NAVIGATING THE SEAS OF CHANGE: HOW SMALL BUSINESSES RESPOND TO ENVIRONMENTAL DYNAMISM

By

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NAVIGATING THE SEAS OF CHANGE: HOW SMALL BUSINESSES RESPOND TO ENVIRONMENTAL DYNAMISM

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Abstract: This research poses the question, "How do the personalities and the perceptions of small business owners and managers impact their decision making processes in response to changes in their market environment?"

Using Miles and Snow's typologies to establish a framework to operate within, a construct of personality and a construct of perception will be used together in a model to help explain small business reactions to external market pressures.

An expansion of Miles and Snow is proposed that will expand their typologies from the traditional three typologies to six steady-state typologies when viewed from the lens of perception and personality.

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CHAPTER I

INTRODUCTION

Topic Overview

Environmental dynamism (EnDyn), or the rate of change in the organization's operating environment, involves changes in demand, changes in technology, changes in the competitive landscape, and other issues that lead to both uncertain impacts on the firm as well as possible new opportunities for the firm (Lumpkin and Dess, 2001). The impact of environmental dynamism is apparent throughout the spectrum of business research, as a cursory look through the disciplines of Strategy, Marketing, Economics, Management, Small-Business, Entrepreneurship, and Organizational Behavior literature will return phrases such as, "in today's ever-changing environment in which businesses compete," "in light of the turbulent times in which we live," "because of the rapidly changing marketplace," and similar phrases that are generally accepted as being true. Some researchers (Aggarwal, Siggelkow and Singh, 2011; Lin, Tsai, and Wu, 2014) will even go so far as to label today's rate of environmental change as nothing short of "violent!"

Changes in the business environment have been demonstrated to have an impact on firm performance (Christensen, 1997; Harrington, Lemak, Reed, and Kendall, 2004). This is especially important for small businesses (Gonzalez-Benito, Gonzalez-Benito, and Munoz-Gallego, 2014, Parnell, Lester, Long, and Koseoglu, 2012) as they are more susceptible to changes in their operating environments due to low cash reserves, structures that are tied to their core offerings, limited managerial experience, and other constraints. This leads to the question: what are the primary factors that guide small business managers as they respond to changes in their business environment? What are the physical and psychological constraints that limit their options? How do their perceptions of their environment influence their decisions to react? What role does the personality of the manager or owner of the small business play in how the company responds to its environment?

These questions are important on several fronts. First, from a practitioner standpoint, if the manager or owner of a small business understands their personal biases, it may help them evaluate their surroundings with a better knowledge of how their own perceptions can influence their interpretation of their changing surroundings. Second, through a close examination of small business responses, I hope to be able to evaluate the outcomes of various responses to develop a prescriptive path forward when faced with change. And, third, as entrepreneurship schools across the country have been experiencing tremendous growth and interest over the past few years (Hynes and Richardson, 2007; Marques, Ferreira, Gomes, and Rodrigues, 2012), academia has an obligation to educate future business owners of potential pitfalls of reacting poorly during times of environmental dynamism.

Current Research

Small and Medium Sized Enterprises

My interest in small businesses stems from over two decades of supervisory and managerial experience with a small company. Through this time, I have observed the owner of the company respond and react to the ups and downs of the cyclical nature of the construction industry and the volatile nature of the petrochemical and power sectors that we serve. Prior to joining the small company environment, I was working with the largest manufacturer of lawn and garden products in

the United States, and although the revenue per employee was virtually identical for the two companies, the working atmospheres of the large and small companies were markedly different. While I lost the prestige of working for a large, well-known company when I went into the small business sector, I found the smaller company more rewarding and personally satisfying while facing the challenges of day to day operations.

Even though I find working in a small company personally satisfying, there are broader implications at stake than simply personal satisfaction. Small and Medium Sized Enterprises ("SMEs") play a critical role in the health of not only local economies but also the national economy as well. For example, of all new jobs created in the United States, almost two thirds can be attributed to the growth of small businesses (Kobe, 2007), and Kirchoff (1991) goes so far as to say that entrepreneurship is *the* primary source of economic growth in our economy (emphasis mine).

The United States Small Business Administration (1983) supports the importance of small businesses by citing not only job creation but also historical innovation efforts as demonstrated by patent filings which were 2 ¹/₂ times higher in small business than in large corporations on a per capita basis. Thus, SMEs are both a significant source of job creation and also a more efficient driver of innovation in the American economic landscape.

Additionally, SMEs are perhaps more important to the local economies than larger employers on some "softer" fronts. For example, SMEs offer a longer lasting impact on the local economy based on the premise that they are less likely to move their employees away from the local region. Thus, they are more likely to have employees active on local boards, charities, and other key positions in their communities. Also, because small businesses can invest their money with a longer time horizon than large publicly traded companies that demand high quarterly returns, they are often able to provide a more stable presence in their local economies (Ward, 1983).

3

While many people have a basic idea of what a small business is, actually defining "Small Business" or "SME" can often be confusing and open to interpretation. The SMEs that are of interest to this research project fall under sector 54 of the North American Industry Classification System (NAICS), "Professional, Scientific, and Technical Services." In order for a business to be classified as "small" under that NAICS sector, the number of employees can go up to 1,500 or annual sales of up to \$35.5 million (SBA, 2014).

While the government may consider a business of 1,500 employees and over 35 million in annual revenue "small," I am going to limit the survey participants to a much more stringent threshold for inclusion. Therefore, I will limit the SMEs of interest to those which line up with the European Union (EU) recommendation which limits the number of employees to between 10 and 249 to be considered a Small or Medium Sized Enterprise.

According to the EU recommendation, "micro-enterprises" employ fewer than 10 people; small enterprises employ fewer than 50 people, and medium-sized enterprises employ fewer than 250 people (EU, 2003). It should be noted that the EU recommendation also considers revenue and balance sheet assets, but for ease of consideration, the employee count is a convenient way to isolate those organizations that are to be included in the research sample.

When surveying the heavy construction industry, care must be taken to insure that SMEs are targeted for inclusion and that larger organizations are selectively excluded from participation. As a note of interest, through careful screening of survey recipients, over 92% of the responses came from SMEs as defined above (fewer than 250 employees). Those respondents who reported a larger employee count were excluded from the analysis that follows in the remainder of this research study.

Competitive Communities and Strategic Taxonomic Groups

The SMEs that are the focus of this study operate within competitive communities. Competitive communities came to light through the work of Porac, Thomas, and Baden-Fuller (1989) with their fascinating look at Scottish knitwear manufacturers. This group of high-end, cashmere sweater manufacturers was interesting because they were virtually identical in almost every aspect of their operations. The wool each company used came from the same suppliers, their employees were hired from the same schools, their manufacturing plants were within a few miles of each other, they used the same equipment, their distribution channels were virtually the same, and they even shared the same target demographic as the final consumer. The authors explored the efforts of the companies to differentiate themselves through product design or market position, and they found that the individual companies actually tend to migrate toward products, strategies, and positions that are very similar to their local competitors.

It is the realm of marketing and managerial strategies to set one company apart from the others and to gain some modicum of competitive advantage (Aggarwal, Siggelkow, and Singh, 2011: Hax and Majluf, 1996). However, as in the case of the Scottish knitwear manufacturers, the tendency towards developing a "cognitive oligopoly" can be difficult to overcome.

Not only do we tend to see a gradual migration towards "competitive homogeneity" among small businesses offering similar services (Leiblein and Madsen, 2009), but we also see the rise of collaboration among competitors (Allred, Fawcett, Wallin, and Magnan, 2011; Porac, Thomas, and Baden-Fuller, 2011; Sakarya, Bodur, Yildirim-Oktem, and Selekler-Goksen, 2012). This phenomenon, known as "Coopetition," has come about so small companies can take advantage of the skills and resources that their competitors possess without sacrificing their own customer base.

The concept of coopetition is a rather strange idea. As small businesses are competing with each other for the same customers, they are actively trying to prevent each other from getting the same customers, but as they come together to share resources, expertise, and other valuable resources, they tend to help each other survive, especially in turbulent markets (BarNir and Smith, 2002; Morris, Kocak, and Ozer, 2007; Parker, 2000). This unusual competitive culture may not exist across all industries, and it would be interesting to explore various fields to find the boundaries of where coopetition is acceptable and where it is anathema. However, to some degree, based on personal experience, coopetition exists within the sample businesses that were surveyed for this research.

For example, small steel fabricators will often subcontract work to each other so that they can take top billing for securing a project that is larger than they would normally be able to handle. Drafting companies will often recommend other companies if they know that their competitors are hurting for work. Design groups often loan their employees to their competitors in order to benefit both parties. Software companies often see their employees move back and forth between each other as they take their skills to a different company and then bring "lessons-learned" back to their original company. Thus, the industry benefits through various forms of collaborative competition.

These same types of collaborative competitors have been referred to as "Business Clusters" (Rauch, van Doorn, and Hulsink, 2014), "Strategic Groups" (Desarbo, Grewal, and Wang, 2009; Mas-Ruiz and Ruiz-Moreno, 2011; Pereira-Moliner, Claver-Cortes, and Molina-Azorin, 2011), and other terms that capture either the idea of an evolving competitive heterogeneity or competitive homogeneity (Leiblein and Madsen, 2009). This academic nomenclature is perhaps due to the human desire to categorize organizational systems into logical groupings much as we do in the animal kingdom (McKelvey, 1978).

Craig, Mandel, and Stewart (2011) took this a step further by studying the dilettante type of taxonomy. The concept of a dilettante taxonomy is an oxymoron: "Dilettante," in this context implies a broad range of companies but a shallow sampling of those, while the nature of "taxonomy" denotes a deep and narrow sampling based upon industry type and location (McKelvey, 1982). Even

though the original identification of the dilettante taxonomy was to compare differences across various approaches to their market, the notion of a broad but shallow cluster of small businesses offers a new and exciting lens through which to approach collaborative competitors. This study utilizes a similar approach by focusing on a very shallow level in the heavy construction industry while sampling a broad spectrum of that shallow level.

Although the SMEs of interest to this project operate within competitive communities, they continue to operate independently of each other while competing for the same raw materials, the same employees, and the same customers. And, the dilettante nature of the target population will often have multiple sample companies working together on different areas of the same project for the same end-customers.

The very notion of "community" carries with it the ideas of common traditions, common thought processes, common interests, interconnected relationships, a degree of identification, and often a sense of locality (Arnold, Brigs, Landry, and Suter, 2013; Muniz and O'Guinn, 2001; Schouten, McAlexander, and Koenig, 2007; Mohammed, Fisher, Jaworski and Cahill, 2002). It is these commonalities that bind the target companies together, and mimic, in several ways, the case of the Scottish knitwear manufacturers, but in a small business framework.

Managerial Perception

Entrepreneurial research specifically indicates that the small business manager's schema, or his biases based on his experiences, greatly influences what areas of the environment that the manager considers to be important, as well as the weight he attributes to the changes in those areas of the environment (Chang, Memili, Chrisman, and Welsh, 2011; Pfeiffer and Salanick, 1978; Tang and Hull, 2012; Walters, Priem, and Shook, 2005). Dewald and Bowen (2010) conclude that if the decision maker (owner/ manager) of a small business perceives changes in their environment as an opportunity, then they are more likely to seek to expand to take advantage of the opportunity. They also conclude that if the changes are perceived as a threat, they will more likely entrench, or resist changing through focusing on internal operations, existing processes, and existing distribution channels. This is in line with the traditional understanding that, as competitors see their market environment differently, they will respond differently to the very same stimuli (Hambrick, 1982). Thus:



Figure 1.1: Reactions to the perception of EnDyn due to Managerial Schema

This plays itself out in many fronts as SMEs seek out opportunities for long-term growth and stability (Patzelt and Shepherd, 2010) as well as surviving temporary industry down-turns (Burpit and Fowler, 2007). Studies also point to items such as personal satisfaction, profitability, and satisfied stakeholders as primary measures of success for SME owners (Gorgievski, Ascalon and Stephan, 2011), but a highly competitive climate may have a negative effect on the measures of success.

For example, personal satisfaction can be compromised as the owner or manager may be called upon to sacrifice profitability to maintain a satisfied work-force, or he may be called upon to sacrifice stakeholder satisfaction for profitability in response to price pressures from the customer base (Arnold, Flaherty, Voss, and Mowen, 2009; Netemeyer, Brashear-Alejandro, and Boles, 2004).

Managerial Personality Disposition

A similar, yet slightly different approach towards managerial reactions to environmental dynamism focuses on the personality dispositions of the decision makers.

Most personality trait theorists assume that behavior is linked to personality in response to specific situations (Digman, 1990). For example, when faced with environmental dynamism, the personality disposition of those managers who have a personality that is growth seeking tend to focus on expanding into new opportunities. While, those managers whose personality dispositions tend toward a mindset of control will tend to focus more on internal operations and existing customers when faced with environmental dynamism (Ebben and Johnson, 2005; Wallace, Little, Hill, and Ridge, 2010). Thus, when taking into account the manager's personality as being pre-disposed to a growth orientation or a control orientation, the following model is proposed:



Figure 1.2: Reactions to EnDyn due to Managerial Personality Disposition

The personality disposition that seeks growth is one that leads the manager to be in a constant state of seeking out higher sales, more store-fronts, more employees, or other measures that would indicate organizational expansion. On the other hand, a personality disposition that seeks control is one that leads the manager to want to ensure a consistent customer experience, a consistent level of quality, a consistent level of training, or other measures to make sure that the ethos of the organization remains constant through time.

Frequently, growth comes at the expense of quality, culture, customer service, or other elements of organizational identity, but the drive for growth often outweighs other organizational identity concerns (Lee, Kelley, Lee and Lee, 2012; Parnell, Lester, Long, and Koseoglu, 2012). And, oftentimes, control comes at the expense of profitability, but the trade-off is accepted because of the importance of offering a consistent product over time (Hillman and Keim, 2001; Kaplan and Norton, 1996; Laitinen, 2002).

The concepts of growth vs. control have also been studied under Regulatory Focus Theory (Higgins, 1997; Ouschan, Boldero, Kashima, Wakimoto, and Kashima, 2007). Higgins (1997) proposed "promotion focus" using phrases that emphasize "positive outcomes" and potential "gains," while he describes "prevention focus" with phrases that are sensitive to "negative outcomes" and potential "losses." Summerville and Roese (2007) use the idea of giving attention to the desire for gains (promotion) vs. focusing on avoiding potential losses (prevention). Thus, Regulatory Focus Theory provides a concise manner to frame this paper.

Putting the Two Streams Together

The gap in our understanding occurs when we combine the two models above. What happens when a growth/promotion-minded manager is faced with an environmental threat, or a control/prevention-minded manager is faced with an environmental opportunity?

	CONTROL Personality Disposition During Environmental Dynamism	GROWTH Personality Disposition During Environmental Dynamism
PERCEPTION of Environmental Dynamism as an OPPORTUNITY	???	Tendency toward EXPANSION
PERCEPTION of Environmental Dynamism as a THREAT	Tendency toward ENTRENCHMENT	???

Figure 1.3: Matrix of Observed Reactions to EnDyn

Cells one and four in the matrix above are surprisingly empty, while cells two and three have had significant resources poured into them tying back to the days of Miles and Snow's 1978 model of Defenders, Prospectors, and Analyzers.

The interesting missing elements in cells one and four may be rooted in the fact that our understanding of organizational reactions to environmental dynamism is rooted in Theory that is four decades old. As the marketplace has become more dynamic, we have the opportunity to study areas that may have been uncommon a generation ago but are becoming more common with each passing year. By digging into cells one and four, we may be able to explore the psychological tension and relative success of different rates of responses to different types of market changes. As the focus of this research is through a small business lens, which is often overlooked (Lumpkin, McKelvie, Gras, and Nason, 2010), we gain an elevated insight into business reactions to market changes primarily due to the limited number of decision makers and the immediate impact their decisions have on their companies.

Theoretical Support

Environment and Strategic Choice Theory

One understanding of a managerial view that can perceive opportunities in turbulent times is rooted in Strategic Choice Theory. Strategic Choice Theory takes the view that businesses and entrepreneurs can manipulate their market environments through strategic choices (Astley and Van de Ven, 1983; Starbuck, 1976; Tang and Hull, 2012; Weick, 1979). For example, when Apple introduced the iPhone, the market didn't realize that it needed a "smartphone," and yet the pervasiveness of smartphones today is an indicator that Apple's strategic choices influenced the market.

On a much smaller scale, Strategic Choice Theory supports the premise that promotionfocused entrepreneurs may focus more on opportunities while tending to ignore the threats in the environment. Thus, because of the tendency towards focusing on opportunities, small businesses may be able to see the potential for growth while dangerously downplaying possible threats in their market environment (Li and Mitchell, 2009).

Environment and Contingency Theory

On another hand, the managerial view of Environmental Dynamism as a "threat" is supported by Contingency Theory. Contingency Theory posits the view that firm performance is mainly driven by environmental factors (Aldrich, 1979; Burton and Forsyth, 1986; Lengnick-Hall and Sanders, 1997; Tang and Hull, 2012). This view holds that the environment cannot be effectively changed by the small business, but that the small business must react to environmental market conditions (aka "Threats") in order to survive. In keeping with the smart-phone analogy above, Samsung felt compelled to react to their changing market environment after the introduction of the iPhone, and within two years had launched their version of a smartphone, the Galaxy.

Small businesses may not have the same global impact as the smart-phone revolution over the past decade, but on a regional, local, and personal level, small businesses are vital to the financial health of countless people worldwide, and prevention-focused entrepreneurs may run the risk of being left behind as their competitive market environment changes.

Personality Theories

In addition to the managerial view of environmental dynamism, there is also a spectrum between growth/promotion and control/prevention in terms of the manager's personality traits which affect organizational responses to environmental changes. Early research explored three typologies of "Prospectors," "Analyzers," and "Defenders" (Miles and Snow, 1978). These typologies looked at organizations which were focused on expansion (Prospectors), organizations which were focused on waiting and seeing if the market for a new offering would develop (Analyzers), and organizations which were intent on ensuring the inward focusing *operational health* of their organization (Defenders). The influence of managerial characteristics upon organizational actions is well known. One of the more prominent lenses that focus on this influence comes from Hambrick and Mason (1984), who helped explain the linkage of organizational behaviors to managerial perceptions through "Upper Echelons Theory." The primary pillars of Upper Echelons Theory state that executives make strategic decisions based on their personal interpretations of the environment in which they find themselves, and that their interpretations of their strategic market environment are heavily influenced by their personal experiences, values, and personalities (Hambrick, 2007).

Where Upper Echelon Theory focuses on large organizations, Sarasvathy (2001, 2008) proposed Effectuation Theory which posits that the very identity of entrepreneurs is tightly wound in the activities of their business endeavors (Downing, 2005; Hoang and Gimeno, 2010; Nielsen and Lassen, 2012; Stepherd and Haynie, 2009). In the small business context, there is increasing acceptance that the entrepreneur's perception of their identity is influenced by cumulative interactions between their companies and their customers (Down and Warren, 2008). Thus, the entrepreneur's "view of self" is affected by their interactions with their environments, which has become a popular foundational model for understanding entrepreneurial behavior (Goel and Karri, 2006; Read, Song, and Smit, 2009) which I anticipate should hold true for small business (SME) managers and decision-makers, as well.

