.

That said, many of the businesses are directly related to improving the quality of people's lives, e.g. medical devices, waste removal, health products, and battery technology. Power/financial success and security/organization are present in five of the nine configurations; power/financial success are always peripheral conditions, while security/organization are always core conditions. This, too, is surprising given that prior research focuses far more on financial motivations than organizational development.

The configuration with the highest consistency, and therefore the highest explanatory power for the outcome is: Achievement/innovation, ~Stimulation/solving big problems, Universalism/social cause, Self-direction/independence, and Security/organization with a consistency of 0.92. Taken together, the results show that the six values+goals super-conditions of power/financial success, achievement/innovation, stimulation/solving big problems, universalism/social cause, self-direction/independence, and security/organization are a representative classification for venture founder values and goals.

Table 8. Nine configurations explain the relationship between the super-condition of values+goals and passion.

	Super Conditions: Antecedent Conditions for Entrepreneurial Passion							Coverage	
Configuration	Power/Fin Success	Ach/Innov	Stim/Solve Big Probs	Universalism/Soc Cause	Self-Dir/Indep	Sec/Org	Consistency	Raw	Unique
1	●		●		o	●	0.87	0.43	0.10
2	●	●	●	●			0.89	0.40	0.04
3	o	●	o	●	●		0.84	0.30	0.00
4		●	o	●	●	●	**0.92**	0.29	0.000
5	●		o	●	●	●	0.89	0.28	0.000
6	o		o	●	●	o	0.78	0.27	0.02
7	●	●	o		●	●	0.87	0.27	0.000
8	o	o		o	●	●	0.83	0.25	0.12
9	●		●	●	●	o	0.85	0.21	0.002
Overall solution consistency			0.77						
Overall solution coverage			0.71						

Note: Black circles • indicate the presence of antecedent conditions. White circles O indicate the absence or negation of antecedent conditions.
Blank cells indicate ambiguous conditions. Large circles indicate core conditions. Small circles indicate peripheral conditions.
Frequency threshold = 1, consistency threshold = 0.80.

7.3 fsQCA results by gender

The relationships between the conditions and the outcome for all entrepreneurs with consideration of gender are depicted below in Table 9.

VALUES: The results show seven configurations of values that provide an overall solution coverage of 0.69, which means these value conditions, taken together, explain 69 percent of entrepreneurial passion in this sample. The presence of achievement dominates all configurations, as it did in the overall sample; when gender is considered, achievement is a core condition in two configurations for males but is only present as a peripheral condition for females. Self-direction is present and absent in almost equal numbers, but is a core condition, regardless, in six of the seven configurations, regardless of gender. Unlike the overall sample, the absence of universalism is found in six out of seven configurations, regardless of gender. It is surprising that absence of universalism is found in both female configurations, given prior research that emphasizes the tendency for females to focus on nurturing and relationship-building. It may be that these more feminine characteristics are not found in females who launch technology firms. Security is a core condition in one male configuration and one female configuration. This is interesting as prior research has found risk-taking to be a commonly found trait in entrepreneurs, especially those launching firms in rapidly changing environments like technology. This may demonstrate that while risk-taking is common, there are those entrepreneurs who value a more secure setting.

The configuration with the highest consistency for males, and therefore the highest explanatory power for the outcome, is the same as for the overall sample: Power, Achievement, ~Self-direction, Universalism, and ~Security, with a consistency of 0.98 (~ indicates the absence of the value). The configuration with the highest consistency for females is: ~Power, Achievement, ~Stimulation, Self-direction, and ~Universalism, with a consistency of 0.86. The only commonality between these two configurations is the presence of the achievement value. Taken together, the results show that the six values of power, achievement, stimulation, self-direction, universalism, and security are a representative classification for venture founder values as a function of gender.

Table 9. Seven configurations explain the relationship between entrepreneurs' values and passion as a function of gender.

	Values: Antecedent Conditions for Entrepreneurial Passion								Coverage	
Configuration	Gender	Power	Achievement	Stimulation	Self-Directed	Universalism	Security	Consistency	Raw	Unique
1	●	●	•		O	o	●	0.88	0.30	0.12
2		●	•	●	O	o	●	0.94	0.21	0.04
3		o	•	O	●	o	•	0.89	0.20	0.08
4	•	•	•		o	●	o	**0.98**	0.17	0.08
5	●	•	●	O	●	o	O	0.80	0.16	0.06
6	o	o	•	O	●	o		**0.86**	0.15	0.04
7	•	o	●	•	●	o	O	0.81	0.14	0.06
Overall solution consistency				0.84						
Overall solution coverage				0.69						

Note: For Gender, black circles • indicate males, white circles O indicate female. All others, black circles • indicate the presence of antecedent conditions; white circles O indicate the absence or negation of antecedent conditions. Blank cells indicate ambiguous conditions. Large circles indicate core conditions. Small circles indicate peripheral conditions.
Frequency threshold = 1, consistency threshold = 0.80.

GOALS: The results in Table 10 show nine configurations of goals that provide an overall coverage of 0.63, which means these goals explain 63 percent of entrepreneurial passion in this sample, the same as for the overall sample. No one goal dominates all configurations, but we see a slightly different mix of conditions when compared to the overall sample. Social cause is present in seven of the nine configurations and, unlike the overall sample, is a core condition in all seven cases, regardless of gender. Organization is present in six of the nine configurations and, like the overall sample, is a core condition in all cases, regardless of gender. Solving big problems is present in six of the nine configurations. It is a core condition in three and a peripheral condition in three; in the overall sample, it was always a peripheral condition, when present. In the two female configurations, solving big problems is an absent or "don't care" condition. The only condition that is always present for females, and as a core condition, is social cause. This is in line with prior research that reports females tend to place more importance on the social outcomes of their firms (Lortie, Castrogiovanni, & Cox, 2016).

Two configurations provide the highest consistencies for males: Financial success, Solving big problems, Social cause, ~Independence, and Organization, with a consistency of 0.91, and ~Financial success, Innovation, Solving big problems, Social cause, Independence, and Organization, with a

consistency of 0.91. One configuration provides the highest consistency for females: Financial success, Innovation, Social Cause, ~Independence, and Organization, with a consistency of 0.98. The commonality between the highest consistency male and female configurations is the presence of social cause and the presence of organization. Taken together, the results show that the six goals of financial success, innovation, solving big problems, social cause, independence, and organization are a representative classification for venture founder goals as a function of gender.

Table 10. Nine configurations explain the relationship between entrepreneurs' goals and passion as a function of gender.

	Goals: Antecedent Conditions for Entrepreneurial Passion								Coverage	
Configuration	Gender	Finanial success	Innovation	Solving big problems	Social cause	Independence	Organization	Consistency	Raw	Unique
1	•	•		•	●	o	●	0.91	0.31	0.04
2		•	o	•	●	o	●	0.93	0.30	0.04
3	•	•	o	•	●	•		0.89	0.20	0.04
4	•	•	o	o	●	o	o	0.84	0.17	0.04
5	●	o	•	●	o	o	●	0.89	0.17	0.05
6	●	o	•	●	●	•	●	0.91	0.17	0.03
7	●	o	o	●	o	•	●	0.82	0.16	0.001
8	o	•	•		●	o	●	0.98	0.15	0.07
9	o	o	o	o	●	•	o	0.81	0.11	0.04
Overall solutions consistency				0.84						
Overall solution coverage				0.63						

Note: For Gender, black circles • indicate males, white circles O indicate female. All others, black circles • indicate the presence of antecedent conditions; white circles O indicate the absence or negation of antecedent conditions. Blank cells indicate ambiguous conditions. Large circles indicate core conditions. Small circles indicate peripheral conditions.
Frequency threshold = 1, consistency threshold = 0.80.

SUPER-CONDITIONS: When values and goals are run together as antecedents for entrepreneurial passion, we find twelve configurations that provide an overall coverage of 0.68, which means these super-conditions explain 68 percent of entrepreneurial passion in this sample. Interestingly, different conditions come to the forefront in this analysis (see Table 11). Self-direction/independence are present in ten of the twelve configurations; unlike the overall sample, self-direction is mostly seen as a core condition when gender is considered. Universalism/social cause, power/financial success, and security/organization are each present in eight of the twelve configurations. Unlike the overall sample, power/financial success is more often a core condition, regardless of gender. In the two female

configurations, security/organization is always present and as a core condition and self-direction/independence is always present.

The configuration with the highest consistency for males is different from the overall sample: Power/financial success, Achievement/innovation, Stimulation/solving big problems, Universalism/social cause, and Self-direction/independence, all are core conditions and provide a consistency of 0.92. The configuration with the highest consistency for females is similar to males in that all conditions that are present are core conditions; unlike males, security/organization is present and stimulation/solving big problems is a "don't care": Power/financial success, Achievement/innovation, Universalism/social cause, Self-direction/independence, and Security/Organization, with a consistency of 0.99. The common element of universalism/social cause is interesting and supports prior research that shows male and female entrepreneurs tend to be equally involved in social ventures (Kelley, Baumer, Brush, Greene, et al., 2017). Taken together, the results show that the six values+goals super-conditions of power/financial success, achievement/innovation, stimulation/solving big problems, universalism/social cause, self-direction/independence, and security/organization are a representative classification for venture founder values and goals as a function of gender.

Table 11. Twelve configurations explain the relationship between the super-condition of values+goals and passion as a function of gender.

	Super Conditions: Antecedent Conditions for Entrepreneurial Passion								Coverage	
Configuration	Gender	Power/Fin Success	Ach/Innov	Stim/Solve Big Probs	Universalism/Soc Cause	Self-Dir/Indep	Sec/Org	Consistency	Raw	Unique
1	●	●		●		○	⬤	0.86	0.36	0.10
2	●	●	●	●	●		⬤	0.90	0.30	0.000
3		⬤	⬤	⬤	⬤	⬤	●	0.93	0.26	0.000
4		○	⬤	○	⬤	⬤	○	0.81	0.24	0.03
5	●	○	⬤	○	⬤	⬤		0.85	0.21	0.02
6	●	⬤	⬤	⬤	⬤	⬤		0.92	0.20	0.000
7	●	⬤		⬤	⬤	⬤	○	0.83	0.18	0.005
8	●	⬤	○	○	●	⬤	⬤	0.85	0.18	0.01
9	●	⬤	●	○	○	⬤	⬤	0.89	0.17	0.001
10	○	⬤	⬤		⬤	⬤	⬤	0.99	0.16	0.01
11	●	○	○	●	○	●	⬤	0.80	0.16	0.00
12	○	○	○	○	○	●	⬤	0.98	0.13	0.02
Overall solution consistency				0.79						
Overall solution coverage				0.68						

Note: For Gender, black circles • indicate males, white circles O indicate female. All others, black circles • indicate the presence of antecedent conditions; white circles O indicate the absence or negation of antecedent conditions. Blank cells indicate ambiguous conditions. Large circles indicate core conditions. Small circles indicate peripheral conditions.
Frequency threshold = 1, consistency threshold = 0.80.

7.4 fsQCA results by country of origin

The relationships between the conditions and the outcome for all entrepreneurs with consideration of country of origin are depicted below in Table 12.

VALUES: The results show seven configurations of values that provide an overall solution coverage of 0.74, which means these value conditions, taken together, explain 74 percent of entrepreneurial passion in this sample. Even though there were more US-born entrepreneurs in the sample, there is more heterogeneity of configurations for non US-born entrepreneurs (four configurations vs one configuration for US-born). This most likely reflects the diversity of cultures represented in the sample (India, Israel, Pakistan, Canada, Mexico, and El Salvador). As in prior analyses, the presence of achievement dominates all configurations, regardless of country of origin. Achievement is a core condition in two configurations for non US born entrepreneurs; it is a peripheral condition in the configuration for US born entrepreneurs. Also similar to prior analyses, stimulation and universalism are almost completely absent conditions.

The data shows a distinct difference between the value configurations for US born entrepreneurs and those born in other countries. There is one configuration for US born entrepreneurs, which provides the highest explanatory power for the outcome: Power, Achievement, ~Stimulation, ~Self-direction, ~Universalism, and ~Security, with a consistency of 0.86 (~ indicates the absence of the value). The configuration with the highest consistency for non US born entrepreneurs is: Power, Achievement, ~Self-direction, Universalism, and ~Security, with a consistency of 0.98. Taken together, the results show that the six values of power, achievement, stimulation, self-direction, universalism, and security are a representative classification for venture founder values as a function of country of origin.

Table 12. Seven configurations explain the relationship between entrepreneurs' values and passion as a function of country of origin.

	Values: Antecedent Conditions for Entrepreneurial Passion								Coverage	
Configuration	Culture	Power	Achievement	Stimulation	Self-Directed	Universalism	Security	Consistency	Raw	Unique
1	o	•	•		o	o	•	0.89	0.31	0.13
2	o		•	o	•	o	o	0.92	0.25	0.04
3	O	o	●		•	o	O	0.94	0.25	0.06
4		●	•	•	O	o	•	0.94	0.21	0.03
5		O	•	O	●	o	•	0.89	0.20	0.05
6	O	•	●		o	•	O	**0.98**	0.17	0.08
7	•	●	•	o	O	o	O	**0.86**	0.14	0.04
Overall solution consistency				0.88						
Overall solution coverage				0.74						

Note: For Culture black circles • indicate US born, white circles O indicate non-US born. All others, black circles • indicate the presence of antecedent conditions; white circles O indicate the absence or negation of antecedent conditions. Blank cells indicate ambiguous conditions. Large circles indicate core conditions. Small circles indicate peripheral conditions.
Frequency threshold = 1, consistency threshold = 0.80.

GOALS: The results in Table 13 show eight configurations of goals that provide an overall coverage of 0.64, which means these goals explain 64 percent of entrepreneurial passion in this sample, slightly higher than the overall sample. No one goal dominates all configurations, but social cause is present in seven out of eight configurations, regardless of country of origin, and always as a core condition. This is similar to the findings based on gender. Organization is present in five of the eight configurations and is a core condition in all five cases, regardless of country of origin. Financial success and solving big problems are also present in five of the eight configurations, but always as a peripheral

condition. For the two US-born configurations, social cause and independence are always present and as core conditions.

The data shows a distinct difference between the goal configurations for US born entrepreneurs and those born in other countries. One configuration provides the highest consistency for US born entrepreneurs: Financial success, Innovation, ~Solving big problems, Social cause, Independence, and Organization, with a consistency of 0.98. Two configurations provide the highest consistency for non US born entrepreneurs: Financial success, Solving big problems, Social cause, and Organization, with a consistency of 0.89, and Financial success, ~Innovation, Solving big problems, Social cause, and Independence, also with a consistency of 0.89. The commonality between the highest consistency US born and non US born configurations is the presence of financial success and social cause. Taken together, the results show that the six goals of financial success, innovation, solving big problems, social cause, independence, and organization are a representative classification for venture founder goals as a function of country of origin.

Table 13. Eight configurations explain the relationship between entrepreneurs' goals and passion as a function of country of origin.

	Goals: Antecedent Conditions for Entrepreneurial Passion								Coverage	
Configuration	Culture	Finanial success	Innovation	Solving big problems	Social cause	Independence	Organization	Consistency	Raw	Unique
1	O	•		•	●		●	0.89	0.41	0.07
2		•	O	•	●	o	●	0.93	0.30	0.04
3	O		•	•	●	•	●	0.86	0.21	0.03
4	o	•	O	•	●	•		0.89	0.19	0.01
5	o	•	O	o	●	o	o	0.85	0.19	0.03
6	O	o	•	•	o	o	●	0.88	0.16	0.030
7	●	o	O	o	●	●	o	0.80	0.13	0.04
8	●	•	•	o	●	●	●	**0.98**	0.13	0.03
Overall solutions consistency				0.86						
Overall solution coverage				0.64						

Note: For Culture black circles • indicate US born, white circles O indicate non-US born. All others, black circles • indicate the presence of antecedent conditions; white circles O indicate the absence or negation of antecedent conditions. Blank cells indicate ambiguous conditions. Large circles indicate core conditions. Small circles indicate peripheral conditions.
Frequency threshold = 1, consistency threshold = 0.80.

SUPER-CONDITIONS: When values and goals are run together as antecedents for entrepreneurial passion, we find nine configurations that provide an overall coverage of 0.75, which

means these super-conditions explain 75 percent of entrepreneurial passion in this sample. Interestingly, different conditions come to the forefront in this analysis (see Table 14). Power/financial success and self-direction/independence are present in six of the nine configurations; unlike the overall sample, both are mostly seen as a core condition. Security/organization is present in five of the nine configurations, but unlike the overall sample, always as a core condition.

The data shows a distinct difference between the values+goals configurations for US born entrepreneurs and those born in other countries. The two configurations with the highest consistency for US born entrepreneurs are: Power/financial success, Stimulation/solving big problems, ~Universalism/social cause, ~Self-direction/independence, and Security/organization, with a consistency of 0.88, and Power/financial success, Achievement/innovation, ~Stimulation/solving big problems, Self-direction/independence, and Security/organization, with a consistency of 0.88. The configuration with the highest consistency for non US born entrepreneurs is: Power/financial success, Achievement/innovation, Stimulation/solving big problems, Universalism/social cause, and Security/Organization, with a consistency of 0.92. Taken together, the results show that the six values+goals super-conditions of power/financial success, achievement/innovation, stimulation/solving big problems, universalism/social cause, self-direction/independence, and security/organization are a representative classification for venture founder values and goals as a function of country of origin.

Table 14. Nine configurations explain the relationship between the super-condition of values+goals and passion as a function of country of origin.

	Super Conditions: Antecedent Conditions for Entrepreneurial Passion							Coverage		
Configuration	Culture	Power/Fin Success	Ach/Innov	Stim/Solve Big Probs	Universalism/Soc Caus	Self-Dir/Indep	Sec/Org	Consistency	Raw	Unique
1	o	●	•	•	•		●	0.92	0.36	0.14
2	O	o	O	O	O	●		0.83	0.25	0.07
3		o	●	o	●	●	o	0.81	0.24	0.04
4	o	●	o	•		o	●	0.86	0.23	0.04
5	o	o	●	o	●	●		0.86	0.22	0.02
6	•	●		•	o	o	●	0.88	0.20	0.07
7	o	●	O	o	•	●	●	0.86	0.20	0.0002
8	o	●		•	•	●	o	0.84	0.19	0.02
9	•	●	•	o		●	●	0.88	0.15	0.02
Overall solution consistency				0.79						
Overall solution coverage				0.75						

Note: For Culture black circles • indicate US born, white circles O indicate non-US born. All others, black circles • indicate the presence of antecedent conditions; white circles O indicate the absence or negation of antecedent conditions. Blank cells indicate ambiguous conditions. Large circles indicate core conditions. Small circles indicate peripheral conditions.
Frequency threshold = 1, consistency threshold = 0.80.

7.5 Founder identity types

In fuzzy set Qualitative Comparative Analysis, consistency scores assess the extent to which the causal conditions are sufficient to lead to the outcome; coverage scores indicate the degree to which the causal combinations account for instances of the outcome. This study found both high overall consistencies and high overall coverage scores in all analyses. The consistencies for the values, goals, and values+goals analyses ranged from 0.77 to 0.86, above the recommended minimum of 0.75 (Ragin, 2008). In addition, the overall coverage scores ranged from 0.63 to 0.76, the equivalent of r^2 values in regression analysis. This indicates that the six values, six goals, and six values+goals super-conditions produce a superior approach to understanding the complex interaction of motivations that inform founder identity.

Table 15 shows a summary of the super-condition configurations that produce the highest consistency results in the overall analysis, the analysis based on gender, and the analysis based on country of origin. From these, we can create a set of founder types that describe the sample of tech entrepreneurs studied.

From the overall analysis, we see the emergence of the Hero founder identity. This person shows core conditions of universalism/social cause and security/organization, and peripheral conditions of

achievement/innovation and self-direction/independence. This indicates they are motivated entrepreneurs willing to create and explore. They tend to focus outside themselves, dedicating themselves to understanding and protecting the welfare of others. This could take the form of building an organization for their employees, developing innovative solutions for customers, and/or creating social impact with their new venture.

From the gender analysis, we see the emergence of the Overachiever founder identities. Males show core conditions in all but one of the six categories, security/organization. Females also show core conditions in all but one category, stimulation/solving big problems. This demonstrates that male overachievers tend to be problem solvers who have a strong sense of independence and are action-oriented. They are willing to take on big challenges and causes in order to achieve success, which they define in terms of control over people and resources. Male overachievers are the only identity in the highest consistency set to include stimulation/solving big problems as a core component. Schwartz (1992) defines stimulation values as those driven by excitement, novelty, and challenges in life. This could be a key component that motivates people to engage in disruptive innovation. (Zuzul & Tripsas, 2019; Yu & Hang, 2010). Female overachievers tend to value harmony and relationships over excitement. They also have a strong sense of independence, are action-oriented, and are willing to take on causes that protect the welfare of others. Unlike males, they are more likely to focus on achievements related to creating a stable organization for themselves and their employees.

From the country of origin analysis, we see the emergence of three founder identities, all of which share core conditions of power/financial success and security/organization. All three tend to be focused on creating a successful organization and define success based on prestige or control over people and resources. The non US-born Community builder identity also shows peripheral conditions of achievement/innovation and stimulation/solving big problems, and is the only one of the three identities to also show universalism/social cause. This supports prior research, which shows that many countries demonstrate higher collectivism/community values than the United States, which scores higher on individualism values (Hofstede 2019). Therefore, the Community builder is likely to be a founder who

creates a successful organization that builds on communities, both inside and outside the firm. This identity shares some characteristics with the "communitarian" identity discussed by Fauchart and Gruber (2011). The US-born Seeker identity adds the peripheral condition of stimulation/solving big problems. While they value building an organization, they also look for excitement in the form of big challenges. This is akin to the "discoverer" identity discussed by Zuzul and Tripsas (2019). The US-born Trailblazer identity adds a core condition of self-direction/independence. Independent thoughts and actions push them to explore as well as build. Independence may also produce some level of tunnel vision, such that they are less likely to adapt the organization based on external feedback or changing industry conditions. This is akin to the "revolutionary" identity discussed by Zuzul and Tripsas (2019).

Table 15. The highest consistency configurations in each analysis and their corresponding founder identities.

	Super Conditions: Antecedent Conditions for Entrepreneurial Passion							Coverage		
Sample	Power/Fin Success	Ach/Innov	Stim/Solve Big Probs	Universalism/Soc Cause	Self-Dir/Indep	Sec/Org	Consistency	Raw	Unique	Founder identity
Overall		•	o	●	•	●	0.92	0.29	0.000	Hero
Male	●	●	●	●	●		0.92	0.20	0.000	Problem solving overachiever
Female	●	●		●	●	●	0.99	0.16	0.01	Harmonious overachiever
Non US-born	●	•	•	•		●	0.92	0.36	0.14	Community builder
US-born	●		•	o	o	●	0.88	0.20	0.07	Seeker
US-born	●	•	o		●	●	0.88	0.15	0.02	Trailblazer

Note: For Culture black circles • indicate US born, white circles O indicate non-US born. All others, black circles • indicate the presence of antecedent conditions; white circles O indicate the absence or negation of antecedent conditions. Blank cells indicate ambiguous conditions. Large circles indicate core conditions. Small circles indicate peripheral conditions. Frequency threshold = 1, consistency threshold = 0.80.

8.0 Discussion

Passion is a motivational construct that can energize and inspire entrepreneurs to take action (Cardon et al., 2017). Passion is only one of several forms of motivation that can drive entrepreneurial behaviors, such as launching a new venture or operating with scarce resources (Cardon et al., 2013; Brannback et al., 2006). Over the last 40 years, studies have shown that entrepreneurs launch new ventures based on a heterogeneity of motivations, including an intrinsic need for self-realization, extrinsic rewards in the form of financial gains, or a passion for building organizations (see Table 2, Cardon et al.,

2009). However, little research has looked at whether there are discernable patterns to the interactions between these motivations.

This study examines an expanded view of entrepreneurial motivation that incorporates individual values, founder goals for the firm, and entrepreneurial passion in order to produce a classification of founder identities. fsQCA is used to assess how these different motivations combine to produce different combinations that result in the entrepreneurial passion needed to persist in the face of challenges. Taken together, these motivation constructs inform the entrepreneur's founder identity, a new identity that is formed as they go through the process of creating a new venture (Powell & Baker, 2014; Fauchart & Gruber, 2011; Hoang & Gimeno, 2010; Cardon et al., 2009).

The results shown in Tables 6 to 15 clearly demonstrate that the fsQCA method generates both complementary and new insights about entrepreneurial motivation and founder identity that have not been found in prior research based on case studies, qualitative content analysis, or surveys. The analyses reveal six sets of value-goal identity conditions that predict entrepreneurial passion with high levels of consistency and coverage: power/financial success, achievement/innovation, stimulation/solving big problems, universalism/social cause, self-direction/independence, and security/organization. Of the multiple configurations that explain the relationship between values+goals and passion, one configuration provides the highest consistency: achievement/innovation, ~stimulation/solving big problems, universalism/social cause, self-direction/independence, and security/organization, which is labeled here as the Hero founder identity.

New knowledge is also established with respect to differences in founder identity based on gender. While the same six sets of value-goal identities describe the sample, differences are found in the highest consistency configurations. For males, the highest consistency configuration is: power/financial success, achievement/innovation, stimulation/solving big problems, universalism/social cause, and self-direction/independence, which is labeled here as the Problem Solving Overachiever identity. A similar configuration provides the highest consistency for females with the removal of stimulation/solving big problems and the addition of security/organization, which is labeled the Harmonious Overachiever.

The six sets of value-goal identity conditions also describe the sample when examining country of origin. The results produce three prominent identities. For non US country of origin, the highest consistency configuration is: power/financial success, stimulation/solving big problems, universalism/social cause, and security/organization, which is labeled here as the Community Builder identity. Two configurations produce the highest consistency for US-born entrepreneurs: (a) power/financial success, stimulation/solving big problems, ~universalism/social cause, ~self-direction/independence, and security/organization, which is labeled the Seeker identity, and (b) power/financial success, achievement/innovation, ~stimulation/solving big problems, self-direction/independence, and security/organization, which is labeled the Trailblazer identity. While this research does not attempt to differentiate between all countries of origin in the sample, it does provide a clear indication that US-born entrepreneurs demonstrate different founder identities from those born in other countries.

The results demonstrate that these six sets of values-goals conditions can be used to create a founder identity classification system that is aligned with prior research on individual values (Schwartz, 1992; Bardi et al., 2008), goals for the firm (see Table 2), and entrepreneurial passion (Cardon et al., 2009, 2013, 2017). The multiple causal conditions uncovered provide a more comprehensive and generalizable framework for understanding entrepreneurial motivation and founder identity.

9.0 Implications and limitations

While not all identities possess the same probability of motivating behavior (Murnieks & Cardon, 2019), this classification provides a solid foundation that allows entrepreneurs to better understand why they make the decisions they do. It also provides a platform for researchers to explore the relationship between motivations, cognitions, and behaviors, such as opportunity recognition, business model development, social network formation, and venture performance.