Another lens that we can use to examine personality traits of the owner or managers of SMEs that influence their reactions to Environmental Dynamism is Regulatory Focus Theory (Higgins, 1997, 2000; Higgins and Low, 2004). Regulatory Focus Theory describes how people align their actions with their internal preferences for either chasing after positive outcomes (known as "Promotion Focus") or reducing the likelihood of negative outcomes (known as "Prevention Focus") (Boesen-Mariana, Gomez, and Gavard-Perret, 2010; Das, 2015; Levinson and Rodebaugh, 2013; Mowie, Georgia, Doss, and Updegraff, 2014).

Understanding Regulatory Focus Theory, Upper Echelons Theory, and Effectuation Theory have opened the door for researchers to explore the growth mindset disposition and the control mindset disposition of managers in various settings and in various terminologies. The growth personality disposition vs. the control personality disposition has been explored under several different terms; flexibility vs. efficiency (Ebben and Johnson, 2005), emergent strategy vs. planned strategy (Droege and Marvel, 2009), exploration vs. exploitation (Burpitt and Valle, 2010), nonpredictive strategies vs. predictive strategies (Wiltbank, Read, Dew, and Sarasvathy, 2009), promotion vs. prevention (Higgins, 1997; Wallace and Chen, 2006; Wallace, Little, Hill, and Ridge, 2010), and growth vs. profitability (Steffens, Davidsson and Fitzsimmons, 2009).

While being called by different terms, the goal of past research has been to gain a better understanding of the personality dispositions that drive organizational responses to environmental dynamism. Strategy and Personality purists may take exception to gathering of the previous terms together under a single umbrella, but from the standpoint of exploring the effect of personality on the relationship between Environmental Dynamism and organizational responses to market change, it seems acceptable to capture the higher level similarities between the concepts rather than focus on individual nuances that may fine-tune the subtleties between the theories.

Potential Contributions of this Research

This research seeks to make contributions to several areas within the Small Business field. First, Environmental Dynamism has been shown to have a direct impact on business success, but there has been surprisingly little research to actually dig into the daily workings of small businesses to understand the effects that managerial perception and personality dispositions have on the organizational response to a dynamic market environment. It may be that the entrepreneurial experiences of the decision makers impact the likelihood of certain responses to environmental dynamism (Chang, Memili, Chrisman, and Welsh, 2011). This may be due to the influence of prior successes or failures in the introduction of new products or services which may give the manager a sense that they are able (or unable) to impact the direction of the organization during times of uncertainty (Levesque, Minniti, and Shepherd, 2009). Or, it may be that uncertainty in the environment smoothes out over time, and the actions that the firm takes are relatively inconsequential (van de Vrande, Vanhaverbeke, and Duysters, 2009).

Second, this research both expands and brings together the established concepts of competitive communities (Porac, Thomas, and Baden-Fuller, 1989) and strategic taxonomic groups (Craig, Mandel, and Stewart, 2011; Tang and Thomas, 1992) in an area that has been previously unexplored. As the target participants of this study represent a dilettante (broad, but shallow) spectrum within the construction industry, the results will offer a breadth of scope that is often elusive. Competitors within highly constrained distribution channels as well as competitors within parallel services participated in the survey instrument to bring savory results for comparison and contrasting across a variety of companies offering various services to a very similar customer base.

Third, this research deepens our understanding of how small businesses, which are inherently vulnerable to changes in their market environment, react to change and impact their environment in the process (Li and Mitchell, 2009). Because of the important contribution that SMEs make on both the economic and the "quality of life" aspects of their communities, it is crucial that we gain an understanding of how they respond to the rapidly changing environment in which they operate.

Fourth, the majority of research focusing on the strategic choices and the strategic actions of organizations have been based on environments that are relatively calm (Peng, 2003), whereas this study focuses on organizations in more dynamic environments. It was unclear at the outset of this project whether significant variations will be seen from traditional research findings. However, by

focusing on small companies who may be staking their very survival on decisions made in highly turbulent environments, a richer understanding of the forces that drive strategic changes is developed.

Organization of the Research Dissertation

Chapter Two presents a review of the research and theory related to the impact of the environment on small businesses along with managerial schema and personality traits. A model is presented of environmental dynamism as an antecedent of organizational change and the influences of perception and personality on the organizational changes. Chapter Two will not attempt to cover all of the research in these fields, as we have well over half a century of literature exploring these areas, however, it will briefly summarize our current understanding of the areas as they relate to the focus of the study.

Chapter Three explains the methods used to develop a new and expanded theoretical understanding of how personality and perception interact within a dilettante small business context. It will introduce the concept of a "flapper group" to conceptualize the target participants as well as exhibiting each element of the survey instrument. Chapter Three will continue by discussing the statistical analysis methods used to delve into hypothetical situations which may seem far-fetched to some but are based in current economic developments both domestically and abroad.

Chapter Four reports the remarkable findings of the research. Detailed demographic information is provided along with multiple passes through the data set to reveal intriguing results that cast doubt on established theories as well as common-sense.

Chapter Five discusses the results of hypothesis testing while trying to make sense of results that are counter-intuitive. This chapter will revisit the four objectives stated on pages 15-16 to explore the merits of the findings. Chapter Five will also turn the data set around and re-group the

Dependent Variables in order to bring a greater degree of clarity to the findings of the research project.

Chapter Six concludes the study with a discussion of the contributions, limitations, and possible directions for continued study. It also raises questions of importance that should be brought to the forefront of Entrepreneurial Market Awareness as young entrepreneurs and new managers are taught in the halls of academia. Through the dissemination of the findings of this project, future generations will be able to enter the turbulent world of Small Business Marketing with a higher degree of awareness of how their own personalities and perceptions may affect their decision making processes either to the betterment or detriment of their business endeavors.

CHAPTER II

REVIEW OF LITERATURE

Environmental Dynamism

While change is a natural occurrence in the business world, the concept of environmental dynamism tends to be focused on major shifts in technology, demand, supply, political pressures, and other sweeping changes that organizations must respond to. Dynamic events such as political upheaval may occur virtually overnight leaving business viability in jeopardy, or the dynamism may be more slow to build, but once a critical mass is reached, it can have sweeping impacts on how the organizations survive, such as a bakery's response to the LGBTQ recent rise to prominence even though the seeds of societal favor were sown in the 1960s.

Environmental dynamism can affect an organization in both negative and positive ways. It can lead to uncertainty about the future health of the company as well as bring about possible new opportunities for the firm (Lumpkin and Dess, 2001). Conventional wisdom, as well as academic research, indicates that there is a strong relationship between environmental dynamism and firm performance (Covin and Slevin, 1991; Gonzalez-Benito, Gonzalez-Benito, and Munoz, Gallego, 2014; Ruiz-Ortega, Parra-Requena, Rodrigo-Alarcon, and Garcia-Villaverde, 2013). This seems to be true for both financial and non–financial indicators of performance (Hillman and Keim, 2001; Kaplan and Norton, 1996; Laitinen, 2002). Some everyday examples of companies facing environmental dynamism include the decision to expand into international markets, establishing a strong internet presence, and responding to the threat of substitute products. These specific examples, though, represent three different types of changes that are constantly facing SMEs. From changes that alter cost and price structures such as off-shoring or internationalization (Mudambi and Venzin, 2010; Sass and Fifekova, 2011), to reaching customers through impersonal means such as an internet/electronic presence (Tan, Chong and Lin, 2013), to the more timeless changes that face businesses such as the threat of substitute products (Meredith, 2007).

My observations within the heavy construction industry lead me to believe that these three specific changes seem to be especially prevalent in the business-to-business (B2B) transactions which are often susceptible to substitute products, e-commerce, and price pressures. This gives these three specific elements a prominent and particular import for this study.

As Reeves, Love, and Tillmanns (2012) suggest, different types of strategies may need to be employed depending upon the predictability of the market and how much influence the company has in steering the direction of the industry they serve. They also conclude that most business leaders typically do *not* respond with the best strategic market approaches, possibly due to the limitations found in the traditional methods of teaching business strategy which does not readily allow for many combinations of strategic choices and market effects.

Examples of Environmental Dynamism: Internationalization

The study of a firm's willingness to expand into offshore markets in response to pressures from customers and competitors is a tangible example of dynamic forces in the environment. Many of the managerial fears that hold firms back from venturing into overseas areas for customers, suppliers, and/or partners are often exaggerated in the minds of the managers and are easily overcome (Hyunsuk, Kelley, Lee, and Lee, 2012). For example, in the case of small and medium-sized family firms, they are often able to establish formal strategic partnerships with overseas companies in order to take advantage of opportunities in the international marketplace for either customers or resources (Kontinen and Ojala, 2011).

Many firms, both large and small, rely on exporting internationally to grow their revenue base and increase their profitability (Karagozoglou and Lindell, 1998; Wolff and Pett, 2000). As a cost-saving measure, SMEs in particular often first test the overseas waters through outsourcing various small components of their overall operations or discrete functions of their labor requirements (Cha, Pingy, and Thatcher, 2008, Matloff, 2004; Stack, Garland, and Kean, 2007) before investing heavily in permanent facilities.

In my personal experience, my company was having difficulty finding qualified domestic employees who were willing to work for my company even though we tend to pay our employees above-average wages for the industry. The owner of my company wrestled with the realization that, in order to grow, we would have to expand through the use of offshore labor sources. This is not unique to my company but has been apparent for several years and in several small business sectors (Cha, Pingy, and Thatcher, 2008; Maidment, 2009, 2011; Miller, 2008; Tsai, Wen and Chen, 2007). Our ability to increase throughput was dependent upon our ability to hire more people, and we eventually established a very successful, wholly-owned offices in China and Australia.

For those firms, like mine, seeking to enter offshore markets for the primary purpose of lowering costs of production, interesting findings have been reported. On the one hand, those firms who are early entrants often are faced with difficult decisions and more substantial investment requirements surrounding building facilities, recruiting and training workers, building a supply chain, and other hurdles (Glazer, 1985; Hawk, Pacheco-de-Almeida, and Yeung, 2013;

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Liberman and Montgomery, 1988, 1998; Mitchell, 1989, 1991; Mitchell, Shaver, and Yeung, 1994) which raise the initial investment to the point where early entrants may have a difficult time recovering from the capital outlay (Gabrielsson, Kirpalani, Dimitratos, Solberg, and Zucchella, 2008; Mitchell, Shaver, and Yeung, 1992). And, beyond the initial cost barriers of off-shoring, organizations of all sizes often under-estimate both cost structures and complexity costs when evaluating overseas opportunities (Dibbern, Winkler, and Heinzl, 2008; Larsen, Manning, and Pederson, 2013; Reitzig and Wagner, 2010; Stringfellow, Teagarden, and Nie, 2008). Overall, the negative effects of early entry into foreign markets are especially strong for smaller exporting firms (Cieslik, Kaciak, and Welsh, 2010; Keupp and Gasman, 2009) than for other types of SMEs that do not require as large of a capital outlay.

On the other hand, even though the findings may be affected by survival bias (Bloodgood, Sapienza, and Almeida, 1996), for those small firms that are able to manage rapid growth, there are many benefits from entering foreign markets (Keupp and Gassman, 2009). Some of the identified potential benefits from internationalization are the opportunity for rapid growth (Bloodgood, Sapienza and Almeida, 1996), increased entrepreneurial opportunities (McDougall and Oviatt, 2000), and new knowledge that can stimulate innovation and future growth (Autio, Sapienza and Almeida, 2000; Salomon and Shaver, 2005).

Regardless of the advantages or disadvantages of the offshoring debate, it is a growing phenomenon (Maidment, 2011) being led by information technology (Matloff, 2004; Yirrell, 2006) and rapidly followed by accounting (Perry, 2004), legal services (Maidment, 2011), business services such as payroll and accounts receivables (Valanju 2005), human resources (Gidner and Cook, 2006), medical services (Stack, Garland, and Keane, 2007), and engineering services (based on personal observation).

Examples of Environmental Dynamism: Internet Presence

In addition to the current pressures leading to the emergence of off-shoring as a viable strategy, within the past ten to fifteen years, we have seen the rise of Internet use as a source of environmental disruption. While internet and technology firms offer an abundance of fodder for research in the field of Strategy, Entrepreneurship, Information Technology, Organizational Dynamics, and a host of other fields (Cartwright and Oliver, 2000; Dierickx and Cool, 1989; Grant, 1991, Liao, Kickul, and Ma, 2009; Teece, Pisano, and Shuen, 1997), it is the *acceptance* of the internet as a strategic tool that represents a significant change in the operating environment of the organization (Daniel, Wilson, and Myers, 2002; Geiger and Martin, 1999; Lee, 2001; Levenburg, Schwarz, and Motwani, 205; Siu, 2002).

Ten to fifteen years ago, many small firms were either reluctant or resistant to use internet technology in their business models (Auger, BarNir, and Gallaugher, 2003; Pratt, 2002) even though the internet was touted as a panacea that would enable the small business to compete with larger firms across global boundaries, with better consumer information, through more accurate supply chain management, and directed advertising efforts (Haynes, Becherer, and Helms, 1998; Hamill and Gregory, 1997; Rayport and Sviokla, 1995).

As an example, I work for a steel detailing firm, and when the internet was in its infancy, in 1998, some of the management staff approached the owner of the company to purchase the domain name "www.steeldetailing.com" (which makes a lot of sense for a "steel detailing" firm). At the time, it was difficult to explain the potential uses for a "web site," and the owner of the company was a little reluctant to spend roughly \$1,500 plus annual fees to secure the domain name and get the site operational. For a small company, it was an investment in totally new technology with *no* proven track record and *no* idea of what it could become. However, to date, as people are looking for steel detailing services, "steeldetailing.com" has been the most

successful inbound marketing tool for generating customer leads in our marketing strategy. But, in the late 1990s, there was a good chance that we were wasting precious funds.

Today, small businesses are embracing an internet presence. Recent surveys indicate as many as 88% of them at least have a traditional website, and many are reporting mobile websites as well as mobile apps that are becoming more readily available (NSBA, 2013). The actual responses to the survey instrument indicate that just over 87% of the companies in the study have functioning websites, which is in-line with NSBA reports. This is a good indication that the internet has become generally accepted by small businesses as a method to reach out to potential customers and increase their visibility in their market.

Examples of Environmental Dynamism: Substitute Products

While internationalization may require a fairly substantial capital investment, and internet utilization is becoming more commonplace, one constant threat in the competitive landscape was pointed out by Michael Porter (1980) when he codified the threat of substitute products as one of the forces for consideration when analyzing an industry. Porter identified the following five forces which were originally intended to analyze the attractiveness of a particular industry:

- (1) The level of competition;
- (2) The power of the buyers;
- (3) The power of the suppliers;
- (4) The ease of entry by competitors; and
- (5) The threat of substitute products.

While no framework is perfect, Porter's framework has been applied to such diverse fields as marketing strategy for e-commerce in emerging markets (Azadi and Rahimzadeh, 2012),

online banking in the United States (Smith, 2006), telecommunications in the middle east (Rajasekar and Raee, 2013), engineering consulting services (Stroe, 2014), and countless other areas of business (Porter, 1983; 1990). Interestingly, these criteria were originally intended to analyze *specific industries*; however, the model has been successfully applied to understand strategic actions at the firm level as well (Crowther, 2008; Dobbs, 2014; Magretta, 2012; Porter, 2008).

For this study, Porter's first two items (level of competition and power of the buyers) correspond to the adoption of internet reach. Item #4 (ease of entry by competitors) corresponds to the entrant of a new foreign competitor, and Item #5 (threat of substitute products) corresponds to the use of wood as a substitute product over the use of steel in heavy construction projects.

Environmental Dynamism and Miles and Snow's Typologies

The study of how organizations respond to changes in their environment is replete with theories and frameworks that are very powerful in their explanatory capabilities. For example, Miles and Snow (1978) propose one of the most prominent frameworks (Zahra and Pearce, 1990) in which four strategic typologies are identified as to how companies respond to the needs of their customers. These well-established typologies are grouped around policies, procedures, alternative products, resources, capabilities, as well as other organizational characteristics (Andrews, Boyne, Law and Walker, 2009; Beynon, Andrews, and Boyne, 2010; Conant, Mokwa, and Varadarajan, 1990; Hambrick, 1983; Lin, Tsai, and Wu, 2014).

The Miles and Snow typologies were originally applied to the study of the strategic actions of large firms (Blackmore and Nesbitt, 2012), but they have also been validated in the context of small business strategies (Gimenez, 2000; James and Hatten, 1994) spanning different
industries and different nationalities (Argon-Sanchez and Sanchez-Marin, 2005; Massa and Testa, 2009; O'Regan and Ghobadian, 2006; Sidek and Zaino, 2011).

While the groupings are fairly well known, for the sake of clarity, they are:

- (1) PROSPECTORS companies that are often "first-to-market" with new and innovative offerings (Pinto and Curto, 2007). Many small firms fall into this category, and are considered drivers of new and innovative offerings because they have the ability to see opportunities for new product offerings before their larger counterparts (Audretsch, 1995; Audretsch and Thurik, 2001; Li and Mitchell, 2009) and they are able to swiftly bring new offerings to the market. These companies have an "early bird gets the worm" approach.
- (2) ANALYZERS companies that tend to be more balanced in their approach to meeting their customer's needs. They are willing to invest a little more in R&D than the Defenders while they are usually not willing to invest too large a portion of their operating proceeds in uncharted waters (Boulianne, 2007; Slater, Hult, and Olson, 2010). These firms are often thought of as "second movers" (Kopel and Loffler, 2008; Sibley, 2012) when considering how they adopt new technologies or provide new market offerings. Instead of an "Early Bird gets the worm" approach, these companies have a "second mouse gets the cheese" approach.
- (3) DEFENDERS companies that tend to focus on their existing market sector while trying to improve their internal operations to better meet the needs of their existing customer base (Slater, Hult, and Olson, 2010). These are companies that concentrate on cost controls, operating efficiencies, and other

internal functions in order to meet the needs of their customers (Garg, Walters, and Priem, 2003).

(4) REACTORS* - companies that do not make changes until the market forces them to adjust. While a Reactor strategy may be acceptable for smaller organizations, especially in trying times, it has not been an effective long-term strategy for success (Ramanujam and Venkatraman, 1987; van de Vrande, Vanhaverbeke, and Duysters, 2009). (*It should be noted that the "Reactor" typology was not in the original Miles and Snow framework, but it has been added in recognition of extreme economic duress (Parnell, Lester, Long, and Koseoglu, 2012)).

The Miles and Snow typologies are very effective buckets in which to align both large and small organizations in terms of how they reach their market. But, the typologies are not without their limitations. For example, there were originally <u>three</u> typologies (Prospector, Analyzer, and Defender), but in times of extreme duress, a <u>fourth</u> typology (Reactor) was recognized. And from a practical standpoint, it is the position of this paper that there may be more than four options available.

Miles and Snow propose three primary strategic responses to market changes (with the fourth response in times of extreme turbulence), but I believe that the middle ground between "Prospector" and "Defender" is more diverse than the label "Analyzer" conveys in our traditional understanding – especially when it comes to small businesses. This study points to a little more space in the "Defender" and/or "Reactor" typologies - such as "Ignoring" the market changes or "Exiting" the market due to dynamic changes.