9.1 Implications for practice

This research provides practical insights for decision-making for entrepreneurs as they create and develop their ventures. This study provides a common language for entrepreneurs to understand what it means to be motivated to launch a new venture. This can increase entrepreneurial self-awareness and help individuals decide whether to venture, where to venture, and how to construct their teams. It can also encourage open discussions between individuals about entrepreneurial motivations, their importance to the individuals involved, and how similarities and differences can affect the new venture. An identity tends to establish restrictive corridors for potential behaviors and can create conflict (Powell & Baker, 2014). This can interfere with effective and timely decision-making, which can undermine the long-term viability of the organization. Conflicting motivations between founders or between founders and their advisors can result in products that don't meet market needs, difficulty raising financing, and mixed messages in branding, all of which can be detrimental to the viability of the firm. Individuals assign varying levels of importance to different values (Schwartz, 1992). Discussions about individual values and their priorities can help resolve conflicts using paired comparisons vs simply assessing the values and their priorities in isolation from key stakeholders (Rokeach & Ball-Rokeach, 1989).

9.2 Implications for theory and future research

Academically, this study provides a new method for understanding the venture creation process. The results create a more robustly developed founder identity framework that can be examined in the context of a variety of entrepreneurial decision-making situations and with respect to firm performance.

Do founders who have one primary value-goal identity make decisions differently from those with a combination of identities? Are there founder identities that are more likely to succeed in certain environments? How do different founder identities perceive and react to resource constraints? Are universalism/social cause identities motivated primarily by community concerns or do social venture founders have identity configurations that include other values and goals? Are there founder identity gender differences among social ventures? How does identity influence venture performance?

Future research on founder identity can also address different outcome levels, such as low vs. average vs. high passion, as well as additional demographic segmentations, such age of the firm, number of ventures the founder has started, and background of the founder.

9.3 Limitations

There are a number of limitations in this research. While the study is based on prior work done by scholars in the values, goals, and passion literature, the results are limited by my choice of keywords. It is possible that different selections of keywords would produce different results. For instance, use of the expanded Rokeach Value Survey (Rokeach, 1973), which covers 36 values, may produce contrasting results to Schwartz's 10 universal values (1992). A narrower or expanded selection of synonyms for values, goals, and passion could also produce different results. Two sets of synonyms were attributed to both the values (stimulation) and passion conditions: excite and thrill. Neither was used excessively, but as there was no way to differentiate one condition from the other, both were kept. Lastly, different language patterns among the entrepreneurs could have affected keyword use, such as the modern language's use of "like" as a substitute for a variety of phrases beyond meaning "similar to."

As with other statistical methods, there are limitations of the fsQCA software that was used for the analysis. The results could be sensitive to case and variable selection, especially for small samples (Berg-Schlosser & De Meur, 2012). Also, when constructing the truth table, there are 2^k rows, where k is the number of causal conditions. Each row corresponds to a configuration of conditions. In this sample, six conditions were used for each of the analyses (values, goals, and values+goals). That produces 64 rows for each analysis. While Ragin and Fiss (2008) recommend a maximum of 10 conditions, I found that the software was only able to number crunch six conditions at a time. That limited the quantity of values and goals examined at once.

The analysis was based on a small sample of interviews with entrepreneurs. While fsQCA was originally designed for small sample sizes (Ragin, 2008), the small number of non US-born founders does not allow for a country by country comparison. Instead, I focus on comparing US-born entrepreneurs with

non US-born as a whole. This precludes a more detailed look at the impact of different cultures on founder values, goals, and passion. The small sample also prevents a more detailed comparison between different generations and the potential impact of changes in societal influence on values, goals, and passion over time.

Finally, the fact that this sample is comprised wholly of tech entrepreneurs could have impacted the classification. For instance, I expected that the tech entrepreneur sample would produce a lower presence for several of the value and goal conditions, such as social cause. The results showed that was not the case, but there may have been other issues specific to this sample. For instance, no hedonism or benevolence value keywords were found in the interviews, so these condition were left out of the analysis.

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Appendix A. Values, goals, and passion keywords searched in interviews.

VALUE KEYWORDS

Power: Power, powered, powerful, powers, strength, strengths, control, controlled, controlling

Achievement: Achieve, achievements, achieving, ambition, ambitions, success, successful, successfully

Stimulation: Stimulate, stimulation, excited, excitement, excites, exciting, novelty, thrill

Universalism: Universalism, unity, justice, equality

Self-direction: Self-direction, independence, independent, freedom, liberty

Security: Security, secure, safety, protection

GOAL KEYWORDS

Financial: Financial. Financially, financials, financiers, wealth, wealthy, affluence, prosperity, opulence, riches, rich, luxury, deep pockets, fortune, fortunate, fortunately, plentitude

Innovation: Innovation, innovated, innovations, innovative, innovator, innovators, revolution, upheaval, transformation, metamorphosis, new methods, new devices, novelty, newness, unconventionality, modern, modernization

Solve big problems: Solve big problems, solve, solved, solving, find answer, find solution, resolve, work out, puzzle out, decipher, decode, get to the bottom, unravel, disentangle, untangle, explain, explained, explaining, expound elucidate, problem, problems, difficulties, difficulty, issue, issues, issuing, complications, dilemma, source of difficulty, difficult task, challenge, challenged, challenges, challenging

Social cause: Social cause, social good, community, communal, communicate, communicated, communicating, communication, communications, communities

Independence: Independent, independence, self-rule, self-determination, autonomy, autonomous, freedom, liberty, self-reliance, self-sufficiency, self-support, individualism, individual, individually, individuals, unconstraint

Organization: Organization, organically, organizations, organize, organized, organizing, people, employee, employees, team, teams, plan, planned, planning, plans, coordinate, structural, structure, structured, structures, structuring, administration, administrator, organizing, manage, management, manageable, managed, manager, managers, manages, managing, logistics, company, companies, firm, firms, concern, concerned, operation, operate, operated, operating, operation, operational, operations, corporate, corporation, corporations, incorporated, incorporating, institute, institution, establish, established, establishing, establishment, association, associated, associations, outfit

PASSION KEYWORDS

Passion, passionate, passions, enthusiasm, love, loved, loves, loving, fascination, obsess, obsessed, obsession, obsessions, fanatic, fixate, predilection, compulsion, relish, like, liked, likely, likes, likely, interest, interested, interesting, interestingly, interests, penchant, addiction, addictions, fondness, fervor, ardor, intensity, eager, zeal, vigor, feeling, feel, feels, emotion, emotions, emotional, fire, excitement,

excited, excites, exciting, energy, energies, animated, gusto, zest, spirit, commitment, commit, commitments, committed, thrill, adventure, exhilarated, elated

Paper 2: The Evolution of Business Model Innovation:

Classifying Dimensions and Intensity of Change

By Shari L.S. Worthington

PhD Candidate

Foisie Business School

Worcester Polytechnic Institute

100 Institute Road

Worcester, MA 01609

sharilee@wpi.edu

July 2020

Dissertation Committee Members:

Dr. Steven S. Taylor, Committee Chair, Foisie Business School, WPI
Dr. Frank Hoy, Dissertation Committee, Foisie Business School, WPI
Dr. Adrienne Hall-Phillips, Dissertation Committee, Foisie Business School, WPI
Dr. Alan Carsrud, Dissertation Committee, Åbo Akademi University

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1.0 ABSTRACT

The ability to adapt or "pivot" a company's business model has been cited as critical to business success, as entrepreneurs are unlikely to get the new venture's strategy perfect out of the gate. This pivoting behavior, also referred to as business model innovation, can take many forms. This includes behaviors such as a small change to internal processes, a larger modification of the firm's revenue capture mechanisms, or a radical change in the product offered. While surveys and scales for measuring the variability of these pivots have recently been proposed and are beginning to be validated by other researchers, there is little agreement on how to conceptualize the dimensions and degree of business model change. What work has been done mostly focuses on SME's and large firms. That leaves a gap in the literature with respect to business model innovation in new and early stage ventures, organizations that often face challenging circumstances that are different from those of more established firms, from establishing credibility to acquiring resources acquisition to generating revenue.

In this literature review, I identify and analyze 32 peer-reviewed quantitative papers from top journals that investigate different aspects of the dynamics of business model innovation. The review reveals a lack of consensus on the dimensions of the construct, making it difficult for scholars to make progress understanding the phenomenon. That said, there is a fair amount of common ground in the literature that can be leveraged into a more comprehensive view of how business models change within a firm. In this paper, I consolidate the findings of these studies and leverage prior theoretical contributions to develop a model of the core dimensions and intensity of change of business model innovation. This model identifies and describes four main dimensions: (a) strategic positioning, (b) depth of business model innovation, (c) breadth of business model innovation, and (d) novelty of business model innovation. I present the model and then discuss important avenues for future research.

2.0 INTRODUCTION

2.1 Background

Business models reflect management's understanding of customer needs, how and what they are willing to pay, how the organization can meet those needs, and how they can generate a profit while doing so (Teece, 2010). Developing a business model can be a complex task for new companies, given the uncertainty and risk inherent in rapidly changing technologies (Trimi & Berbegal-Mirabent, 2012). The development process may not end with the first business model. The ability to adapt or "pivot" a company's business model has been cited as critical to business success (Ries, 2011), as entrepreneurs are unlikely to get the new venture's strategy perfect out of the gate. Even experienced organizations struggle to define their business models (Immelt, 2017). Initial selections of business models often have to be abandoned or adapted as previously unavailable information becomes known. To profit from innovation, some scholars assert that entrepreneurs need to be as good at developing new business models as they are at developing new products (Chesbrough, 2010).

Recent research shows how business models can emerge from a trial and error process where entrepreneurs test their assumptions about products, customer expectations, distribution channels, and internal operations (Eisenmann, Ries, & Dillard, 2012; Baden-Fuller and Morgan 2010; Chesbrough 2010). This dynamic view of business model change led to the creation of terminology and constructs to explain the phenomena. Although there is no agreed upon definition, business model innovation (BMI) generally refers to the discovery of fundamentally different ways to create and capture customer value (Casadesus-Masanell & Zhu, 2013; Amit & Zott, 2001) or modification or improvement of at least one of a company's core value dimensions, such as value creation or value proposition (Abdelkafi, Makhotin, & Posselt, 2013). This process is also referred to in the literature as business model change, business model adaptation, business model evolution, or business model transformation.

This paper seeks to reduce ambiguity around the concept of business model innovation and improve measurement options by contributing to a better understanding of the dimensions of the construct. Based on an analysis of the business model innovation literature, with an emphasis on the 32

quantitative studies found in top-ranked journals (3's and 4's per the Academic Journal Guide, 2018), I identify the dimensions of business model innovation and review the methods for measurement that have been developed to date. I then create a model that offers a way to consolidate the multiplicity of views on the dimensions and degree of business model innovation based on: (a) strategic positioning, (b) depth of business model innovation, (c) breadth of business model innovation, and (d) novelty of business model innovation.

2.2 Research problem and justification

The BMI literature is still young (Snihur & Wiklund, 2019; Foss & Saebi, 2017). The first empirical measures of BMI appeared in publications in 2007, one as part of a larger survey about business models by Zott & Amit, and the other as part of an analysis of product and market changes in new technology ventures by Andries & Debackere (2007). By 2015, scholarly research on business models and BMI had increased to the point where we now have a number of empirically validated measurement scales for business model innovation (see Table 1).

As is common in the early stages of a new research field, there is little agreement about the definitions or dimensions of BMI (Foss & Saebi, 2017; Clauss, 2017; Schneider & Spieth, 2013). Before measurement scales can usefully guide research into such areas as the antecedents of BMI and BMI's relationship to performance outcomes, there needs to be agreement on key issues. For instance, do novelty and scope sufficiently capture the essence of business model innovations (Foss & Saebi, 2017)? Do we define business model innovations as those that are new to the firm, new to the industry, or both (Osiyevskky & Dewald, 2018)? What degree of change warrants the label 'innovation' (Clauss, 2017; Spieth & Schneider, 2016; Teece, 2010)? Do business models take into account a firm's competitive positioning and are therefore akin to organization strategy, or are business models something different (Seddon, Lewis, Freeman, & Shanks, 2004; Spieth & Schneider, 2016; Clauss, 2017)?

This study attempts to provide new insights into a poorly understood phenomenon, the dimensions and degrees of change that define business model innovation. The literature lacks a

comprehensive view of the construct and its component parts. To address this, the central question of this research is: **How can we consolidate and classify the core dimensions of the business model innovation construct in a way that can be used to guide future research**?

The goal of this research is to provide insights for practical decision-making for entrepreneurs and their support systems as new ventures are created and developed. Business models provide executives with an integrated view of their firm's activities, helping them communicate with internal and external stakeholders and gather needed resources (Schneider & Spieth, 2013). Innovating those business models allows firms to continuously react to changes in the environment (Demil & Lococq, 2010).

For academics, this study provides a new avenue for understanding the different types of business model innovations based on various configurations of a consolidated view of the core dimensions. The identification of relevant elements can lead to a better understanding of BMI's impact on a firm's financial performance and, an increasingly popular topic in academic journals, BMI's impact on a firm's sustainability management (Schneider & Spieth, 2013; Lopez, Bastein, & Tukker, 2019).

This paper proceeds as follows. A review of the literature is organized around the core constructs of business models and business model innovation. Limitations of existing literature are addressed, and then a theoretical model is developed to address these gaps related to the dimensions of BMI based on: (a) strategic positioning, (b) depth of business model innovation, (c) breadth of business model innovation, and (d) novelty of business model innovation.

2.3 Delimitations of scope and key assumptions

This literature review is focused on issues related to the dimensions and measurement of BMI. To ensure a rigorous peer review process and a higher likelihood of validated knowledge, I analyze the quantitative research found in top academic journals (rated 3's and 4's in the *Academic Journal Guide*, 2018). These quantitative studies build on a broader base of conceptual papers and case studies that examine BMI from a variety of angles, for example, based on company age and size, products/services produced, customer

segments served, or management characteristics[2]. I am then able to leverage the lessons learned in the quantitative literature and examine the convergence as researchers create different ways to measure various aspects of BMI. From this, I propose a model that helps guide future research in a more comprehensive manner.

This review will discuss BMI in the context of new ventures, SMEs, and large organizations. Additional discussion is added for the case of new ventures and early stage ventures as they present a gap in the current literature.

Throughout this paper, I use the phrase business model innovation. Occasionally, other terms may be used, such as business model change, business model adaptation, business model evolution, or business model transformation. Unless otherwise specified, these terms are used interchangeably. **Business model** is defined as the representation of a set of variables in the areas of venture strategy, architecture, and economics that are combined to create sustainable competitive advantage for a firm (Morris, Schindehutte, & Allen, 2005). **Business model innovation** is a new or improved business model configuration the impacts the way a firm defines and implements its value in terms of value creation, value capture, and value proposition (see Table 1).

3.0 LITERATURE REVIEW: Business model innovation

3.1 Introduction

Most organizations engage in a dynamic process of adjusting to uncertainty and environmental change by questioning, verifying, and redefining the way they interact with the environment (Miles, Snow, Meyer, and Coleman, Jr., 1978). If they find an effective way to adjust to changes, they are able to define and maintain a viable market for their offerings; if not, the firm fails (Miles et al., 1978). This

[2] Recent reviews of conceptual papers and case study research on business model innovation can be found in Schneider and Spieth, 2013, and Foss and Saebi, 2017.

process of adaptation is determined by environmental conditions as well as by the choices made by top managers (Porter, 1980; Drucker, 1974; Cyert & March, 1963). "In a new organization, an entrepreneurial insight, perhaps only vaguely defined at first, must be developed into a concrete definition of an organizational domain, a specific good or service, and a target market or market segment" (Miles et al., 1978, p. 549). From this, entrepreneurs create, either implicitly or explicitly, their firm's strategy. **Strategy formation** is defined as "the process by which executives create a unique set of interdependent activities to create and capture value" (Ott, Eisenhardt, & Bingham, 2017, p. 306).

3.2 Dynamic capabilities

All new firms face challenges related to uncertainty (facing unknowns) and risk (weighing the probabilities of known outcomes). Entrepreneurs may start their ventures with goals in mind, but precise definitions of the business and how they allocate resources often change as they learn more about the uncertainties and risks of the business environment (Nicholls-Nixon, Cooper, & Woo, 2000). According to the resource-based view of the firm (RBV), companies must learn to combine and recombine resources in order to create value for their customers and a strategic advantage over competitors (Penrose, 1959; Barney, 1991).

The rapid pace of innovation and associated competition in technology industries presents firms with an added degree of uncertainty as they seek to define their strategic advantage. Janeway (2012) describes the innovation economy as "…saturated in unquantifiable uncertainty" (p. 58). Teece (2016) refers to this as "deep uncertainty." Recently, strategic change scholars have extended RBV to dynamic markets in order to explain how and why some firms can create competitive advantage in the face of rapid and unpredictable change (Teece, Pisano, & Shuen, 1997; Eisenhardt & Martin, 2000). According to Teece et al. (1997), leveraging dynamic capabilities, some firms are able to "integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (p. 516). This allows them to quickly align and realign internal and external resources to respond to changes in the business environment to generate positive results for the firm.

In high-velocity environments, like the technology markets, dynamic capabilities are a way to produce adaptive but unpredictable outcomes using experiential learning, rapidly created new knowledge, and iterative execution (Eisenhardt & Martin, 2000). Dynamic capabilities, such as strategic decision speed, have been found to have performance-enhancing effects, most of which are positive indicators, such as survival, growth, and flexibility, in large and small firms (Schilke, Hu, & Helfat, 2018; Baum & Wally, 2003).

While scholars agree that dynamic capabilities increase organizational agility and market responsiveness (Zahra & George, 2002), there is some disagreement about the form of the strategic value of dynamic capabilities. Teece (2007) emphasizes the value of dynamic capabilities as a process that enables firms to "create, deploy, and protect the intangible assets that support superior long-run business performance" (p. 1319). Others do not believe that dynamic capabilities themselves are a source of sustainable competitive advantage as different companies can take different paths to produce the same configuration of resources (Eisenhardt & Martin, 2000). Instead, it is proposed that the value of dynamic capabilities lies in the resource configurations that are created (Eisenhardt & Martin, 2000), which can take the form of the representations of the business model as it is created and iterated.

Dynamic capabilities provide the ability to repeatedly and consistently perform an activity directed toward strategic change (Helfat & Winter, 2011). Such capabilities are context specific and must be built up over time; once they are, they become embedded within the organization (Helfat & Martin, 2015). Unlike transaction cost economics, dynamic capabilities focus on the development of new opportunities (vs. opportunism), the acquisition of new resources (vs. existing), and the creation of value (vs. value protection) (Augier & Teece, 2008).

The bulk of the dynamic capabilities literature refers to Teece's (2007) typology, which proposes that dynamic capabilities are based on: (a) sensing new opportunities and threats, (b) making strategic choices based on these opportunities and business models, and (c) transforming the firm's resources, structure, and capabilities. Scholars have explored the role of individual-level factors in shaping dynamic capabilities (Schilke et al., 2018), including human capital (Hsu & Wang, 2012; Kale, 2010), leadership

(Kor & Mesko, 2013; Rindova & Kotha, 2001), and managerial cognition (Dunning & Lundan, 2010; Leiblein, 2011). Unlike operational (or "ordinary") capabilities, dynamic capabilities can be based on the skills and knowledge of one or a few individuals rather than on the organization's routines (Teece, 2012). This is especially applicable to new ventures, where routines have yet to be developed and founder decisions have a significant impact on the firm (Bird, 1992; Mathias, Williams, & Smith, 2015).

Dynamic capabilities can also be viewed as the ability of the organization's primary decision maker(s) to reconfigure resources and routines (Zahra, Sapienza, & Davidsson, 2006). The willingness to reconfigure is influenced by the individual's perception of opportunities to make organization changes, their willingness to initiate such changes, and their ability to then implement the changes (Zahra et al., 2006). The motivation, skills, and experiences of the firm's key managers largely determine such abilities (Penrose, 1959), which are reflected in strategic and organizational processes, such as product development, marketing, and strategic decision-making (Eisenhardt & Martin, 2000).

Most research on capabilities and organizational learning has focused on larger, established technology firms. Zahra et al. (2006) propose that dynamic capabilities operate differently in new vs. established firms. All firms learn through a variety of mechanisms, but how and what firms learn depends on the age of the firm and the developmental stage of their organization routines. The authors posit that established companies learn primarily through deliberate steps based on experience, planned change, experimentation, and imitation. In new ventures, learning is based on action more than planning and employs methods that produce faster and more significant change: trial-and-error, improvisation, and imitation.

This action-oriented learning process of entrepreneurs can have a significant impact on strategy formation in new ventures. According to Mintzberg (1978), "Strategy formation...becomes a learning process, whereby so-called implementation feeds back to formulation and intentions get modified en route, resulting in an emergent strategy," (p. 946). But in high-velocity environments, entrepreneurs make choices and learn in the face of extreme uncertainty and risk, so errors are possible and can lead to substandard performance (Shepherd, Williams, & Patzelt, 2014). While decision makers tend to be

boundedly rational, making logical choices within the limits of the information available and their cognitive capabilities (Zahra et al., 2006), tumultuous environments can make it unlikely that entrepreneurs will get the strategy that informs these decisions perfect the first time around. The more active the entrepreneur and firm are in developing their dynamic capabilities, the more likely they will make better strategic choices, such as pivoting business models when the need arises.

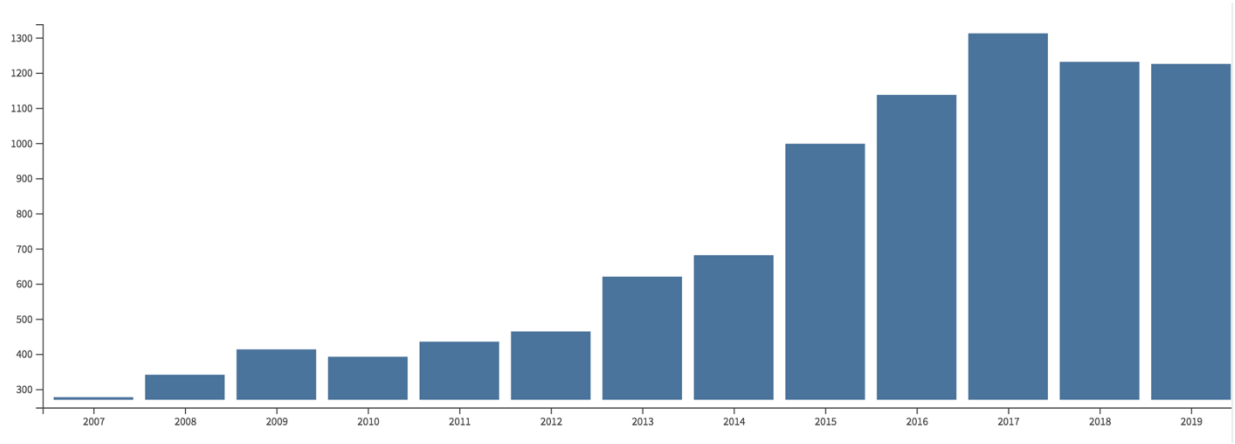
3.3 Defining business model innovation

Before an entrepreneur develops a business model, they must find an opportunity they think is worth pursuing. The next step is to decide how to take the new idea to market. Core organizing processes, such as the creation of strategies, roles, and boundaries, are generally recognized as fundamental to the structure of organizations and can have long-term impact on firm survival and adaptation (Beckman, Burton, & O'Reilly, 2007). The ability to employ dynamic capabilities to integrate, build, and reconfigure internal and external resources to address rapid change can lead to quicker responses to evolving customer preferences, competitor activities, and external feedback, generating positive results for the firm (Teece et al., 1997). According to Chesbrough (2010), technology by itself has limited objective value until it is commercialized in some way via a business model, yet the same idea taken to market through different business models can yield different economic outcomes. As a result, entrepreneurs need to be as good at developing and refining new business models as they are at creating new products (Chesbrough, 2010).

3.3.1 Business models

The term "business model" first appeared in the IT literature (Bellman et al., 1957), and then gained visibility during the early years of the dot-com economy, as technology firms attempted to differentiate their online businesses (Wirtz, Pistoia, Ullrich, & Gottel, 2016). A search for the phrase "business model" on Web of Science produced 9,901 publications and 85,981 citations between 2005 and 2019.

Figure 1. A Web of Science search for "business model" produced 9,901 publications between 2005 and 2019, with the bulk appearing between 2015 and 2019.

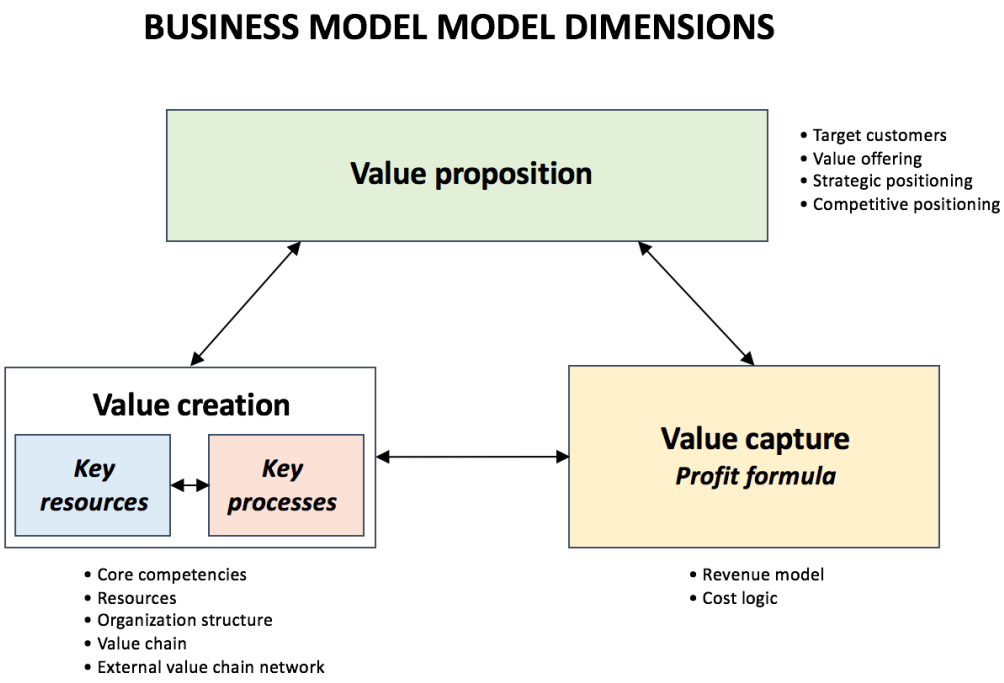


Amit and Zott (2001) define a business model as "how an organization is linked to external stakeholders, and how it engages in economic exchanges with them to create value for all exchange partners" (p.181). Osterwalder, Pigneur, & Tucci (2005) expand on this by defining a business model as "a conceptual tool that contains a set of elements and their relationship and allows expressing a company's logic of earning money. It is a description of the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, in order to generate profitable and sustainable revenue streams" (p. 15). Business models can be implicit – implied based on the actions taken by an organization's employees – or explicit – spelled out in a clear manner with less room for misinterpretation (George & Bock, 2010).

Although there is a plethora of definitions related to business models, most are consistent with that of Teece (2010), "the design or architecture of the value creation, delivery, and capture mechanism" of the firm (p. 172). It is generally agreed that the major components of the business model include the value proposition and customer segments, the resources and value chain structure that produce the value proposition, the organization's value capture processes that convert inputs into products, and the formula that indicates how to achieve a positive return (Christensen, Bartman, & van Bever, 2016). Following

this, Johnson (2018) represents the components of the business model as a four-box framework that includes customer value proposition, key resources, key processes, and profit formula (see Figure 2).