Another limitation is that the modern approach to understanding the typologies assumes a steady-state and that organizations are ineffective in reacting when their environment changes. Yet, it is believed that during times of increased uncertainty, *ALL* firms may become more flexible in their approach to the market (Hagedoom and Duysters, 2002; Hitt, Bierman, Shimizu, and Kochhar, 2001; van de Vrande, Vanhaverbeke, and Duysters, 2009; Wadhwa and Kotha, 2006) which would imply that firms have the ability to switch between typologies in times of environmental dynamism. Given these limitations in Miles and Snow, especially in times of environmental dynamism, I am proposing an expansion of their typologies that will help explain strategic responses of small businesses as they operate within a market that is inherently dynamic, or at least I am proposing that there may be more richness within the four typologies than what is traditionally understood with the possibility that the "Reactor" typology become recognized as a more "True to Life" long-term effect than previously envisioned.

There are many different ways in which environmental dynamism manifests itself, and there are many different ways to react to the changing environment. This project recognizes the changing environment as a constant that ties small businesses together and then seeks to explore how the owner/manager's individual biases, or "schema," and how their individual personality dispositions influence their company's reactions to those outside forces.

Managerial Schema and Managerial Personality Disposition, as demonstrated below, are both fairly well understood and fairly consistent over time, but very little has been done to explore the impact of the two constructs together as to how they impact organizational responsiveness to environmental changes. The deliberate selection of both managerial schema (represented by constructs of personality) and managerial perceptions of their environment is necessary to developing an understanding of how SMEs respond to their constantly changing environment.

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The following sections describe the constructs of "Schema" and "Personality Disposition," and then present a proposed model for study.

Managerial Schema and Environmental Dynamism

In studying the effects of the managerial schema on business performance, it serves well to use small companies as the focus group. Small companies are interesting on two fronts: First, even though they are "businesses" they are often managed in ways that are contrary to how large companies are managed (Brockman, Jones, and Becherer, 2013) which makes them a novel area of study, and secondly, they operate in an interesting space in economic theory.

For example, neoclassical economic theory operates on the four basic premises below as presented by Weintraub (2007):

- Individuals are rational beings and make rational choices based on assigned values between the choices.
- (2) Individuals seek to maximize the utility (overall benefit) of their choices.
- (3) Firms, unlike individuals, seek to maximize profit from their choices.
- (4) Individuals act independently on the basis of full and relevant information.

Because small businesses operate closer to the "individual level" than the "firm level" of neoclassical theory, the notion of utility may play a greater role in the manager's decision processes than profit maximization. But, because small businesses must operate as goingconcerns, they also strive to generate profits. It is this operational tension that makes the study of small businesses an exciting area of research.

Neoclassical Theory, as described above, tends to gain an upper hand as the entrepreneurs become more experienced (List, 2004), while Prospect Theory's (Kahneman and Tversky, 1979; List, 2004) endowment effect, which ascribes added value to one's own possessions (Knetsch, 1989; Thaler, 1980), tends to play a role in nascent entrepreneurial endeavors. This may be in part due to newer entrepreneurs not fully being aware of the complexity of the decisions they are making, as the strength of prospect theory lies in the realm of well-defined and relatively simple problems (Bromiley, 2010).

However, a newer version of Prospect Theory called "third-generation prospect theory" (PT³) has started to incorporate a greater degree of uncertainty of outcomes into its descriptive capabilities (Schmidt, Starmer, and Sugden, 2008) especially in some of the areas that neoclassical theory uses the notion of "utility" to capture (Camerer, 1989; Starmer, 2000). This indicates some convergence of two well-accepted frameworks of economic behavior, which is important in understanding how the thoughts and attitudes of the SME owner/manager influence the actions and reactions of the organization to its changing environment.

It has been posited that organizational strategy is greatly influenced by the manager's schema or the filters through which they see the world based on what is important to them. Their schema tends to drive environmental scanning activities as they evaluate their surroundings for sources of environmental change (Walters, Priem, and Shook, 2005). The ways that individual SMEs interpret and react to market changes are exactly what sets one company apart from another (Hitt, Ireland, and Hoskisson, 2012) in terms of both profitability and survivability.

For example, the Resource-Based View of the firm (RBV) stresses the needs of the decision makers to evaluate the internal resources, both tangible and intangible, to develop methods for coping with environmental change (Barney, 1991; Hitt, Bierman, Shimizu, and Kochhar, 2001; Pereira-Moliner, Claver-Cortes, and Molina-Azorin, 2011; Peterfaf, 1993; Wernerfelt, 1984). It would stand to reason that those managers who have a fuller understanding of their organizational assets would be poised to react to environmental changes much more

effectively than managers who are not aware of their internal resources. Thus, it is the managerial ability to harness dynamic capabilities often found in small organizations that may enable them to take advantage of changes in their environments more effectively (Liao, Kickul, and Ma, 2009; Teece, Pisano, and Shuen, 1997). This is also in line with contingency theory, which posits that the best course of action for a firm to take is reactionary and contingent upon both the external happenings and the internal resources of the organization (Fiedler, 1964; Grotsch, Blome, and Schleper, 2013; Lawrence and Lorsch, 1967; Luthans, 1976).

Perceptions of Environmental Dynamism

Miles and Snow include in their work a Perceived Environmental Uncertainty (PEU) Instrument (Miles and Snow, 1987), which helps frame their typologies in regards to the managerial view of the environment (Boulton, Lindsay, Franklin, and Rue, 1982; Dirsmith and Covaleski, 1983; Ireland, Hitt, Bettis, and DePorras, 1987; Lindsay and Rue, 1980) rather than simply relying on static, unchanging strategic positions. The inclusion or consideration of the perceptions of the managers and decision makers of SMEs is paramount to understanding the thought processes of how SMEs respond to changes in their market.

In many small business taxonomies, the decision makers of the organizations have access to similar resources as well as much the same information regarding their industry as their competitors have. These sources of information include industry publications, media reports, conference proceedings, newsletters, and the like (Aguilar, 1967; Hambrick, 1982). But, it is up to the decision makers of those organizations to scan those sources and determine which pieces of information are critical to the firm.

Studies of large firms during times of environmental dynamism have been mixed when it comes to effectiveness of building consensus among the top management teams based on scanning sources of management information (Dess, 1987; Homburg, Krohmer, and Workman, 1999; Priem, 1990; West and Schwenk, 1996) with some showing greater success among cohesive management teams, some showing greater difficulties, and some showing no effect at all. This study will seek to minimize the potential lack of cohesiveness in the top management teams of large firms by focusing on SMEs with a smaller top management team (perhaps a single decision maker), the mixed results from top management consensus should be minimized because of the reduction in the team size.

It has also been demonstrated that managerial schema can be affected by personal experiences when owners/managers view potential changes in their environment (Kirzner, 1979; Shane, 2000; Ucbasaran, Westhead, and Wright, 2009). For example, recent successes or recent failures in business dealings can color their perceptions of changes in their environment (Baron, 2009; Chang, Memili, Chrisman, and Welsh, 2011; D'Souza and Kemelgor, 2008; Ucbasaran, Westhead, and Wright, 2009) which will allow the managers to notice opportunities or threats in the changing environments to a different degree than those without recent successes or failures (Cassar and Craig, 2009; Dew, Read, Sarasvathy, and Wiltbank, 2009; Glaser and Chi, 1988).

It stands to reason that the firm's ability to positively react to changes in their environment is contingent upon the owner or manager's ability to recognize those changes as opportunities for growth or expansion (Kontinen and Ojala, 2011). Interestingly, in the Small and Medium-sized Enterprise literature, there is a divide over the SME's relationship with market changes.

On the one hand, it is believed that SMEs that are market-oriented have a better "feel" for the changing needs of their customers and can respond quickly without the organizational encumbrances that hamper larger organizations (Keskin, 2006). Market orientation can be defined as the ability of the organization to recognize the needs of their target audience and meet those needs effectively and efficiently (Jaworksi and Kohli, 1993; Slater and Narver, 1998), and can be measured along three dimensions: (1) Customer Orientation; (2) Competitor Orientation; and (3) Inter-functional Coordination (Narver and Slater, 1990). As a result of market orientation, Reijonen, Laukkanen, Komppula, and Tuominen (2012) found that growing SMEs were "significantly more market-oriented" than those SMEs that were either flat or in decline. This view is in line with "Strategic Choice Theory" which posits that organizations can influence their environments and can guide the direction that their environment moves in so as to maximize their organizational influence (Smith, 1999; Whittington, R, 1988).

Standard Marketing texts identify an organization's "Marketing Philosophy," or "Marketing Management Philosophy," as composed of four orientations, and the relative strength of those orientations influences their interaction with their market. Lamb, Hair, and McDaniel (2016) identify the four orientations as:

- 1. **Product Orientation** focusing on the internal capabilities of the organization rather than on the wants or needs of the market.
- 2. **Sales Orientation** focusing on aggressive sales strategies to encourage people to buy more.
- 3. **Market Orientation** focusing on satisfying the customers' perceptions of their needs.
- 4. **Societal Marketing Orientation** focusing on providing goods and services with minimal impact on the environment or with a mindset towards working within politically correct supply chains.

On the other hand, SMEs with clear strategic vision that concentrate on (1) a single niche market, (2) controlling their costs, and (3) differentiating themselves in the minds of their customers from their competitors (Longenecker, Petty, Palich, and Moore, 2010; Parnell, Lester, Long, and Koseoglu, 2012) tend to outperform their competitors even in periods of market decline. The importance of strategic consistency has been demonstrated in multiple market sectors and across continental boundaries (Lamberg, Tikkanen, Nokelainen, and Suur-Inkeroinen,

2009; Parnell, 2013) which leads one to believe that strategic vision and consistency are of universal importance to SMEs.

One of the now-classic tomes investigating how companies should respond to changes in their environment is Clayton Christensen's <u>The Innovator's Dilemma</u> (1997). Christensen and his co-authors explored how technological advances in the market can drive successful organizations out of business if they do not respond to their changing conditions. He chronicled many large and successful firms that were driven to obsolescence by changes in their environment because they were either unable or unwilling to adapt to the changing needs of their customer base. Oftentimes, their reluctance to change was driven by the manager's view of their past experiences (aka their schema) and what had driven success in the past. By clinging tightly to their own perceptions, the managers inadvertently watched their successful firms go into a state of decline.

However, if managers are willing and able to foster an atmosphere of innovativeness – even for their existing products – their prospects for survival are greatly enhanced (Lakemond and Detterfelt, 2013). This is especially true for firms that are more customer-oriented (Brockman, Jones, and Becherer, 2012) when they are willing to take necessary risks to satisfy the changing needs of their clientele.

Additionally, firms have been known to combat dynamic environments through both outward and inward focused efforts. Outward efforts tend towards expansion through such avenues as new product development, new customer development, new uses for existing products, and the like. Inward efforts tend towards cost reductions efforts such as operational streamlining, procedural efficiencies, and tightening financial controls (Parnell, Lester, and Menefee, 2000; Zhang, Garrett-Jones, and Szeto, 2013). Firms that are able to nimbly redirect resources and strategic focus will tend to outperform their competitors (Allred, Addams, and

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Chakraborty, 2007; Kuye, Abiola, and Oghojafor, 2013; Rindova and Kotha, 2001; Shinkle, Kriauciunas, and Hundley, 2013) and increase their odds of survival and profitability (Hannan and Freeman, 1984).

Managerial Personality Disposition and Environmental Dynamism

In addition to the manager's schema affecting their view of changes in their environment, the manager's personality disposition also influence their reactions to change (Barrick and Mount, 1991). Even though there is not complete agreement among researchers, the prevailing sentiment is that personality dispositions are influencers of behaviors in response to environmental situations (Digman, 1990), and that personality is relatively stable over time (Cobb-Clark and Schurer, 2012).

Personality is an interesting field of study with a long and rich heritage. Digman (1990) offers an excellent review of personality models in which he explores six decades of research covering the introduction of a "Five Factor" model through various stages of evolution and testing of the various factors. He credits McDougall (1932) with proposing five "distinguishable but separable factors" of personality which opened the door to much debate and study from that point on.

Subsequent researchers would propose significantly different models of personality factors. Cattell, Eber, and Tatsuoka (1970) proposed sixteen primary and eight secondary factors of personality, Birenbaum and Montag (1986) focused on 16 factors without secondary factors, others tended to focus on two or three dimensions (Costa and McCrae, 1985; Eysenck, 1957, 1970). Occasionally, based on the views of the researcher, the proposed five dimensions may be re-evaluated as four or six dimensions depending on the factor loading interpretations of the researchers (Peabody and Goldberg, 1989), but overall, the five-factor model tends to enjoy

widespread acceptance (Digman, 1990; Gosling, Rentfrow, and Swann, 2003; Hendricks, Hofstee, and De Raad, 1999; Muck, Hell, and Gosling, 2007; Oshio, Abe, Cutrone, and Gosling, 2013).

Even though there is not complete agreement in the field as to the absolute number and the specific names of the personality dimensions (Block, 1995), most personality researchers generally accept a "Big Five" framework (Costa and McCrae, 1998; Gosling, Rentfrow, and Swann, 2003; John and Srivastava, 1999) when evaluating various situations. The Big Five framework is composed of five general factors of personality traits that are intended to be broad enough to encompass concepts that are sometimes difficult to quantify. In the modern era (Gosling, Rentfrow, and Swann, 2003), the five factors tend to be labeled:

- (1) Extraversion to be outgoing, active, and seeking excitement. People high in this factor tend to be predisposed to experiencing positive emotions (Watson and Clark, 1997);
- (2) Agreeableness to be kind, trusting, trustworthy and warm (Judge and Bono, 2000);
- (3) Conscientiousness to have the characteristics of dependability and a drive for achievement. This trait correlates the best with job performance in the Five Factor model (Barrick and Mount, 1991);
- (4) Emotional Stability often labeled by the opposite term "Neuroticism," this is a measure of anxiousness, moodiness, depression, etc. This trait correlates most highly with overall satisfaction in life (McCrae and Costa, 1991); and
- (5) **Openness to Experience** to be creative, perceptive and thoughtful. This trait is the only of the traits to correlate with overall intelligence (Judge and Borno, 2000).

The table on the following page was developed by Digman (1990), and it shows the first forty years of researchers trying to put labels on the five major dimensions of personality. These dimensions have sometimes been reverse coded to show the spectrum that lies within each dimension. For example, Dimension II is called by such pleasant terms as "agreeableness," "friendly compliance," "love," and "likeability," while also being called "paranoid disposition" on the other end of the spectrum. On occasion, the dimensions may be labeled with both ends of the spectrum for the factor being measured, such as "Extraversion vs. Introversion."

Author	Factor I	II	III	IV	V
Fiske (1949)	Social Adaptability	Conformity	Will to Achieve*	Emotional Control	Inquiring Intellect
Cattell (1957)	Exvia	Cortertia	Superego Strength	Anxiety	Intelligence
Tupes & Christal (1961)	Surgency	Agreeableness	Dependability	Emotionality	Culture
Norman (1963)	Surgency	Agreeableness	Conscientiousness	Emotion	Culture
Borgatta (1964)	Assertiveness	Likeability	Task Interest	Emotionality	Intelligence
Eysenick (1970)	Extraversion	Psychoticism	Psychoticism	Neuroticism	
Guilford (1975)	Social Activity	Paranoid Dispositi	Thinking Introversion	Emotional Stability	
Buss & Plomin (1984)	Activity	Sociability	Impulsivity	Emotionality	
Costa & McCrae (1985)	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Tellegen (1985)	Positive Emotionality		Constraint	Negative Emotionality	
Hogan (1986)	Sociability & Ambition	Likeability	Prudence	Adjustment	Intellectance
Lorr (1986)	Interpersonal Involvement	Level of Socialization	Self-Control	Emotional Stability	Independent
Digman (1988)	Extraversion	Friendly Compliance	Will to Achieve	Neuroticism	Intellect
Peabody & Goldberg (1989)	Power	Love	Work	Affect	Intellect

*Not in the original analysis, but noted in a re-analysis by Digman and Takemoto-Chock (1981)

Table 2.1: Digman's (1990) Summary of Personality Dimensions

The impact of managerial personality disposition on organizational behavior is especially true for small businesses (Gibson, 2010). For example, Heilman and Chen (2003) and Weiler and Bernasek (2001) find that if people start their own companies because of frustrations over the lack of potential for advancement with a previous employer, then their strategic decisions often reflect the influence of their previous discontent. Early research on gender differences in entrepreneurial endeavors identified some interesting differences between men and women entrepreneurs. For example, women tended to focus more on the long term while men tended to focus on current actions (Sandberg, 2003). Women were more interested in creating something new, whereas men were more focused on finding new opportunities (Verheul, Risseeuw, and Bartelse, 2002). And, women tended to have a greater passion for marketing while men tended to have a stronger focus on financial goals and/or production issues (Boohene, Sheridan, and Kotey, 2008; Knotts, Jones, and Brown 2008). Those historical findings may seem passé, but recent research suggests that stereotypical personality traits of men and women play a role in the entrepreneurial experience, even down to the basic levels of opportunity evaluation (Gupta, Turban, and Pareek, 2013) which lends credence to managerial schema influencing decision making processes.

The basic tenants of personality present themselves as likely factors that may influence the behavior of managers and decision makers of small businesses (Barrack and Mount, 1991; Digman, 1990). Additionally, for over half a century, personality has been thought to be a driver of behavior and has even been used as a predictor of managerial success (Cattel, 1943, 1946, 1947, 1948; Digiman, 1990; Tupes, 1957; Tupes and Christal, 1961).

Proposed Model

Given that environmental dynamism is real, and that it affects firm performance, it is posited that both the managerial perception (i.e. opportunity vs. threat) and the managerial personality disposition (i.e. growth vs. control) will have an impact on the small business' response to the changes in the environment.



Figure 2.1: Proposed Model

To what extent the results of those moderators shape the response of the small business to changes in their environment is the question this project seeks to answer.

Because the opportunistic biases and growth-oriented mindsets tend to move organizations towards revenue generating activities and control mindsets in threatening environments tend towards asset protection activities (Burpit and Fowler, 2007; Dewald and Bowen, 2010; Ebben and Johnson, 2005; Patzelt and Shepherd, 2010; Wallace, Little, Hill, and Ridge, 2010), I believe something along the lines of Figure 2.2 (See Below) is likely to occur. The figure is intended to expand the proposed model (Figure 2.1) and to parsimoniously demonstrate the relationships between perception and personality disposition. As such, I am proposing that the interaction effects between perception and personality in light of Environmental Dynamism in an SME setting will tend towards the reactions shown below.





Based on the interactions between perception and personality in a dynamic small business environment, I propose the following hypotheses:

Hypotheses:

- Hypothesis 1: If the owner/manager of a small business views changes in their operating environment as an *opportunity* and they have a *growth*-minded personality, there will be a positive correlation with their intent to *expand* their operations in response to those changes.
- **Hypothesis 2**: If the owner/manager of a small business views changes in their operating environment as an *opportunity* and they have a *control*-minded personality, there will be a positive correlation with their intent to *eyeball*, or "keep an eye on" the changes, but will not likely be an early mover in response to those changes. In practical terms, "keeping an eye on" pending changes may be interpreted as a willingness to "analyze" the cost/benefit of moving on a particular opportunity. However, it appears that many of the respondents may have used the "eyeball" response to make it sound like they are actively watching the pending changes while in reality they may be ignoring those changes until those changes gather enough traction to force a change.
- Hypothesis 3: If the owner/manager of a small business views changes in their operating environment as *neutral* (neither an opportunity nor a threat) and they have a *growth*-minded personality, there will be a positive correlation with their intent to *explore* new opportunities in response to those changes.
- **Hypothesis 4**: If the owner/manager of a small business views changes in their operating environment as *neutral* (neither an opportunity nor a threat)

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and they have a *control*-minded personality, there will be a positive correlation with their intent to *ignore* those changes.

- Hypothesis 5: If the owner/manager of a small business views changes in their operating environment as a *threat* and they have a *growth*-minded personality, there will be a positive correlation with their intent to *exit* the market response to those changes through some sort of divestiture or radical business transformation.
- Hypothesis 6: If the owner/manager of a small business views changes in their operating environment as a *threat* and they have a *control*-minded personality, there will be a positive correlation with their intent to *entrench* in response to those changes.

Definition of Terms:

- **Control:** (Synonymous with being "Prevention Minded"): The owner/manager disposition toward their desire to maintain the need for control of their circumstances and a desire to minimize the chance for negative outcomes. This will be determined based upon responses to the questions taken from Regulatory Focus Theory and the Ten Item Personality Inventory discussed below.
- Entrench (H6): A willingness to resist changing through focusing on internal operations, existing processes, and existing distribution channels to preserve company assets rather than invest in new methods or customers. This is typically seen in aggressive marketing efforts to existing

customers and through aggressive cost controls. This is based on reactions provided by the participants.

- Exit (H5): willingness in extreme cases to sell the company or to seek employment elsewhere in order to improve their personal financial situation or a willingness to radically transform the company to serve a different market. This is based on reactions provided by the participants.
- **Expand (H1):** A willingness to seek a greater market presence through immediately opening new store-fronts, developing new avenues for existing products, developing new products based on existing competencies, or other such activities which often involve significant financial investment. This is based on reactions provided by the participants.
- Explore (H3): A willingness to "test the waters" of an increased presence through trial runs, temporary strategic partnerships, or similar methods with minimal financial risk while dabbling in a new market outlet. This is based on reactions provided by the participants.
- **Eyeball (H2):** A willingness to keep an eye on the changes in the environment in order to have an understanding of what competitors are doing, but not invest in pursuing the same or similar operational changes as the competitors at the current time. This is based on reactions provided by the participants.
- Growth: (Synonymous with being "Promotion Minded"): The owner/manager's disposition toward expansion and a drive for positive outcomes. This will be determined based upon responses to the 44

questions taken from Regulatory Focus Theory and the Ten Item Personality Inventory discussed below.

- **Ignore (H4):** Exhibiting little or no desire to spend time or effort watching the particular environmental changes because there is little or no perceived impact to the company on the horizon. This is based on reactions provided by the participants.
- **Neutral:** A circumstance that is perceived as having neither the potential for positive or for negative impacts on the future of the organization. This is based on responses provided by the participants.
- **Opportunity:** A circumstance that is perceived as carrying the potential for positive impacts on the future of the organization. This is based on responses provided by the participants.
- **Threat:** A circumstance that is perceived as carrying the potential for negative impacts on the future of the organization. This is based on responses provided by the participants.

The next chapter will identify the target research population, describe how the perception construct and the personality construct will be identified, and describe the outcomes of the study.

CHAPTER III

METHODOLOGY

Introduction

While much has been studied to gain a better understanding of how perception (or schema) influences managerial behavior and much has been written about how personality dispositions influence managerial behavior, very little research has been done to capture how perception and personality work together to influence the managerial decision-making process.

By using tools that have been time-tested, such as the "Ten Item Personality Inventory" (Gosling, Rentfrow and Swann, 2003), hypothetical scenarios, and self-reports, I was able to develop a fuller understanding of existing theory and to move theory forward by adding a layer of construct interaction that has previously been overlooked.

This study focuses on those small and medium-sized enterprises limited to 250 or fewer employees. And, because small business behavior is tied closely to owner/manager behavior, the end result will expand our understanding of how managerial perception and managerial personality influence how SMEs respond to changes in their market environments. Over 2,000 survey instruments were sent to companies that offer specific products and services that support the heavy construction industry. By focusing on SMEs in a single pipeline, this will limit market sector effects to a single channel.

Target Sample Population: A Flapper Group

Within the heavy construction industry, projects are awarded by large companies who sub-let contracts through various disciplines. For example, a large firm may wish to build a brand new refinery. In that case, the owner may enlist the services of various design and architectural firms, who will further contract other specialty firms to help complete their tasks. The project then flows down to the next tier who will begin to build the pieces needed for the new refinery.

Each tier of the construction process will then enlist the services of lower level suppliers to help them fulfill their obligations, and the trickle-down effect flows down ultimately to the level where the most basic services are provided. These bottom tier companies tend to be small companies with no suppliers other than the people that provide office supplies or other rudimentary services.

The bottom tier companies are not dependent upon each other for their viability, but each of them relies on the tiers above them – ultimately by some far-off top-tier organization that controls the fates of all of the smaller firms below.

From an economic activity standpoint, this would be comparable to the bottom row of tassels on a 1920's style flapper girl dress. Each tassel within a row moves independently of the other tassels in that row, and each row of tassels influences the movement of the rows below it. Ultimately, all the tassels are influenced by the movement and direction of the head and shoulders of the dancer.

Similar to the bottom row of tassels, the target sample of this project are small companies at the very bottom of the construction hierarchy. These are the companies that would seem to (1) be the most vulnerable to changes beyond their control; (2) struggle together to meet the needs of a similar customer base; and (3) experience the most violent swings as the upper tiers of the construction hierarchy choose how they award sub-contracts to the down-stream suppliers.



Figure 3.1: Flapper Girl

Target Sample Population: Small and Medium Sized Enterprises

The types of organizations that were invited to respond include such organizations as:

- (1) Steel Galvanizers and other Coating providers;
- (2) Steel Grating Suppliers;
- (3) Industrial Fiberglass Suppliers;
- (4) Steel Detailing services providers;
- (5) HVAC (Heating, Ventilation, and Air Conditioning) designers;
- (6) Connection Design Engineering providers;
- (7) Small Steel Fabrication Shops;
- (8) Other service providers that revealed themselves as the study progresses (such as software providers).

These, and companies like them, occupy the lowest flapper-group tier within the heavy construction industry. And, my two decades of experience within this group helped to open some doors to various associations that represent these organizations. That access helped provide points of contact and addresses to send survey instruments to, and also helped the data collection process with a fairly high response rate to the survey instrument.

A friend of mine in the direct marketing field related that a mailed survey usually yields a 1% to 1 ½% response rate in his field. Fortunately, the response rate for this study was just over 7% (7.007%) which is probably due to my connections in the industry and to approaching organizations within the same "flapper group" as my own organization. It would appear that industry friends and friendly competitors ("coopetitors") respond at a much higher rate than strangers who are solicited through other direct mail offerings.

Perception Construct

In order to explore the effects of perception on managers in response to market changes, I asked managers and owners of SMEs their opinion about three various situations. This method of "self-reporting" is used quite extensively (Gamez, Kotov, and Watson, 2010; Kormos and Gifford, 2014; Steg and Vlek, 2009). Even though it can sometimes be difficult to tie self-reported activity to actual responses in real life (Barr, 2007; Milfont, 2009), self-reports will provide at least a baseline for further study.

Two scenarios were presented to the target respondents and they were asked to rate the scenarios on a Likert-type scale of 1(Immediate Threat) to 7 (Immediate Opportunity) with 4 representing a truly "neutral" perception of the scenario in regards to the SME's operations. The scenarios were based on (1) international competition aggressively targeting the SME's customer base, and (2) a new technology or replacement process becoming available. Based on the manager's perception of each of the scenarios, I then asked what their likely business response would be to the change in their market environment.

For initial analysis purposes, an initial response of 3, 4, or 5 on the scale was considered "neutral." Responses on the ends of the scale were initially recorded as "opportunities" or "threats."

A third scenario was nested in the demographic section of data collection as each participating company was asked if and when their website became operational. This is an indication of their aggressiveness in venturing into new technology. Those companies who were early entrants into the digital domain should correspond to those companies that viewed the internet as an opportunity and should also tie to those managers who are more promotion-focused as they will be more willing to take risks to reach out into new areas of operations. And, while one cannot be certain that the decision makers who first made the SMEs digital moves are the

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decision makers of today, it was assumed that an SME's tendency towards early adoption would carry though in their hiring and promotion processes so that similar minded people now occupy those managerial roles today.

The basis of the first scenario is grounded in internationalization. My personal experience is that most of the work being done in the heavy construction industry that is "off-shored" tends to land in Asia (India, the Philippines, and China). However, Africa is gaining attention from some of the major clothing manufacturers such as Tommy Hilfiger, Levi Strauss & Co, as well as many others (Passariello and Kapner, 2015). This is important because textile manufacturing is often associated with developing markets, and there is a dependence on CNC (Computer Numerically Controlled) equipment in the making of textiles.

Both of those factors, developing markets and CNC experience, point toward the opportunity for expansion into Africa for support services in the heavy construction field – especially in technologically dependent areas.

Respondents were given this first scenario below and asked to state their agreement or disagreement along a seven-point scale for each of the responses:

SCENARIO #1: - You have recently started hearing rumors of your best customers awarding contracts to companies in Africa that offer the same goods and services as your company at a significant discount. One of your best customers has confirmed that they have been sending work to a company headquartered in Kenya. What would best describe your reaction to this news?

- I would quickly move toward opening an office (or a strategic partnership) in Kenya or the surrounding area.
- 2.) I would start researching the feasibility of opening an office (or a strategic partnership) in Kenya or the surrounding area.
- 3.) I would "keep my eyes on" the Kenyan supplier to see if they will develop into a genuine threat in the future.
- *4.) I* would see this as a threat to my long-term success, and I would look for a new job opportunity (or if you are the owner, try to sell your company).
- 5.) I wouldn't consider an African company to be a real threat.
- 6.) I would work on driving the cost of my goods and services down in order to compete with the foreign company.

A second scenario representing a substitute product was then presented.

Because of the ubiquitous nature of steel in heavy construction projects, those of us in the industry may be missing the early stages of the rise of substitute building materials. Steel has been the construction material of choice for tall buildings for several decades, but design groups are starting to consider alternatives to steel. One of the more unusual alternatives for steel that is starting to appear on the scene is the use of soft-wood, like pine, for multi-story structures

(Malmquist, 2017; McGraw-Herdeg, 2013, 2014; Wooden Skyscrapers, 2012). While it may seem far-fetched to think of 10- or 20-story buildings being constructed of a wooden skeleton, in 2012 a twelve-story building using wood and concrete was constructed in Austria (Cree, 2012). Michael Green, a Canadian architect, has been working on a 20-story wooden structure (McGraw-Herdeg, 2014). And, Skidmore, Owings & Merrill, the company that designed the New World Trade Center in New York and the Burj Khalifa tower in Dubai, is currently exploring the feasibility of recreating a 42-story residential building in the Chicago area using wood and concrete (SOM, 2013; 2014).

The implications for the heavy steel construction industry may at first go un-noticed as it will take years to be able to grow the volume of wood required to make a legitimate dent in steel's share-of-market, but for each wooden high-rise (aka "plyscraper") erected, it is one less structural steel project that needs to be detailed, fabricated and galvanized.

And, as wood starts to make more of an impact on the heavy construction industry, it could start to drive down the overall demand for goods and services currently provided by my company and many companies at my Flapper-Group level of the construction hierarchy.

It will be interesting to see if plyscrapers become a viable alternative over the next few years, and it will be interesting to observe how the steel construction sector responds to this burgeoning threat. That is the background for scenario #2 below.

Respondents were presented with this second scenario and asked to state their agreement or disagreement along a seven-point scale for each of the responses:

SCENARIO #2: You have recently seen some stories in industry publications about design houses experimenting with the feasibility of using wood instead of steel for tall buildings.

The wooden sky-scrapers (called "plyscrapers") could impact the future of your organization. What would best describe your reaction to this news?

- 1.) I would quickly move toward partnering with a wood-products company or a timber-services company in order to be one of the first of my competitors in this new market.
- 2.) I would start researching the feasibility of partnering with a woodproducts company or a timber-services company.
- 3.) I would "keep my eyes on" the wooden skyscraper movement to see if it will develop into something more than an engineering fad.
- 4.) I would see this as a threat to my long-term success, and I would look for a new job opportunity (or if you are the owner, try to sell your company).
- 5.) I wouldn't consider "plyscrapers" to be a real game-changer in my industry.
- 6.) I would work on continuing to make my goods and services better to keep the wooden substitute from becoming attractive to my end-users.

Personality Disposition Construct

This research uses the Big Five Personality Dimensions to approximate the effect of managerial personality on the SME's reaction to environmental dynamism. While there is not complete agreement as to the names of the five personality dimensions, most researchers are in agreement that the five domains adequately capture the essential elements of personality (Barrick and Mount, 1991; Block, 1995; Digman, 1990; Goldberg, 1990; John and Srivastava, 1999; McCrae and Costa, 1999).

Gosling, Rentfrow, and Swann (2003) developed an extremely abbreviated measure of the Big-Five personality dimensions with a Ten-item Personality Inventory (TIPI) that has been validated in multiple languages, in multiple cultures, and against more lengthy tools (Rammstedt and John, 2007; Romero, Villar, Gomez-Fraguela, and Lopez-Romero, 2012; Soto and John, 2009). The TIPI measurement instrument involves a Likert-type 1(Disagree Strongly) to 7 (Agree Strongly) scale of self-reports to the following questions:

I see myself as:

- 1. Extraverted, enthusiastic _____.
- 2. *Critical, quarrelsome*_____.
- 3. Dependable, self-disciplined _____.
- 4. Anxious, easily upset _____.
- 5. Open to new experiences, complex _____.
- 6. Reserved, quiet _____.
- 7. *Sympathetic*, *warm*_____.
- 8. Disorganized, careless _____.
- 9. *Calm, emotionally stable* _____.
- 10. Conventional, uncreative _____.

According to the TIPI, the following dimensions are measured with the items above. "R"

denotes reverse-scored items:

Extraversion: Items 1 and 6R Agreeableness: Items 2R and 7 Conscientiousness: Items 3 and 8R Emotional Stability: Items 4R and 9 Openness to Experience: Items 5 and 10R

Based on the "Five Factor" model and Digman's summary of those factors (See Page 34),

I selected Factor I (Extraversion) to most closely correspond to a "growth" mindset among

managers, and I selected Factor III (Conscientiousness) to most closely correspond to a "control" mindset.

As a supporting measure, using four specific questions taken from Regulatory Focus Theory, also on the same scale of 1 to 7, with 1 being "strongly disagree" and 7 being "strongly agree," the following questions were asked of the respondents:

To what degree do you agree with the following statements:

- 1. Taking risks is essential for success _____.
- 2. The worst thing you can do when trying to achieve a goal is to worry about making mistakes _____.
- 3. Being cautious is the best policy for success _____.
- 4. To achieve something, one must be cautious _____.

These four questions have generated high factor loadings on previous multi-national studies when investigating Regulatory Focus Theory components of "Promotion" and "Prevention" (Ouschan, Boldero, Kashima, Waskimoto, & Kashima, 2007; Summerville and Roese, 2008), so it is reasonable to assume that they will capture the prevention/promotion mindset in a succinct manner for this project as well.

The questions above along with a cover letter were sent to members of the following associations which represent the dilettante Flapper Group of interest to the study:

- 1.) The American Architectural Manufacturers Association Fiberglass Material Council,
- 2.) The American Galvanizers Association,
- The American Society of Heating, Refrigerating and Air-Conditioning Engineers,
- 4.) The National Council of Structural Engineers Association,
- 5.) The American Institute of Steel Construction (esp. "Associate Members"),
- 6.) The National Institute of Steel Detailing, and
- 7.) The National Association of Architectural Metal Manufacturers.

These associations and their members represent the types of SMEs that work in concert with each other as the "flapper groups" described previously. I petitioned the associations for their membership contact list and offered to provide a summary of my findings in article form for their periodic journals upon completion of the survey. I have also offered to present the findings at trade conferences.

The requests for copies of membership lists were generally not responded to. However, I was often directed to the association's websites where members were often listed by state, by discipline, by size, or by some other categorization method. The membership lists of the National Institute of Steel Detailing, the American Institute of Steel Construction, and the American Galvanizers Association were provided by the organizations. Members of other associations were contacted through addresses provided on the association websites.

The survey responses were manually entered into Microsoft Excel due to the program's ubiquity and the ease for which others can validate and reproduce the study. There may be objections to using Excel for academic research purposes because it lacks the horsepower of SPSS, SAS, or another statistical tool. However, the real-world applications of the study may

lead to a diagnostic tool that industry and academia can use to help small business owners understand how their personality and their perceptions influence the direction their decisions may take.

Additionally, the real world has much easier access to Microsoft products than to the heavy hitters in the statistical analysis realm. Also, because of the limited outcomes of the grouping of the variables, much of the horsepower of true statistical packages would be overkill for the project.

This project lends itself to the use of Logistic Regression as the primary analysis method. Logistic Regression was developed in the late 1950s (Cox, 1958) and expanded in the late 1960s (Walker and Duncan, 1967) to offer predictive measures in the medical field. Examples would include "What is the likelihood (probability) of a person getting lung disease if they smoke cigarettes?" Or "If a person is chronically obese, what is the likelihood (probability) that they will develop hypertension?" Logistic regression works well in situations like the above when the answer to the questions is Boolean in nature. Boolean variables are binary in their values. They are either "Yes or No," "True or False," "Heads or Tails," etc. Without having any evidence to the contrary, the outcome of these types of questions should be 50/50 where the outcome is just as likely "Heads/True" as "Tails/False."

Concepts standard to normal distribution such as Central Tendency, Variability, and Normal Distribution do not hold up well when there are only two outcomes. Thus, in the example of a coin toss the "normal distribution" would be 50% heads and 50% Tails. Any deviations over the long term from 50/50 would indicate that either the coin or the flipping mechanism is skewed, and predictions could then be made as to the likelihood of a "Head" or "Tail" for future flips. Therefore, for Boolean tests, data sets that show greater than 50% True (or False) indicate a greater than likely expected outcome. As the model and hypotheses on previous pages describe, the test at each Hypothesis point will either be "Yes, it is likely," or "No, it is unlikely." For example, the survey instrument (See Appendix B) presents two situations. Question #7 in each of those situations identifies if the environmentally dynamic event is viewed as an "Opportunity" (By circling 6 or 7), "Neutral" (By circling 3, 4, or 5), or as a "Threat" (By circling 1 or 2).

The personality construct of "Growth" vs. "Control" is identified by questions 1, 3, 4, 6, and 8 through 13 from the Ten-item Personality Inventory (Gosling, Rentfrow, and Swan, 2003). Survey responses to questions 1 and 9 measure "Extraversion." It was used for the "Growth" personality disposition. Survey responses to questions 4 and 11 measure "Conscientiousness and they were used to load onto the "Control" personality disposition. The construct is validated by questions 2, 5, 7, and 14 which tie back to Regulatory Focus Theory (Ouschan, Boldero, Kashima, Waskimoto, & Kashima, 2007; Summerville and Roese, 2008) and should validate or negate the factors of "Extraversion" and "Conscientiousness" above.

There are two overriding assumptions that are demanded by this type of logistic analysis. The first assumption is that there are only two possible outcomes for each hypothesis test – either the Dependent Variable is "Selected," or the Dependent Variable is "Not Selected." The test is set up to gather "Yes" or "No" to each of the scenarios, but the "No" option includes the selection of any choice other than "Yes."