Figure 2. The dimensions of a business model include the value proposition that is based on the product or service created and the customer problem being solved; value creation, which includes the key resources and key processes that are used to deliver the value proposition in a repeatable and sustainable way; and the profit formula that determines how the company will financially capture value in terms of revenue and costs (adapted from Johnson, 2018).



While business model use has become popular among practitioners (Boston Consulting Group, 2014), there is disagreement in the academic literature about whether the business model represents a useful construct in management research (Massa, Tucci, and Afuah, 2017; Markides, 2015). Some see the business model construct as a subset of organizational change, suggesting that "the organization's capabilities to renew and change are dependent on the underlying values and beliefs of organizational members" (Hock, Clauss, & Schulz, 2015, p. 434) Others see the business model as a concept that adds

value to traditional strategy literature by expanding the meaning of "value creation" to include new markets with new users, and "value capture" to include how resources are monetized by a firm (Massa et al., 2017; Casadesus-Masanell & Ricart, 2010).

There is also disagreement in the literature about the meaning and function of business models. Some scholars see business models as real attributes of firms that include the activities the firm performs and the resultant outcomes, such as the content, structure, and governance of the transactions a business uses to create value (Massa et al., 2017; Zott & Amit, 2010). Other scholars see business models as interpretations that focus on conceptual representations, such as the business model canvas template that can serve as a "blueprint" to indicate how companies do business (Osterwalder & Pigneur, 2010). At the other extreme are scholars who see business models as implicit cognitive/linguistic schemas, or stories, composed of images of real systems that are shaped by a manager's understanding of the environment and the firm's value creation activities. These cognitive structures serve to make decision-making more efficient by focusing mental models in the face of imperfect information and cognitive complexity. The heuristic logic and resulting narrative create a shared understanding of the business model that can be deployed to create economic value (Chesbrough & Rosenbloom, 2002).

3.3.2 Business model innovation

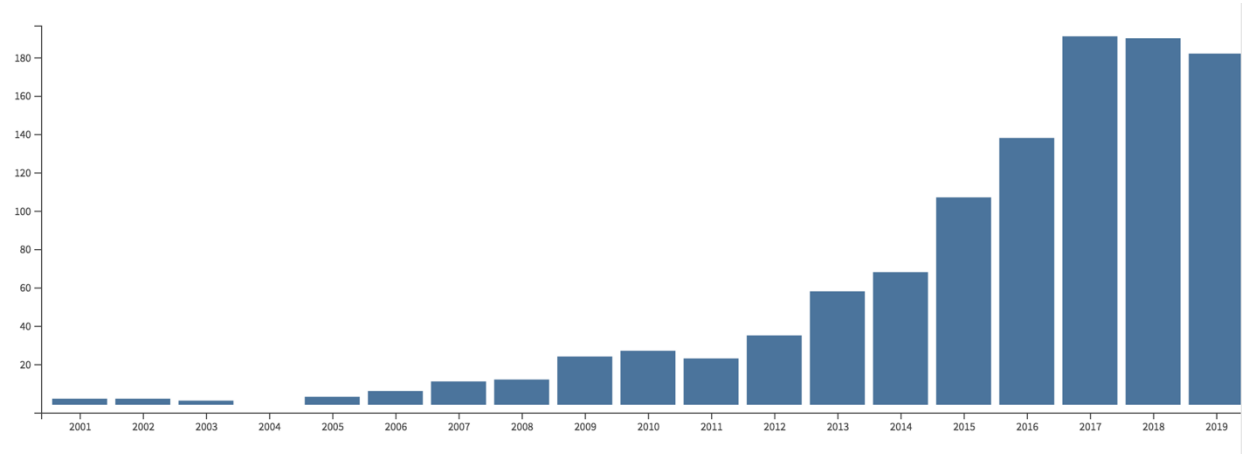
Many new ventures struggle to create business models and strategies that address key customer and competitor issues (Standing & Mattson, 2018; Edelman, Brush, & Manolova, 2015). Even experienced organizations can struggle defining their business models. According to GE retired CEO Jeffrey Immelt (2017), "There's a tension - even as you're making a major commitment of resources, you've got to be open to pivoting on the basis of what you learn, because you're unlikely to get the strategy perfect out of the gate. Nothing we've done (at GE) has ever turned out exactly as it began" (p. 57). Initial selections of business models often have to be abandoned or adapted as previously unavailable information becomes known (Andries & Debackere, 2006). To profit from innovation, some scholars

assert that entrepreneurs need to, first and foremost, be adept at creating and fine-tuning new business models (Chesbrough, 2010; Ries, 2011).

Creating and modifying business models has become prevalent among practitioners. Boston Consulting Group (2014) reports that in a survey of 1,500 senior executives of established companies, 94% stated that their companies had attempted some degree of business model change. The practitioner literature refers to this as "pivoting" the business model (Blank, 2010; Ries, 2011; O'Connor & Klebahn, 2011; Kant, Kutcher, Mahdavian, & Sprague, 2015; Abbosh, Nunes, Savic, & Moore, 2017; Young Entrepreneur Council, 2019). Scholars generally refer to this process as business model innovation (Chesbrough, 2007; Amit & Zott, 2012; Sosna, Trevinyo-Rodrigues, & Velamuri, 2010; Wirtz, Gottel, & Daiser, 2016). Some scholars refer to it as business model adaptation (Saebi, Lien, & Foss, 2017), business model evolution (Demil & Lecocq, 2010), or business model transformation (Aspara, et al., 2013).

The term "business model innovation" first appeared in the management literature in an article about innovation management. Francis and Bessant (2005) introduced business model innovation as a way to reframe current products, processes, and markets in order to embrace new opportunities and let go of others. A search for the phrases "business model innovation" or "business model adaptation" or "business model evolution" or "business model transformation" or "business model change" on Web of Science produced 1080 publications and 10,905 citations between 2000 and 2019. Interest in the topic has grown along with increased use of the phrase "business model" (see Figure 3).

Figure 3. A Web of Science search for "business model innovation" related phrases produced 1080 publications between 2009 and 2019.



A firm's business model is seen as the subject of innovation in business model innovation instead of the organization's products or processes (Baden-Fuller & Haefliger, 2013). Such innovation refers to the discovery of fundamentally different ways to create and capture customer value (Markides, 2006; Casadesus-Masanell & Zhu, 2013). While there is no agreement in the literature as to the dimensions of the construct or the intensity of variation needed to create a "fundamentally different" business model, there is a fair amount of common ground. Wirtz et al. (2016a) define business model innovation as "the design process for giving birth to a fairly new business model on the market, which is accompanied by an adjustment of the value proposition and/or the value constellation and aims at generating or securing a sustainable competitive advantage," (p. 189). Saebi (2014) views business model innovation as a highly dynamic change to numerous components of the business model with a goal of disrupting the market. Malhotra (2000) sees business model innovation as a paradigm shift that involves a fundamental rethinking of the entire organization. Johnson, Christensen, and Kagermann (2008) interpret business model innovation as a complete reinvention of the business model that produces disruption in the industry. Although each definition incorporates elements of change, there is room for interpretation about the construct's components and degree of adaptation required, making these definitions challenging to operationalize.

To help clarify the construct, Saebi (2014) proposes a typology of business model dynamics. She defines "business model evolution" as a fine-tuning process involving incremental change to a few areas of the business model, "business model adaptation" as a realignment of several components of the business model at once with varying degrees of radicalness, and "business model innovation" as a highly dynamic change to numerous components with a goal of disrupting the market.

Clauss (2017), in creating a scale to measure business model innovation, more narrowly defines the nature of the business model components and the dynamics of change. He describes business model innovation as a higher order factor composed of three innovation dimensions -- value creation, the resources and capabilities used to create value; value proposition, solutions and how they are offered to customers; and value capture, the firm's revenues and costs. Each value dimension is represented by sub-constructs: value creation includes capabilities and technologies/equipment, processes/structures, and partnerships; value proposition includes offerings, customer segments/markets, channels, and customer relationships; and value capture includes revenue models and cost structures. According to Clauss, business model innovation can result from a change to one or more of the value dimensions through changes to one or more of the sub-constructs.

3.4 Operationalizing business model innovation: Current challenges

While Clauss (2017) provides a more tightly defined view of BMI, there appears to be little agreement amongst scholars as to the value constructs or intensity of variation needed to be classified as a business model innovation. There is overlap among the terms and definitions, but what is noticeably absent is conceptual clarity. I address this in the following analysis.

An examination of the BMI literature in top journals (ranked as 3's or 4's in *Academic Journal Guide*, 2018) reveals a total of 32 quantitative research based publications. Among those, a total of 21 different business model dimensions are mentioned, from value creation and value capture to customer interface and supply chain. The most referenced dimensions are value creation (14 publications), value capture (11 publications), and value proposition (7 publications, see Table 1). The most cited publications

employ the dimensions of value creation (1257), value capture (1016), content/governance/structure (513), value delivery (200), and value proposition (178). While there is general agreement about the major components of the business model in the broader literature, the BMI literature has yet to clearly coalesce.

Table 1. Quantitative studies of business model innovation show wide variation in the business model dimensions analyzed, but commonalities are evident around core topics.

Author(s)	Cites	Methodology	Value creation	Value capture	Value proposition	Value delivery	Content	Governance	Structure	Resource structure	Internal org. processes	Value appropriation	Transaction structure	Value structures	External org. processes	Financial model	Value offer	Target customer	Value networking	Link factor & product mkts	Customer interface	Supply chain	Value chain
Balboni, Bortoluzzi et al., 2019	1	Survey of entrepreneurial high tech companies, N=267	•									•					•						
Lopoez, Bastein, & Tukker, 2019	8	Meta-analysis of large and small companies, various industries, N=143			•						•					•					•	•	
Snihur & Wiklund, 2019	1	Survey of large companies, various industries, N=118																					•
Futterer, Schmidt, & Heidenreich, 2018	9	Survey of large companies, various industries, N=128									•				•	•	•						
Osiyevskyy & Dewald, 2018	1	Two surveys of SME real estate companies, N=241, 173					•	•	•														
Pedersen, Gwozdz, & Hvass, 2018	32	Survey of mostly SMEs in fashion industry, N=492	•	•		•																	
Clauss, 2017	39	Two surveys of mostly SME manufacturing companies, N=126, 232	•	•	•																		
Guo, Tang, Su, & Katz, 2017	15	Survey of SMEs, various industries, N=155					•	•	•														
Saebi, Lien, & Foss, 2017	35	Survey of large and small companies, various industries, N=1248		•	•	•												•					
Bouncken & Fredrich, 2016	19	Survey of large and small companies in high tech, N=195		•																			
Cortimiglia, Ghezzi & Frank 2016	32	Survey of mostly SMEs, various industries, N=138	•		•	•						•							•				
Guo, Su, & Ahlstrom, 2016	23	Survey of companies, size & industry unclear, N=186					•	•	•														
Hock, Clauss, & Schulz, 2016	10	Survey of large and small engineering companies, N=305	•																				
Karimi & Walter, 2016	26	Survey of large and small newspaper companies, N=148				•														•			
Velu & Jacob, 2016	10	Survey of entrepreneurial firms in high tech, N=111	•	•	•																		
Visnjic, Weingarten, & Neely, 2016	77	Panel data of large and small manufacturing companies, N=133	•	•																			
Cucculelli & Bettinelli, 2015	34	Survey of SMEs in clothing industry, N=376	none																				
Gerasymenko, De Clerq, & Sapienza, 2015	16	Survey of VC-backed early stage tech companies, N=163			•					•	•				•								
Kim & Min, 2105	38	Panel data of large retailers, N=131	none																				

Author(s)		Methodology	Value creation	Value capture	Value proposition	Value delivery	Content	Governance	Structure	Resource structure	Internal org. processes	Value appropriation	Transaction structure	Value structures	External org. processes	Financial model	Value offer	Target customer	Value networking	Link factor & product mkts	Customer interface	Supply chain	Value chain
Osiyevskyy & Dewald, 2015a	49	Survey of SMEs in real estate, N=241								•			•	•									
Osiyevskyy & Dewald, 2015b	17	Survey of SMEs in real estate, N=241								•			•	•									
Souto, 2015	75	Survey of mostly SMEs in hotel industry, N=115	•	•		•																	
Velu, 2015	38	Survey entrepreneurial firms in high tech, N=129	•	•	•																		
Denicolai, Ramirez, & Tidd, 2014	31	Data set of large companies, various industries, N=310	•	•																			
Wei, Yang, Sun, & Gu, 2014	36	Survey of Chinese firms, various industries, N=176	•																				
Kastalli & Van Looy, 2013	216	Panel data of large manufacturing company and its subsidiaries, N=44	•									•											
Bock, Opsahl, George ,& Gann, 2012	124	Survey of large companies, various industries, N=107	•	•																			
Christensen, Parsons, & Fairbourne, 2010	37	Survey of entrepreneurial firms, various industries, N=222	none																				
Dewald & Bowen, 2010	53	Survey of SMEs in real estate, N=126	none																				
Zott & Amit, 2008	536	Survey of entrepreneurial firms on stock exchange, various industries, N=170	•	•																			
Andries & Debackere, 2007	63	Directory data of independent entrepreneurs and corporate entrepreneurs in high tech, N=117	none																				
Zott & Amit, 2007	474	Survey of entrepreneurial firms on stock exchange, various industries, N=190					•	•	•														
Total articles			14	11	7	5	4	4	4	3	3	3	2	2	2	2	2	1	1	1	1	1	1
Total WoS citations			1257	1016	178	200	513	513	513	82	33	33	66	66	25	17	10	35	32	26	8	8	1

Most BMI studies are based on more than one value dimension of the business model. The most common combinations reflect authors' differing views of the key attributes and activities of firms: value creation + value capture (referenced in 6 publications), content + governance + structure (4 publications), value creation + value capture + value proposition (4 publications). The earliest business model dimensions used in quantitative research by two of the most cited business model papers continue to be used as the basis of study for the BMI construct: (a) Zott and Amit's (2007) content + governance + structure (Osiyevskyy & Dewald, 2018; Guo, Tang, Su, & Katz, 2017; and Guo, Su, & Ahlstrom, 2016), and (b) Zott and Amit's (2008) value creation + value capture (Pedersen, Gwozdz, & Hvass, 2018; Wisnjic, Weingarten, & Neely, 2016; Souto, 2015; and Denicolai, Ramirez, & Tidd, 2014).

Quantitative BMI publications can be found in a diversity of journals and journal types (see Table 2). The largest number are found in business management journals (10), followed by technology management (9), entrepreneurship (5), strategy (5), and economics (3). Surprisingly, few BMI articles can be found in the marketing management literature, even though many business model dimensions are at the

core of marketing planning and strategy, including target customer definition, value proposition, and competitive analysis (Kotler, 2012; Lilien, Kotler, & Moorthy, 1992). Those that are in marketing journals are primarily conceptual papers or case studies.

Table 2. Quantitative business model innovation research in the top publications (3's and 4's per the Academic Journal Guide, 2018) is mostly found in technology management and business management journals, followed by entrepreneurship and strategy journals.

Journal	Number of Publications
R&D Management	7
Long Range Planning	5
Journal of Business Research	3
Strategic Entrepreneurship Journal	3
Small Business Economics	2
Asia Pacific Journal of Management	1
Ecological Economics	1
Entrepreneurship Theory & Practice	1
Journal of Business Ethics	1
Journal of Management Studies	1
Journal of Operations Management	1
Journal of Product Innovation Management	1
Journal of Small Business Management	1
Organization Science	1
Strategic Management Journal	1
Technovation	1
Tourism Management	1

Beyond the marketing journals, the vast majority of all BMI literature is comprised of conceptual papers or case studies. In the quantitative BMI literature, the methodologies employed are primarily based on surveys of a mix of company sizes (entrepreneurs, SMEs, and large firms) in a variety of industries, from high technology to fashion to real estate (see Table 1). Most of the data is analyzed using OLS regression analyses or structural equation modeling. The one BMI meta-analysis (Lopez, et al., 2019) is more narrowly focused on resource efficiency and implementation barriers in sustainable (i.e. reduced use of resources) production environments.

The mixture of company sizes and industries in the studies may make the findings more generalizable, but they also make it more difficult to discern patterns or differences that can influence the likelihood of innovating or the impact of those innovations for different types of firms. For instance, the longer sales cycle for many technology start-ups selling directly to businesses provides a slower feedback loop than the shorter sales cycle for large retailers selling directly to consumers. Slower input can delay insight into whether a particular business model is working and, therefore, delay the perceived need for BMI.

Four of the quantitative BMI studies focus on small, early stage entrepreneurial ventures in high technology (Balboni, Bortoluzzi, et al., 2019; Velu & Jacob, 2016; Gerasymenko, De Clerq, & Sapienza, 2015; and Velu, 2015). Their findings highlight the unique circumstances faced by startups, including the positive influence owner/managers can have on BMI (Velu & Jacob, 2016) and the positive influence venture capital firms can have on performance during business model changes in venture-backed companies (Gerasymenko, et al., 2015). Velu (2015) found that new firms with either high or low levels of BMI are more likely to survive for longer periods of time than new firms with moderate levels of BMI. Balboni et al. (2019) found that the initial business model of a new venture has a limited impact on future performance and is best seen as a temporary foundation on which to innovate and build. These types of studies provide more insight into specific factors that can help startups overcome higher risk and resource limitations, but different authors rely on different definitions of business models, different sets of business model components, and different dimensions of BMI, thus confounding the results.

4.0 Model development: The dimensions of business model innovation

The business model innovation construct has been in use since 2005, yet the literature base is still at an early stage of development, especially when compared to the rate of development of the field of business models. This can be seen in the lack of consensus related to: business model change terminology and definitions (Foss & Saebi, 2017), the business model value dimensions under study (see Table 1), and

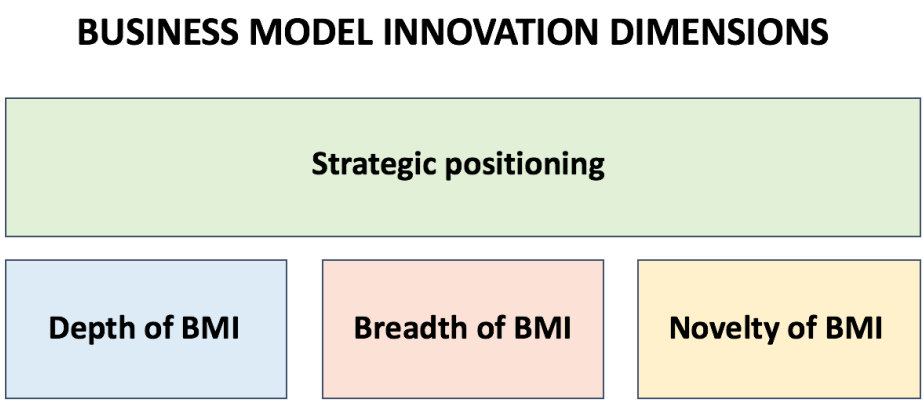
the depth and breadth of change that constitutes innovation (Saebi et al., 2017; Clauss, 2017; Spieth & Schneider, 2016; and Demil & Lecocq, 2010).

In line with Morris et al. (2005), I define business model as the representation of a set of variables in the areas of venture strategy, architecture, and economics that are combined to create sustainable competitive advantage for a firm. In the BMI literature, these variables can take a variety of forms, as shown in Table 1, with the largest number of publications referencing: value creation, the firm's core competencies, resources, organization structure, value chain, and external value creation network; value capture, the firm's revenue model and cost logic; and value proposition, the firm's target customers, value offering, and strategic and competitive positioning. These three value constructs also are among the most cited and align with the general business model literature (see Figure 2).

From this, I extend the business model definition and core values into a definition of business model innovation, a new or improved business model configuration that impacts the way a firm defines and implements its value in terms of value creation, value capture, and value proposition. With this definition in place, that still leaves us with a lack of agreed upon dimensions, which make it difficult to understand the complexities of the BMI process, such as antecedents and outcomes, or how to advise firms on the impact of business model changes related to performance. Although there is a lack of agreement on dimensions, there is commonality in prior research that provides an opportunity to create a model that identifies the relevant dimensions and elements of BMI. Once clarified, such a model can then serve as the basis for future scale development.

As shown in Figure 4, I propose that business model innovation can be best understood according to four core dimensions: (a) strategic positioning, (b) depth of BMI, (c) breadth of BMI, and (d) novelty of BMI. Each dimension is discussed below.

Figure 4. The dimensions of the the business model innovation construct include strategic positioning, depth of BMI, breadth of BMI, and novelty of BMI.



4.1 Strategic positioning of business model innovation

New ventures initially form around a perceived opportunity, such as creating new technology or solving an unmet need in the market (Shane & Venkataraman, 2000). Once identified, some entrepreneurs develop detailed plans to address the opportunity while others fly by the seat of their pants (Schramm, 2018). Mintzberg (1978) differentiates these as *intended strategy*, an explicit and purposeful plan, and *realized strategy*, a pattern in a stream of decisions based on some level of consistency. Whether explicit or implicit, the entrepreneur develops some form of strategy, a contingent plan of action focused on accomplishing a specified goal (Casadesus-Masanell & Ricart, 2010).

Porter (1996), in defining strategy, ties the term to competitive positioning and to a firm's activities: "Strategy is the creation of a unique and valuable position, involving a different set of activities" (p. 68). This sets the stage for the sub-construct *strategic competitive positioning*, which Porter defines as "performing different activities from rivals or performing similar activities in different ways" (p. 63).

There is much discussion in the management literature about the meanings and possible overlap between the terms "strategy" and "business model." While practitioners tend to use the terms interchangeably (DaSilva & Trkman, 2014), some scholars argue they have different meanings because

business models do not consider a firm's competitive positioning (DaSilva & Trkman, 2014; Cassadesus-Masanell & Ricart, 2010; Teece, 2010; Seddon, Lewis, Freeman, & Shanks, 2004). As early as 2006, Morris et al. (2006) argued for a more strategic conceptualization of the business model based on strategic, operational, and economic components. More recently, some scholars include strategy as an element of business models, generally in the form of competitive positioning (Spieth & Schneider, 2016; Matzler, Bailom, von den Eichen, & Kotler, 2013). For instance, surveying 200 strategy and innovation experts, Spieth and Schneider (2016) found that a firm's business model value offering includes three business model elements: target customers, product and service offering, and competitive positioning. In a detailed case study of Nespresso's business model, Matzler et al. (2013) assert that "the starting point of business model innovation is a differentiated and innovative positioning on the market" (p. 33). They define the core questions of a business model to include two positioning components: (a) determining which customer needs the firm is attempting to fill, and (b) figuring out how the firm can establish and maintain a unique position in the mind of the customer.

Porter (1980) asserts that strategic competitive positioning allows a firm to take offensive or defensive actions to create a defendable space in an industry, vis-a-vis competitors. This can take one of three forms: (a) an overall cost leadership position that focuses on achieving lower costs than competitors, (b) a differentiated position that aims to create something perceived as unique in an industry, such as a product design or brand image or dealer network, or (c) a focused position that targets a specific group of buyers with either a low cost or differentiated offering.

In line with the aforementioned literature, I take the position that while the terms strategy and business model may have different meanings, the sub-construct strategic competitive positioning is directly relevant to, and a component of, business models and a component to be evaluated as part of the business model change process. Based on widespread acceptance of Porter's competitive positioning constructs, I define the strategic positioning dimension of BMI as based on three options: (a) cost leadership, (b) differentiation, or (c) focus.

Thus, the strategic positioning dimension of business model innovation can be defined based on a choice of cost leadership, differentiation, or focus.

According to Porter (1996), each of the three strategic competitive positions involves the creation of a "fit" that blends a company's activities together in such a way that they perform different activities from rivals or perform similar activities in different ways. "Competitive strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value," (p. 64). In the context of BMI, the selection of a strategic competitive position must be made first as it then informs choices related to the remaining dimensions: depth, in the form of the degree of innovation; breadth, in the form of value components changed; and novelty, in the form of degree of newness. As an example of fit, it is a premise of manufacturing that "high-quality end products cannot be cost effectively built from low-quality components," (National Research Council, 2000). This implies that the choice of a low cost positioning strategy fits with value creation activities that involve lower quality parts; this then fits with a customer value proposition that emphasizes lower cost over higher quality.

With respect to a change in business models, a firm's strategic position does not have to change in order to qualify as BMI. For example, electronics distributor Marshall Industries focused on a differentiated business model based on aggressive selling and exceptional customer service. According to Olofson (1999), they were the first to distribute semiconductor components in the 1970's and the first to broadly offer Japanese components in the U.S. With the advent of the Web, they shifted their business model to focus on e-commerce, becoming one of the first companies to sell online, even rebranding the company as a "virtual distributor." The move online changed the value proposition and value creation components of their business model, but did not change their strategic positioning, which continued to focus on differentiation.

4.2 Depth of business model innovation

Innovation is defined as generating, developing, and implementing new ideas or behaviors; this can take the form of a new product or service, new process, new structure, or new plan (Damanpour,

1991). Such innovations are generally regarded as a source of competitive advantage in an increasingly complex and changing world (Crossan & Apaydin, 2010; Tushman & O'Reilly, 1996). Scholars propose that distinguishing the different types of innovation, such as administrative vs. technical, product vs. process, and radical vs. incremental, helps in understanding the adoption behavior of organizations and in identifying the determinants of innovation (Damanpour, 1991, p. 560). As a result, there has been much discussion in the academic literature about how to define and operationalize levels of innovation (Christensen, McDonald, Altman, & Palmer, 2018; Govindarajan & Kopalle, 2006; Christensen & Raynor, 2003; Ettlie, Bridges, & O'Keefe, 1984; Chandy & Tellis, 1998).

Govindarajan and Kopalle (2006) define radicalness of innovation as the extent to which an innovation is based on new technology relative to current practices. This is differentiated from the disruptiveness of innovation, which refers to "the extent an emerging customer segment, and not the mainstream customer segment, sees value in the innovation at the time of introduction, which over time disrupts the product's mainstream customers' use" (p. 14). These disruptive innovations can be technologically less radical (low end) or more radical (high end). Ultimately, the focus of BMI disruption is on innovation of business model components, and disruptive technologies can act as antecedents to disruptive BMI (Osiyevskyy & Dewald, 2015a).

In the quantitative BMI literature, depth of innovation has been approached from several different vantage points. In a similar vein to incremental vs. radical innovation, Osiyevskyy & Dewald (2015a) differentiate between exploitative business model change, which fine-tunes a current business model, and explorative business model change, which brings major changes to the value creation and value capture process of a firm. In parallel to Osiyevskyy and Dewald, Taran, Boer, and Lindgren (2015) developed a three-dimensional typology of business model innovation. They add an additional level of depth to their conceptualization of innovation by defining BMI radicality as the newness of each business model element, ranging from low (incrementally new) to medium to high (radically new). Eight of the 32 quantitative BMI publications analyzed in this study rely on incremental vs. radical to measure depth of BMI.

Zott and Amit (2007) examined how the content, structure, and governance of a firm's transactions create value through business opportunities. They differentiate depth based on novelty-centered business models, which create new markets or innovate transactions in existing markets (akin to disruptive innovation), and efficiency-centered business models, which imitate an existing business model but in a more efficient manner in order to reduce transaction costs (akin to incremental innovation). Nine of the thirty-two quantitative BMI publications analyzed in this study rely on novelty vs. efficiency to measure depth of BMI.

Given the mixed support in the literature for various definitions of innovation, I have consolidated prior research into three levels of BMI depth: (a) incremental innovation, akin to exploitative innovation or sustaining innovation, which is characterized by refinement and efficiency behaviors of the firm's management (He & Wong, 2004; Christensen, 1997); (b) radical innovation, akin to explorative innovation, which is characterized by search, discovery, and risk taking behaviors of the firm's management that lead to, at a minimum, technology-based innovation (Govindarajan & Kopelle, 2006; He & Wong, 2004); and disruptive innovation, akin to explorative innovation, which is characterized by search, discovery, and risk taking behaviors of the firm's management that lead to, at a minimum, market segment innovation (Govindarajan & Kopelle, 2006; He & Wong, 2004).

Thus, depth of business model innovation dimension can be defined based on a choice of incremental, radical, or disruptive innovation.

HP provides an example of the wide range of choices available related to depth of innovation. HP developed the first programmable scientific desktop calculator in 1968, a disruptive innovation that pushed the leading edge of mathematics tools into the hands of individuals (HP, 2009). In the 1980's, the company introduced the first inkjet printer, a radical innovation in the printer market. This was followed by a series of incremental innovations in the form of upgrades to their printers (HP, 2009).

4.3 Breadth of business model innovation

Business strategists have long been asking how to build a sustainable competitive advantage (Porter, 1980). In addressing that question, Teece (2010) was among the first to propose a multi-value view of business model components that includes the value creation, value delivery, and value capture mechanisms employed by a firm. As discussed earlier, a review of the quantitative BMI literature to date reveals a total of 21 different business model value dimensions, the most referenced being Teece's value creation, value capture, and value proposition (see Table 1). Recent research has embraced variations of this multi-component view as they address the question of how to quantify the breadth of BMIs.

In a review of the BMI literature, Foss and Saebi (2017) describe the extent or range of BMI as the "scope," in other words, how much of the business model is affected by BMI. Some scholars define this range in terms of the individual components of a business model that are changed, such as the nine elements of Osterwalder and Pigneur's (2005) business model canvas representation, as demonstrated by Pedersen et al. (2018) and Cortimiglia et al. (2016). Others prefer a higher level view based on the value elements changed, such as value proposition, value creation, and value capture (Velu & Jacob, 2016; Saebi et al., 2017; and Gerasymenko et al., 2015).

In addition to the lack of agreement on the components involved in BMI, there is a multiplicity of views on the number of components that must change in order to classify it as innovation. While some scholars do not specifically define breadth in their research, those that do span a range of changes that are required to be classified as BMI: (a) one business model component must change (Spieth & Schneider, 2016; Bock et al., 2012; Amit & Zott, 2012), (b) one or more components must change (Clauss, 2017; Frankenberger, Weiblen, Csik, & Gassmann, 2013); (c) two or more components must change (Saebi et al., 2017; Lindgardt, Reeves, Stalk, & Deimler, 2009); or (d) all components of the business model must change (Osiyevskyy & Dewald, 2015; Johnson et al., 2008). There are also scholars that cross several of these categories. For example, Saebi et al. (2017) group breadth of business model changes into three possibilities: (a) no adaptation to the four business model dimensions of target market, value proposition,

value capture, or value delivery, (b) semi adaptation, changes to two of four dimensions, or (c) total adaptation, changes to all four dimensions.

In the search for common ground, I consolidate prior methodologies into three levels of BMI breadth based on the three most referenced core value elements (value creation, value capture, and value proposition). BMI breadth spans three levels of change: (a) change to one value component, (b) changes to two value components, or (c) changes to all three value components.

Thus, the breadth of business model innovation dimension can be defined based on the number of changes made to the firm's value components, one or two or three.

Startup Motion Media's launch into the videophone market provides an example. At the 1964 World's Fair, AT&T attempted to get the public interested in a picturephone device (Flashbak, 2018). While they received a fair amount of publicity, they did not get much uptake from consumers, even after 30 years of trying. In the 1990's, AT&T gave up. In 2001, with the rise in broadband communications, Motion Media introduced the CareStation videophone, an Internet-based communication device for home telehealth services (Digital Health, 2001). Like AT&T, they found few buyers. So they pivoted one component of their business model, the value proposition, to change their customer focus to the general business markets (Meserve, 2003). Unfortunately, they found little success there either and eventually closed their doors.

4.4 Novelty of business model innovation

Novelty is another indicator for level of change to a business model. While novelty was originally defined by Amit and Zott (2001) as one of four primary types of value drivers in e-business, it is now more widely used to indicate a new business model within a particular context. Some scholars define the degree of novelty of BMI as being a business model that is new to a firm (Spieth & Schneider, 2016; Bock et al., 2012; Johnson et al., 2008), while others characterize novelty as a business model that is new to the industry (Santos et al., 2009). Taran et al. (2015) provide the broadest typology of BMI novelty,

which they refer to as "reach." They define reach as a categorical variable that can include a business model that is new to the company, new to the market, new to the industry, or new to the world.

With the goal of defining the most complete representation based on prior literature, I follow the work of Taran et al. (2015) and specify four levels of BMI novelty based on the point of reference of the change: (a) change that is new to the firm, (b) change that is new to the market in which the firm competes, (c) change that is new to the industry in which the firm competes, or (d) change that is unique and new to the world.

Thus, the novelty of business model innovation dimension can be defined based on the point of reference: new to the firm, new to the market, new to the industry, or new to the world.

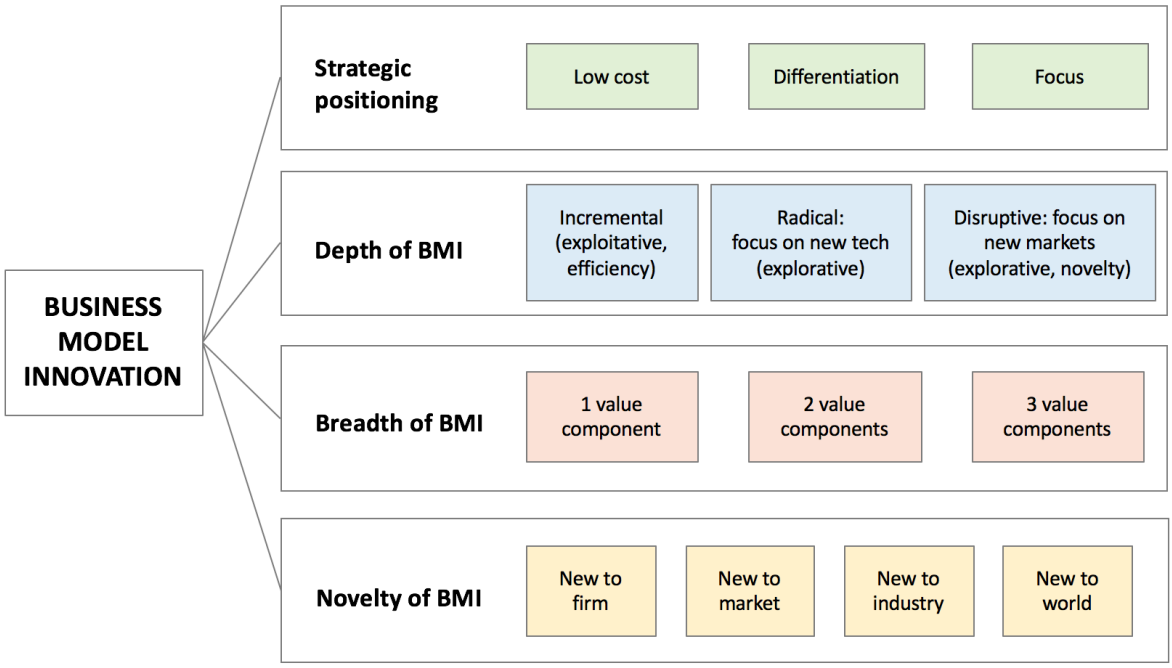
An example of business model novelty can be seen with the launch of the LabVIEW software package by National Instruments, a manufacturer of computer-based test and measurement equipment for use by engineers and scientists. Founded in 1976, the company released LabVIEW, a new graphical programming software package in 1986 (National Instruments-a, n.d.). This began a significant period of growth for the firm. When I worked with them in the early 1980's, they were a $10 million manufacturer of IEEE-488 peripherals that connected computers to test equipment. Today, they sell a wide range of computer hardware products to support the LabVIEW software suite (National Instruments-b, n.d.); revenues in 2019 were $1.352 billion (Yahoo Finance, 2020). LabVIEW was one of the first graphical programming languages and the first "virtual instrumentation software." LabVIEW changed the basis of competition in the test equipment industry from a focus on computer hardware to a focus on easier to use software to program increasingly commoditized hardware. Based on the success of LabVIEW, the co-founders of National Instruments, who were also the lead developers, were inducted into the Inventors Hall of Fame (Statesman, 2019). LabVIEW was seen as a disruptive innovation as it brought a new level of ease of use to programming test equipment and therefore had the potential to open new markets. While this business model was new to the test equipment industry, it was not new to the world as it was similar to the model being used in the broader personal computer industry.

5.0 Discussion

As shown in Figure 5, business model innovation can be evaluated based on four dimensions: strategic positioning, depth of BMI, breadth of BMI, and novelty of BMI. Each dimension can be evaluated for change based on its components:

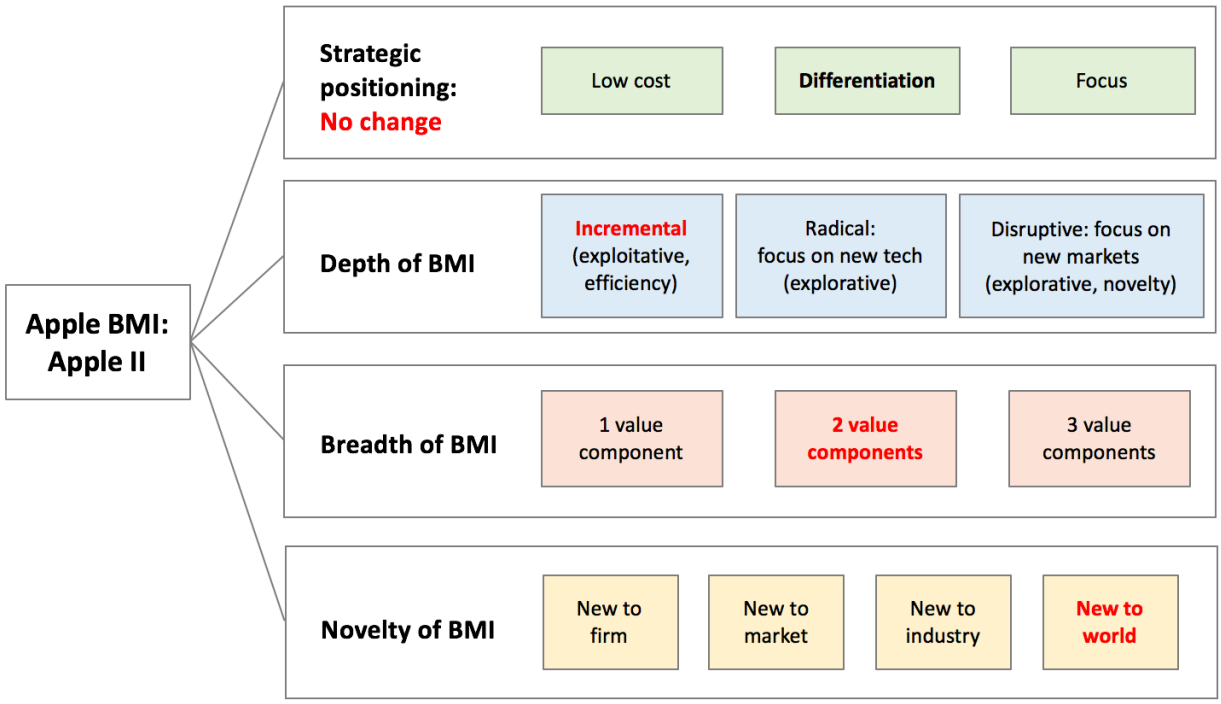
- Change in strategic positioning is based on whether the company makes a change from one competitive position to another, or no change at all.
- Change in depth of BMI is based on whether the company introduces an incremental, radical, or disruptive innovation, or no innovation at all.
- Change in breadth of BMI is based on the number of value components in the business model that are changed, from zero to three.
- Change in novelty of BMI is based on the point of reference for the change -- whether the new business model is already in use in the market but is new to the firm, whether it is already in use in the industry but is new to the market, whether it is in use in the world but is new to the industry, or whether it is a business model that has never been seen before in any context.

Figure 5. The dimensions of the business model innovation construct are broken down into sub-constructs that indicate the degree of change: strategic positioning in the form of low cost vs. differentiation, vs. focus; depth of BMI in the form of incremental vs. radical vs. disruptive; breadth of BMI in the form of number of value components; and novelty of BMI in the form of new to the firm, new to the market, new to the industry, or new to the world.



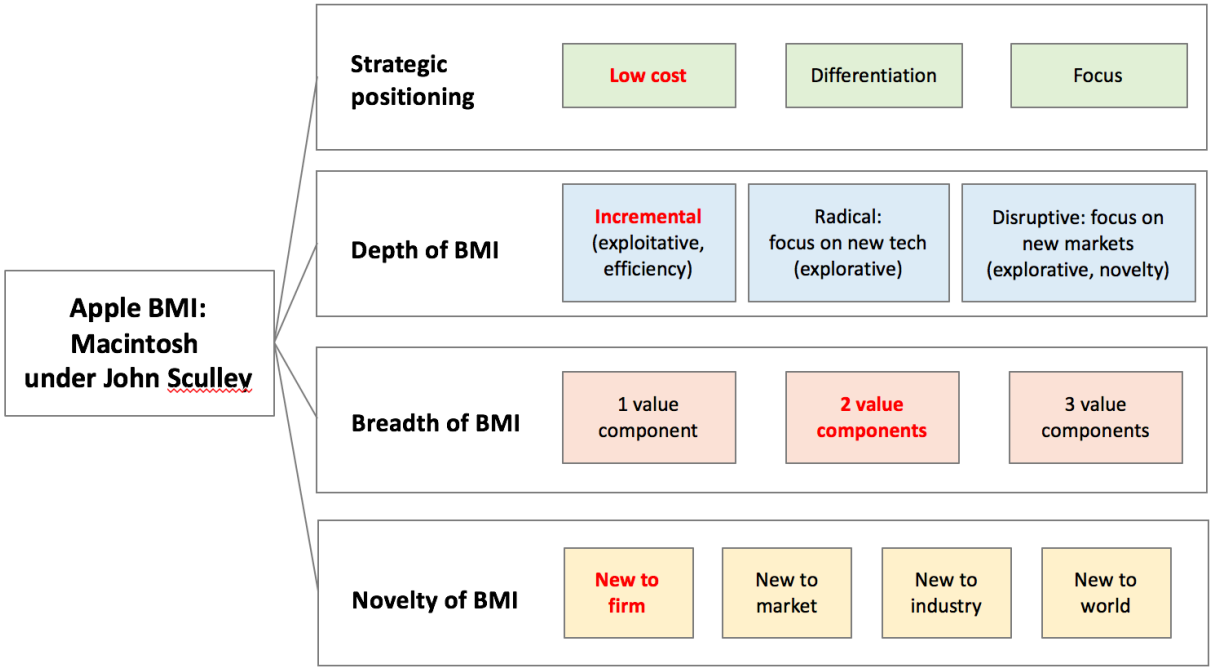
Apple, for instance, has seen a number of business model changes over its lifetime, even though it has mostly embraced a differentiation strategy based on technology innovation and, with the launch of the Macintosh, sleek design. The company experienced a change in business models with the launch of the Apple II personal computer in 1977. This was an incremental innovation over the Apple I (Dernbach, 2008). Apple changed two of the value components: value proposition (new "appliance" like product sold beyond the hobbyist market) and value creation (partnerships with third-party software developers and more sophisticated production operations to support the sleeker plastic packaging). This was a new to the world business model being simultaneously tried by Apple, Tandy, and Commodore, the first companies to develop and broadly distribute integrated personal computers (Helmers, 1977; Computer History Museum: 1977, n.d.). As shown in Figure 6, Apple's launch of the Apple II involved changes to three of the four BMI dimensions.

Figure 6. Apple's launch of the Apple II followed the company's differentiation strategy but involved changes to BMI depth, BMI breadth, and BMI novelty.



Fast forward to 1985 when Steve Jobs left Apple and John Sculley took over as CEO. According to Rothaermel (2015), the company's business model changed as Sculley directed the company to pursue a low-cost strategy in order to compete more effectively against IBM and the growing number of PC clone manufacturers. This led to a change in value proposition as Apple focused on selling a low cost PC-like Macintosh to the household computer market vs. a higher priced graphics design / desktop publishing system to marketers in businesses. Apple also changed key resources and processes in order to bring down the cost of manufacturing to support its low-cost positioning. Incremental innovations were made to products to expand the range of software and peripherals (Kawasaki, 1991). Overall, the business model was new to Apple but was already in use by IBM and PC compatible manufacturers. As shown in Figure 7, Apple's relaunch of the Macintosh under Sculley involved changes to all four of the BMI dimensions.

Figure 7. Apple's relaunch of the Macintosh under CEO John Sculley changed the company's strategic positioning to a low cost model and involved changes to BMI depth, BMI breadth, and BMI novelty.



6.0 Implications and limitations

Business models and business model innovation are increasingly central constructs for practitioners and, therefore, for management research. This literature review reveals that quantitative studies in BMI are still in an early stage of development. Further progress will benefit from a better definition of the construct and a more holistic approach to defining the construct's dimensions.

6.1 Implications for theory and future research

The academic literature lacks a commonly accepted definition of the dimensions of the business model innovation construct. This can create confusion as scholars attempt to apply more robust analytical methods. This paper attempts to clear up some of the muddiness around the construct in order to provide new avenues of research into antecedents, outcomes, and performance implications. I develop a more comprehensive view of business model innovation by assessing and consolidating prior literature. From

this, a model of the four dimensions of BMI is created. This provides a basis for development of a more consistent approach to measurement and, as result, a more consistent picture of BMI.

Future research can more systematically investigate the impact of changes to individual dimensions of BMI as well as to changes to multiple dimensions. For instance, Velu (2015) found that new firms with either high or low levels of BMI, measured as changes to all three value components (value proposition, value creation, and value capture), are more likely to survive for longer periods of time than new firms with moderate levels of BMI. Scholars can now investigate how that might change based on the strategic positioning dimension of BMI and/or the novelty of BMI.

6.2 Implications for practice

Innovation is a complex process that can encompass a variety of innovation types that can be pursued separately or in combination, including product, process, and business models (Snihur & Wiklund, 2019; Markides, 2006). Firms face challenges from many sides -- competitor moves, market shifts, societal dynamics, new regulations, and evolving technologies. To remain viable, they must adapt their business models (Linder & Cantrell, 2000). This research provides insights for entrepreneurs and senior managers involved in developing their firm's business strategy. A detailed understanding of BMI allows for a more granular look at how executives can assess key strategic changes and their interactions: (a) how do we want the firm to be positioned in the industry vis-a-vis competitors and customers, (b) how much risk are we willing to assume and in what areas, and (c) how much innovation potential do we have available in-house and where can these resources best be applied.

Companies tend to have a much stronger sense of how to innovate products and technology than they do how to innovate business models (Chesbrough, 2010). According to Bucherer, Eisert, and Gassmann (2012), "a more holistic management of innovation is needed, in which different types (e.g., product and business model innovation) and degrees of innovation (incremental and radical innovations) are considered and integrated" (p. 195). A better understanding of the dimensions of business model innovation (depth, breadth, novelty, and strategic positioning) can provide increased awareness of the

types of opportunities available to enhance competitive positioning. Such an awareness can alter managerial beliefs about internal strengths and weaknesses, the potential impact of external threats, the viability of perceived opportunities, and the willingness to engage in change.

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Paper 3: Why Do Some Venture Founders Pivot to a Greater or Lesser Degree Than Others?

The influence of founder identity on business model innovation

By Shari L.S. Worthington

PhD Candidate

Foisie Business School

Worcester Polytechnic Institute

100 Institute Road

Worcester, MA 01609

sharilee@wpi.edu

July 2020

Dissertation Committee Members:

Dr. Steven S. Taylor, Committee Chair, Foisie Business School, WPI

Dr. Frank Hoy, Dissertation Committee, Foisie Business School, WPI

Dr. Adrienne Hall-Phillips, Dissertation Committee, Foisie Business School, WPI

Dr. Alan Carsrud, Dissertation Committee, Åbo Akademi University

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1.0 ABSTRACT

Business model design is increasingly common among practitioners. Yet many new ventures struggle to create business models and strategies that address key customer and competitor issues. Business model innovation is the process of modifying a firm's core business logic, realigning the venture's business model elements to better address the external environment and how the firm interfaces with customers and partners. A core component of the business model innovation process is feedback involving such issues as product features, industries served, and customer needs addressed. This feedback process can be influenced by internal and external parties, including the venture founder and other members of the founding team. Early decisions by the founder(s) can have a lasting impact on future outcomes of the firm. But entrepreneurs can be resistant to external input related to their creative ideas, even if the intent is to increase viability. This leads us to ask, why are some venture founders more likely to pivot their business models than others?

This research examines the oral histories of technology venture founders in order to explore the relationship between an entrepreneur's founder identity and the degree of business model pivoting exhibited as they create and develop a new venture. Results show a heterogeneity of founder identities

among the venture founders with the largest number demonstrating an "overachiever" identity, followed by "trailblazer" and "community-builder." Business model innovation interests focus on the areas of strategic planning and BMI breadth (business model value components), followed distantly by BMI novelty and BMI depth (innovation). Differences are seen for founder identity based on gender and country of origin.

An examination of the relationship between founder identity and business model innovation finds that those founders most likely to discuss business model innovation are driven by the core motivational components of achievement/innovation, stimulation/solving big problems, and/or self-direction/independence. Those founders least likely to discuss business model innovation are driven by no core motivational components or by universalism/social cause. The motivational component power/financial success only appears to drive business model innovation when paired with stimulation/solving big problems.

Keywords: founder identity, business model innovation, new ventures, technology entrepreneurs, natural language processing

2.0 INTRODUCTION

2.1 Background to the research

Failure rates show that many new organizations struggle for survival and fail within a few years (Gage, 2016). Entrepreneurs and larger firms alike are unlikely to settle on the first strategy chosen (Ries, 2011; Immelt, 2017; Tushman & O'Reilly, 1996). Sometimes the changes in strategy are small and other times they are large. For example, Twitter changed from a podcasting platform to a micro-blogging site and Nokia evolved from a paper mill to a mobile device manufacturer (Nazar, 2013). First business models often have to be abandoned or adapted as initially unavailable information becomes known (Andries & Debackere, 2006). Business model innovation, the ability to adapt or “pivot” a business model, has been cited as critical to venture success (Chesbrough, 2010; Ries, 2011).

A core component of the pivoting process in a new venture is the feedback loop, wherein information is provided to the entrepreneur with the intent of improving the firm's ability to create and extract value for a product or service (Harrison & Rouse, 2015). This feedback loop assumes that the entrepreneur is willing to receive new information, evaluate it, and then respond. According to Rouse (2013), entrepreneurs can be resistant to external input related to their creative ideas, even if the intent is to increase viability. Externally imposed changes can challenge the self-concept of the individual associated with that work, which can produce protective behaviors toward the idea, potentially undermining its viability.

Early decisions by the founder, such as product features or target customers, can have a lasting impact on future outcomes of the firm (Bird, 1992; Mathias, Williams, & Smith, 2015), including the degree to which they are adapted to fit market opportunities. These decisions are influenced by the entrepreneur's idiosyncratic set of role and social identities, which are based on motives, values, aspirations, history, and personal circumstances (Murnieks & Mosakowski, 2007; Fauchart & Gruber, 2011; Cardon, Wincent, Singh, & Drnovsek, 2009; Carsrud & Brännback, 2011). The entrepreneur develops a founder identity as they work through the process of creating a new venture. The founder identity drives much of the entrepreneur's decision-making related to the firm, such as how the firm will create and capture customer value (Mathias & Williams, 2017).

This study investigates the relationship between founder identity -- an entrepreneur's individual values, goals for the firm, and entrepreneurial passion -- and the degree to which an entrepreneur adapts, or pivots, their firm's business model. The research builds on papers one and two. In paper one, I created a method for measuring the founder identity core construct of my research; the end result was a founder identity typology. In paper two, I created a model detailing the dimensions of BMI, the other core construct of my research. Here, in paper three, I add a method for measuring BMI via text classification and natural language processing (NLP), and then examine the specifics of how founder identity and BMI relate using rank order analysis and thick, rich descriptions based on the founder interviews.

2.2 Research problem and justification

This research attempts to provide new insights into an underexplored phenomenon -- why some founders pivot their business models to a greater or lesser degree than others. A founder identity tends to establish restrictive corridors for potential behaviors, such as how to respond to feedback, and can be a fundamental source of conflict in entrepreneurial ventures (Fauchart & Gruber, 2011; Hoang & Gimeno, 2010). This can undermine the long-term viability of the organization. Such conflict can lead to confused priorities when defining new products, inefficiencies in allocating resources, and mixed messages in branding, all of which can be detrimental to the viability of the firm. Conflict can be especially damaging when it interferes with decision-making processes, especially in fast-moving, technology industries (Eisenhardt, 1989; Shepherd & Haynie, 2009). This leads to the central question of this research:

How does variability of founder identities relate to the strategic decision-making process of business model innovation in new ventures?

Much of the research on pivoting, or business model change, is based on decisions and processes embedded within large organizations where the motivations, skills, and experiences of key managers shape organizational strategy and adaptation (Chesbrough, 2010; Amit & Zott, 2012; Sosna, Trevinyo-Rodriguez, & Velamuri, 2010; Schneider & Spieth, 2013). Due to cognitive capacity and resource limitations, new ventures evolve differently from existing firms (Gartner, 1985; Delmar & Shane, 2004); strategy and adaptation are driven by the founder or founding team (Covin & Slevin, 1991). Yet little is known about business model development and adaptation in new ventures, and the connection between business models and individual- and team-level cognition, all of which are crucial to firm survival (Wirtz, Pistoia, Ullrich, & Gottel, 2016; Foss & Saebi, 2017; Aspara, Lamberg, & Tikkanen, 2013; Sosna et al., 2010; Tripsas & Gavetti, 2000).

Entrepreneurial cognition and behaviors, motivated by the values and goals of entrepreneurs, (Carsrud, Brännback, Elfving, and Brandt, 2017) influence key components of the entrepreneurship

process, such as opportunity recognition, perceived feasibility, and decision-making styles. Given the complexity of the interactions between cognition, motivation, values, goals, and behavior, scholars have called for additional research on their roles in entrepreneurial processes (Carsrud, et al., 2017; Carsrud & Brännback, 2011; Shane, Locke, & Collins, 2003; Fayolle, Linan, & Moriano, 2014; Holland & Shepherd, 2013; Baum & Locke, 2004). The goal of this dissertation research is to address aspects of these key issues and provide insights for practical decision-making for entrepreneurs that will help reduce conflict and increase effectiveness as they create and develop their ventures and the associated strategies.