The second assumption is that each response is independent of all other responses. In other words, one respondent does not influence the responses of another participant. For example, in picking jelly beans out of a jar, the likelihood of Red/Not-Red changes each time someone pulls from the jar. But, this study maintains the independence of responses to maintain a stable likelihood of each possible response across every participant.

The resulting distribution for each of the Hypothesis should be an "S" curve similar to the one below with the actual distribution of the data all falling either at the "True" (1) or "False" (0) points on the Y-axis, and the number of respondents populating the x-axis. If the break-point of the curve falls above the 50% mark, then the hypothesis would be supported. If the curve fell right on the 50% mark, then the hypothesis would be unsupported. However, if the curve fell below the 50% mark, then the hypothesis would be falsified, and another explanation would be needed.

The actual data plots are not as crisp as the example below due to smaller sample sizes across each hypothesis and due to the actual results being somewhat skewed.



Figure 3.2: Logistic Regression Distribution Curve Example

Microsoft Excel has the capability through the use of an add-on from real-statistics.com to perform the mathematical and graphical functions that will be able to test each of the hypotheses with the goal of having a greater than 0.5 probability of a "True" condition.

In order to test Hypothesis #1, (*If the owner/manager of a small business views changes in their operating environment as an opportunity and they have a growth-minded personality, there will be a positive correlation with their intent to expand their operations in response to those changes.*), the respondents who identified the situation as an opportunity (by scoring it a "6" or "7"), AND self-identified with a growth-minded personality disposition through the Ten Item Personality Inventory. The hypothesis predicts that these individuals should "strongly agree" ("6" or "7") to *Question #1* following the description of each Situation in Appendix B.

In order to test Hypothesis #2, (*If the owner/manager of a small business views changes in their operating environment as an opportunity and they have a control-minded personality, there will be a positive correlation with their intent to eyeball, or "keep an eye on" the changes, but will not likely be an early mover in response to those changes.*), the respondents who have identified the situation as an opportunity (by scoring it a "6" or "7"), AND self-identified with a control-minded personality disposition through the Ten Item Personality Inventory. The hypothesis predicts that these individuals should "strongly agree" ("6" or "7") to *Question #3* following the description of each Situation in Appendix B.

In order to test Hypothesis #3, (*If the owner/manager of a small business views changes in their operating environment as* **neutral** (*neither an opportunity nor a threat*) *and they have a* **growth-***minded personality, there will be a positive correlation with their intent to* **explore** *new opportunities in response to those changes.*), the respondents who have identified the situation as a neutral (by scoring it a "3, "4," or "5"), AND self-identified with a growth-minded personality
disposition through the Ten Item Personality Inventory. The hypothesis predicts that these individuals should "strongly agree" ("6" or "7") to *Question #2* following the description of each Situation in Appendix B.

In order to test Hypothesis #4, (*If the owner/manager of a small business views changes in their operating environment as neutral* (*neither an opportunity nor a threat*) and they have a *control-minded personality, there will be a positive correlation with their intent to ignore those changes.*), the respondents who have identified the situation as neutral (by scoring it a "3, "4," or "5"), AND self-identified with a control-minded personality disposition through the Ten Item Personality Inventory. The hypothesis predicts that these individuals should "strongly agree" ("6" or "7") to *Question #5* following the description of each Situation in Appendix B.

In order to test Hypothesis #5, (*If the owner/manager of a small business views changes in their operating environment as a threat and they have a growth-minded personality, there will be a positive correlation with their intent to exit the market response to those changes through some sort of divestiture or radical business transformation.*), the respondents who have identified the situation as a threat (by scoring it a "6" or "7"), AND self-identified with a growth-minded personality disposition through the Ten Item Personality Inventory. The hypothesis predicts that these individuals should "strongly agree" ("6" or "7") to *Question #4* following the description of each Situation in Appendix B.

In order to test Hypothesis #6, (*If the owner/manager of a small business views changes in their operating environment as a threat and they have a control-minded personality, there will <i>be a positive correlation with their intent to* **entrench** *in response to those changes.*), the respondents who have identified the situation as a threat (by scoring it a "6" or "7"), AND selfidentified with a control-minded personality disposition through the Ten Item Personality Inventory. The hypothesis predicts that these individuals should "strongly agree" ("6" or "7") to *Question #6* following the description of each Situation in Appendix B.

Based on the respondent's view of the dynamic event, and their personality disposition, the model predicts how they will respond to the first six questions with each situation in Appendix B. For the purposes of this study, I have selected .65 as the acceptable validation rate when comparing the predictions to the actual responses. A .65 or higher accuracy rating would be meaningful in both academic and practical settings. However, accuracy above .50 supports the above hypotheses, even if it doesn't carry the impact of a higher accuracy percentage.

The next chapter will present a more detailed description of the survey participants in terms of both market offerings and general demographic information. Responses from the association membership lists mentioned above were aggregated into a few key areas to foster more homogeneous groupings within the tassels of the flapper groups.

CHAPTER IV

FINDINGS

Survey Participants and Respondent Demographics

A total of 2,088 surveys were mailed or personally delivered to potential participants. 2,015 of these were in the United States, 46 were in Canada, 15 were located in Mexico, and 12 were located in the Philippines.

Of the 2,088 surveys that were sent out, 147 were returned unanswered by the U.S. Postal Service, and I was able to confirm that those companies were no longer in business or the point of contact was no longer in the industry. This reduced the number of potential respondents to 1,941. And, of the 1,941 surveys distributed, 136 were returned for an overall response rate of 7.0%.

The high response rate of 7% is more than likely due to my experience within the industry and to personal appeals to many of my past clients and partners that I consider to be friends. And, in addition to mailing surveys, many of the recipients were personally contacted to ask for their support. I suspect that those who were personally contacted returned their surveys with a much higher compliance rate than those companies that were mailed a survey without personal preparation.

It should be noted, that of the 136 responses, only 10 were from companies larger than the 250 employee limit established by the European Union's definition of an SME.

Of those useable responses, the following five logical categories were used to encapsulate the data based on how closely related the respondents were in their market offerings:

- Steel Detailers: These are organizations that produce drawings and computer files for fabricators to make the beams, columns, braces, etc. to construct various buildings. 767 surveys were mailed to Steel Detailers (720 in the U.S., 41 in Canada, 4 in the Philippines, and 2 in Mexico). 54 Steel Detailers retuned useful responses for a response rate of 7.04%. However, one was removed due to exceeding the size limitation for inclusion.
- 2. Steel Fabricators: These companies cut, punch, and weld steel components to form the structural skeleton of buildings. 733 surveys were mailed to Steel Fabricators (732 in the U.S., 1 in Canada). 50 Steel Fabricators returned useful responses for a response rate of 6.82%. Six of the responses from Steel Fabricators were removed due to exceeding the size limitation for inclusion.
- Specialty Coatings: These are companies that apply corrosion resistant coatings such as Zinc Galvanizing or Paint Systems to steel members. All of the 306 surveys in this category were mailed to Specialty Coating companies in the U.S. 8 returned useful responses for a response rate of 2.61%. One of the surveys was removed due to exceeding the size limitation for inclusion.
- 4. Other (Hard Products): These are companies that provide such items as Bridge Bearings, Marine Steel, Bending & Rolling Services, Adjustable Roof Top Unit Frames, Concrete & Masonry Products, Rebar, Castings, Machines or Machining

Services, Fiberglass Items, Weldments, Spiral Components, Stadium Seating, Steel Mills and Distributors, and Welding Equipment. 146 surveys were mailed to this group (143 in the U.S., 2 in Canada, and 1 in Mexico). 15 returned useful responses for a response rate of 10.27%. Two of the surveys were excluded from further analysis due to the large size of the firms.

5. Other (Soft Services): These are companies that provide Engineering Software, Consulting Services, Subordinate Engineering Services, Connection Design Services, Cloud Hosting, and Building Information Management (BIM) Services. 136 surveys were mailed to this group (114 in the U.S., 2 in Canada, 8 in Mexico, and 12 in the Philippines). 9 returned useful responses for a response rate of 6.62%. One of the surveys was removed due to exceeding the size limitation for inclusion.

General Demographic Information

Role Within the Organization: Of those who chose to respond:

28 responded as Owners (20.9% of responses);
37 responded as President or C-Level (27.6% of responses);
18 responded as Vice President or Director Level (13.4% of responses);
4 responded as Upper Management (2.9% of responses);
33 responded as Mid-Level Management (24.6% of responses);
14 responded as Senior Employees (10.4% of responses).

Education Level:

16 responded as having completed High School (12.4% of responses);
23 responded as having Some College (17.8% of responses);
17 responded as having an Associate's/Trade/Tech. Diploma (13.1% of responses);
57 responded with Bachelor's Degrees (44.1% of responses);

14 responded with Master's Degrees (10.8% of responses);

2 responded with Doctorates (1.5% of responses).

Certifications:

61 responded with certifications appropriate for their role within the organization (44.8% of responses).

Gender:

124 identified as Male (93.9% of responses); 8 identified as Female (6.0% of responses).

Ethnicity:

111 identified as White/Caucasian (90.9% of responses);

4 responded as Mixed (3.2% of responses);

3 responded as Asian (2.4% of responses);

3 responded as Hispanic (2.4% of responses);

1 responded as Indian (0.8% of responses)

Other Individual Information:

The mean reported age was 52.1 years old with ages ranging from 23 to 79. The mean time in their role was 14.5 years ranging from 1 to 45. The mean tenure with their company was 18.2 years with a range of 1 to 47 years. The mean time in their industry was 26.9 years with a range of 1 to 58 years.

Information about the Companies:

They averaged 128 employees across all 136 respondents. When removing the (10) large companies, they averaged 48 employees. On average, the companies represented have been in business since 1979. The newest company was founded in 2017. The oldest company was founded in 1871.

From a general standpoint, the sample is overwhelmingly White (90.9%), and overwhelmingly Male (93.9%). Almost two-thirds (64.8%) represent upper management. Most (87.3%) have at least some college, and almost 45% having at least one industry certification. With an average of 18 years in the industry and 14 ½ years at their company, they exemplify high levels of education, experience, and responsibility within their organizations.

First Run Through of the Data Set

First, the data was compiled by combining the respondent's answers to all of the personality based statements and their level of agreement or disagreement with each statement. The statements were pulled from the Ten Item Personality Inventory (TIPI) and the Five-Factor Model (5F). Although 16 statements from the two instruments (TIPI and 5F) were included in the survey, only eight applied to the Growth or Control mindset that this study is focused on.

Of the eight statements that contribute to an understanding of the Growth or Control mindset, four were pulled from "TIPI", and four were pulled from "5F."

The Ten Item Personality Inventory (TIPI) contributed these statements:

(1) "I see myself as Extraverted/Enthusiastic." Because this statement has been validated through the TIPI framework as a measure of "Extraversion" which is being used as a proxy for a growth minded disposition, agreement with this statement indicated a growth-oriented personality disposition.

- (2) "I see myself as Dependable/Self-Disciplined." This statement has been validated through the TIPI framework as a measure of "Conscientiousness" which is being used as a proxy for a control minded disposition. Agreement with this statement indicated a control-oriented personality disposition.
- (3) "I see myself as Reserved/Quiet." This has been validated through the TIPI framework as a measure of "Extraversion" which is being used as a proxy for a growth minded disposition, DIS-agreement with this statement indicated a growth-oriented mindset. This measure is Reverse coded of item number 1 above.
- (4) "I see myself as Disorganized/Careless." This statement has been validated through the TIPI framework as a measure of "Conscientiousness." DIS-agreement with this statement indicated a control-oriented personality disposition. This measure is Reverse Coded of item number 2 above.

In the TIPI framework, the four statements above do not cross load on each other. By "agreeing" with item number 1, it indicates a "growth" personality disposition, but disagreement with item number 1 does NOT indicate "control" personality disposition. However, in the Five Factor (5F) personality model, growth and control mindsets are presented on a sliding scale so that the more a person agrees with growth oriented statements, the less of a control orientation they are expected to demonstrate, and the more they disagree with a growth oriented statement, the more of a control orientation is expected.

5F contributed these statements:

- (1) **"I believe taking risks is essential for success."** Agreement indicated a growth mindset, disagreement indicated a control mindset.
- (2) **"I believe being cautions is the best policy for success."** Disagreement indicated a growth mindset, agreement indicated a control mindset.
- (3) "I believe a cautious approach is necessary to achieve something."Disagreement indicated a growth mindset, agreement indicated a control mindset.
- (4) "When trying to achieve a goal, you shouldn't worry about making mistakes." Agreement indicated a growth mindset, disagreement indicated a control mindset.

Participants were asked to indicate how strongly they agree or disagree with each of the statements based on a seven-point scale with 1 being "strongly disagree" and 7 being "strongly agree." Because TIPI only loads on one construct for each question, it contributed two questions towards classification of the participant as having a growth oriented personality disposition and two questions towards classification of the participant as having a control oriented personality disposition. And since 5F is presented as a scale of (in this case) growth to control, the four measures could indicate either growth or control. Thus, each of the personality disposition constructs had the availability of six possible "points" towards identifying the personality disposition of the various respondents.

On the first run through of the data, if the respondent indicated with a 1 or 2 it was recorded as "disagree" with the statement. An indication of 6 or 7 was recorded as "agree" with the statement. An indication of 3, 4, or 5 on the scale was not tallied as either a growth or a control point.

The total of each "Growth" and "Control" score was collected and the difference was taken to indicate their overall personality disposition in terms of growth or control. For example, if a respondent answered in agreement (or disagreement for reversely coded statements) to one of the "growth" factor statements, but they also agreed (or disagreed for reversely coded statements) to three of the "control" factors, and if they responded "neutral" on the other four statements, they would have been placed in the "control" minded group because their control score of 3 was higher than their growth score of 1.

Responses to the two hypothetical situations were recorded in the same manner. A scale of 1 to 7 was used to ask if they considered the situation to be an opportunity for growth or a threat to company success. A response of 1 or 2 indicated that the respondent considered the hypothetical situation to be an opportunity for growth, and a response of 6 or 7 indicated that the respondent considered the situation to be a threat to success. A response of 3, 4, or 5 on the scale was taken to indicate that the situation was perceived as neither an opportunity nor a threat, but represented a "neutral" change in the market environment.

Hypothetical Scenario #1: New Overseas Entrant into the Market

In response to the hypothetical rise of a new foreign/overseas source of competition from the African nation of Kenya, the respondents were asked if they would be inclined to (a) **Expand** into the foreign arena, (b) **Explore** the feasibility of expanding, (c) **Eyeball**, or "keep their eyes on" the new source of competition, (d) **Exit**, or look for an opportunity to leave their company, (e) **Ignore** the new source of competition, or (f) **Entrench** themselves deeper into their current processes to drive down their costs in order to compete better on price.

Of the 126 SME respondents, several participants were unable to be placed into either the growth or control categories based on their responses to the questions. Fortunately, however, one hundred and six (106) SME respondents filtered through the TIPI and 5F filters were able to be used as either a "growth" or a "control" personality type, and the initial results were quite eye-opening.

Hypothesis 1 proposed that if the owner/manager of a small business views the entrant of the Kenyan supplier as an *opportunity*, and if they have a *growth*-minded personality, there should be a positive correlation with their intent to *expand* their operations in response to those market conditions. Of the respondents that met both the perception construct of "opportunity" and the personality construct of "growth-minded," the model predicted four (4) responses in support of Hypothesis 1.

The actual responses were that zero (0) responses to expand their operations.

Below is the "Receiver Operating Characteristic" Curve (ROC Curve) which plots the "True Positive Rate" (TPR) on the Y-axis as compared to the "False Positive Rate" (FPR) on the X-axis.

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TPR is calculated by the function TP/(TP+FN) or TPR= True Positive divided by (True Positive + False Negative). FPR is calculated by the function FP/(TN+FP) or FPR = False Positive divided by (True Negative + False Positive).

With a little imagination, the shape of the plot should resemble the example on page 58 with the vertical component hovering around an X-value of 0.5 for a truly random binary probability.

For the purposes of this study, I have selected an X-value of 0.65 for the targeted vertical component to support the various hypotheses. The ROC curve will be used throughout the remainder of the dissertation to represent the predictive capabilities of the hypotheses.

On the following page is an ROC curve for Hypothesis 1 in regards to a new source of foreign competition along with a regression data table and a classification table:



Figure 4.01 Regression Plot for Scenario 1 Hypothesis 1: Off-Shoring

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	0	55	55	0	6.19013E-10	3.40457E-08	55
0	1	0	40	40	0	6.19013E-10	2.47605E-08	40
1	0	0	7	7	0	6.19013E-10	4.33309E-09	7
1	1	0	4	4	0	6.19013E-10	2.47605E-09	4
		0	106	106			6.56154E-08	106

Table 4.01a Logistic Regression Data for Scenario 1 Hypothesis 1

	Suc-Obs	Fail-Obs	
Suc-Pred	0	4	4
Fail-Pred	0	102	102
	0	106	106

Table 4.01b Classification Table for Scenario 1 Hypothesis 1

Hypothesis 2 proposed that if the owner/manager of a small business views the entrant of the Kenyan supplier as an *opportunity*, and if they have a *control*-minded personality, there should be a positive correlation with their intent to *eyeball* (keep an eye on) the Kenyan operations in response to those market conditions. Of the respondents that met both the perception construct of "opportunity" and the personality construct of "growth-minded," the model predicted seven (7) responses in support of Hypothesis #2.

Of the total responses, thirty-two (32) people responded that they would "keep their eye on" the situation. This represents 30.19% of the useable respondents.

However, thirty-one (31) of the predicted responses were "false positives" based on the predictive model. The predicted "true positives" indicated that only one (1) of the thirty-two companies would "keep their eye on" the Kenyan situation for a predictive accuracy rate of 14.29% (1/7) for Hypothesis 2, and an observed response accuracy rate of 3.13% (1/32).

On the following page is an ROC curve for Hypothesis 2 in regards to a new source of foreign competition along with a regression data table and a classification table:



Figure 4.02 Regression Plot for Scenario 1 Hypothesis 2: Off-Shoring

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	13	27	40	0.325	0.330684	13.22734	26.77266
0	1	17	38	55	0.309091	0.304957	16.77266	38.22734
1	0	1	3	4	0.25	0.193165	0.772659	3.227341
1	1	1	6	7	0.142857	0.175334	1.227341	5.772659
		32	74	106			32	74

Table 4.02a Logistic Regression Data for Scenario 1 Hypothesis 2

	Suc-Obs	Fail-Obs	
Suc-Pred	1	6	7
Fail-Pred	31	68	99
	32	74	106

Table 4.02b Classification Table for Scenario 1 Hypothesis 2

Hypothesis 3 proposed that if the owner/manager of a small business views the Kenyan changes in their market as *neutral*, and if they have a *growth*-minded personality, there will be a positive correlation with their intent to *explore* new opportunities in response to those "neutral" changes.

Of the respondents that met both constructs for Hypothesis 3, the model predicted twenty-four (24) people would explore the new market situation.

Nineteen (19) people actually responded that they would "explore" the feasibility of either partnering with the new foreign competitor or moving into the local arena. This represents 17.92% of the useable respondents.

However, thirteen (13) of the predicted responses were "false positives" based on the predictive model. The predicted "true positives" indicated that only six (6) of the nineteen companies would "explore" the Kenyan situation for a predictive accuracy rate of 31.58% (6/19) for Hypothesis 3, and an observed response accuracy rate of 25.00% (6/24).