Academically, this study provides a new avenue for understanding the venture creation process. The results of this research can expand our understanding of business model innovation by examining the relationship between founder identity and the entrepreneur's cognitive processes related to business model development and adaptation. It can also serve as a platform for research on team cognition, decision-making, and conflict in the early stages of new ventures, when founders attempt to organize an overload of industry and technology information into a plan for sustainable organizations.

2.3 Delimitations of scope and key assumptions

This research focuses on founding entrepreneurs in technology ventures. This provides an opportunity to examine the decision-making behaviors of those responsible for the majority of decisions in the early stages of the company's formation. Concentrating on technology ventures allows examination of the decision-making process within organizations that are often routinely exposed to uncertain, risky, and hostile environments. In such situations, wrong decisions can have a large impact on the new venture, as there is often a limited horizon for generating revenue and profits. This research centers on the relationship between a founder's motivations and the strategic decisions they make related to the development and adaptation of the firm's business model, a key strategy element that guides how the company will create and capture value.

This study builds on my prior dissertation work related to founder identity classification (Worthington, 2020a) and business model innovation (Worthington, 2020b).

Throughout this paper, I use the phrase business model innovation. Occasionally, other terms may be used, such as business model change or business model adaptation. Unless otherwise specified, these terms are used interchangeably. Business model is defined as the representation of a set of variables in the areas of venture strategy, architecture, and economics that are combined to create sustainable competitive advantage for a firm (Morris, Schindehutte, & Allen, 2005). In line with Teece (2010), I define business model innovation as a new or improved business model configuration that impacts the way a firm defines and implements its value in terms of value creation, value capture, and value proposition.

This paper also refers to values, personal values, and individual values, which are used interchangeably. Likewise, goals, individual goals, and the entrepreneur's goals for the firm are used interchangeably, all referring to the founder's goals they seek to accomplish through the new venture. Motivation and entrepreneurial motivation are both used to indicate the application of motivation to the new venture context. Founder identity is used to refer to the identity of an entrepreneur who has founded one or more new ventures. Motivational components refer to the value/goal motivations that contribute to founder identity. Entrepreneurial identity is used to refer to the identity of an entrepreneur who is considering or planning to launch a new venture but has yet to legalize the new organization. Prior literature occasionally uses the terms entrepreneurial identity and founder identity interchangeably.

3.0 LITERATURE REVIEW

3.1 Introduction

Decision-making in organizations is a strategic activity that leads to a choice of goals, as well as the resources and processes that will be employed to meet those goals (Vermeulen, & Curseu, 2008). Strategic planning is a valuable activity that can influence an organization's survival (Robinson & Pearce, 1984). Such planning can involve a variety of key issues, from financial goals and objectives to the firm's business model.

In small entrepreneurial firms, the strategic planning process is highly dependent on decisions made by the entrepreneur (Robinson & Pearce, 1984). Entrepreneurial cognition, such as interpreting

changes in the environment, can play an important role in shaping how the new venture responds (Saebi, Lien, & Foss, 2017). Innovative entrepreneurs often make decisions, implicitly or explicitly, to pivot their business models and change the direction of the venture in order to take advantage of new technologies or market opportunities (Dew, Grichnik, Mayer-Haug, Read, & Brinckmann, 2015). In this paper, I look at how founder identity plays a role in shaping such decisions.

3.2 Business model innovation

According to Tripsas and Gavetti (2000), "Organizational change is difficult. Even when established firms recognize the need to change in response to shifts in their external environment, they are often unable to respond," (p. 1147). Most organizations engage in a dynamic process of adjusting to uncertainty and environmental change by questioning, verifying, and redefining the way they interact with the environment (Miles, Snow, Meyer, and Coleman, Jr., 1978). If they find an effective way to adjust to changes, they are able to define and maintain a viable market for their offerings; if not, the firm fails (Miles et al., 1978). This process of adaptation is determined by environmental conditions as well as by the choices made by top managers (Porter, 1980). Such choices include the firm's business model, which reflects "management's hypothesis about what customers want, how they want it, and how the enterprise can organize to best meet those needs, get paid for doing so, and make a profit" (Teece, 2010, p. 172).

3.2.1 Business models and business model innovation

For new ventures, before an entrepreneur develops a business model, they must find an opportunity they think is worth pursuing. The next step is to decide how to take the new idea to market. Core organizing processes, such as the creation of strategies, roles, and boundaries, are generally recognized as fundamental to the structure of organizations and can have long-term impact on firm survival and adaptation (Beckman, Burton, & O'Reilly, 2007). The ability to employ dynamic capabilities to integrate, build, and reconfigure internal and external resources to address rapid change can lead to

quicker responses to evolving customer preferences, competitor activities, and external feedback, generating positive results for the firm (Teece et al., 1997). According to Chesbrough (2010), technology by itself has limited objective value until it is commercialized in some way via a business model, yet the same idea taken to market through different business models can yield different economic outcomes. As a result, entrepreneurs need to be as good at developing and dynamically refining new business models as they are at creating new products (Chesbrough, 2010; Teece, 2010).

3.2.2 The dimensions of business model innovation

A firm's business model is seen as the subject of innovation in business model innovation instead of the organization's products or processes (Baden-Fuller & Haefliger, 2013). Such innovation refers to the discovery of fundamentally different ways to create and capture customer value (Markides, 2006; Casadesus-Masanell & Zhu, 2013). While there is no agreement in the literature as to the dimensions of the construct or the intensity of variation needed to create a "fundamentally different" business model, there is a fair amount of common ground. In paper two, I analyzed the quantitative BMI papers that have been published in top journals and uncovered commonalities that allowed me to define the core dimensions of business model innovation. This led to a new model that classifies the dimensions of business model innovation into four categories: (a) strategic positioning, (b) depth of BMI, (c) breadth of BMI, and (d) novelty of BMI.

STRATEGIC POSITIONING: While practitioners tend to use the terms "strategy" and "business models" interchangeably (DaSilva & Trkman, 2014), some scholars argue they have different meanings because business models do not consider a firm's competitive positioning (DaSilva & Trkman, 2014; Cassadesus-Masanell & Ricart, 2010; Teece, 2010; Seddon, Lewis, Freeman, & Shanks, 2004). In 2006, Morris et al. argued for a more strategic conceptualization of the business model based on strategic, operational, and economic components. More recently, scholars are now including strategy as an element of business models, generally in the form of competitive positioning (Spieth & Schneider, 2016; Matzler, Bailom, von den Eichen, & Kotler, 2013). This is in line with Porter's (1996) concept of strategic

positioning, which involves creating a unique and valuable position in the market that differentiates a firm from its competitors. Aligning recent research with Porter's (1980) earlier work on strategic competitive positions, I define three levels for the strategic positioning dimension of BMI: (a) cost leadership, achieved through lower costs, (b) differentiation, based on the creation of something perceived as different in the industry, and (c) focus, based on targeting a specific group of buyers with either a low cost or differentiated offering.

DEPTH OF INNOVATION: Depth of innovation has been approached in several ways in the BMI literature. In some studies, it is classified as minor vs. major changes, while others include additional layers to indicate low-medium-high levels of change (Osiyevskyy & Dewald, 2015a; Taran, Boer, and Lindgren, 2015). Combining the different approaches to innovation, I define three levels for the depth dimension of BMI: (a) incremental innovation, which focuses on smaller changes in terms of refinements and improved efficiencies, (b) radical innovation, which is associated with search, discovery, and risk-taking behaviors related to technology innovation, and (c) disruptive innovation, which focuses on search, discovery, and risk-taking behaviors related to innovation within new market segments.

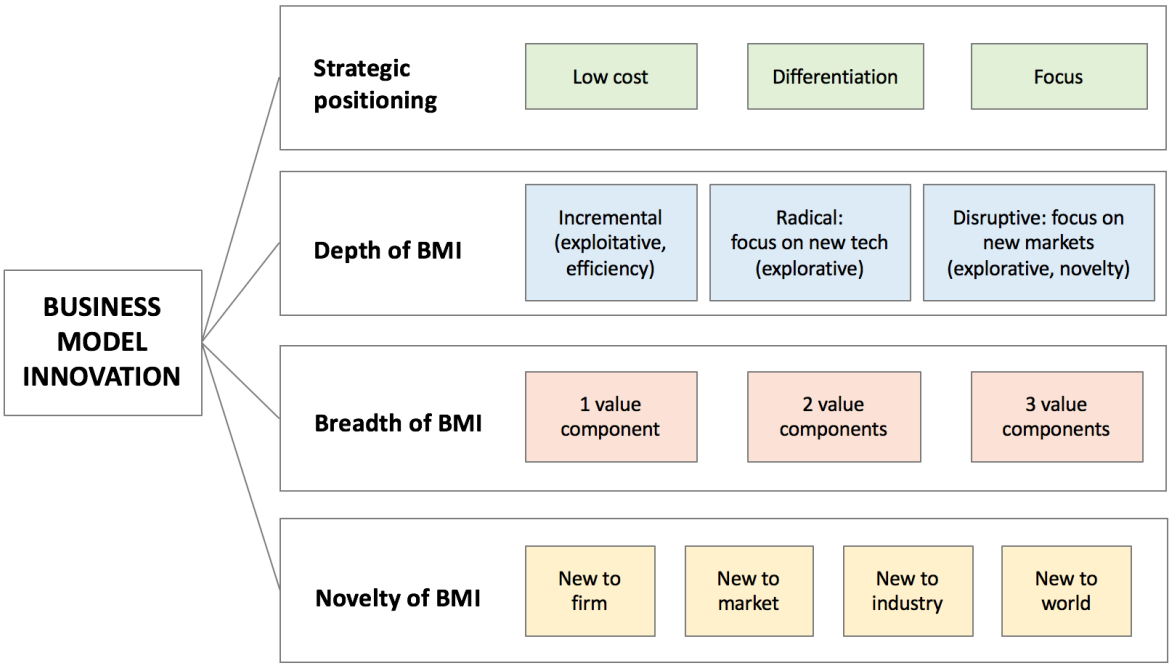
BREADTH OF BMI: The breadth of BMI involves the number of business model components that must change in order to classify a new business model as an innovation. The first issue is how to define the components of the business model affected. Some scholars define this range in terms of the individual components of a business model that are changed, such as the nine elements of Osterwalder and Pigneur's (2005) business model canvas representation, as demonstrated by Pedersen, Gwozdz, and Hvass. (2018) and Cortimiglia et al. (2016). Others prefer a higher level view based on the value elements changed, such as value proposition, value creation, and value capture (Velu & Jacob, 2016; Saebi et al., 2017; and Gerasymenko, De Clercq, & Sapienza, 2015). Based on a consensus of prior research, I define the business model's components in terms of a more inclusive view that incorporates the higher level value dimensions of: (a) value creation, (b) value capture, and (c) value proposition.

In terms of the number of business model/value components that must then change to qualify as innovation, the academic literature shows multiple definitions, from one component must change to all

must change (Spieth & Schneider, 2016; Clauss, 2017; Saebi et al., 2017; Osiyevskyy & Dewald, 2015b). Consolidating the literature, I define three levels for the breadth dimension of BMI: (a) change to one value component, (b) changes to two value components, or (c) changes to all three value components.

NOVELTY OF BMI: The final dimension of BMI is novelty. Novelty is another indicator for degree of change to a business model. Some scholars define the degree of novelty as a business model that is new to a firm, others consider novelty as new to the industry, and yet others see novelty as new to the world (Spieth & Schneider, 2016; Santos, Spector, & Van der Heyden, 2009; Taran et al., 2015). Finding the common ground in the literature, I follow Taran et al. (2015) and define four levels for the novelty dimension of BMI: (a) change that is new to the firm, (b) change that is new to the market in which the firm competes, (c) change that is new to the industry in which the firm competes, and (d) change that is unique and new to the world.

Figure 1. The dimensions of the the business model innovation construct include: strategic positioning in the form of low cost vs. differentiation vs. focus; depth of BMI in the form of incremental vs. radical vs. disruptive innovation; breadth of BMI in the form of number of value components changed; and novelty of BMI in the form of new to the firm, new to the market, new to the industry, or new to the world (Worthington, 2020b).



3.3 Founder identity

Personal, role, and social identities define who a person is and motivate behaviors that support and verify their identities, as I discussed in paper one. All three types of identities take on an important function in guiding behavior, especially under conditions of uncertainty or ambiguity, such as those often faced by early stage entrepreneurs who are attempting to define new market opportunities and obtain much needed resources (Navis & Glynn, 2011). According to Carsrud and Brännback (2014), "Firm-level 'behaviors' are the direct result of individual-level decisions and behaviors. Entrepreneurial strategy is set by individuals acting on behalf of the firm" (p. 88). Fauchart and Gruber (2011) demonstrated that founders with different social identities (personal self-interest vs. community interest vs. political interest) had different views on how to define firm performance; these identities also influenced the type of industry the entrepreneur entered. In this paper, I investigate the relationship between new venture founder identities and the development of their firm strategies in the form of business model change.

3.3.1 Entrepreneurial motivation

Goals are mental representations of behaviors or outcomes associated with positive affect that are the object or aim of a person's actions (Dijksterhuis & Aarts, 2010; Locke, Shaw, Saari, & Latham, 1981). Values are a subset of goals — broad, relatively stable goals that guide perceptions, attitudes, and behaviors over time and in different contexts (Schwartz, 1992). Research has demonstrated that personal identity influences the way executives strategize, including how they pay attention to and interpret information, and how they incorporate their values and goals into the process (Fauchart & Gruber, 2011; Tripsas & Gavetti, 2000).

Within the new venture process, entrepreneurial motivation is the short- and long-term goals an entrepreneur seeks to achieve through the perceptions, attitudes, and behaviors associated with business ownership (Robichaud, McGraw, & Roger, 2001). Often these motivations are similar to those of non-entrepreneurs; the difference is that entrepreneurs express their motivations by creating new ventures (Carsrud et al., 2017). Entrepreneurial motivation guides decision-making related to venture creation and development activities that are congruent with the individual's personal values (Holland & Shepherd, 2013; Bardi & Schwartz, 2003). This can help explain why different people may make different decisions and take alternate actions even when facing similar situations (Schwartz, 2006).

Prior research shows that entrepreneurs are motivated to launch new ventures to fill a heterogeneity of needs (as summarized in paper one). Over time, a variety of measures have been developed, each influenced by the scholars' differing perceptions of entrepreneurial motivations or roles. Some scholars employed factor analysis to create general categories of motivation, such as extrinsic rewards, intrinsic rewards, independence / autonomy, and family security (Kuratko, Hornsby, & Naffziger, 1997). Others consolidated prior research to create lists that include a variety of motivations, including innovation, independence, recognition, roles, financial success, and self-realization (Carter, Gartner, Shaver, & Gatewood, 2003; Cassar, 2007). A small set of the studies focus on technology entrepreneurs; they found agreement on only one motivation, the desire to innovate / explore new

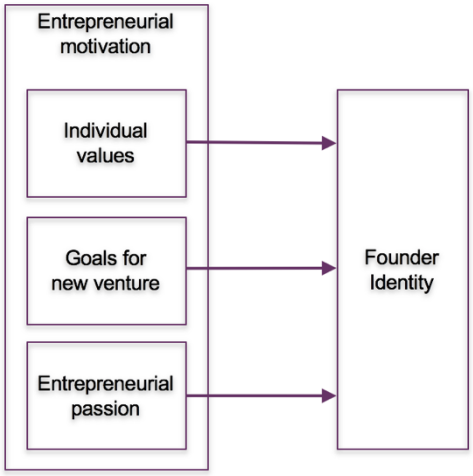
technologies. The lack of agreement leaves researchers in need of a more robust method of classifying entrepreneurial motivations as a platform for further research.

3.3.2 Founder identity classification

According to Gartner (1985), new ventures are a gestalt of variables from four dimensions: (a) the individual who starts the organization, including their motivations and past experiences, (b) the firm that is started, (c) the surrounding environment, and (d) the individual's process for starting the venture. As an individual creates a new venture, they develop a founder identity, which drives much of their decision-making related to the firm (Mathias & Williams, 2017; Fauchart & Gruber, 2011). Founders behave in ways that are consistent with their identities and they imprint components of their self-concepts on key dimensions of their firms (Fauchart & Gruber, 2011), including product development and business models. As new ventures are typically small, decisions are made primarily by the founder. These decisions shape and have a relatively strong influence on the firm (Barney, Bunderson, Foreman, et al., 1998). Differences in the structure of founders' identities can lead to differences in how they interpret situations, such as reactions to external feedback, changes in industry structure, or adversity faced by their firm, and the resulting behaviors (Gruber & MacMillan, 2017; Powell & Baker, 2014).

In paper one, I create a model that proposes that founder identity is at least partly derived from entrepreneurial motivation, which is comprised of the entrepreneur's values; the goals they seek to achieve through the perceptions, attitudes, and behaviors associated with business ownership; and the passion they bring to the new venture (see Figure 2).

Figure 2. The founder identity construct is derived, at least in part, from the individual values, goals for the firm, and passion of the entrepreneur (Worthington, 2020a).



My analysis of entrepreneur's values, goals, and passion revealed six sets of value-goal identity conditions that contribute to founder identity for the tech entrepreneurs studied: power/financial success, achievement/innovation, stimulation/solving big problems, universalism/social cause, self-direction/independence, and security/organization (see Table 1). A closer look at gender and country of origin also revealed differences in the mix of motivational components among entrepreneurs.

Table 1. Entrepreneurial motivation incorporates entrepreneurial passion, which is driven by personal values and goals for the firm, as well as by super-condition combinations of vales + goals (Worthington, 2020a).

Entrepreneurial values	**Goals for the firm**	**Super-conditions**
Power	Financial success	Power / financial success
Achievement	Innovation	Achievement / innovation
Stimulation	Solving big problems	Stimulation / solving big problems
Universalism	Social cause	Universalism / social cause
Self-direction	Independence	Self-direction / independence
Security	Organization	Security / organization

4.0 THEORY DEVELOPMENT

In this section, I develop a model from which to understand the role of founder identity in the strategic decision-making process of business model innovation. The primary purpose of the model is to guide the empirical research in order to induct theory about the relationship between variability of founder identities and degree of business model innovation. I draw upon existing literature in strategic management, entrepreneurship, and psychology to expand the founder identity model in Figure 2 to include a relationship with behaviors related to business model innovation.

Entrepreneurs are essential to the development of entrepreneurial opportunities – situations in which new goods, services, raw materials, and organizing methods can be introduced and sold at greater than their cost of production (Casson, 1982). These opportunities are creative products that emerge through an iterative process whereby entrepreneurs shape and develop ideas, insights, and contradictions (Dimov, 2007). This shaping process can be expressed in the form of a business model, a conceptual tool that shows how a venture will turn its initial idea into a viable opportunity that creates value for customers and profits for the firm (Osterwalder & Pigneur, 2010). Rarely, though, do new ventures get their business model right the first time (Andries & Debackere, 2006). Entrepreneurs may envision clear goals when they start their ventures, but precise definitions of the business and allocation of resources can change as they learn more about the external environment and create mental models that facilitate understanding of markets, competitors, and strategies (Nicholls-Nixon, Cooper, & Woo, 2000; Ott, Eisenhardt, & Bingham, 2017). As a result, ideas and business models need to be adapted or iterated to refine the value delivered and create a competitive advantage for the organization (Ries, 2011).

The iteration process relies on feedback, which can originate from the creator of the idea, other members of the entrepreneurial team, or external sources, such as investors (Sapienza, 1992; Busenitz, Fiet, & Moesel, 2004). Regardless of the source, not all input is readily received by the creator; their willingness to revise ideas based on feedback can vary (Rouse, 2013; Crilly, 2017; Grimes, 2018). In larger established firms, resistance to change can occur due to organizational inertia (Hannan & Freeman, 1984), cognitive stability (Lowstedt, 1993), and escalation of commitment (Staw, 1981). In startups, the

founder or founding team is often the primary source of resistance, as the self-concept of the individual can be closely linked to the new business idea (Rouse, 2013; Grimes, 2018). This can lead to conflict over key decisions and result in indecision, slow decisions, or ineffective decisions (Eisenhardt, 1989). In the uncertain, risky, and hostile environments faced by many technology firms, this can have a large impact on new ventures, as these firms often have limited windows of opportunity to find a sustainable strategy (Mitchell & Shepherd, 2010).

Founder identity types and change

In paper one, my analysis of founder identity demonstrates the emergence of a number of founder identity types, or personas, that characterize the range of values and goals in entrepreneurs: (a) the hero, (b) the problem-solving overachiever, (c) the harmonious overachiever, (d) the community builder, (e) the seeker, and (f) the trailblazer. In this study, I propose that these founder identities can be related to entrepreneurial behaviors, such as business model change.

For example, the hero founder identity shows core motivations of universalism/social cause and security/organization, and peripheral conditions of achievement/innovation and self-direction/independence. This indicates they tend to focus outside themselves, dedicating themselves to understanding and protecting the welfare of others. They are also motivated to create and explore. This could take the form of building an organization for their employees, developing innovative solutions for customers, and/or creating social impact with their new venture. This could also indicate a decreased likelihood to experiment with different changes to the firm's business model in order to create a more stable environment for the organization and the value it delivers to customers.

The male overachiever shows core motivations in all but one of the six categories, security/organization. This indicates that they tend to be problem solvers who have a strong sense of independence and are action-oriented. They are willing to take on big challenges and causes in order to achieve success, which they define in terms of control over people and resources. Male overachievers are the only identity to include stimulation/solving big problems as a core motivation. Schwartz (1992)

defines stimulation values as those driven by excitement, novelty, and challenges in life. This could be a key component that motivates people to engage in disruptive innovation (Zuzul & Tripsas, 2019; Yu & Hang, 2011) and, as a result, more intense business model innovation.

Female overachievers also show core motivations in all but one of the six categories, stimulation/solving big problems. Unlike male overachievers, female overachievers tend to value harmony and relationships over excitement. They also have a strong sense of independence, are action-oriented, and are willing to take on causes that protect the welfare of others. Unlike males, they are more likely to focus on achievements related to creating a stable organization for themselves and their employees. In this case, we might see male overachievers more likely to embrace novelty and, as a result, business model innovations, while females may be more likely to look for organizational stability over change.

A country of origin analysis (US-born vs. non US-born founders) showed the emergence of three founder identities, all of which share core motivations of power/financial success and security/organization. All three tend to be focused on creating a successful organization and defining success based on prestige or control over people and resources. The non US-born community builder identity also shows peripheral motivations of achievement/innovation and stimulation/solving big problems, and is the only one of the three identities to also show universalism/social cause. This supports prior research, which shows that many countries demonstrate higher collectivism/community values than the United States, which scores higher on individualism values (Hofstede, 2019). Therefore, the community builder is likely to be a founder who creates a successful organization that builds on communities, both inside and outside the firm. This identity shares some characteristics with the "communitarian" identity discussed by Fauchart and Gruber (2011). Such a focus on community and organization may indicate a reluctance to engage in the disruption typically associated with business model innovation.

In addition to power/financial success and security/organization, the US-born seeker identity adds the peripheral motivation of stimulation/solving big problems. While they value building an organization,

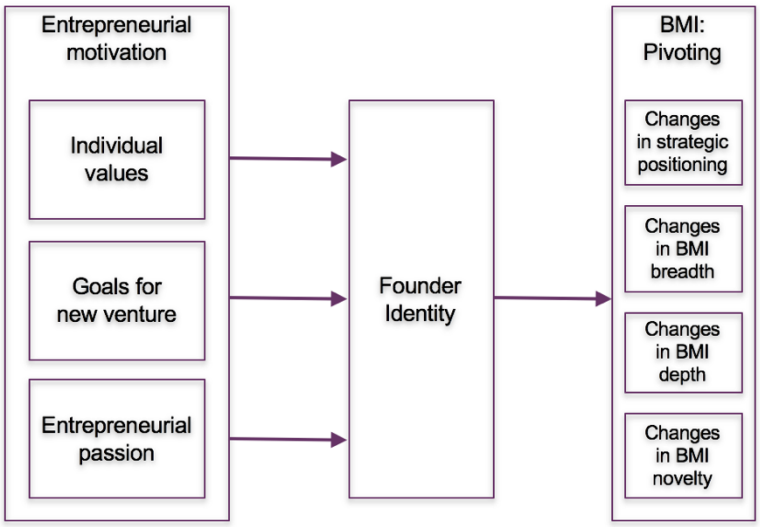
they also look for excitement in the form of big challenges. This is akin to the "discoverer" identity discussed by Zuzul and Tripsas (2019). This can make them more likely to embrace change as they build an organization.

The US-born trailblazer identity adds a core motivation of self-direction/independence to power/financial success and security/organization. Independent thoughts and actions push them to explore as well as build. This is akin to the "revolutionary" identity discussed by Zuzul and Tripsas (2019). Independence may also produce some level of tunnel vision, such that they are less likely to adapt the organization based on external feedback or changing industry conditions. Tunnel vision can indicate a reluctance to respond to external feedback, such as input from external advisors on product functionality. This can lead to misalignment and business models in need of change.

Identities have a profound effect on the way entrepreneurs feel, think, behave, and on what they aim to achieve. As such, scholars have called for a better understanding of these dynamics (Leitch & Harrison, 2016). Others have called for additional research on founder identity and its role in various industry settings, in high-growth environments, and in relationship to radical innovation (Sieger, Gruber, Fauchart, & Zellweger, 2016; Powell & Baker, 2014; Fauchart & Gruber, 2011). This study responds to these calls by providing a more robust framework for understanding and researching founder identity in the context of strategy development, specifically business model innovation.

In this study, I propose that a more complete understanding of the relationship between founder identity and business model innovation will result from bridging the psychological research on personal values with the entrepreneurship literature on motivation and the strategy research on business models. As shown in Figure 3, and in line with Robichaud, et al. (2001), I propose that founder identity is at least partly derived from entrepreneurial motivation, which is comprised of the entrepreneur's values; the goals they seek to achieve through the perceptions, attitudes, and behaviors associated with business ownership; and the passion they bring to the new venture. The degree of business model innovation, also referred to as pivoting, is composed of changes to four BMI dimensions — strategic positioning, BMI breadth, BMI depth, and BMI novelty — and is at least partly derived from the entrepreneur's founder identity.

Figure 3. The founder identity construct, which is derived at least in part from the individual values, goals for the firm, and passion of the entrepreneur, influences the degree of change (number of changes) related to the firm's business model.



5.0 METHODOLOGY

5.1 Introduction

Past research on entrepreneurial identities and business model innovation, the core constructs of my dissertation, have generally employed one of two analysis techniques: (a) narrative analysis of small samples of interviews that rely on researchers' differing perceptions of entrepreneurial cognition, or (b) regression analysis of surveys that assess the association between the outcome and one variable at a time (as I discuss in papers one and two). While this is an exploratory study, my goal is to understand detailed entrepreneurial stories in a way that reduces the biases that can be introduced using traditional narrative analysis while providing a way to classify the core constructs when studying small sample sizes. I employ a mixed methods approach that blends qualitative and quantitative analyses.

To describe each entrepreneur's founder identity, paper one's founder identity typology is used as the basis for a directed content analysis of the number of motivational constructs mentioned in each of the

founder interviews. To describe each founder's level of engagement in BMI, paper two's BMI dimensions are used to guide a directed content analysis, quantifying each founder's discussion of BMI. Once the individual founder identity and BMI engagement levels are determined, thematic analysis is used to examine the relationship between the two constructs.

5.2 Sample and data collection

The sample is based on a purposive sampling of experienced venture founders, individuals who have started at least one technology company that is generating revenue but is still considered a small business with fewer than 500 employees (U.S. Small Business Administration, 2016). This sample represents entrepreneurs that have succeeded in garnering sales from customers, yet are not so large that the founder(s) has moved away from a CXO role in the organization. Introductions to entrepreneurs were made through my social networks, as I have extensive experience working with entrepreneurs in a variety of industries through venture development and investment organizations.

Detailed founder stories were collected from 25 experienced venture founders of SMEs in technology-related industries. A life-story/biographical approach to narrative methodology (Atkinson, 2007) is initially used in order to understand the subjective meanings of the experiences of technology entrepreneurs as they socially construct their ventures through interactions with others, such as team members, customers, and investors. As each entrepreneur tells their story, they provide information related to identity questions, such as, who am I, how did I come to be here, and where is my life going, as well as key strategy questions, such as where is my company going.

The life-story approach has been found to help elicit new and contextual insights into the entrepreneurial process (Yitshaki & Kropp, 2011; Rae & Carswell, 2000). In this study, information was collected from entrepreneurs using semi-structured interviews with open-ended questions about the entrepreneurs' backgrounds, first experiences with entrepreneurship, motivation for launching their venture(s), and types of products and services created. During interviews ranging from 30 to 120 minutes, each entrepreneur was asked to "tell their story" -- an autobiography of sorts -- about how they had come

to found their most recent company. The goal was to elicit the founder's narrative process of recollection and sensemaking. This prompts the person to reflect and disclose more about significant periods and events, such as education, values, and product innovation.

Entrepreneurs were interviewed between June 2017 and April 2019. Each interview was audio recorded and a verbatim transcript (Poland, 1995) was produced by a professional translation service, then lightly edited by the researcher. The focus of the research is the content of the entrepreneur's story. Therefore, the transcription process leaves out the researcher's questions, uses standard spelling, creates sentence and paragraph structure, and leaves out background noises and verbal fillers, such as "um's" and "uh's" (Atkinson, 1998).

To better understand founders' goals for the business, data was also collected from secondary sources, including company web sites, social media profiles, and business presentations of the entrepreneurs. In addition, each participant was asked to complete a short survey with a mixture of open ended and multiple-choice questions about the company launch, number of employees at the time of the survey, number of distributors and/or resellers, description of target customers, and the customer feedback process in the event that such information was missed during the interview.

5.3 Descriptive statistics

The entrepreneurs studied have all founded at least one new venture, with an average of 2.72 ventures across the sample. Eighteen of the ventures (72%) were founded in the last eight years, between 2010 and 2018, and seven (28%) were founded between 1997 and 2009. The gender of the entrepreneurs varies; nineteen are male (76%) and six are female (24%). The origin of the entrepreneurs also varies; seventeen were born in the United States (68%) and eight were born outside the United States (32%), including Canada, India, Israel, Mexico, El Salvador, Pakistan, and Saudi Arabia.

Table 2. Demographics of the entrepreneurs participating in the study.

Company type	Transcript words	Founded	Ventures founded	Gender	Country of origin
Waste services	3,918	1997	1	F	El Salvador
Scientific instrumentation	2,816	2001	1	M	United States
Medical devices	9,326	2002	4	M	United States
High performance coatings	5,196	2004	2	F	United States
Video teleconferencing	7,656	2009	3	M	India
IT/web services	19,344	2009	1	M	United States
CRM	4,051	2009	4	M	United States
Game development (B2C)	3,607	2010	1	M	United States
Game development (B2C)	4,235	2010	1	M	United States
Game development (B2C)	6,925	2010	1	M	United States
Manufacturing instrumentation	4,216	2012	1	M	United States
Video teleconferencing	4,491	2012	5	M	India
Web development & apps	2,451	2012	5	M	Pakistan
Jewelry manufacturing	18,859	2013	7	M	Saudi Arabia
Drone services	3,232	2013	2	F	Canada
Tech incubator	16,783	2014	1	F	United States
Biomed/pharma	5,727	2015	3	F	Israel
Games & sw development (B2B)	7,670	2015	1	M	United States
Sustainability financing	7,575	2016	11	M	United States
Battery technology	2,885	2016	2	M	United States
Medical devices	2,599	2017	1	F	United States
Advanced manufaturing	5,780	2017	2	M	United States
Sales analytics sw	10,266	2017	1	M	United States
Mobile services app	3,852	2018	4	M	Mexico
Audio products	11,988	2018	3	M	United States
Total words	175,448		2.72		
Median words	5,196				

5.4 Data analysis

5.4.1 Computer aided text analysis using natural language processing

In this study, business model innovation is analyzed using directed content analysis based on natural language processing (NLP) of the founder interviews. Content analysis is used by scholars to organize and make sense of the language used by individuals. Directed content analysis uses prior theory or relevant research findings to guide the development of the coding scheme, helping to provide information about the variables of interest as well as the relationships among variables (Hsieh & Shannon, 2005). In this study, both the founder identity and BMI constructs are based on prior research, as presented in my first and second papers.

One of the challenges with content analysis is that researchers must exercise caution so as not to imply meaning that is more a reflection of their own view of the world than that of the individual being studied. The development of computer-aided text analysis (CATA) has the potential to remove researcher bias, but it is still in the early stages of use in organizational studies (Duriau, Reger, & Pfarrer, 2007). According to Short, McKenny, and Reid (2018), "Computer-aided text analysis (CATA) offers great promise for scholars who aspire to capture the beliefs, cognitions, and emotions of individuals as reflected in their narratives and written texts" (p. 415). CATA focuses beyond the content of the message itself and looks at how language is used to convey a message to the audience (Pennebaker, Mehl, & Niederhoffer, 2003). This makes it well suited for the current study that analyzes the language and messages within entrepreneurial stories.

Most CATA tools are limited to single word level analysis (unigrams), making them less context sensitive than human coders for detecting meaning within a sentence (Short, Broberg, Cogliser, & Brigham, 2010). NLP, a subset of CATA, is an artificial intelligence (AI) technique that supports analyzing text at single and multiple word levels (Pandey & Pandey, 2017). NLP is able to identify larger chunks of meaningful text in the form of phrase-level data (N-grams, such as bigrams or trigrams), and has been shown to retain intended meanings better than single-word analysis (Pandey & Pandey, 2017).

There are a variety of approaches to NLP analysis. The research determines the type of NLP application to use, which can be classified as shallow or deep (Lee, 2007). In a review of the literature, Pandey and Pandey (2017) observed three research purposes: classification, information retrieval, and decision-making. For classification, researchers can use NLP to assist human coders by building data dictionaries to guide the extraction of text from the corpus. When relevant dictionaries are not available, researchers can use deep NLP to automatically extract information from the interviews in the form of initial concepts and then use unsupervised machine learning (where no guidance is given as to desired outputs) to identify sub-elements. For decision-making research, such as sentiment analysis or predicting outcomes, a mix of shallow and deep NLP can be used, employing a mix of dictionaries, coded rules, and unsupervised or supervised (where guidance is given as to desired outputs) machine learning.

NLP is a relatively new analysis technique, especially within the management literature. Research is still ongoing about algorithms, applications, and tools. As a result, there is no consensus about which approach generates the most reliable and accurate outcomes (Pandey & Pandey, 2017). For this study, I worked with Haadi Mombini, a WPI PhD student in Information Technology. His specialty is using NLP techniques to analyze health social media data to inform medical decision-making. Haadi agreed to work with me so he can test his algorithms on the narrative data sets of the entrepreneur interviews, which are much longer than those found on social media, and therefore present potential new challenges.

CATA tools can be used inductively to examine themes of interest within narratives, such as human coding using NVivo. CATA tools like NLP can also be used deductively, in a more quantitative approach. I chose a deductive approach using NLP to provide a more detailed and reliable analysis of the entrepreneur interviews using single and multiple words derived from prior theory and research. CATA techniques are more accurate and exhibit high test-retest reliability when examining transcripts of individuals over time (Short et al. 2010). Neubig (2016) provides a large list of NLP tools available for different tasks, from general NLP libraries, like NLTK, to phrase structure parsing, to speech recognition. In this study, we employ a text classification methodology using the NLT Python library.

5.4.2 Measuring business model innovation

Text classification is the automatic assignment of text to predefined classes (Kobayashi, Mol, & Berkers, Kismihok, & Den Hartog, 2018). Using the BMI construct and its dimensions identified in paper two, text classification is used to apply the model to the sample in order to obtain the number of times each BMI dimension is mentioned by each founder. This provides a quantitative assessment of the individual's level of interest in BMI, which is compared and contrasted among the entrepreneurs in the sample.

5.4.2.1 BMI classification using natural language processing

The design of the text classification algorithm starts with the collection of training data to help the algorithm understand the keywords and phrases of interest in a relevant context. A dictionary associated with the BMI construct is developed, and then the NLP program uses that information to search for related language patterns within the corpus (Short et al. 2018). As no business model innovation dictionary has previously been developed, I employ a deductive approach to create one based on the dimensions of business model innovation identified in paper two.

The BMI dictionary is created following the four-step process developed by Short et al. (2010): (a) a working definition of the BMI construct is derived from prior literature (paper 2); (b) an initial assessment of the dimensionality is made (paper 2); (c) a list of BMI keywords is created corresponding to the words and phrases used in the definition of the dimensions of BMI in paper 2. As the construct is multi-dimensional, discrete word lists are created for each dimension as well as for references to "pivoting." An exhaustive list of synonyms is created using the Random House Unabridged Dictionary at thesaurus.com. No overlap is allowed between the four word lists as each dimension has a unique focus: strategic positioning, BMI breadth, BMI depth, and BMI novelty. Keywords related to "pivoting" could be relevant to any of the four BMI categories. When the NLP program is not able to place a "pivoting" sentence in one of the four BMI categories, it is placed into a separate category and I manually assign it to one of the four BMI categories later; and (d) the word list is assessed by an expert who is knowledgeable in the specific topic (in this case, the author, myself). The complete list of keywords in the dictionary can be found in Appendix A.

Before the classification algorithm is deployed on the founder interviews, it is put through several rounds of training, fine-tuning the parameters, and evaluating the results until acceptable levels of performance and validity are reached (Kobayashi et al., 2018). The initial training set included the abstracts of 48 research articles related to the 4 business model dimensions, as referenced in paper two. This includes: strategic planning (11 articles), BMI breadth (17 articles), BMI depth (14 articles), and BMI novelty (6 articles). One requirement for any type of machine learning is the availability of a large

enough sample for training to provide reasonable accuracy and F1 scores (Pandey & Pandey, 2017). To expand the training dataset, we ran ran six specific search queries on Web of Science from 1970 through April 19, 2020. This produced 1796 article abstracts, as indicated in Table 3. I then systematically screened the article abstracts and selected a total of 218 as the most relevant to be included in the final training set, with the goal of a relatively balanced training set among all five categories.

Table 3. Results of BMI article queries on Web of Science for training data.

BMI dimension	**Search query**	**# WoS articles**	**Final # articles**
Strategic positioning	"business model" AND "strategy"	1570	41
BMI breadth	"business model" AND "value creation" AND "value proposition"	50	56
BMI depth	"business model" AND "incremental innovation" "business model" AND "disruptive innovation"	9 58	44
BMI novelty	"business model" AND "novelt*"	67	46
Pivoting	"business model" AND "pivot*"	42	31

The training vocabulary is created as the classification algorithm input using term frequency and inverse document frequency (TF-IDF) analysis (Sridhar, 2015), along with standard English stop words from the NLT Python library. The TF-IDF vocabulary is also used to identify unigrams (single word vocabularies) and bigrams (two word vocabularies) that occur together. This step finds the most correlated words associated with each BMI category.

Six different algorithms were experimented with to train the interview text classification algorithm, as shown in Table 4. These choices were informed by prior relevant literature that demonstrates acceptable results using the algorithms (Fishcheva & Kotelnikov, 2019; Si, Datta, Banerjee, & Naskar, 2019; and Kaur & Kaur, 2017). Five-fold stratified cross-validation (with three repeats) was applied to evaluate the performance of the classification algorithms. Each was tested for accuracy and F1 scores, the two most commonly used metrics for text classification tasks (Manning, Raghavan, & Schutze, 2009). Based on the results in Table 4, we chose the top performing classification algorithm,

LinearSVC, and ran it on a set of test interview data (a single paragraph from each interview) to find the hidden BMI categories.

Table 4. Comparison of classification algorithm results based on an analysis of 218 BMI articles from the literature show all algorithms performed better than the baseline random classifier.

Classification algorithm	**Accuracy**	**F1 Score**
LinearSVC	0.749	0.742
XGBoost	0.689	0.682
SVC	0.669	0.649
LogisticalRegression	0.666	0.645
TreeClassifier	0.577	0.575
Random Forest	0.562	0.543
Baseline (dummy)	0.200	0.190

Accuracies above the baseline are considered acceptable for text classification (Aue & Gamon, 2005). For this study, the highest accuracy algorithm, LinearSVC, is used to perform the classification analysis on each of the 25 founder interviews. The NLP analysis of the interview data categorized each paragraph of the interviews into one of the five categories: strategic positioning, BMI breadth, BMI depth, BMI novelty, or pivoting, as shown in Table 5. These were then checked by the author and re-categorized to increase the alignment of the data to the topic. All pivoting responses were re-categorized into one of the 4 BMI dimensions (Table 6).

Table 5. NLP classification of BMI dimensions by founder.

	NLP Classified Business Model Innovation					
Interview	**Strategic positioning**	**BMI breadth**	**BMI depth**	**BMI novelty**	**Pivoting**	**Total**
1	27	2	0	4	19	52
2	31	3	1	8	14	57
3	51	3	1	13	57	125
4	14	2	1	3	4	24
5	21	2	3	3	13	42
6	11	0	0	0	19	30
7	16	3	0	3	30	52
8	15	2	0	4	7	28
9	14	1	2	4	4	25
10	9	2	2	3	25	41
11	27	1	1	4	15	48
12	20	0	0	4	16	40
13	13	0	0	1	7	21
14	58	6	1	11	37	113
15	14	0	0	1	8	23
16	8	0	0	4	10	22
17	16	0	0	1	10	27
18	19	2	2	7	21	51
19	18	3	0	3	38	62
20	24	1	0	8	38	71
21	29	1	0	13	30	73
22	16	0	0	8	20	44
23	13	1	0	5	6	25
24	13	2	2	4	6	27
25	14	0	1	3	14	32
Total	511	37	17	122	468	1155
Mean	20.44	1.48	0.68	4.88	18.72	46.20
Median	16.00	1.00	0.00	4.00	15.00	41.00

Table 6. Final classification of BMI dimensions by founder after adjustments for relevance by author.

	Business Model Innovation				
Interview	**Strategic positioning**	**BMI breadth**	**BMI depth**	**BMI novelty**	**BMI Total**
1	25	2	0	3	30
2	27	11	1	4	43
3	24	32	0	6	62
4	5	10	0	3	18
5	7	14	1	2	24
6	4	3	0	0	7
7	12	6	0	3	21
8	11	3	0	2	16
9	10	4	2	3	19
10	10	7	10	1	28
11	17	9	0	1	27
12	15	11	0	2	28
13	11	5	0	0	16
14	23	15	4	3	45
15	11	4	0	1	16
16	8	6	2	0	16
17	9	10	1	1	21
18	21	12	2	3	38
19	16	20	0	3	39
20	18	0	0	5	23
21	17	12	0	4	33
22	14	8	0	3	25
23	7	4	0	2	13
24	8	2	2	4	16
25	13	6	1	3	23
	343	216	26	62	647
Mean	13.72	8.64	1.04	2.48	25.88
Median	12.00	7.00	0.00	3.00	23.00

A comparison of the initial NLP classification results vs. my re-classification shows that 44% of all interview paragraphs were removed from the final classification. Those removed were due to context cues that were not perceived the the NLP process, such as references to prior companies created by the founder or to background information, such as education or early hobbies. As shown in Table 7, I reclassified pivoting paragraphs, which also affected the relative ranking of BMI dimensions.

The initial NLP classification found strategic positioning to be the most mentioned topic, followed closely by pivoting, then BMI novelty, BMI breadth, and BMI depth. After the pivoting paragraphs were reclassified to the four BMI dimensions and I verified the accuracy of the remaining classifications, strategic positioning remained the top mentioned dimension, followed by BMI breadth, BMI depth, and BMI novelty. The most noticeable change was in the BMI breadth category. Founders tended to talk a fair amount about their products and customers, but the terminology was not always reflected in the classification dictionary. Modifications reflecting this should be considered for future research to improve the accuracy of the NLP classification process.

Table 7. Comparison of percent of interview paragraphs allocated to the four BMI dimensions and pivoting, before and after author reclassification.

	Strategic positioning	**BMI breadth**	**BMI depth**	**BMI novelty**	**Pivoting**
Initial NLP classification	44.2%	3.2%	1.5%	10.6%	40.5%
Final classification with author changes	53.0%	33.4%	4.2%	9.6%	--

5.4.3 Measuring founder identity

Each entrepreneur's founder identity is based on the classification created in paper one, which analyzes keyword counts for: (a) the human values Schwartz (1992) found across all societies: power, achievement, stimulation, self-direction, universalism, and security, (b) firm goals that lead entrepreneurs to launch new ventures according to those most cited in prior literature: financial success, innovation, solving big problems, social cause, independence, and organization, and (c) passion keywords, as defined by Cardon et al. (2017).

5.4.4 Analyzing the relationship between founder identity and business model innovation

The relationship between founder identity and BMI is analyzed using a two-step process: (a) rank order comparisons of BMI code frequencies within the founder identities, and (b) thematic analysis of the results in order to identify, analyze, and report patterns within the data.

RANK-ORDER COMPARISONS: Although there are 647 mentions of BMI in the founder interviews (see Table 6), we are comparing and contrasting a small sample size -- 25 founders -- with an even smaller number of founder identities (see Table 12). This study, therefore, is unlikely to produce coded data that can be compared meaningfully using statistical tests of difference (Hsieh & Shannon, 2005). Instead, I analyze rank order comparisons of the frequencies of BMI codes among the different founder identities to determine prevalence (Schilling, 2005; Curtis, Weinrich, Carline, et al. 2001) and then report themes about how entrepreneurs make sense of their experiences.

THEMATIC ANALYSIS: Thematic analysis is a useful and flexible research tool that can provide a complex and rich story about the data (Braun & Clark, 2006). In this study, a theoretical thematic analysis is conducted across the data set, driven by the theory base associated with each construct. A latent level analysis is used to examine the underlying ideas, assumptions, and ideologies that inform the semantic content of the data (Braun & Clarke, 2006). The thematic analysis follows the process developed by Braun & Clark (2006): (a) reading and re-reading the data to become familiar with the content, (b) generating initial codes (accomplished using fsQCA for founder identity and text classification using NLP for BMI), (c) searching for themes, (d) reviewing the themes, (e) defining and naming the themes, and (f) reporting the themes by relating them back to the research question and literature.

6.0 Findings

6.1 Degree of business model innovation

The four main dimensions of business model innovation are: (a) strategic positioning, (b) depth of business model innovation, (c) breadth of business model innovation, and (d) novelty of business model

innovation. Here we analyze these dimensions as expressed by each of the individual entrepreneurs studied.

6.1.1 BMI results for all entrepreneurs

As shown in Table 8, the text classification results indicate the presence of a heterogeneity of business model innovation dimensions across the sample of tech entrepreneurs. For the majority of the entrepreneurs, strategic positioning is the most discussed BMI dimension at 343 total mentions (53.0% of total BMI mentions). This is followed by discussions about BMI breadth at 216 total mentions (33.4% of total), BMI novelty at 62 mentions (9.6% of total), and BMI depth at 26 mentions (4.0% of total). Given that the interviews are about the early stages of the entrepreneurs' new ventures, it is not surprising that strategic positioning (how we differentiate) and BMI breadth (what we make and for whom) are top of mind. Innovation and novelty are mentioned less but appear to be an assumed part of the conversation, as all the entrepreneurs studied are creating technology innovations. For example, while not mentioning innovation directly, one founder states, "I had my first taste of [entrepreneurship] there, but wanted to do something that was much more impactful from a technology and societal stance. I like the tech movement and how easy it is. Not necessarily easy, but how quickly you can try something."

Within the BMI dimensions, there is wide variation among the founders in terms of the amount discussed, from as few as 4 mentions of strategic positioning in one interview to as many as 27 in another. For BMI breadth, there are as few as 0 mentions in one interview and as many as 32 in another. BMI depth and BMI novelty show a narrower range: BMI depth ranges from 0 to 10 mentions, and BMI novelty ranges from 0 to 6 mentions. This supports the heterogeneity of founder engagement across BMI dimensions as well as within.

The use of feedback terminology was also analyzed. It was not expected to be the top issue as founders told their stories, but it was mentioned a total of 63 times. This is 8.9% of the total mentions for BMI + feedback, about the same level as BMI novelty. Interestingly, while only 8 of the 25 entrepreneurs

(32%) fell above the median for feedback, 7 of the 8 were in the top half of BMI scores. This indicates a positive relationship between feedback and degree of BMI.

Table 8. Number of mentions of BMI dimensions and feedback per interview.

				Business Model Innovation					
Gender	**Cntry**	**# Paras**	**Interview**	**Strategic positioning**	**BMI breadth**	**BMI depth**	**BMI novelty**	**BMI Total**	**Feedback Total**
F	US	40	3	24	32	0	6	62	9
M	NonUS	41	14	23	15	4	3	45	3
M	US	52	2	27	11	1	4	43	1
M	US	73	19	16	20	0	3	39	7
M	US	72	18	21	12	2	3	38	7
M	US	44	21	17	12	0	4	33	9
M	US	52	1	25	2	0	3	30	1
F	NonUS	27	10	10	7	10	1	28	1
F	US	22	12	15	11	0	2	28	3
M	US	24	11	17	9	0	1	27	1
M	US	32	22	14	8	0	3	25	4
M	US	21	5	7	14	1	2	24	2
M	US	44	20	18	0	0	5	23	0
F	NonUS	30	25	13	6	1	3	23	1
M	NonUS	56	7	12	6	0	3	21	2
M	US	126	17	9	10	1	1	21	2
M	US	51	9	10	4	2	3	19	2
F	US	113	4	5	10	0	3	18	0
M	US	61	8	11	3	0	2	16	3
M	NonUS	41	13	11	5	0	0	16	1
M	NonUS	25	15	11	4	0	1	16	0
M	US	28	16	8	6	2	0	16	1
F	NonUS	25	24	8	2	2	4	16	0
M	US	27	23	7	4	0	2	13	2
M	NonUS	23	6	4	3	0	0	7	1
	Total			343	216	26	62	647	63
	Mean		Mean	13.72	8.64	1.04	2.48	25.88	2.52
	Median		Median	12.00	7.00	0.00	3.00	23.00	2.00

As shown in Table 9, looking across the data set for patterns based on demographics shows that female founders have the highest mean number of mentions of BMI and non US-born founders show the lowest mean number. A closer look at the details follows.

Table 9. Number of mentions of BMI dimensions and feedback by demographics (green=highest, red=lowest).

		Business Model Innovation					
Sample	**BMI mentions**	**Strategic positioning**	**BMI breadth**	**BMI depth**	**BMI novelty**	**BMI Total**	**Feedback Total**
All							
	Total	343	216	26	62	647	63
	Mean	13.72	8.64	1.04	2.48	25.88	2.52
	Median	12.00	7.00	0.00	3.00	23.00	2.00
	Range	4...27	0...32	0...10	0...6	7...62	0...9
Females							
	Total	75	68	13	19	175	14
	Mean	12.50	11.33	0.17	3.17	29.17	2.33
	Median	11.50	8.50	0.50	3.00	25.50	1.00
	Range	5...24	2...32	0...10	1...6	16...62	0...9
Males							
	Total	268	148	13	43	472	49
	Mean	14.11	7.79	0.68	2.26	24.84	2.58
	Median	12.00	6.00	0.00	3.00	23.00	2.00
	Range	4...27	0...20	0...4	0...5	7...45	0...9
US-born							
	Total	251	168	9	47	475	54
	Mean	14.76	9.88	0.53	2.76	27.94	3.18
	Median	15.00	10.00	0.00	3.00	25.00	2.00
	Range	5...27	0...32	0...2	0...6	13...62	0...9
Non US-born							
	Total	92	48	17	15	172	9
	Mean	11.50	6.00	2.13	1.88	21.50	1.13
	Median	11.00	5.50	0.50	2.00	18.50	1.00
	Range	4...23	2...15	0...10	0...4	7...45	0...3

6.1.2 BMI results by gender

As in the overall sample, an analysis by gender shows a heterogeneity of BMI (see Table 9). For females, similar to the total population, strategic positioning is the most discussed BMI dimension at 75 mentions (42.9% of total BMI mentions). This was followed by BMI breadth at 68 total mentions (38.9% of total), BMI novelty at 19 mentions (10.9% of total), and BMI depth at 13 mentions (7.4% of total). Comparing means shows that BMI dimensions, overall, are discussed more among females than the total sample (29.17 vs. 25.88), specifically, all dimensions except strategic positioning.

There is wide variation among the female founders in terms of the amount discussed within each BMI dimension, from as few as 2 mentions of BMI breadth in one interview to as many as 32 in another. BMI novelty shows a narrower range, from 1 to 6 mentions. Even though females represent 24% of the sample, their results generally track with the overall sample.

Feedback is mentioned only 14 times in total, a slightly lower rate than among the total population (7.4% of all BMI + feedback mentions vs. 8.9% among the total sample). Although a smaller total number, similar to the total sample, 2 of the 6 female entrepreneurs (33.3%) fell above the median for feedback, they accounted for 2 of the 3 that were in the top half of BMI scores. This shows that females tend to show the same positive relationship between feedback and BMI.

In analyzing the male interviews, both similarities and differences can be seen between the genders. For males, similar to females, strategic positioning is the most discussed BMI dimension at 268 total mentions, but it is mentioned at a higher rate than females (56.8% of total BMI mentions vs. 42.9% for females). The remaining BMI dimensions are mentioned at lower rates than females: BMI breadth at 68 total mentions (31.4% of total vs. 38.9% for females); BMI novelty at 19 mentions (9.1% of total vs. 10.9% for females), and BMI depth at 13 mentions (2.8% of total vs. 7.4% for females). Comparing means shows that BMI dimensions, overall, are discussed less among males than females (24.84 vs. 29.17).

There is also wide variation among the male founders in terms of the amount discussed within each BMI dimension, from as few as 4 mentions of strategic positioning in one interview to as many as 27 in another. BMI depth showed a narrow range, from 0 to 4 mentions. This supports the theme of BMI heterogeneity among venture founders, with somewhat more variability among females.

Feedback is mentioned more often in males, 49 times in total; this accounted for 9.4% of all BMI + feedback mentions vs. 7.4% among females. A bit lower than the total sample, 6 of the 19 male entrepreneurs (31.6%) fell above the median for feedback, they accounted for 5 of the 9 entrepreneurs (55.6%) that were in the top half of BMI scores. This shows that although males tend to mention feedback more, there is a weaker positive relationship between feedback and BMI than in females.