On the following page is an ROC curve for Hypothesis 3 in regards to a new source of foreign competition along with a regression data table and a classification table:



Figure 4.03 Regression Plot for Scenario 1 Hypothesis 3:

Off-Shoring

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	3	26	29	0.103448	0.101382	2.940074	26.05993
0	1	2	18	20	0.1	0.102996	2.059926	17.94007
1	0	8	25	33	0.242424	0.24424	8.059926	24.94007
1	1	6	18	24	0.25	0.247503	5.940074	18.05993
		19	87	106			19	87

Table 4.03a Logistic Regression Data for Scenario 1 Hypothesis 3

	Suc-Obs	Fail-Obs	
Suc-Pred	6	18	24
Fail-Pred	18	84	82
	24	102	106

Table 4.03b Classification Table for Scenario 1 Hypothesis 3

Hypothesis 4 proposed that if the owner/manager of a small business views the Kenyan changes in their market as *neutral*, and if they have a *control*-minded personality, there will be a positive correlation with their intent to *ignore* the "neutral" changes.

Of the respondents that met both constructs for Hypothesis 4, the model predicted thirtyfour (34) people would ignore the Kenyan entrant.

Of the total responses, twenty-eight (28) people responded that they would "ignore" the new market situation. This represents 26.42% of the useable respondents.

However, fifteen (15) of the predicted responses were "false positives" based on the predictive model. The predicted "true positives" indicated that only thirteen (13) people actually responded that they would ignore the new competitor, for a predictive accuracy rate of 38.24% (13/34) for Hypothesis 4, and an observed response accuracy rate of 46.43% (13/28).

Interestingly, the "Ignore" option was the highest predictive accuracy rating across all six hypotheses for the hypothetical situation proposing a new foreign competitor in the market space.

On the following page is an ROC curve for Hypothesis 4 in regards to a new source of foreign competition along with a regression data table and a classification table:



Figure 4.04 Regression Plot for Scenario 1 Hypothesis 4: Off-Shoring

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	2	18	20	0.1	0.116918	2.338355	17.66165
0	1	5	24	29	0.172414	0.160746	4.661645	24.33835
1	0	8	16	24	0.333333	0.319235	7.661645	16.33835
1	1	13	20	33	0.393939	0.404193	13.33835	19.66165
		28	78	106			28	78

Table 4.04a Logistic Regression Data for Scenario 1 Hypothesis 4

	Suc-Obs	Fail-Obs	
Suc-Pred	13	20	33
Fail-Pred	15	58	73
	28	78	106

Table 4.04b Classification Table for Scenario 1 Hypothesis 4

Hypothesis 5 proposed that if the owner/manager of a small business views the Kenyan changes in their market as a *threat*, and if they have a *growth*-minded personality, there will be a positive correlation with their intent to *exit* the market in response to the threat.

Of the respondents that met both constructs for Hypothesis 5, the model predicted fourteen (14) people would respond with intent to exit based on the new market situation.

Six (6) people actually indicated a leaning to leaving their job or the market as a result of the new foreign influence. This represents 5.66% of the useable respondents.

However, all six (6) of the predicted responses were "false positives" based on the predictive model. The predicted "true positives" indicated that none (0) of the fourteen companies would "explore" the Kenyan situation for a predictive accuracy rate of 0.00% (0/14) for Hypothesis 3, and an observed response accuracy rate of 0.00% (0/6).

On the following page is an ROC curve for Hypothesis 5 in regards to a new source of foreign competition along with a regression data table and a classification table:



Figure 4.05 Regression Plot for Scenario 1 Hypothesis 5: Off-Shoring

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	2	40	42	0.047619	0.047619	2	40
0	1	0	30	30	0	2.93E-10	8.78E-09	30
1	0	4	16	20	0.2	0.2	4	16
1	1	0	14	14	0	1.46E-09	2.05E-08	14
		6	100	106			6	100

Table 4.05a Logistic Regression Data for Scenario 1 Hypothesis 5

	Suc-Obs	Fail-Obs	
Suc-Pred	0	14	14
Fail-Pred	6	86	92
	6	100	106

Table 4.05b Classification Table for Scenario 1 Hypothesis 5

Hypothesis 6 proposed that if the owner/manager of a small business views changes in their market as a *threat*, and if they have a *control*-minded personality, there should be a positive correlation with their intent to *entrench* (focus their energies on their internal operations) in response to those changes.

Of the respondents that met both constructs for Hypothesis 6, the model predicted twenty (20) people would "entrench" based on the introduction of the Kenyan situation.

Of the total responses, seventeen (17) people responded that they would "entrench" in this new market situation. This represents 16.54% of the useable respondents.

However, seventeen (17) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that only three (3) people actually responded that they would ignore the new competitor, for a predictive accuracy rate of 17.65% (3/17) for Hypothesis #4, and an observed response accuracy rate of 15.00% (3/20).

On the following page is an ROC curve for Hypothesis 6 in regards to a new source of foreign competition along with a regression data table and a classification table:



Figure 4.06 Regression Plot for Scenario 1 Hypothesis 6: Off-Shoring

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	6	24	30	0.2	0.198732	5.961957	24.03804
0	1	4	38	42	0.095238	0.096144	4.038043	37.96196
1	0	4	10	14	0.285714	0.288432	4.038043	9.961957
1	1	3	17	20	0.15	0.148098	2.961957	17.03804
		17	89	106			17	89

Table 4.06a Logistic Regression Data for Scenario 1 Hypothesis 6

	Suc-Obs	Fail-Obs	
Suc-Pred	3	17	20
Fail-Pred	14	72	86
	17	89	106

Table 4.06b Classification Table for Scenario 1 Hypothesis 6

With such varied participants covering a broad spectrum of offerings within the construction industry, the results of the survey were both disappointing and interesting. The results are disappointing because the predictive accuracy for the model in response to a Hypothetical change in the foreign competition status of the market was dismally low. And, the results are interesting because they are quite surprising considering that the foundational theories that this study is based on were *not* supported in this market arena!

Overall, the predictive and observed accuracy of the model for Scenario #1 was well below the .65 cutoff as shown below:

N=106	Initial Criteria (1,2 or 6,7)	Predicted Accuracy	Observed Accuracy
	H1: Opportunity + Growth = Expand	0.00%	0.00%
	H2: Opportunity + Control = Eyeball	14.29%	3.13%
trant	H3: Neutral + Growth = Explore	31.58%	25.00%
an Ent	H4: Neutral + Control = Ignore	38.24%	46.43%
Keny	H5: Threat + Growth = Exit	0.00%	0.00%
	H6: Threat + Control = Entrench	17.65%	15.00%
	Average Accuracy:	16.96%	14.93%

Table 4.07: Accuracy Matrix for Off-Shoring Scenario

Hypothetical Scenario #2: Introduction of a Substitute Product

Scenario #2 proposed a radical new substitute product entering the market. As the target respondents for the data tend to operate in the heavy construction field with steel being the material of choice, the suggested entry of wood as a primary building material for heavy structures or high-rise buildings may sound far-fetched to many of the participants.

The same one hundred and seven (107) SME respondents filtered through the TIPI and 5F filters to indicate either a growth or a control mindset that responded to the introduction of a new foreign entrant also responded to the second scenario.

Hypothesis 1 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as an *opportunity*, and if they have a *growth*-minded personality, there should be a positive correlation with their intent to *expand* their operations in response to those market conditions. Of the respondents that met both the perception construct of "opportunity" and the personality construct of "growth-minded," the model predicted eight (8) responses in support of Hypothesis 1.

The actual responses were that zero (0) responses to expand their operations.

On the following page is an ROC curve for Hypothesis 1 in regards to a new competing product along with a regression data table and a classification table:



Figure 4.09 Regression Plot for Scenario 2 Hypothesis 1: Substitute Product

rerception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	0	55	55	0	6 10013E 10	3 40457E 08	55
0	0	0	55	55	0	0.19015E-10	3.40437E-08	55
0	1	0	34	34	0	6.19013E-10	2.10464E-08	34
1	0	0	7	7	0	6.19013E-10	4.33309E-09	7
1	1	0	10	10	0	6.19013E-10	6.19013E-09	10
		0	106	106			6.56154E-08	106

Table 4.09a Logistic Regression Data for Scenario 2 Hypothesis 1

	Suc-Obs	Fail-Obs	
Suc-Pred	0	10	10
Fail-Pred	0	96	96
	0	106	106

Table 4.09b Classification Table for Scenario 2 Hypothesis 1

Hypothesis 2 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as an *opportunity*, and if they have a *control*-minded personality, there should be a positive correlation with their intent to *eyeball* (keep an eye on) the new product entrant in response to those market conditions.

Of the respondents that met both the perception construct of "opportunity" and the personality construct of "control," the model predicted seven (7) responses in support of Hypothesis 2. This represents 6.60% of the useable respondents.

Of the total responses, thirty-three (33) people responded that they would "keep their eye on" the new market situation. This represents 31.13% of the useable respondents.

However, six (6) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that only one (1) person actually responded that they would ignore the new competitor, for a predictive accuracy rate of 14.29% (1/7) for Hypothesis 2, and an observed response accuracy rate of 3.03% (1/33).

On the following page is an ROC curve for Hypothesis 2 in regards to a new competing product along with a regression data table and a classification table:



Figure 4.10 Regression Plot for Scenario 2 Hypothesis 2: Substitute Product

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	13	21	34	0.382353	0.391323	13.30498	20.69502
0	1	16	39	55	0.290909	0.285364	15.69502	39.30498
1	0	3	7	10	0.3	0.269502	2.69502	7.30498
1	1	1	6	7	0.142857	0.186426	1.30498	5.69502
		33	73	106			33	73

Table 4.10a Logistic Regression Data for Scenario 2 Hypothesis 2

	Suc-Obs	Fail-Obs	
Suc-Pred	1	6	7
Fail-Pred	32	67	99
	33	73	106

Table 4.10b Classification Table for Scenario 2 Hypothesis 2

Hypothesis 3 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as *neutral*, and if they have a *growth*-minded personality, there will be a positive correlation with their intent to *explore* new opportunities in response to those "neutral" changes.

Of the respondents that met both constructs for Hypothesis 3, the model predicted twenty-four (24) people would explore the new market situation. This represents 22.64% of the useable respondents.

Of the total responses, fifteen (15) people responded that they would "explore" the new market situation. This represents 14.15% of the useable respondents.

However, twenty-two (22) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that only two (2) people actually responded that they would explore the new substitute product, for a predictive accuracy rate of 8.33% (2/24) for Hypothesis 3, and an observed response accuracy rate of 13.33% (2/15).

On the following page is an ROC curve for Hypothesis 3 in regards to a new competing product along with a regression data table and a classification table:



Figure 4.11 Regression Plot for Scenario 2 Hypothesis 3	:
Substitute Product	

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	1	17	18	0.055556	0.142831	2.57095	15.42905
0	1	5	15	20	0.25	0.171453	3.42905	16.57095
1	0	7	37	44	0.159091	0.123388	5.42905	38.57095
1	1	2	22	24	0.083333	0.14879	3.57095	20.42905
		15	91	106			15	91

Table 4.11a Logistic Regression Data for Scenario 2 Hypothesis 3

	Suc-Obs	Fail-Obs	
Suc-Pred	2	22	24
Fail-Pred	13	69	82
	15	91	106

Table 4.11b Classification Table for Scenario 2 Hypothesis 3

Hypothesis 4 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as *neutral*, and if they have a *control*-minded personality, there will be a positive correlation with their intent to *ignore* the "neutral" changes.

Of the respondents that met both constructs for Hypothesis 4, the model predicted fortyfour (44) people would ignore the new market situation. This represents 41.51% of the useable respondents.

Of the total responses, thirty-eight (38) people responded that they would "ignore" the new market situation. This represents 35.85% of the useable respondents.

However, twenty-four (24) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that twenty (20) people actually responded that they would ignore the new substitute product, for a predictive accuracy rate of 45.45% (20/44) for Hypothesis 4, and an observed response accuracy rate of 52.63% (20/38).

Interestingly, just as the case with the foreign competitor, the "Ignore" option was the highest predictive accuracy rating across all six hypotheses for the hypothetical situation proposing a new substitute product in the market space.

On the following page is an ROC curve for Hypothesis 4 in regards to a new competing product along with a regression data table and a classification table:



Figure 4.12 R	egression 1	Plot for	Scenario	2 Hypothesis	4:
	Subs	titute Pı	roduct		

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	4	16	20	0.2	0.205961	4.119212	15.88079
0	1	5	13	18	0 277778	0 271155	4 880788	13 11921
0	1	5	15	10	0.277770	0.271155	4.000700	15.11721
1	0	9	15	24	0.375	0.370033	8.880788	15.11921
1	1	20	24	44	0.454545	0.457255	20.11921	23.88079
		38	68	106			38	68

Table 4.12a Logistic Regression Data for Scenario 2 Hypothesis 4

	Suc-Obs	Fail-Obs	
Suc-Pred	20	24	44
Fail-Pred	18	44	62
	38	68	106

Table 4.12b Classification Table for Scenario 2 Hypothesis 4

Hypothesis 5 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as a *threat*, and if they have a *growth*-minded personality, there will be a positive correlation with their intent to *exit* the market in response to the threat.

Of the respondents that met both constructs for Hypothesis 5, the model predicted eight (8) people would respond with intent to exit their company based on the new market situation. This represents 7.55% of the useable respondents.

Of the total responses, two (2) people responded that they would "exit" based on the new market situation. This represents 1.89% of the useable respondents.

However, all eight (8) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that zero (0) people actually responded that they would exit, for a predictive accuracy rate of 0.00% (0/8) for Hypothesis 5, and an observed response accuracy rate of 0.00% (0/2).

On the following page is an ROC curve for Hypothesis 5 in regards to a new competing product along with a regression data table and a classification table:



Figure 4.13 Regression Plot for Scenario 2 Hypothesis 5: Substitute Product

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
	-	-			-			
0	0	0	53	53	0	1.21E-09	6.39E-08	53
0	1	0	26	26	0	0.15.17	7.5(5.1)	26
0	1	0	36	36	0	2.1E-17	7.56E-16	30
1	0	2	7	0	0.0000000	0.000000	2	7
1	0	2	/	9	0.2222222	0.222222	2	/
				-	0	1075.00	0.005.00	
1	1	0	8	8	0	4.97E-09	3.98E-08	8
		2	104	106			2	104

Table 4.13a Logistic Regression Data for Scenario 2 Hypothesis 5

	Suc-Obs	Fail-Obs	
Suc-Pred	0	8	8
Fail-Pred	2	96	98
	2	104	106

Table 4.13b Classification Table for Scenario 2 Hypothesis 5

Hypothesis 6 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as a *threat*, and if they have a *control*-minded personality, there should be a positive correlation with their intent to *entrench* (focus their energies on their internal operations) in response to those changes.

Of the respondents that met both constructs for Hypothesis 6, the model predicted nine (90) responses that should ramp up their focus on their internal operations. This represents 8.49% of the useable respondents.

Of the total responses, fourteen (14) people responded that they would "entrench" based on the new market situation. This represents 13.21% of the useable respondents.

However, seven (7) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that two (2) people actually responded that they would entrench, for a predictive accuracy rate of 22.22% (2/9) for Hypothesis 6, and an actual response accuracy rate of 14.28% (2/14).

On the following page is an ROC curve for Hypothesis 6 in regards to a new competing product along with a regression data table and a classification table:



Figure 4.14 Regression Plot for Scenario 2 Hypothesis	6:
Substitute Product	

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	5	31	36	0.138889	0.126645	4.559211	31.44079
					0.110000	0.101504	< 110700	46.550.01
0	1	6	47	53	0.113208	0.121524	6.440789	46.55921
1	0	1	7	8	0.125	0.180099	1.440789	6.559211
1	1	2	7	9	0.222222	0.173246	1.559211	7.440789
		14	92	106			14	92

Table 4.14a Logistic Regression Data for Scenario 2 Hypothesis 6

	Suc-Obs	Fail-Obs	
Suc-Pred	2	7	9
Fail-Pred	12	85	97
	14	92	106

Table 4.14b Classification Table for Scenario 2 Hypothesis 6
With such varied participants covering a broad spectrum of offerings within the construction industry, the results of the survey were both disappointing and interesting. Interesting because the actual results were not what was expected and disappointing because the overall predictive and observed accuracy of the model for Scenario #2 was well below the .65 cutoff as shown below:

N=106	Initial Criteria (1,2 or 6,7)	Predicted Accuracy	Observed Accuracy
	H1: Opportunity + Growth = Expand	0.00%	0.00%
	H2: Opportunity + Control = Eyeball	14.29%	3.03%
oduct	H3: Neutral + Growth = Explore	8.33%	13.33%
tute P1	H4: Neutral + Control = Ignore	45.45%	52.63%
Substi	H5: Threat + Growth = Exit	0.00%	0.00%
	H6: Threat + Control = Entrench	22.22%	14.28%
	Average Accuracy:	15.05%	13.88%

 Table 4.15: Accuracy Matrix for Substitute Product Scenario

Second Run Through of the Data Set

The second run through the data set tightened the criteria to be included with the personality and the perception constructs.

During the previous analysis, an answer of "1 or 2" or "6 or 7" were recorded as "agree" or "disagree" with the statements that were tied to the categorization of personality types and their perception of the hypothetical situation that was presented.

An indication of 2, 3, 4, 5, or 6 on the scale was not tallied as either a growth or a control point.

Responses to the two hypothetical situations were recorded in the same manner. A scale of 1 to 7 was used to ask if they considered the situation to be an opportunity for growth or a threat to company success. The same scoring criteria were used to capture the perception of the hypothetical change in the market environment.

One hundred and six (106) respondents met the criteria for inclusion in the first run through of the data set. However, with more stringent criteria applied to the second run through of the data, only seventy-three (73) respondents were cataloged at the extremes. This is 57.94% of the total responses and 68.87% of the number of responses for the first run through.

It should be noted that there were forth-three (43) respondents included in the first run through of the data who were not included in the second run through, and there were ten (10) respondents who were not included in the first run through who were included in the second run through of the data.

Hypothetical Scenario #1: New Overseas Entrant into the Market – More Stringent Inclusion (1's and 7's only)

Revisiting the data collected in response to Scenario #1 - a competitor from Kenya – where the respondents were asked if they would be inclined to (a) **Expand**, (b) **Explore**, (c) **Eyeball**, (d) **Exit**, (e) **Ignore**, or (f) **Entrench**, the same responses were filtered through the TIPI and 5F filters set at the extreme responses of 1's and 7's only.

Hypothesis 1 proposed that if the owner/manager of a small business views the entrant of the Kenyan supplier as an *opportunity*, and if they have a *growth*-minded personality, there should be a positive correlation with their intent to *expand* their operations.

Of the respondents that met both the perception construct of "opportunity" and the personality construct of "growth-minded," the model predicted two (2) responses in support of Hypothesis #1. This represents 2.74% of the 73 useable respondents.

The actual responses were that zero (0) responses to expand their operations. This represents 0.00% of the useable respondents.

With zero (0) responses in support of expansion, this represents a predictive accuracy rate of 0.00% (0/2) for Hypothesis 1 and an observed response accuracy rate of 0.00% (0/0).