6.1.3 BMI results by country of origin

As in the overall sample, an analysis by country of origin shows a heterogeneity of BMI (see Table 9). For US-born founders, similar to the total population, strategic positioning is the most discussed BMI dimension at 251 total mentions (52.8% of BMI total). This is followed by BMI breadth at 168 total mentions (35.4% of total) and BMI novelty at 47 mentions (10.0% of total). BMI depth has 9 mentions, lower than the total population (1.9% of total vs. 4.0%). Comparing means shows that BMI dimensions, overall, are discussed more among US-born than the total sample (27.94 vs. 25.88), specifically, all dimensions except BMI depth.

There is also wide variation among the US-born founders in terms of the amount discussed within each BMI dimension, from as few as 0 mentions of BMI breadth in one interview to as many as 32 in another. BMI depth shows a narrower range, from 0 to 2 mentions. This continues to support the overall heterogeneity of BMI theme, with US-born founders showing more similarities in levels of discussion about positioning and business model values (BMI breadth).

Feedback is mentioned 54 times in total, a higher rate than among the total population (10.2% of all BMI + feedback mentions vs. the 8.9% among the total population). Unlike the total sample, 7 of the 17 US-born entrepreneurs fell above the median for feedback (41.2% vs. 33.3% of the total sample. These 7 founders accounted for 5 of the 8 that were in the top half of BMI scores (62.5%). This shows that US-born founders show a positive relationship between feedback and BMI.

For non US-born founders, similar to the US-born founders, strategic positioning is the most discussed BMI dimension at 92 total mentions (53.5% of BMI total). This is followed by BMI breadth at 48 total mentions, a lower rate than the US-born sample (26.4% of total vs. 35.4% of US-born). This is the only sub-sample where BMI depth (degree of innovation) is discussed more than BMI novelty. BMI depth is mentioned 17 times, more than twice that of the total population (9.9% of total vs. 4.0% of the total sample vs. 1.9% of the US-born sample) and BMI novelty is mentioned 15 times, less than the US-born sample (8.7% of total vs. 10.0%). Comparing means shows that BMI dimensions are overall

discussed less among non US-born than among US-born (21.50 vs. 27.94), specifically, all dimensions except BMI depth. This demonstrates higher engagement with the topic of innovation among non-US born founders. There is insufficient data to indicate if that is due to fewer assumptions about innovation in the course of conversations or if it is a language issue (all non-US born founders in the sample spoke English, but to varying levels of proficiency).

Demonstrating that heterogeneity among entrepreneurs crosses cultural boundaries, there is also variation among the non US-born founders in terms of the amount discussed within each BMI dimension. Strategic planning mentions range from as few as 4 in one interview to 23 in another. BMI novelty shows the narrowest range, from 0 to 4 mentions.

Feedback is mentioned 9 times in total, half the rate of the US-born sample (5.0% of all BMI and feedback mentions vs. 10.2% among the US-born sample). Of these, 2 of the 8 entrepreneurs fell above the median for feedback (25.0% vs. 41.2% of the US-born sample). These 2 founders accounted for 2 of the 4 that were in the top half of BMI scores (50%), lower than the 62.5% of the US-born founders. This shows that US-born founders show a more positive relationship between feedback and BMI.

6.2 Founder identity results

Let us turn to the second main construct of my research, founder identity. Prior research has shown that entrepreneurial cognition is motivated by the values and goals of entrepreneurs and subsequently influences entrepreneurial behaviors and key components of the entrepreneurship process (Carsrud et al., 2017). I propose that those key components include business model innovation. Here I analyze the founder identities of the individual entrepreneurs with respect to their value/goal motivations: power/financial success, achievement/innovation, stimulation/solving big problems, universalism/social cause, self-direction/independence, and/or security/organization.

6.2.1 Founder identity results for all entrepreneurs

As shown in Table 10, the results indicate a heterogeneity of founder identities across the sample, each of which includes a mix of motivational components. fsQCA analysis distinguishes between core and peripheral conditions. A core condition has a strong causal relationship with the outcome of interest and a peripheral condition has a weaker relationship with the outcome, in this case, the relationship studied is between the motivational components of personal values, goals for the firm, and entrepreneurial passion. When combined, these motivational components produce a typology of founder identities. In Table 10, core conditions are indicated by a large filled circle while peripheral conditions are indicated by a small filled circle.

Table 10. A heterogeneity of founder identities is seen among the venture founders interviewed.

		Founder Identities of Tech Entrepreneurs						
Gender	**Country**	**PWFS**	**ACINV**	**STSBP**	**UNSC**	**SDIN**	**SECOR**	**PERSONAS**
F	Non-US	●		•	•	•	•	Overachiever
F	Non-US		•	•	●			Community innovator
F	Non-US	●						Wall Streeter
F	US	●	●	●	•	●	●	Overachiever
F	US				●			Protector
F	US		•			•	•	
M	Non-US		•		•	•		
M	Non-US	•	●			●		Trailblazer
M	Non-US		•	•	●			Community innovator
M	Non-US		●			●	●	Trailblazer
M	Non-US	●	•			•		Trailblazer
M	US	•	•					
M	US	•	•	•	•			Overachiever
M	US			•	•			
M	US	●				•		Wall Streeter
M	US			•	●		•	Community problem solver
M	US	•			•		•	
M	US		•	•	•		•	
M	US		●	●	●	●	•	Overachiever
M	US	●	•	●	•	•	●	Overachiever
M	US	●	●	●		●	●	Overachiever
M	US	•			●	•	●	Hero
M	US			•			•	
M	US		●	•		•	●	Org-driven seeker
M	US	●		●	●			Hero
Count		8C, 5P	6C, 9P	5C, 9P	7C, 8P	5C, 8P	6C, 7P	
% of Total		0.52	0.60	0.56	0.60	0.52	0.52	
Rank		4	1	3	1	4	4	

Note: Large circles represent core (C) conditions, small circles represent peripheral (P) conditions.

Each individual in the sample produces a founder identity footprint composed of one or more motivational components. None are exactly alike. This is not unexpected as identities can be based on a mix of factors, such as influences from family and friends, educational endeavors, and work experience (Cote & Levine, 2014). This makes a person's identity as unique as a fingerprint, including the founder identity. A look at the individual motivational components within the identities, however, demonstrates some interesting patterns.

The motivational component most present in the sample, whether core or peripheral, is achievement/innovation in 60% of the founders. This is not surprising given the sample is innovation-focused technology entrepreneurs, most of whom are launching new-to-the-market products or services. What is unexpected is that the motivational component of universalism/social cause is present in the same proportion, 60%. None of the tech entrepreneurs in the sample are currently working on a traditional social venture, yet content related to universal values and solving societal problems came through in the interviews. For example, one founder commented, "We're just people helping each other."

Stimulation/solving big programs is present in the next highest proportion, 56% of the sample. This is followed by the motivational components power/financial success, self-direction/independence, and security/organization, which are each present in 52% of the population.

Power/financial success is the only motivational component that is present more as a core condition than as a peripheral condition: 8 entrepreneurs show it as core, 5 show it as peripheral. In all other cases, the motivational components are more often expressed as peripheral conditions in the sample. Power and wealth were rarely a major topic of discussion in the interviews. This is in contrast to early research that found that financial success is a primary motivator for entrepreneurs (Pickle & Rungeling, 1973). For decades, many scholars assumed the desire for personal wealth was the top motive for entrepreneurship (Amit, MacCrimmon, Zietsma, & Oesch, 2001). As recently as 2009, a Kauffman Foundation study found that the strongest motivation for starting a business was building wealth (Wadhwa, Holly, Aggarwal, & Salkever, 2009). But in the 21st century, skilled engineers and scientists are more likely to obtain higher salaries, bonuses, and stock options working for one of the giant tech

companies or well-funded startups compared to launching an entrepreneurial venture of their own. I interpret the power/financial success results in this study as support for the fact that while many of the entrepreneurs interviewed state they are not pursuing entrepreneurship for a big financial payout, money is on their minds and they hope for financial gains that will pay the bills and give them a good life.

Analysis of core vs. peripheral motivational components indicates continued support for the heterogeneity theme across the sample (see Table 11). The most common core components are power/financial success (32% of the founders) and universalism/social cause (28%). The most common peripheral motivational components are achievement/innovation (36%), stimulation/solving big problems (36%), universalism/social cause (32%), and self-determination/independence (32%).

Table 11. Ranked order of founder identity motivational components in sample.

All components	**Core components**	**Peripheral components**
Achievement/innovation (60%)	Power/financial success (32%)	Achievement/innovation (36%)
Universalism/social cause (60%)	Universalism/social cause (28%)	Stimulation/solving big problems (36%)
Stimulation/solving big problems (56%)	Achievement/innovation (24%)	Universalism/social cause (32%)
Power/financial success (52%)	Security/organization (24%)	Self-direction/independence (32%)
Self-direction/independence (52%)	Self-direction/independence (20%)	Security/organization (28%)
Security/organization (52%)	Stimulation/solving big problems (20%)	Power/financial success (20%)

PERSONAS: A person's identity is deeply personal and serves as a set of guiding principles in an individual's life. The identity provides an individual with a frame of reference through which they can interpret the world around them, as well as their actual and potential behaviors (Tajfel & Turner, 1979). As discussed, most entrepreneurs show a mix of founder identity components. As shown in Table 12, these can be sorted and categorized into founder identity personas. Several of these were identified in paper one (community-builder, hero, seeker, overachiever, and trailblazer). Two new personas emerge in this detailed analysis of individual identities, which I have labeled protector and wall streeter.

Table 12. Founder identity personas by motivational components.

		Founder Identities of Tech Entrepreneurs						
Gender	**Country**	**PWFS**	**ACINV**	**STSBP**	**UNSC**	**SDIN**	**SECOR**	**PERSONAS**
F	Non-US		•	•	●			Community innovator
M	Non-US		•	•	●			Community innovator
M	US			•	●		•	Community problem solver
M	US	●		●	●			Hero
M	US	•			●	•	●	Hero
M	US		●	•		•	●	Org-driven seeker
F	Non-US	●		•	•	•	•	Overachiever
F	US	●	●	●	•	●	●	Overachiever
M	US	●	•	●	•	•	●	Overachiever
M	US	●	●	●		●	●	Overachiever
M	US	•	•	•	•			Overachiever
M	US		●	●	●	●	•	Overachiever
F	US				●			Protector
M	Non-US	●	•			•		Trailblazer
M	Non-US	•	●			●		Trailblazer
M	Non-US		●			●	●	Trailblazer
F	Non-US	●						Wall Streeter
M	US	●				•		Wall Streeter
M	Non-US		•		•	•		
F	US		•			•	•	
M	US	•	•					
M	US	•			•		•	
M	US			•	•			
M	US		•	•	•		•	
M	US			•			•	

A focus on the core motivations, with support from the peripheral motivations, shows the emergence of eight founder identity personas. An emphasis is placed on the core identity components as these show the strongest relationship with the needed outcome of entrepreneurial passion. If a founder identity is only comprised of peripheral motivations, there isn't a strong enough indicator to identify a persona.

The most common persona present in the sample is the overachiever (6 of the founders), an entrepreneur that is motivated by at least 5 of the 6 components. These founders are driven from many angles, the most common core motivations being power/financial success and stimulation/solving big problems. It is not always about power/financial success, however. One overachiever founder noted, "I was much more interested in, I guess, the innovation of it. Now, having conquered that hill, I want to

move on to the next thing. Had it generated all this revenue, I would have continued in that vein, but I wanted to kind of keep throwing darts at the wall. If it sticks, then that's great. If it doesn't stick, then that's also great."

The next most common persona is the trailblazer (3) who is motivated by achievement/innovation with a strong dose of self-direction/independence. The community builder personas (3) are driven by a core motivation of universalism/social cause; some combine that with a peripheral motivation of achievement/innovation, others combine that with stimulation/solving big problems.

The hero persona is driven by a mixture of power/financial success and universalism/social cause; some do this with a focus on their organization, while others look to solve big problems. The wall streeter persona is motivated primarily by power/financial success, but that often came through in the interviews in the form of a desire to have a major impact. For instance, one wall streeter said, "I wanted to do something to change the world." This is in contrast to the protector persona who is motivated purely by universalism/social cause, such as the founder of a medical device company in this sample. The organization-driven seeker is a person looking for achievement/innovation while focusing on creating security/organization.

An interesting finding was the abundance of no core motivation founders (7). This could be akin to an anti-persona. No one element clearly distinguishes their drive as they create and build new ventures. This also could be a result of the typology not capturing all possible motivational components, as discussed in Worthington (2020a).

6.2.2 Founder identity results by gender

As in the overall sample, an analysis by gender shows a heterogeneity of founder identities (see Table 12). The motivational component of power/financial success is found as a core component in 50% of the female entrepreneurs. Universalism/social cause is found as a core component in one-third of the sample, but increases to two-thirds if considered as core or peripheral component. This fits with the mixed results from prior research by scholars. Brush (1992), for instance, found that female entrepreneurs are

more caring and relationship-focused, seeing their ventures as interconnected to other firms and groups around them. Other scholars found no differences between genders, such as values and attitudes toward business ownership success (Walker & Brown, 2004).

In terms of founder identity personas, four of the eight personas identified in this study are found among the females: overachiever (2), community builder: innovator (1), protector (1), and wall streeter (1). Absent are the trailblazer, hero, organization-driven seeker, and community builder: problem solver.

An analysis by gender also shows a heterogeneity of founder identities among males (see Table 12). Unlike females, males exhibit a broader mix of core motivational components. Power/financial success, achievement/innovation, universalism/social cause, and security/organization are the most common, each found as a core component in 26% of the male entrepreneurs. Achievement/innovation is most common if core and peripheral cases are combined (63.2%), followed by stimulation/solving big problems and universalism/social cause (57.8% each).

In terms of founder identity personas, a broader array of personas is found among males (seven of the eight): overachiever (5), trailblazer (3), hero (2), community-builder: innovator (1), community-builder: problem solver (1), organization-driven seeker (1), and wall streeter (1). Absent is the protector persona, which is found among females.

6.2.3 Founder identity results by country of origin

As in the overall sample, an analysis by country of origin shows a heterogeneity of founder identities (see Table 12). Unlike the overall sample, four motivational components are the most common, each in 26.3% of the entrepreneurs: power/financial success, stimulation/solving big problems, universalism/social cause, and security/organization. If we consider both core and peripheral components, power/financial success drops from the top, leaving stimulation/solving big problems, universalism/social cause, and security/organization each in 57.9% of the founder identities.

In terms of founder identity personas, six of the eight personas are found among the US-born entrepreneurs: overachiever (5), hero (2), community-builder: problem solver (1), organization-driven

seeker (1), protector (1), and wall streeter (1). Missing are the community builder: innovator and the trailblazer.

An analysis by country of origin also shows a heterogeneity of founder identities among non US-born entrepreneurs (see Table 12). Unlike US-born, non US-born exhibit a narrower mix of core motivational components. Power/financial success is the most common, present as a core component in 37.5% of the non-US born entrepreneurs.

Like the overall male sample, achievement/innovation is most common if core and peripheral cases are combined (75%). This is followed by self-direction/independence (62.5% each), which is the highest presence of this motivational component in one of the sample sub-populations. Surprisingly, universalism/social cause is not as present in this sample, even though many countries outside the US tend to show higher levels of collectivism (Hofstede, 2019).

In terms of founder identity personas, four of the eight personas are found among the non US-born entrepreneurs: trailblazer (3), community-builder: innovator (2), overachiever (1), and wall streeter (1). Absent are the hero, community-builder: problem solver, protector, and organization-driven seeker.

6.3 Founder identity and degree of business model innovation

In this section, I turn to the main research question, how variability of founder identities relates to the strategic decision-making process of business model innovation in new ventures. While not all identities possess the same probability of motivating behavior (Murnieks & Cardon, 2019), the founder identity classification discussed here provides a foundation that can help entrepreneurs better understand why they make the decisions they do, such as during the strategic planning process, potentially leading to more thoughtful decision making. Differences in the structure of founders' identities can lead to differences in how they interpret situations, such as reactions to changes in industry structure or adversity faced by their firm, and differences in resulting behaviors (Gruber & MacMillan, 2017; Powell & Baker, 2014). Here I show how differences in founder identities can lead to differences in business model innovation by examining thematic patterns in the data.

6.3.1 Results for all entrepreneurs

Themes represent a level of patterned response within the data set (Braun & Clarke, 2006). I start by examining the relationship between the presence of the founder identity motivational components and the number of mentions of BMI dimensions. This analysis focuses on the core motivational components, as they are the primary drivers of founder identity; peripheral motivations provide a weaker drive, as discussed in paper one.

As shown in Table 13, I look at three different categories of identities (individual motivational components, component pairs, and component triplets) and their relationships with BMI based on number of BMI mentions in the founder interviews. Means are used to describe central tendencies for comparison purposes and then are ranked to indicate prevalence. The sample size is small and outliers can be an indication of interesting results, especially when dealing with entrepreneurial cognition, so outliers are retained following the recommended approach for exploratory studies of social psychological phenomena (Davidsson, 2004). Green highlights in the tables indicate the most BMI mentions for the motivational components and red highlights indicate the least.

Table 13. Mean BMI mentions by core motivational component, examined as single components, components pairs, and component triplets.

Mean BMI mentions by motivational component

Mean number of BMI dimension mentions by persona

FID core motivational components	Strategic positioning	BMI breadth	BMI depth	BMI novelty	BMI Total	BMI Highest Mentions	BMI Lowest Mentions	Feedback Total
ACINV-STSBP	19.00	21.33	0.00	4.33	44.67	2	1	8.33
STSBP-SDIN	19.00	21.33	0.00	4.33	44.67	2	1	8.33
ACINV-STSBP-SDIN	19.00	21.33	0.00	4.33	44.67	2	1	8.33
ACINV-SECOR	22.25	15.25	1.00	4.00	42.50	1		5.50
PWFS-STSBP	21.50	13.75	0.25	4.75	40.25			4.75
STSBP	20.40	15.00	0.20	4.40	40.00			5.20
SDIN	18.40	17.00	0.80	3.80	40.00			6.00
ACINV-SDIN	18.40	17.00	0.80	3.80	40.00			6.00
PWFS-SECOR	19.67	14.67	0.00	5.00	39.33	1	1	6.00
STSBP-SECOR	19.67	14.67	0.00	5.00	39.33	1	1	6.00
PWFS-STSBP-SECOR	19.67	14.67	0.00	5.00	39.33	1	1	6.00
ACINV	19.50	14.50	0.67	3.67	38.33			5.17
SECOR	20.17	11.50	0.67	4.00	36.33			4.33
PWFS all combinations	17.13	10.13	1.50	3.13	31.88			2.75
UNSC all	12.71	8.86	0.71	2.43	24.71			2.00
PWFS only	12.75	6.50	2.75	1.50	23.50	1	1	0.75
No core motivations	10.50	7.63	0.75	1.88	20.75			2.75
UNSC only	8.00	5.75	1.00	1.75	16.50		3	0.50

Note: PWFS = power/financial success, ACINV = achievement/innovation, STSBP = stimulation/solving big problems, UNSC = universalism/social cause, SDIN = self-directed/independent, SECOR = security/organization
Green = highest mentions per BMI dimension. Red = lowest mentions per BMI dimension.

The results show that achievement/innovation, stimulation/solving big problems, and self-directed/independent motivations rank the highest for total BMI mentions, as well as for feedback. The lowest rank corresponds to the universalism/social cause motivation. "No core motivations" ranks second lowest. Power/financial success-only also scores near the bottom. Power/financial success-all combinations round out the lowest BMI mentions. Interestingly, the only time power/financial success occurs in the top 8 is when combined with stimulation/solving big problems, one of the highest ranked motivational components.

From this, I infer that founders whose identities incorporate the core motivational components of achievement/innovation, stimulation/solving big problems, and/or self-direction/independence are most likely to engage in discussions about BMI. On the other hand, founders whose identities incorporate the

core motivational components of universalism/social cause, power/financial success, or no core motivations are least likely to engage in discussions about BMI.

If we rank BMI dimensions and BMI total by motivational component and tally those by average rank across all five categories, we see security/organization pop to the top of the ranking (see Table 14). Stimulation/solving big problems has more number one rankings (strategic positioning, BMI breadth, and BMI novelty), but is weighed down by its low rank on BMI depth.

Table 14. Rank of founder identity motivational components by mentions of BMI dimensions.

	Percent motivational components above BMI median mentions						
FID core motivational components	**Strategic positioning**	**BMI breadth**	**BMI depth**	**BMI novelty**	**BMI total**	**Avg rank, all categories**	**Rank**
SECOR	1	3	4	2	1	2.20	1
STSBP	1	1	7	1	3	2.60	2
SDIN	4	2	3	4	3	3.20	3
ACINV	3	3	4	5	1	3.20	3
PWFS	5	6	6	2	5	4.80	5
UNSC	6	5	1	6	6	4.80	5
No core motivations	7	6	2	7	7	5.80	7

Note: PWFS = power/financial success, ACINV = achievement/innovation, STSBP = stimulation/solving big problems, UNSC = universalism/social cause, SDIN = self-directed/independent, SECOR = security/organization

6.3.1.1 High degree of BMI in overachiever identities

Let us look at how founder identity and business model innovation play out in the entrepreneurs' stories. Isaac[3] (PWFS-ACINV-STSBP-SDIN-SECOR, BMI = 33, feedback = 9), a US-born founder of an IT/web services company, is an overachiever who scores high on BMI. He knew that he wanted to go into business early on. He started programming at the age of seven. In seventh grade, he and a friend launched their first business, installing home networks. Isaac's intense interest in technology and his independence demonstrate his drive to push boundaries. This is a recurring theme among these tech entrepreneurs, where SDIN is present as a core or peripheral motivation in 13 of the 25 founders. For some founders,

[3] All entrepreneurs' names have been changed to pseudonyms to protect their identities.

pushing boundaries was encouraged; in others, it was discouraged. Isaac states, "My senior year in high school, at the school I was at, they had this thing called the DaVinci Lab. It was basically $1 million plus of technology equipment that was stationed out into modules, so we had things like a 3D lathe. We had an animation computer. One of the module projects that I did was to build a Linux server from the ground up. I built an e-mail server for some of the teachers. I built a Web server. I built an art gallery for our art class, because I really enjoyed art and appreciated our art teachers. I came in one day and the whole thing was wiped out. I was like, what the heck's going on? [The teacher] said, you know, you're going too fast, and we don't have anybody that understands this stuff and can oversee you. Unfortunately, we have to put a boundary around this and you're not allowed to do this kind of stuff anymore."

By the time he was 17, Isaac knew he wanted to start a company to develop web sites for businesses, but he did not have access to money for the computer equipment or for college. Instead, he rock-climbed, worked at restaurants, and spent a lot of time studying to fill in the gaps in his education. He met an inspirational mentor and went to work for his company building web sites.

A few years later, Isaac launched his IT services/web development company, which today is known for developing complex systems that many of his competitors shy away from. But, in the early days, his first few hires did not go well. They tried to negotiate a higher percentage of shares in his company. Isaac said no and there was a falling out. He then connected with a friend who was ready to leave his current employer due to the low quality of the web sites they were creating. The team quickly brought in new contracts and started hiring. While Isaac had amassed a wide range of skills -- programming, project management, sales, business writing -- he recognized a problem and had to make some changes. "I really wasn't experienced at managing people as much as I should have been. I hired some people that were friends, that were cool people and intelligent, but really not right for the business. I spent like a good three years just doing really good work but not getting past a team of five to eight people and finding that, if things were a little off the rails, I was oftentimes carrying everybody on my shoulders. For a little while, some of the projects that we worked on were so interesting it didn't really

matter to me. But eventually, I wasn't seeing the team scaling and growing the way that I wanted it to. I had to make some hard decisions and terminated a couple people that were friends."

Isaac is open to feedback from clients, aware of the importance of customer needs and the value his company delivers. "I had to make sure that I was really listening, because every single customer business was a little bit unique, and there were always different processes or structures or people or practices that were really important to their identities as a business. So I had to understand those things to get the software right that we were making for them." In general, Isaac takes a pragmatic approach to feedback and change. "There's [sic] times where I can be like, yeah, you're right and, by the way, I can act on that immediately. There's [sic] been times where it's like, I'm not sure if I agree with you. There have been times where it's like, well, you know, I agree with you from your perspective, but if I look at it from the bigger picture – the 10,000-foot view or the multiyear view – I don't agree with you. I'm really willing to consider that. Not all feedback is always positive. It's especially helpful, though, if it is feedback that you can hear that helps identify some of your own blind spots, because we don't always know what our blind spots are."

Tessa (PWFS-ACINV-STSBP-SDIN-SECOR, BMI = 62, feedback = 9), a US-born CEO of a tech incubator, is also an overachiever who scores high on BMI, but she took a different path to entrepreneurship than Isaac. She was aware from an early age that she loved science and math and obtained a degree in mathematics and computer science. She worked for a large computer company as a programmer for a few years, then realized she wanted to try a smaller company to broaden her experience and figure out what she ultimately wanted to do with her life. She moved into product management in a venture-funded firm. The company ended up firing two VP's of marketing in a row, then gave her the job. She wrote her first business plan as part of the acquisition of the company by a larger firm. This was when she realized, "I love the world of startups."

Over the next decade, she worked for several startups that were creating radical or disruptive innovations. She then founded her first firm, a technology marketing company, where she developed business plans for startups while facing her own array of entrepreneurial challenges, including hiring

employees vs. contractors, generating sales, and developing skills. Along the way, she started collecting observations that eventually led to launching her incubator. "People would have board meetings and not share what was really going on with the board, like they were trying to tell the board that everything's perfect – not because they were lying, because that's sort of what they did. It's sort of like everything's great. And everything wasn't great. I know that there's a balance because every company has things that aren't perfect. But it was kind of interesting. I remember saying, but aren't these the people that are supposed to be helping us?"

Tessa lived in a suburb outside of a major metropolitan area known for its wealth of resources for the technology industry. She started thinking about the local startup community and the challenges of commuting back and forth to the city to visit investors or IP attorneys, and the expense of locating a firm there. She talked with entrepreneurs in the area, recognized there was an opportunity, and wrote a business plan. She presented it to an existing venture support organization, hoping they would expand their offerings to include her incubator. "I tried really hard and when that wasn't working, I'm kind of like, this region needs more happening. Part of the interesting observation was, OK, why don't I do a program out here?" She pivoted her idea and decided to put together an incubator herself. She met resistance, but persisted. "I had one venture capitalist [say] entrepreneurs need to go where the resources are. What you're doing isn't needed. I went, OK, I agree with the first part. If you're going to be successful, you've got to find what you need. I'm not saying that you don't. But why should it be so hard for them to find those resources? What if someone could make it easier for them? I mean what's wrong with that? And then they get to stick to their core competency. Spending 10, 12, 15 more hours on the road – it's not like it's an immutable law of physics. Put some resources out here."

Tessa opened the incubator the next year. While the strategic positioning remained the same, they embraced a number of BMI breadth changes based on feedback. "Success as a company founder [is measured] in terms of meeting goals set annually and from feedback. I was able to attract a facility, grants, a lot of volunteers, a lot of other funding...and a reasonable number of members-in-residence plus a great deal of local attention. The success of my firm [is measured as] entrepreneurs served, members

attracted, volunteers, numbers and hours, resources contributed, money and equipment, recognition in ecosystem, and how much the dial was moved for the entrepreneurs. We achieved a lot of positive energy from our stakeholders and contribution from volunteers in terms of hours. A few dozen companies did well in part due to our help and connections." Ultimately, though, the VC was right. She was not able to pivot sufficiently to sustain the organization past its first six years due to continued competition from the nearby city. They closed their doors in 2019.