On the following page is an ROC curve for Hypothesis 1 in regards to a new source of foreign competition along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:



Figure 4.16 Regression Plot for Scenario 1 Hypothesis 1: Off-Shoring at Extremes

								Fail-
Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Pred
0	0	0	40	40	0	6.19013E-10	2.4761E-08	40
0	1	0	28	28	0	6.19013E-10	1.7332E-08	28
1	0	0	3	3	0	6.19013E-10	1.857E-09	3
1	1	0	2	2	0	6.19013E-10	1.238E-09	2
		0	73	73			4.5188E-08	73

Table 4.16a Logistic Regression Data for Scenario 1 Hypothesis 1:Off-Shoring at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	0	2	2
Fail-Pred	0	71	71
	0	73	73

Table 4.16b Classification Table for Scenario 1 Hypothesis 1: Off-Shoring at Extremes

Hypothesis 2 proposed that if the owner/manager of a small business views the entrant of the Kenyan supplier as an *opportunity*, and if they have a *control*-minded personality, there should be a positive correlation with their intent to *eyeball* (keep an eye on) the Kenyan operations in response to those market conditions.

Of the respondents that met both constructs for Hypothesis 2, the model predicted three (3) people would "eyeball" the new market situation.

Twenty-six (29) people actually responded that they would "eyeball" the feasibility of either partnering with the new foreign competitor or moving into the local arena. This represents 25.62% of the useable respondents.

However, two (2) of the predictions was a "false positive" based on the predictive model. The predicted "true positives" indicated that only one (1) of the three (3) companies would "eyeball" the Kenyan situation for a predictive accuracy rate of 33.33% (1/3) for Hypothesis 2, and an observed response accuracy rate of 3.85% (1/26).

On the following page is an ROC curve for Hypothesis 2 in regards to a new source of foreign competition along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:



Figure 4.17 Regression Plot for Scenario 1 Hypothesis 2: Off-Shoring at Extremes

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	10	18	28	0.357143	0.344033	9.632927	18.36707
0	1	15	25	40	0.375	0.384177	15.36707	24.63293
1	0	0	2	2	0	0.183536	0.367073	1.632927
1	1	1	2	3	0.333333	0.210976	0.632927	2.367073
		26	47	73			26	47

Table 4.17a Logistic Regression Data for Scenario 1 Hypothesis 2:Off-Shoring at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	1	2	3
Fail-Pred	25	45	70
	26	47	73

Table 4.17b Classification Table for Scenario 1 Hypothesis 2:Off-Shoring at Extremes

Hypothesis 3 proposed that if the owner/manager of a small business views the Kenyan changes in their market as *neutral*, and if they have a *growth*-minded personality, there will be a positive correlation with their intent to *explore* new opportunities in response to those "neutral" changes.

Of the respondents that met both constructs for Hypothesis 3, the model predicted twenty-two (22) people would explore the new market situation.

Thirteen (13) people actually responded that they would "explore" the feasibility of either partnering with the new foreign competitor or moving into the local arena. This represents 17.81% of the useable respondents.

However, eighteen (18) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that only four (4) of the twenty-two companies would "explore" the Kenyan situation for a predictive accuracy rate of 18.18% (4/22) for Hypothesis 3, and an observed response accuracy rate of 30.77% (4/13).

On the following page is an ROC curve for Hypothesis 3 in regards to a new source of foreign competition along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:



Figure 4.18 Regression Plot for Scenario 1 Hypothesis 3: Off-Shoring at Extremes

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	1	11	12	0.083333	0.105151	1.261807	10.73819
0	1	1	7	8	0.125	0.092274	0.738193	7.261807
1	0	7	24	31	0.225806	0.217361	6.738193	24.26181
1	1	4	18	22	0.181818	0.193718	4.261807	17.73819
		13	60	73			13	60

Table 4.18a Logistic Regression Data for Scenario 1 Hypothesis 3:Off-Shoring at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	4	18	22
Fail-Pred	9	42	51
	13	60	73

Table 4.18b Classification Table for Scenario 1 Hypothesis 3:Off-Shoring at Extremes

Hypothesis 4 proposed that if the owner/manager of a small business views the Kenyan changes in their market as *neutral*, and if they have a *control*-minded personality, there will be a positive correlation with their intent to *ignore* the "neutral" changes.

Of the respondents that met both constructs for Hypothesis 4, the model predicted thirtyone (31) people would "ignore" the new market situation.

Twenty-one (21) people actually responded that they would "ignore" the feasibility of either partnering with the new foreign competitor or moving into the local arena. This represents 28.77% of the useable respondents.

However, twenty (20) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that only eleven (11) of the thirty-one (31) predicted responses would "ignore" the Kenyan situation for a predictive accuracy rate of 35.48% (11/31) for Hypothesis 4, and an observed response accuracy rate of 52.38% (11/21).

The "Ignore" option was the highest predictive accuracy rating across all six hypotheses.

On the following page is an ROC curve for Hypothesis 4 in regards to a new source of foreign competition along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:



Figure 4.19 Regression Plot for Scenario 1 Hypothesis 4: Off-Shoring at Extremes

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	0	8	8	0	7.83E-10	6.26E-09	8
0	1	0	12	12	0	5.17E-10	6.2E-09	12
1	0	10	12	22	0.45454545	0.454545	10	12
1	1	11	20	31	0.35483871	0.354839	11	20
		21	52	73			21	52

Table 4.19a Logistic Regression Data for Scenario 1 Hypothesis 4:Off-Shoring at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	11	20	31
Fail-Pred	10	32	42
	21	52	73

Table 4.19b Classification Table for Scenario 1 Hypothesis 4:Off-Shoring at Extremes

Hypothesis 5 proposed that if the owner/manager of a small business views the Kenyan changes in their market as a *threat*, and if they have a *growth*-minded personality, there will be a positive correlation with their intent to *exit* the market in response to the threat.

Of the respondents that met both constructs for Hypothesis 5, the model predicted five (5) people would "exit" based on the new market situation.

Five (5) people actually responded that they would "exit" based on the new market conditions. This represents 6.85% of the useable respondents.

However, four (4) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that one (1) of the five (5) predicted responses would "exit" due to the Kenyan situation for a predictive accuracy rate of 20.00% (1/5) for Hypothesis 5, and an observed response accuracy rate of 20.00% (1/5).

On the following page is an ROC curve for Hypothesis 5 in regards to a new source of foreign competition along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:



Figure 4.20 Regression Plot for Scenario 1 Hypothesis 5: Off-Shoring at Extremes

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	1	35	36	0.027778	0.023603	0.849709	35.15029
0	1	0	25	25	0	0.006012	0.150291	24.84971
1	0	3	4	7	0.428571	0.450042	3.150291	3.849709
1	1	1	4	5	0.2	0.169942	0.849709	4.150291
		5	68	73			5	68

Table 4.20a Logistic Regression Data for Scenario 1 Hypothesis 5:Off-Shoring at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	1	4	5
Fail-Pred	4	64	68
	5	68	73

Table 4.20b Classification Table for Scenario 1 Hypothesis 5:Off-Shoring at Extremes

Hypothesis 6 proposed that if the owner/manager of a small business views changes in their market as a *threat*, and if they have a *control*-minded personality, there should be a positive correlation with their intent to *entrench* (focus their energies on their internal operations) in response to those changes.

Of the respondents that met both constructs for Hypothesis 6, the model predicted seven (7) people would "entrench" due to the new market situation.

Eleven (11) people actually responded that they would "entrench" in response to the new foreign competitor or moving into the local arena. This represents 15.67% of the useable respondents.

However, six (6) of the responses were "false positives" based on the predictive model. The predicted "true positives" indicated that only one (1) of the seven predicted responses would "entrench" in response to the Kenyan situation for a predictive accuracy rate of 15.07% (1/7) for Hypothesis 4, and an observed response accuracy rate of 9.09% (1/11).

On the following page is an ROC curve for Hypothesis 6 in regards to a new source of foreign competition along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:

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Figure 4.21 Regression Plot for Scenario 1 Hypothesis 6: Off-Shoring at Extremes

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	6	19	25	0.24	0.235775	5.894386	19.10561
0	1	2	34	36	0.055556	0.058489	2.105614	33.89439
1	0	2	3	5	0.4	0.421123	2.105614	2.894386
1	1	1	6	7	0.142857	0.127769	0.894386	6.105614
		11	62	73			11	62

Table 4.21a Logistic Regression Data for Scenario 1 Hypothesis 6:Off-Shoring at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	1	6	7
Fail-Pred	10	56	66
	11	62	73

Table 4.21b Classification Table for Scenario 1 Hypothesis 6:Off-Shoring at Extremes

Overall, the predictive and observed accuracy of the model for Scenario #1 with stringent criteria for inclusion was well below the .65 cutoff as shown below

N=73	Stringent Criteria (1 or 7)	Predicted Accuracy	Observed Accuracy
	H1: Opportunity + Growth = Expand	0.00%	0.00%
	H2: Opportunity + Control = Eyeball	33.33%	3.85%
trant	H3: Neutral + Growth = Explore	18.18%	30.77%
an En	H4: Neutral + Control = Ignore	35.48%	52.38%
Keny	H5: Threat + Growth = Exit	20.00%	20.00%
	H6: Threat + Control = Entrench	15.07%	9.09%
	Average Accuracy:	20.34%	19.35%

Table 4.22 Accuracy Matrix #2 for Off-Shoring Scenario:Off-Shoring at Extremes

Hypothetical Scenario #2: Introduction of a Substitute Product – More Stringent Inclusion (1's and 7's only)

Scenario #2 proposed a radical new substitute product entering the market. As the target respondents for the data tend to operate in the heavy construction field with steel being the material of choice, the suggested entry of wood as a primary building material for heavy structures or high-rise buildings may sound far-fetched to many of the participants.

The same SME seventy-three (73) respondents as above were filtered through the TIPI and 5F filters with more stringent criteria (1's and 7's only) to indicate either a growth or a control mindset that responded to the introduction of a new foreign entrant also responded to the second scenario.

Hypothesis 1 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as an *opportunity*, and if they have a *growth*-minded personality, there should be a positive correlation with their intent to *expand* their operations in response to those market conditions.

Of the respondents that met both the perception construct of "opportunity" and the personality construct of "growth-minded," the model predicted four (4) responses in support of Hypothesis #1.

Zero (0) people responded that they would "expand" in response to the introduction of a substitute product. This represents 0.00% of the useable respondents.

However, four (4) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that none (0) of the four (4) predicted responses would "expand" in response to the substitute product for a predictive accuracy rate of 0.00% (0/4) for Hypothesis 4, and an observed response accuracy rate of 0.00% (0/0).

On the following page is an ROC curve for Hypothesis 1 in regards to a new substitute product along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:



Figure 4.23 Regression Plot for Scenario 2 Hypothesis 1: Substitute Product at Extremes

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	0	41	41	0	6.19013E-10	2.538E-08	41
0	1	0	26	26	0	6.19013E-10	1.6094E-08	26
1	0	0	2	2	0	6.19013E-10	1.238E-09	2
1	1	0	4	4	0	6.19013E-10	2.4761E-09	4
		0	73	73			4.5188E-08	73

Table 4.23a Logistic Regression Data for Scenario 2 Hypothesis 1:Substitute Product at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	0	4	4
Fail-Pred	0	69	69
	0	73	73

Table 4.23b Classification Table for Scenario 2 Hypothesis 1:Substitute Product at Extremes

Hypothesis 2 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as an *opportunity*, and if they have a *control*-minded personality, there should be a positive correlation with their intent to *eyeball* (keep an eye on) the new product entrant in response to those market conditions.

Of the respondents that met both constructs for Hypothesis 2, the model predicted two (2) people would "eyeball" due to the new market situation.

Seventeen (17) people actually responded that they would "eyeball" in response to the substitute product. This represents 23.29% of the useable respondents.

However, one (1) of the predicted responses was a "false positive" based on the predictive model. The predicted "true positives" indicated that only one (1) of the two predicted responses would "eyeball" in response to the Kenyan situation for a predictive accuracy rate of 50.00% (1/2) for Hypothesis 4, and an observed response accuracy rate of 5.88% (1/17).

On the following page is an ROC curve for Hypothesis 2 in regards to a new substitute product along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:



Figure 4.24 Regression Plot for Scenario 2 Hypothesis 2: Substitute Product at Extremes

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	8	18	26	0.307692	0.279597	7.269516	18.73048
0	1	8	33	41	0.195122	0.212939	8.730484	32.26952
1	0	0	4	4	0	0.182621	0.730484	3.269516
1	1	1	1	2	0.5	0.134758	0.269516	1.730484
		17	56	73			17	56

Table 4.24a Logistic Regression Data for Scenario 2 Hypothesis 2:Substitute Product at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	1	1	2
Fail-Pred	16	55	71
	17	56	73

Table 4.24b Classification Table for Scenario 2 Hypothesis 2:Substitute Product at Extremes

Hypothesis 3 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as *neutral*, and if they have a *growth*-minded personality, there will be a positive correlation with their intent to *explore* new opportunities in response to those "neutral" changes.

Of the respondents that met both constructs for Hypothesis 3, the model predicted twenty-three (23) people would "explore" the new market situation.

Thirteen (13) people actually responded that they would "explore" in response to the new foreign competitor or moving into the local arena. This represents 17.81% of the useable respondents.

However, twenty (20) of the predictions were "false positives" based on the predictive model. The predicted "true positives" indicated that only three (3) of the twenty-three (23) predicted responses would "explore" in response to the Kenyan situation for a predictive accuracy rate of 13.04% (3/23) for Hypothesis 3, and an observed response accuracy rate of 23.08% (3/13).

On the following page is an ROC curve for Hypothesis 3 in regards to a new substitute product along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:



Figure 4.25	Regression Plot for Scenario 2 Hypothesis 3	:
	Substitute Product at Extremes	

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	1	5	6	0.166667	0.247867	1.4872	4.5128
0	1	2	5	7	0 285714	0 216114	1 5128	5 4872
0	1	2	5	,	0.203714	0.210114	1.5120	5.4072
1	0	7	30	37	0.189189	0.176022	6.5128	30.4872
1	1	3	20	23	0.130435	0.151617	3.4872	19.5128
		13	60	73			13	60

Table 4.25a Logistic Regression Data for Scenario 2 Hypothesis 3:Substitute Product at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	3	20	23
Fail-Pred	10	40	50
	13	60	73

Table 4.25b Classification Table for Scenario 2 Hypothesis 3:Substitute Product at Extremes

Hypothesis 4 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as *neutral*, and if they have a *control*-minded personality, there will be a positive correlation with their intent to *ignore* the "neutral" changes.

Of the respondents that met both constructs for Hypothesis 4, the model predicted thirtyseven (37) people would "ignore" the new market situation.

Thirty-one (31) people actually responded that they would "ignore" the new foreign competitor or moving into the local arena. This represents 42.47% of the useable respondents.

However, fifteen (15) of the predicted responses were "false positives" based on the predictive model. The predicted "true positives" indicated that fifteen (15) of the thirty-seven (37) predicted responses would "ignore" the substitute product situation for a predictive accuracy rate of 40.54% (15/37) for Hypothesis 4, and an observed response accuracy rate of 70.97% (22/31).

This observed result is above the 50% cut-off that would be expected by pure chance, but the predicted accuracy is well below the .65 cutoff required by the study.

On the following page is an ROC curve for Hypothesis 4 in regards to a new substitute product along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:

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Figure 4.26 Regression Plot for Scenario 2 Hypothesis 4: Substitute Product at Extremes

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	2	5	7	0.285714	0.105099	0.735692	6.264308
0	1	0	6	6	0	0.210718	1.264308	4.735692
1	0	7	16	23	0.304348	0.359318	8.264308	14.73569
1	1	22	15	37	0.594595	0.560424	20.73569	16.26431
		31	42	73			31	42

Table 4.26a Logistic Regression Data for Scenario 2 Hypothesis 4:Substitute Product at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	22	15	37
Fail-Pred	9	27	36
	31	42	73

Table 4.26b Classification Table for Scenario 2 Hypothesis 4:Substitute Product at Extremes

Hypothesis 5 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as a *threat*, and if they have a *growth*-minded personality, there will be a positive correlation with their intent to *exit* the market in response to the threat.

Of the respondents that met both constructs for Hypothesis 5, the model predicted two (2) people would "exit" due to the new market situation.

Two (2) people actually responded that they would "exit" in response to the new substitute product. This represents 2.74% of the useable respondents.

However, both (2) of the predicted responses were "false positives" based on the predictive model. The predicted "true positives" indicated that zero (0) of the two (2) predicted responses would "exit" in response to the new market situation for a predictive accuracy rate of 0.00% (0/2) for Hypothesis 5, and an observed response accuracy rate of 0.00% (0/2).

On the following page is an ROC curve for Hypothesis 5 in regards to a new substitute product along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:



Figure 4.27 Regression Plot for Scenario 2 Hypothesis 5: Substitute Product at Extremes

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	1	40	41	0.02439	0.02439	1	40
0	1	0	28	28	0	2.11E-10	5.92E-09	28
1	0	1	1	2	0.5	0.5	1	1
1	1	0	2	2	0	8.45E-09	1.69E-08	2
		2	71	73			2	71

Table 4.27a Logistic Regression Data for Scenario 2 Hypothesis 5:Substitute Product at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	0	2	2
Fail-Pred	2	69	71
	2	71	73

Table 4.27b Classification Table for Scenario 2 Hypothesis 5:Substitute Product at Extremes

Hypothesis 6 proposed that if the owner/manager of a small business views the use of wood in the heavy construction industry as a *threat*, and if they have a *control*-minded personality, there should be a positive correlation with their intent to *entrench* (focus their energies on their internal operations) in response to those changes.

Of the respondents that met both constructs for Hypothesis 6, the model predicted two (2) people would "entrench" due to the new market situation.

Nine (9) people actually responded that they would "entrench" in response to the new substitute product. This represents 12.33% of the useable respondents.

However, two (2) of the predicted responses were "false positives" based on the predictive model. The predicted "true positives" indicated that zero (0) of the two predicted responses would "entrench" in response to the substitute product for a predictive accuracy rate of 0.00% (0/2) for Hypothesis 6, and an observed response accuracy rate of 0.00% (0/9).

On the following page is an ROC curve for Hypothesis 6 in regards to a new substitute product along with a regression data table and a classification table based on more stringent inclusion of participants who "agree" or "disagree" with the perception and personality constructs:



Figure 4.28 Regression Plot for Scenario 2 Hypothesis 6: Substitute Product at Extremes

Perception	Personality	Success	Failure	Total	p-Obs	p-Pred	Suc-Pred	Fail-Pred
0	0	5	23	28	0.178571	0.178571	5	23
0	1	4	37	41	0.097561	0.097561	4	37
1	0	0	2	2	0	8.41E-10	1.68E-09	2
1	1	0	2	2	0	4.18E-10	8.36E-10	2
		9	64	73			9	64

Table 4.28a Logistic Regression Data for Scenario 2 Hypothesis 6:Substitute Product at Extremes

	Suc-Obs	Fail-Obs	
Suc-Pred	0	2	2
Fail-Pred	9	62	71
	9	64	73

Table 4.28b Classification Table for Scenario 2 Hypothesis 6:Substitute Product at Extremes

	Overall,	the predi	ctive and	observed	accuracy	of the	model	for	Scenario	#1	with strin	gent
criteria	for inclu	sion was	well belo	w the .65	cutoff as	shown	below	:				

N=73	Stringent Criteria (1 or 7)	Predicted Accuracy	Observed Accuracy
	H1: Opportunity + Growth = Expand	0.00%	0.00%
	H2: Opportunity + Control = Eyeball	50.00%	5.88%
oduct	H3: Neutral + Growth = Explore	13.04%	23.08%
tute P1	H4: Neutral + Control = Ignore	40.54%	70.97%
Substi	H5: Threat + Growth = Exit	0.00%	0.00%
	H6: Threat + Control = Entrench	0.00%	0.00%
	Average Accuracy:	17.26%	16.66%

Table 4.29: Accuracy Matrix #2 for Substitute Product Scenario:Substitute Product at Extremes

Third Run Through of the Data Set

For a third look at the data, it was previously hypothesized that companies who were early adopters of an internet presence would be more likely to demonstrate characteristics that align with a growth-minded approach to market changes than those companies who were late adapters or who do not have a functioning website at all.