As Tessa shows, pivoting does not always translate to business performance success. The founder of a medical device company is also struggling to grow his firm, in spite of a number of pivots along the way. Mark (PWFS, STSBP, UNSC, BMI = 43, feedback = 1), is a US-born hero with a high BMI score whose firm is attempting to make inroads in an underserved healthcare market. Over the last 18 years, his strategic positioning has remained the same with a focus on a particular medical market. But he has pivoted a number of BMI breath value components in order to stimulate growth. He is now attempting a change in BMI depth with the launch of a new design for solving his customers' medical problems. Thus far, BMI novelty is working against him. The product is so new and different that doctors are having a hard time justifying the time and expense to integrate it into their practices, in spite of the benefits it provides their patients.

6.3.1.2 Moderate degree of BMI in a heterogeneity of identities

The founder of a bio/pharm company is seeing growth with a moderate approach to pivoting. Betsy (PWFS, BMI = 28, feedback = 1) is an non US-born overachiever whose founder identity includes five of the six motivational components, yet only power/financial success is a core component. She started as a research PhD, then transferred to industry. Her focus on financial success was clear early on. "I had my eyes set upon getting my PhD in industry, contrary to what my advisor wanted me to do, which was to stay in academic research. But I never liked academia. I always wanted to get engaged in product development and be financially rewarded for it."

Betsy has accumulated a significant amount of business experience. She has founded three companies and along the way raised money from investors, negotiated multimillion dollar contracts with larger pharmaceutical companies, taken one of her firms public, and today continues to invest in new product development. She is not shy about providing her opinion, personally and professionally. She has revamped and rebranded when she saw the need, but is selective when taking advice. It would not be unusual to hear her say, "This is what we're going to do. Thank you for your input. That's interesting, but I think we're on the right path."

It is also interesting to note that not all top ranked motivations align with higher BMI's. This is demonstrated by the founder story of the CEO of a soon-to-be "unicorn" videoconferencing firm. Victor (ACINV-SDIN, BMI = 21, feedback = 2), a non US-born trailblazer with a moderate BMI, grew up in challenging conditions outside the US and learned to adapt to different environments because the family frequently moved. Today, that is demonstrated by what he refers to as a core philosophy focused on flexibility, "There's [sic] a lot of opportunities, but you don't know them as opportunities and you just have to go with the flow." After accidentally ending up in a PhD level programming class after he moved to the US, he completed his masters and went to work for Bell Labs. This was the 1990s and he was soon intrigued by the rise of Silicon Valley. Victor ended up in a small company in San Francisco. "I've never thought of myself as an entrepreneur. I always thought of myself as a maverick. Questioning the establishments, questioning the status quo, challenging authority, all those things. I don't know whether they make up an entrepreneur or not, but always they're part of me. If somebody says, this is the way to do it, I'll try to figure out if there is another way, an opposite way to do it, just for the sake of doing the opposite way."

Victor and two of his colleagues had an idea to start a company to help organizations connect to the Internet. They eventually convinced Sun Microsystems to invest, but then Cisco found out and bought them outright. He stayed at Cisco and rose through the ranks, running different business units. Then he left and started his second company, which he states, "is where I really learned my entrepreneurial chops, in terms of what matters, how to run a company. We proceeded to build a company, convince our

shareholders, investors, everybody else, and the employees in the market that this is worth it, and recruit. I was able to come up with the strategy, plan, and a market for that product." Cisco found out about the firm and considered it a threat, so they bought it at a handsome price and then killed it.

Victor stayed at Cisco another few years and then decided big companies were not for him. He was intrigued by the video space and eventually started company #3, a videoconferencing company. They have raised over $175 million and are focused on customer needs, "If you're a founder and entrepreneur in a startup environment, you have to be tracking the customer. You cannot delegate that function to somebody else." While he is self-directed and likes to innovate, he also demonstrates a number of universalism values. The company is egalitarian with respect to its employees, i.e. no organization chart, and he has a relationship with all his employees, even as they have grown into the hundreds. "I wanted to make this company a reflection of what I don't like about big companies. I always manage by walking. I come in, I put my bags down, and walk around the building, saying hi to everybody, seeing them, looking them in the eye, making sure that I meet everybody."

Let's compare Victor's drive and focus on the customer with the founding story of Grant (UNSC, BMI = 21, feedback = 2), a US-born community problem solver who also has a moderate BMI. His family-based game development company was launched within a year of Victor's videoconferencing company and both are considered successful by their founders. While their BMI and feedback scores are both moderate, their founder stories are very different. Grant and his siblings started the company, but they don't remember a specific conversation about how it got started. Grant and one of his siblings (also interviewed, no-core-motivations) had full-time jobs and two were still in college for programming. They had all dabbled in game development previously and Grant was unhappy with his career. "I needed to find something to do, but I guess, in my mind it wasn't about entrepreneurship. In my mind it was about honing this new trade, the 3D skills. I felt like that was something that I was genuinely excited about. I didn't really expect anything to come out of it. Maybe just an excuse to hone my skills."

Financially, the siblings have each done well and they want to continue to grow the firm, but at a different pace than Victor. According to Grant, "We're doing fine. My lifestyle has changed along with

the amount of money that we made. It's sad to say I guess, there's always a new bar that's going to be set. This quote/unquote sense of never being satisfied. Ten years ago if you showed me a glimpse of where I'm at now, I would be like, oh, I could never even imagine being there, but now that I'm here, I've got room to grow." But the focus is on stability and managing stress. "Getting a nice successful game is about, I think for me, stability basically...not having to worry about how well each game is going to do [monetarily]. I would love it if we hit a point where those in the company who wanted to could take a step back and take on a more designer/managerial role [vs. splitting the programming and design amongst us]." But hiring new employees is not a goal. There is no discussion about raising money to grow the firm. There is little discussion of customers, although Grant acknowledges the importance of Apple iTunes in getting visibility for their games. A lot of his story is around the siblings, how they work together, and how well they get along. According to Schwartz (1992), universalism is grounded in understanding and appreciation and protecting the welfare of others, as evidenced by Grant's focus on his siblings.

Grant's moderate BMI makes sense. He and his brothers enjoy working together, tweaking their skills, and creating new games. Victor, on the other hand, might be expected to have a higher BMI score based on founding three high growth ventures. But in the end, he said he is not one to pivot an idea. Once he gets something in mind, it's "pedal to the metal."

6.3.1.3 Low degree of BMI in no core motivation identities

At the other end of the spectrum are those founders with low BMI scores. Charles (no core motivations, BMI = 13, feedback = 2), US-born founder of a CRM software company, is a no core motivations founder with a low BMI score. He is a computer engineer whose interest in technology began at an early age, like many of the founders in this study. He knew he wanted to go into business when he started developing web sites for companies in high school. Since then, he has launched several small software companies. He describes his current venture as sort of just happening. "We didn't really have any goals outside of build a really great company and hire people that we enjoyed working with and just really

build cool stuff. For us at the time, it was just work with really smart and intelligent people that we enjoyed to be around and build amazing solutions with these people and our customers. There wasn't really anything more than that. There were no roles. Everybody did everything."

Charles pays attention to feedback from customers, but shows some resistance when he points out that it should go both ways. "Feedback's an important aspect of our culture, both giving and receiving, internally and externally. Although giving externally is a lot harder. Customers oftentimes don't want your feedback. But in the spirit of true partnership, it has to happen."

Goals for the firm are focused internally, with profitability seen more as a 'like to have.' "Success is largely about culture and growth. I didn't really focus too heavily on profitability. I guess my thought was like, well, if we do those things well, we'll probably be profitable. We were most years. We've built our business around the employee, and we've built the business around the employee experience. The culture is one that entirely promotes the employee experience."

Vincent (no core motivations, BMI = 7, feedback = 1), non US-born founder of a high profile videoconferencing company, is also a no core motivations founder with a low BMI score. In college, he realized he was going to be responsible for taking care of his family as he grew up. "If I really wanted to do that, I wasn't going to be able to do that on a standard six-figure income or anything like that. You combine that with what you saw happening in the start-up world, particularly [the] dot com boom, it was like you know what, this is where I need to go." A computer science major, his launched his first startup freshman year. That quickly became a full-time job. He and a few friends then dropped out of school to focus on startup number two. "That was a pretty remarkable experience. We had no idea what we were doing. We picked a space that was definitely interesting. We raised a little bit of money, built a team of 40 or 50 people. Then, ultimately, didn't really go anywhere. At that point in time, we ended up getting acquired by this company." He pivoted his life and went back to school with a clearer purpose of launching another startup.

Vincent spent a few years at Microsoft to see how big companies operate. His next company was formed to address a problem the founders cared about. "It was something that we had a lot of intuition for,

given the work that we were doing at Microsoft. We ended up, in hindsight, just making a bunch of decisions right. We didn't try to hire a bunch of people right away. We just focused on what we were building and spent a lot of time trying to figure out what the right product was." Vincent saw this company as a way to prove he could really create a successful company. Jumping ahead to his latest venture, he describes the company as, "an attempt to prove that I could do something that's big and potentially global scale." A theme of wanting to prove himself pervades his founder story. "[It's an] attitude of one foot in front of the other. You could be dealt any obstacle or you could be dealt any gut punch. What you do is get up and you say, all right, well, what is the next step. You keep doing that until you no longer have the will to do that. Ultimately, the people that keep walking are the ones that either survive or build something incredibly valuable."

The idea for the current company came about while he was working at a Fortune 500 firm. "Me and my cofounder we said, well, hey, maybe every company in the world should have communication tools that work like the ones that we have here." Interestingly, while Vincent did not score high on BMI, he describes the new firm as focusing on customer needs. "We started interacting with customers, maybe not from day one, but from maybe day 180 from starting the company. We started that very early. We spent a whole bunch of time figuring out, well, what value are we going to sell, how are we going to position the product, what are we going to say that [our company] is. [Today] we make it a point that [the salespeople] are capturing customer feedback and insight. We feed that back into products." But gathering feedback is not always an indication of acceptance and use. For instance, in his prior company, they created multiple different products and then asked potential customers to indicate interest. "Had we actually listened to the survey results, the number one product, we would have built Dropbox and I think we might be having a different conversation right now."

7.0 Discussion

This research attempts to address the question of how variability in venture founder identities relates to business model innovation in new ventures. This was accomplished by using the oral histories

of technology venture founders to explore the relationship between an entrepreneur's founder identity and business model pivoting as they create and develop a new venture.

Founder identity: The results show a heterogeneity of founder identities among the venture founders studied, in line with findings from prior exploratory research (Cardon et al., 2017; Fauchart & Gruber, 2011; Zuzul & Tripsas, 2020). In this study, I take a step further by providing both an overall founder identity persona and the motivational components of each founder's identity. The largest number of founders demonstrate an overachiever identity that is comprised of at least five of the six motivational components. They are willing to take on big challenges in order to achieve success. One overachiever in the sample purchased a startup venture from a Fortune 500 company, merged it with three other small organizations, and then continued to develop new technology to grow the business. The founder states, "Three things make me feel secure as a company founder. Growth as a measure of the areas of financial growth, growth in innovation, growth with staff competency."

The next most common personas found are the trailblazers, those driven by independence and self-direction to build things, and the community builders, those who look to create a successful organization that builds on communities, both inside the firm and outside.

Female and male founders show a range of founder identities, but the protector persona, which is driven solely by the core motivation of universalism/social cause, is only found in females. As there is only one protector persona in the sample, it is difficult to say whether or not this follows traditional gender stereotypes.

Achievement/innovation is the most common motivation among both US-born and non US-born founders. Surprisingly, universalism/social cause is less present in non-US born entrepreneurs, even though prior research shows that many countries demonstrate higher collectivism/community values than the US (Hoefstede, 2019).

Business model innovation: The founders studied also show a heterogeneity of interest in business model innovation. While there is wide variation in terms of the amount of discussion about the four BMI dimensions, strategic planning and BMI breadth are discussed far more than BMI depth and

BMI novelty. Over time, for instance, one founder realized they needed to make a fundamental change to both their strategic positioning and BMI breadth: "The product and process itself haven't changed a whole lot. But our business model has gone through a number of evolutions. What we found is that there's nobody on this planet interested in funding the original [manufacturing] model, especially at the stage that we're at. We're going to be technology developers and innovators."

US-born founders discuss BMI more than non US-born founders. There is even more of a contrast related to discussions about feedback; US-born founders discussed feedback more than twice as much as non US-born founders. One explanation could be cultural differences related to equality among individuals (Hoefstede, 2020). Higher equality and less centralized power in the US can be interpreted as a general expectation that more credibility is given to the voices (and therefore the feedback) of those who surround the entrepreneur, whether employees or customers or investors.

Gender differences among the founders are also present. BMI, in general, is discussed more by females than males, although strategic positioning is discussed more by males, while the other three dimensions are more discussed by females. Feedback is discussed only slightly more in women than men. In a study of organizational teams, Miller and Karakowsky (2005) found that men are most likely to ask for feedback when performing a male-oriented task in a group of predominantly male members, but they are less likely to seek feedback if their gender role is threatened (ego considerations). Females, on the other hand, are far more likely to seek feedback when performing masculine-oriented tasks in groups that have more men than women (which is often the case in the technology sector). The sample size of this study is small, but females did not discuss seeking feedback far more than males. This may be due to the development of a more level playing field over time, or that the women have found ways to work around biases they encounter. Recent studies indicate that there is no gender difference in measures of firm survival or profitability when industry, firm size, and firm age are controlled (Coleman, 2016).

Founder identity and business model innovation: An examination of the relationship between founder identity and business model innovation finds that those founders most likely to discuss business model innovation are driven by the core motivational components of achievement/innovation,

stimulation/solving big problems, and/or self-direction/independence. It could be said that all three motivational components share a similar theme related to an ability to create and an appetite for free thinking and growth. This is exemplified by one founder with all three motivations, who said, "I want to build and grow [the company] and sell it at some point and do something else with my life and then try other things. I've never really found myself staying in one job for very long. I want to grow and learn."

The founders least likely to discuss business model innovation are driven by no core motivational components or by universalism/social cause. This could be interpreted as, without a core motivation, tech entrepreneurs tend to fall back to focusing on the product. According to one founder, "Obviously, under-resourced, under-staffed has been the story of our existence for trying to do what we're trying to do in terms of developing finished products. Everything we were doing is trying to enhance either features or cost or performance of both of those [products] because they were basically late stage prototypes." One founder, driven only by universalism/social cause states, "For me, success is very family-oriented. For me being able to spend time with my family when I want to, how I want to, is probably the prime criteria for success. I find this entrepreneurship journey very fulfilling in that sense...I have that freedom in my life where I can spend time with my family and reschedule my work to suit the family gatherings, etc." Then they added the common refrain, "For me, that's the primary criteria for success, followed by money, of course."

Interestingly, given decades of research that assumed entrepreneurs, especially tech entrepreneurs, are motivated primarily by money, this study found that power/financial success only drives business model innovation when paired with stimulation/solving big problems. One founder, whose only motivation is power/financial success, states, "I had my eyes set upon getting my PhD in industry. Contrary to what my advisor wanted me to do, which was to stay in academic research, I always wanted to get engaged in product development and be financially rewarded for it." This is in contrast to most of the other founders, who echo less of a money-first goal. One founder with no core motivational components shared their view, "It's [about] making money and it's also making money in such a way that

we're happy doing it, because...our goal is always to make money but also nobody sacrifices their personal enjoyment to make money."

8.0 Implications and limitations

This study integrates new approaches to studying founder identity and business model innovation and unearths a novel look at how entrepreneurial cognition can influence the venture creation and development process. These methodologies provide an avenue for future research on the individual constructs as well as on their interaction amongst themselves and in conjunction with other key issues in entrepreneurship.

8.1 Implications for theory and future research

In the broadest sense, this research at the intersection of the psychology, entrepreneurship, and strategy fields has the potential to provide a new platform for understanding entrepreneurship with a focus on the individual and their identity. As founders strive for behaviors that are consistent with their identities, they make strategic choices, such as business model changes, that can have a lasting impact on their firms. For instance, research has long shown that strategic planning positively influences firm performance (Miller & Cardinal, 1994). But how does the individual influence strategic planning decisions during the roller coaster years when new ventures are being created? This research provides a foundation for understanding the relationship between the entrepreneur, strategic choices, and key indicators of success, such as customer satisfaction, venture survival rates, and firm performance. The more we can explore such topics, the more insight we can provide to the entrepreneurial support community to guide education, mentorship, resource allocation, and more.

This research also fills in some of the gaps in the new wave of research into founder identity. In this study, we see that power/financial success motivations do not show as strong a positive relationship with BMI as other motivations. Is that a good or bad thing for the firm? Velu (2015) found that firms are more likely to survive when the degree of BMI is low or high; moderate degrees of BMI show the

shortest firm survival times. Might this indicate that power/financial success motivations push entrepreneurs into a more precarious moderate degree of BMI? We see this mix of power/financial success-based overachiever identity and moderate BMI in the example of the bio/pharm founder. While her firm is small, she says she is reaping satisfactory financial rewards. Might her firm provide increased value to customers or generate more revenues/profits if her BMI was higher or lower?

This research also provides a foundation for exploring the influence of the individual entrepreneur on the funding process. If certain identities encourage entrepreneurs to greater or lesser degrees of pivoting, how might that impact decisions by investors? Cardon, Sudek, and Mitteness (2009) found that angel investors factor the passion displayed by entrepreneurs into the funding decision when evaluating the founder's enthusiasm, preparedness, and commitment. Might investors factor additional criteria into these decisions, such as alignment with individual values and degree of business model change, and how important a role they play?

A deeper understanding of founder personas and business model change can provide a more nuanced view of individual factors that compel entrepreneurs to transform existing markets, create new ones, or otherwise change their game in order to address competitors and fuel growth. The additional factors of personal values, goals for the firm, and passion might be connected to the often controversial entrepreneurial personality literature. Is there a relationship between founder identities, personality, and business success? Zhao, Seibert, and Scott (2006) used a meta-analysis of prior research to examine the Big Five personality traits in entrepreneurs; they found that entrepreneurs scored higher on conscientiousness and openness to experience, and lower on neuroticism and agreeableness. Similarly, Rauch and Frese (2007) used a meta-analysis to find that need for achievement, generalized self-efficacy, innovativeness, stress tolerance, need for autonomy, and proactive personality are correlated with business creation and business success. The findings of this study might represent moderator variables that help describe the relationship between personality and entrepreneurial actions.

This study also provides a platform for research on new venture teams, especially with respect to team conflict or cohesion. Conflict can lead to confused priorities when defining new products,

inefficiencies in allocating resources, and mixed messages in branding, all of which can be detrimental to the viability of the firm. Conflict can be especially damaging when it interferes with decision-making processes, especially in fast-moving technology industries (Eisenhardt, 1989; Shepherd & Haynie, 2009).

8.2 Implications for practice

This research impacts practical decision-making in new ventures, both for individuals and for teams. Armed with the results of this study, entrepreneurs can reflect on how their founder identities influence the choices made during decision-making. Once underlying motivations are more visible, individuals and teams can make conscious decisions about whether they need to change their behaviors in order to improve the long-term viability of the firm. For instance, the universalism/social cause entrepreneur can consider whether their dedication to the cause is holding them back in terms of useful business pivots. An achievement/innovation entrepreneur can think more carefully about whether their tendency toward higher levels of BMI is useful for the firm or a potential detriment that keeps them from establishing practices and processes that more efficiently use resources.

An interesting example related to team conflict arose after a presentation I gave of this research. I had a conversation with a fellow entrepreneurship scholar who consults with family businesses in Europe. One of the firms he works with has a management team composed of several family members from different branches of the family. The family members are often at odds over strategic decisions. It had gotten to the point where they were at a standstill, which was becoming detrimental to firm performance. The scholar is intrigued by this intersection of founder identity and strategic planning. Neither the researcher nor the family members had considered the potential impact of personal motivations on firm strategy. Once the scholar started thinking it through, he realized there were fundamental differences in the values and goals of the family members that seemed to lead to different strategy preferences. As soon as the scholar recognized this, he started making plans to facilitate discussions with the management team with an eye toward finding common ground among the different founder identities.

8.3 Limitations

There are a number of limitations in this research. The small sample size limits the extent of the analysis between founder identities and BMI. The sample clearly shows a heterogeneity of identities and levels of BMI, but that heterogeneity reduces the number of personas that can be compared to BMI discussions. Future research should expand the sample size in order to increase the number of founders per identity. It would also be useful to expand the number of female founders for more detailed gender analysis and non-US born entrepreneurs for additional cultural analysis. A larger sample could also allow for a more detailed look at generational differences among identities and BMI. For instance, Brieger, Baro, and Criaco (2020) found that both younger and older entrepreneurs are more likely to create social value with their businesses, while middle age entrepreneurs are more focused on financials than social value. Similarly, a sample population of nascent entrepreneurs vs. the experienced founders studied could produce additional insights.

A number of biases could be impacting the results of this research. For instance, this study is based on prior work by scholars in the areas of founder identity and BMI, but the results are limited by my choice of keywords. It is possible that changes in the selection of keywords or the use of a different thesaurus would produce different keyword lists and, therefore, different results.

My goal in using the fsQCA and NLP software tools was to reduce the impact of bias when analyzing the interview data (Mahmoodi, Leckelt, van Zalk, Geukes, & Back, 2017). While using the software reduced my own bias, it introduced another potential source...the algorithms themselves. The algorithms within these programs and toolsets are written by humans, who are inherently biased; that can influence the way they frame the analysis that underlies their code (Condliffe, 2019). Such algorithmic bias can result in systematic discrimination and unfair decisions by favoring some individuals over others (Aysolmaz, Dau, & Iren, 2020). While this study did not have a direct impact on the entrepreneurs by affecting the delivery of services to those studied, bias may have been deeply embedded in the research. For example, in natural language processing, algorithms trained with biased data can lead to algorithmic discrimination (Amini, Soleimany, Schwarting, Bhatia, & Rus, 2019). Every attempt was made to use

reliable prior research to frame the choice of constructs and keywords. Ultimately, though, the introduction of software tools is akin to employing additional human coders along with their human biases.

The NLP classification process presents additional limitations that could introduce bias. The classification algorithm produced an acceptably high level of accuracy, but the program was unable to interpret all instances of context. This led to the need to re-categorize some of the interview text. My interpretation of the NLP classification results produced the final assignments of text to BMI dimensions, which could affect the results. That said, in reviewing the interviews, I found certain founder statements would have swayed me toward one motivational component or another, without consideration of the whole interview. NLP removed that level of bias.

Lastly, this sample represents technology entrepreneurs. Additional research is needed around other types of entrepreneurs and industries, such as social entrepreneurs or family business entrepreneurs.

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Appendix A. BMI dimensions and feedback keywords searched in interviews.

Strategic positioning
Original terms from prior research: strategy, strategic position, business strategy, low cost, differentiate, focus, competitive position, organization strategy, business model
Synonyms: address itself to, affordable, approach, approaches, bargain, bargain basement, blueprint, blueprints, bring into focus, bring to a focus, calculated position, center, characterize, cheap, competitive price, competitor position, concentrate, critical position, crucial position, cut price, cut rate, discounts, discounted, distinguish, economical, economy price, essential position, game plan, game plans, giveaway, grand design, grand designs, half price, have as its starting point, important position, individualize, individuate, key position, low price, low priced, make different, mark off, marked down, master plan, master plans, moderately priced, pay attention to, pinpoint, plan, plan of action, planned position, plans, policies, policy, procedure, procedures, program, programs, proposed action, proposed actions, reasonably priced, reduced price, revolve around, rock bottom, sale price, schedule, schedules, scheme, schemes, segregate, separate, set apart, set of tactics, single out, slashed, special price, spotlight, tactical position, tactics, vital position, zero in, zoom in.

BMI breadth
Original terms from prior research: value creation, value capture, value proposition, value delivery, transaction content, transaction structure, transaction governance, internal processes, resource structure, value appropriation, external processes, financial model, transaction structure, value offer, value structure, customer interface, link markets, supply chain, target customer, value chain, value network, value, customer value, value protection, value constellation.

BMI depth
Original terms from prior research: incremental innovation, radical innovation, disruptive innovation.
Synonyms: advanced, complete innovation, comprehensive innovation, drastic innovation, entire innovation, essential innovation, extensive innovation, far reaching innovation, fresh, groundbreaking, inconsequential innovation, infinitesimal innovation, ingenious, innovational, insignificant innovation, inventive, little innovation, major innovation, minor innovation, negligible innovation, neoteric, new fashioned, newfangled, paltry innovation, pioneering, profound innovation, radical, revolutionary, serious innovation, slight innovation, small innovation, small scale innovation, state of the art, sweeping innovation, tiny innovation, total innovation, trailblazing, trifling innovation, trivial innovation, unconventional, unimportant innovation, unorthodox, unprecedented, unusual, wide ranging innovation, innovate, innovative.

BMI novelty
Original terms from prior research: new to firm, new to market, new to industry, new to world, novel, novelty.
Synonyms: newly discovered, recently discovered, brand new, up to the minute, up to date, latest, current, state of the art, advanced, newly arrived, newness, originality, unconventionality, unconventional, unfamiliar, unusual, imaginative, creative, creativeness, innovativeness, innovation, new start, new-to-firm, discovery, new-to-market, new-to-industry new-to-world, new approach to, novel approach to, emerging business model.

Pivoting
Original terms from prior research: Pivot, innovation, adaptation, change, evolution, transformation.
Synonyms: adaptation, adjust, adjustment, advancement, alter, alteration, alternate, alters, amend, amendment, change of direction, changed, changes, changing, conversion, convert, converts, customize, customizes, customizing, departure, departures, development, evolve, evolved, evolvement

evolves, exchange, exchanges, expand, expands, expansion, extend, extends, extension, grow, grows, growth, improve, improved, improves, interchange, made different, make adjustments to, make alterations to, make different, metamorphose, metamorphosis, modernize, modification, modify, modifies, mutate, mutation, new device, new devices, new method, new methods, newness, novelty, overhaul, overhauls, permute, permutes, progress, progression, rearrange, rearranged, rearrangement, rearranges, rebuild, rebuilding, rebuilds, rebuilt, recast, recasting, recasts, reconstruct, reconstruction, redesign, redesigns, redo, redoing, refashion, refashioned, refashions, refine, refined, refines, reform, reformed, reforms, rejigging, remake, remakes, remaking, remodel, remodeled, remodels, renew, renewal, renewed, renewing, renews, renovate, renovated, renovates, renovation, reorder, reordering, reorders, reorganization, reorganize, reorganizes, reorient, reorientate, reoriented, reorients, replace, replaced, replaces, reshape, reshapes, reshuffle, reshuffles, reshuffling, restructure, restructured, restructures, restyle, restyled, restyles, revamp, revamped, revamping, revamps, revise, revised, revises, revision, revolution, revolutions, rework, reworked, reworking, reworks, sea change, sea changes, shake up, shift of emphasis, substitute, swap, swapped, swaps, switch, switched, switches, swivel, swiveled, swivels, transfiguration, transfigure, transfigures, transform, transformed, transforms, transmute, transmuted, transmutes, transpose, transposed, transposes, turn, turned, turns, tweak, tweaked, tweaks, unconventional, undergo a change, undergo a sea change, upheaval, variation, variations, reinvent, reinvents, reinvented, reinventing.

Feedback
Feedback, listen, listening