Early adopters were those companies whose sites were operational by 1998 or by the first year of operations if the company was founded after 1998.

1998 was chosen as the pivotal year because that was the year that the number of internet users surpassed 100 million individuals, and the technological infrastructure of the United States allowed for the use of high-speed modems to connect to the web.

The test of website availability is not necessarily a strongly valid scientific measure of growth-mindedness, but it is at least anecdotal evidence of historical willingness to venture into new territory.

Through the lens of "website early adopters," the data should demonstrate that growthminded companies are more willing to venture into new technologies.

When comparing the early adopters with the late/non-adopters in how they view the new African entrant into the market, it is expected that the early adopters would be more likely to expand into the new geographic region. However, the survey responses tell a different story. Only 4.17% (2 out of 48) of early internet adopters indicated a willingness to expand while 7.04% (5 out of 71) of the late/non-adopters indicated a willingness to expand. This is directly the opposite of what was expected.

When running the same comparison in light of a new substitute product, the results were not as striking but were still inverted. 2.08% (1 out of 48) of the early internet adopters indicated

a willingness to engage in the new substitute product while 2.82% (2 out of 71) of the late/nonadopters indicated a willingness to expand.

In both cases, the late/non-adopters indicated a higher likelihood of expansion than the early adopters, but neither group exhibited a willingness to expand into new markets or into new products:

	Early Internet Adopters Willing to Expand	Late/Non Internet Adopters Willing to Expand		
Due to Foreign Entrant	4.17%	7.04%		
Due to Substitute Product	2.08%	2.82%		

Table 4.30: Expansion and Internet Adoption

Alternate Grouping of Responses within the Data Set

In order to make sense of the responses, it may be best to turn the responses around and look for similarities in the allowed responses. The hypothesized responses to market dynamism were **Expand, Explore, Eyeball, Exit, Ignore,** or **Entrench.** The responses actually represent two distinct postures towards reacting to pending environmental pressures.

The responses can be categorized as either an active response (Radical Response) or an inactive response (Reluctant Response).

The radical responses include the willingness to **Expand**, **Explore**, and **Exit**. Each of these responses requires a commitment of financial capital, intellectual effort, physical exertion, or psychological uncertainty. To expand involves financial investment in new geography, processes, or materials. To Explore involves a level of similar investment, but on a smaller scale. And, to Exit involves a level of psychological uncertainty for the business owner or upper manager as they struggle with selling the company or embarking on a new employment framework. Each of these three options involves financial or personal risk.

Reluctant responses, which are really not a response, include the categories of **Eyeball**, **Ignore**, and **Entrench**. From the outside looking in, the "Eyeball" response – to keep an eye on something – sounds wise and noble, however, from a practical standpoint, when a business owner "keeps their eye on" a market change looming on the horizon, it usually indicates that they are unwilling to pull the trigger in response to pending changes. From a practical standpoint, "Eyeball" is a more prudent way of saying that they would "Ignore" the changes. But, many of the companies that wanted to take an even higher approach to ignoring pending market changes chose to "Entrench" within their internal cost control measures to do what they could to minimize the attractiveness of the pending market shift. None of these responses require the additional risk of resources or of psychological effort. When evaluating the data in terms of the SME's radical responses (Expand, Explore, Exit) vs. reluctant responses (Eyeball, Ignore Entrench), the results suddenly become much more clear. 75.2% of the respondents indicated a "Reluctant" response to the new foreign competitor with 28.15% choosing to ignore the market change outright. Less than 25% (24.8%) identified a "Radical" response to the Kenyan market entrant.

In terms of the substitute product, 83.2% chose a "Reluctant" response with 39.26% choosing to ignore the substitute product. Only 16.8% indicated a "Radical" response to the substitute product in the market-space.

I use the terms "Reluctant" and "Radical" because there is a reluctance to engage in new market conditions within the SMEs in the sample, and the slightest indication of a willingness to invest in a new geography or new product offering looks like a radical option because so few business leaders consider it a viable choice.

	Radical Response by SME	Reluctant Response by SME
Due to Foreign Entrant	24.8%	75.2%
Due to Substitute Product	16.8%	83.2%

Table 4.31: Radical and Reluctant Responses by SMEs

CHAPTER V

CONCLUSIONS

Overview and Commentary

Given the distribution of the responses, none of the hypotheses were supported. This is a surprising finding since the bases of the hypotheses are rooted in well-established theories. Even from a common sense standpoint, this exercise should have demonstrated two things.

The first would be to confirm the existing theories in a new context. The context moving from a large corporation framework to the environment of the SME would not be expected to be such a radical departure from theoretical norms, but in this case, we appear to deviate from expectations on <u>all</u> theoretical fronts.

The second would be fill-in some possible gaps in the existing theoretical framework by which businesses are understood. This is simply a minor expansion to the well-established theories that have been accepted for over three decades.

Neither of these things occurred.

This brings me to some fairly sobering and straight-forward conclusions. Either the theories that this study was based on are losing their validity in the current market environment, or the SME subjects of the study behave in patterns inconsistent with established theory.

If the established theories are losing validity in contemporary markets, this could open up an exciting time of turbulence in academic pursuit as we attempt to understand current conditions that move organizations, especially SMEs to respond to market changes.

On the other hand, the results of this study may add credence to the notion that SMEs operate under a different set of strategic marketing parameters than large corporations. This conclusion may not be paradigm shifting, but the radical differences between theorized corporate responses to pending market shifts and SME's <u>lack</u> of response to the same or similar shifts are surprising.

Not only is the lack of results surprising, but it is also a frightening harbinger of things to come. The responses indicate that the participating SMEs may not elicit the same nimbleness that the small business literature indicates to be a hallmark of the entrepreneurial DNA expected in SMEs.

It can also be concluded to some degree that SME leadership in support of the heavy construction industry is unwilling to consider opportunities/threats that may not be immediately relevant. The industry has endured a wave of foreign competition from India, China, and the Philippines over the last decade, but the survey responses leave me with the feeling that the leaders of the small businesses do not believe other nations will be a threat any time soon. For example, one Steel Detailer hand wrote a note on the survey instrument saying, "Off-shore detailers are no threat because their work generally sucks. My customers will not deal with Filipinos. [I] doubt they would deal with Kenyans."

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This kind of short-sightedness may pose a long-term threat to his organization if he doesn't figure out how to take steps to lower his cost-of-goods by embracing foreign markets as a cost-saving measure as well as a potential source of income.

Summary of the Four Main Analyses

The figures below encapsulate the theoretical model comprising of the participant's view of Environmental Dynamism as an "Opportunity," a "Threat," or "Neutral," followed by their personality traits as either "Growth" or "Control."

The hypothesized responses are shown with their "Predictive Accuracy" and their "Observed Accuracy" percentages. "Predictive Accuracy" is a measure of how many of the predicted responses actually responded according to the prediction, and "Observed Accuracy" is a measure of how many of the observed responses were predicted to occur.
Summary of Analysis #1: Scenario #1 - The Introduction of a Kenyan Competitor

As shown below, the predictive model was not supported by observational responses to the survey instrument. The "Ignore" hypothesis fared the best of the six hypotheses, but both predictive and observational accuracy were not only well below the .65 cut-off required by this research, but were also below .50 which is a baseline measure of research that lends itself to logistic regression methodologies.



Figure 5.1: Results of Hypothesis Testing: Foreign Competition

The tables below show the correlation data for each of the Hypotheses in response to Hypothetical Situation #1 – Foreign Competition.

The theoretical foundations for this study indicated that people with a growth minded personality disposition would be more inclined to expand, and people who saw the market changes as an opportunity would be more likely to expand. In both of these cases, the correlation matrix returns a mathematical error due to the actual responses indicating that none of the respondents indicated a propensity to expand. This may be an indication that this sample group lies outside of the traditional parameters of the existing theoretical boundaries.

There is also very little correlation between the Growth/Control personality dispositions and perceiving the changes as an Opportunity, Neutral, or a Threat. Surprisingly, there are negative correlations, even though they are small, between a personality disposed towards Growth (Control) and viewing a foreign entrant as an Opportunity (Threat). I was expecting both a stronger and an opposite correlation.

	Growth	Control	Opportunity	Neutral	Threat	Expand
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	-0.0090	0.0979	1.0000			
Neutral	-0.0574	-0.0325	-0.4013	1.0000		
Threat	0.0667	-0.0313	-0.2458	-0.7892	1.0000	
Expand	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.0000

Table 5.01 Correlation Matrix for Hypothesis 1: Expand due to Foreign Entrant

The correlations between the variables for Hypothesis 2 (Perceived opportunity with a control personality disposition should lead to keeping their eye on the foreign entrant) are shown below. The table below indicates that the "eyeball" option is more closely correlated with a perceived threat instead of a perceived opportunity by a control-minded person.

	Growth	Control	Opportunity	Neutral	Threat	Eyeball
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	-0.0090	0.0979	1.0000			
Neutral	-0.0574	-0.0325	-0.4013	1.0000		
Threat	0.0667	-0.0313	-0.2458	-0.7892	1.0000	
Eyeball	0.0053	0.0642	-0.1547	-0.1858	0.3003	1.0000

Table 5.02 Correlation Matrix for Hypothesis 2: Eyeball due to Foreign Entrant

The correlations between the variables for Hypothesis 3 (Perceived neutral with a growth personality disposition should lead to exploring the foreign entrant) are shown below. The table below indicates that the "explore" option is more closely (negatively) correlated with a perceived threat instead of a perceived neutral by a control-minded person.

	Growth	Control	Opportunity	Neutral	Threat	Explore
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	-0.0090	0.0979	1.0000			
Neutral	-0.0574	-0.0325	-0.4013	1.0000		
Threat	0.0667	-0.0313	-0.2458	-0.7892	1.0000	
Explore	0.0532	0.1030	0.1955	0.1125	-0.2501	1.0000

Table 5.03 Correlation Matrix for Hypothesis 3: Explore due to Foreign Entrant

The correlations between the variables for Hypothesis 4 (Perceived neutral with a control personality disposition should lead to ignoring the foreign entrant) are shown below. The table below indicates that the "ignore" option is more closely (negatively) correlated with a perceived threat instead of a perceived neutral by a (negatively correlated) control-minded person. The negative correlation of Ignore to both Growth and Control is surprising.

	Growth	Control	Opportunity	Neutral	Threat	Ignore
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	-0.0090	0.0979	1.0000			
Neutral	-0.0574	-0.0325	-0.4013	1.0000		
Threat	0.0667	-0.0313	-0.2458	-0.7892	1.0000	
Ignore	-0.0767	-0.1681	0.0408	0.2526	-0.2947	1.0000

Table 5.04 Correlation Matrix for Hypothesis 4: Ignore due to Foreign Entrant

The correlations between the variables for Hypothesis 5 (Perceived threat with a growth personality disposition should lead to exiting due to the foreign entrant) are shown below. The table below indicates that the "exit" option is more closely negatively correlated with a growth disposition, but is positively correlated with a perceived threat.

	Growth	Control	Opportunity	Neutral	Threat	Exit
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	-0.0090	0.0979	1.0000			
Neutral	-0.0574	-0.0325	-0.4013	1.0000		
Threat	0.0667	-0.0313	-0.2458	-0.7892	1.0000	
Exit	-0.1867	0.0199	-0.0887	-0.1584	0.2271	1.0000

Table 5.05 Correlation Matrix for Hypothesis 5: Exit due to Foreign Entrant

The correlations between the variables for Hypothesis 6 (Perceived threat with a control personality disposition should lead to entrenching due to the foreign entrant) are shown below. The table below indicates that the "entrench" option is more closely correlated with a growth disposition instead of a control personality and is positively correlated with a perceived threat (as well as negatively correlated with a perceived "neutral).

	Growth	Control	Opportunity	Neutral	Threat	Entrench
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	-0.0090	0.0979	1.0000			
Neutral	-0.0574	-0.0325	-0.4013	1.0000		
Threat	0.0667	-0.0313	-0.2458	-0.7892	1.0000	
Entrench	0.1630	0.0013	0.0000	-0.0937	0.0992	1.0000

Table 5.06 Correlation Matrix for Hypothesis 6: Entrench due to Foreign Entrant

Collectively, the correlations for the variables in the hypothetical foreign entrant scenario are as follows:

	Growth	Control	Opportunity	Neutral	Threat
Growth	1.0000				
Control	-0.1128	1.0000			
Opportunity	-0.0090	0.0979	1.0000		
Neutral	-0.0574	-0.0325	-0.4013	1.0000	
Threat	0.0667	-0.0313	-0.2458	-0.7892	1.0000
Expand (H1)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Explore (H3)	0.0532	0.1030	0.1955	0.1125	-0.2501
Eyeball (H2)	0.0053	0.0642	-0.1547	-0.1858	0.3003
Exit (H5)	-0.1867	0.0199	-0.0887	-0.1584	0.2271
Ignore (H4)	-0.0767	-0.1681	0.0408	0.2526	-0.2947
Entrench (H6)	0.1630	0.0013	0.0000	-0.0937	0.0992

Table 5.07 Correlation Matrix for Foreign Entrant Responses

Summary of Analysis #2: Scenario #2 - The Introduction of a Substitute Product

As shown below, the predictive model was not supported by observational responses to the survey instrument. Again, the "Ignore" hypothesis fared the best of the six hypotheses, but both predictive and observational accuracy were not only well below the .65 cut-off required by this research. Interestingly, the Observed Accuracy was just barely above .50 which is a baseline measure of research that lends itself to logistic regression methodologies.



Figure 5.2: Results of Hypothesis Testing: Substitute Product

The tables below show the correlation data for each of the Hypotheses in response to Hypothetical Situation #2 – The introduction of a Substitute Product.

The theoretical foundations for this study indicated that people with a growth minded personality disposition would be more inclined to expand, and people who saw the market changes as an opportunity would be more likely to expand. In both of these cases, the correlation matrix returns a mathematical error due to the actual responses indicating that none of the respondents indicated a propensity to expand. This may be an indication that this sample group lies outside of the traditional parameters of the existing theoretical boundaries.

	Growth	Control	Opportunity	Neutral	Threat	Expand
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	0.1044	-0.1392	1.0000			
Neutral	-0.1541	0.1051	-0.6409	1.0000		
Threat	0.0904	0.0076	-0.2000	-0.6240	1.0000	
Expand	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.0000

 Table 5.08 Correlation Matrix for Hypothesis 1: Expand due to Substitute Product

The correlations between the variables for Hypothesis 2 (Perceived opportunity with a control personality disposition should lead to keeping their eye on the substitute product) are shown below. The table below indicates that the "eyeball" option is more closely correlated with a perceived threat instead of a perceived opportunity by a growth-minded person.

	Growth	Control	Opportunity	Neutral	Threat	Eyeball
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	0.1044	-0.1392	1.0000			
Neutral	-0.1541	0.1051	-0.6409	1.0000		
Threat	0.0904	0.0076	-0.2000	-0.6240	1.0000	
Eyeball	0.0749	0.0314	-0.1343	-0.0339	0.1800	1.0000

Table 5.09 Correlation Matrix for Hypothesis 2: Eyeball due to Substitute Product

The correlations between the variables for Hypothesis 3 (Perceived neutral with a growth personality disposition should lead to exploring the substitute product) are shown below. The table below indicates that the "explore" option is more closely correlated with a perceived opportunity instead of a perceived neutral by a (negatively correlated) control-minded person.

	Growth	Control	Opportunity	Neutral	Threat	Explore
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	0.1044	-0.1392	1.0000			
Neutral	-0.1541	0.1051	-0.6409	1.0000		
Threat	0.0904	0.0076	-0.2000	-0.6240	1.0000	
Explore	0.0339	-0.1383	0.2404	-0.0867	-0.1340	1.0000

Table 5.10 Correlation Matrix for Hypothesis 3: Explore due to Substitute Product

The correlations between the variables for Hypothesis 4 (Perceived neutral with a control personality disposition should lead to ignoring the substitute product) are shown below. The table below indicates that the "ignore" option is more closely (negatively) correlated with a perceived threat while positively correlated with a perceived neutral by a (negatively correlated) growth-minded person.

	Growth	Control	Opportunity	Neutral	Threat	Ignore
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	0.1044	-0.1392	1.0000			
Neutral	-0.1541	0.1051	-0.6409	1.0000		
Threat	0.0904	0.0076	-0.2000	-0.6240	1.0000	
Ignore	-0.1491	0.0050	-0.0012	0.1502	-0.1904	1.0000

Table 5.11 Correlation Matrix for Hypothesis 4: Ignore due to Substitute Product

The correlations between the variables for Hypothesis 5 (Perceived threat with a growth personality disposition should lead to exiting due to the substitute product) are shown below. The table below indicates that the "exit" option is positively correlated to the perception as a threat, but is weakly negatively correlated with a growth mined personality yet even more weakly positively correlated with a control minded personality disposition.

	Growth	Control	Opportunity	Neutral	Threat	Exit
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	0.1044	-0.1392	1.0000			
Neutral	-0.1541	0.1051	-0.6409	1.0000		
Threat	0.0904	0.0076	-0.2000	-0.6240	1.0000	
Exit	-0.0520	0.0234	-0.0683	-0.2132	0.3417	1.0000

Table 5.12 Correlation Matrix for Hypothesis 5: Exit due to Substitute Product

The correlations between the variables for Hypothesis 6 (Perceived threat with a control personality disposition should lead to entrenching due to the substitute product) are shown below. The table below indicates that the "entrench" option is more barely correlated with a perceived threat and slightly more correlated with a growth personality disposition.

	Growth	Control	Opportunity	Neutral	Threat	Entrench
Growth	1.0000					
Control	-0.1128	1.0000				
Opportunity	0.1044	-0.1392	1.0000			
Neutral	-0.1541	0.1051	-0.6409	1.0000		
Threat	0.0904	0.0076	-0.2000	-0.6240	1.0000	
Entrench	0.1036	0.0918	-0.0443	0.0162	0.0244	1.0000

Table 5.13 Correlation Matrix for Hypothesis 6: Entrench due to Substitute Product

Collectively, the correlations for the variables in the hypothetical substitute product scenario are as follows:

	Growth	Control	Opportunity	Neutral	Threat
Growth	1.0000				
Control	-0.1128	1.0000			
Opportunity	0.1044	-0.1392	1.0000		
Neutral	-0.1541	0.1051	-0.6409	1.0000	
Threat	0.0904	0.0076	-0.2000	-0.6240	1.0000
Expand (H1)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Explore (H3)	0.0339	-0.1383	0.2404	-0.0867	-0.1340
Eyeball (H2)	0.0749	0.0314	-0.1343	-0.0339	0.1800
Exit (H5)	-0.0520	0.0234	-0.0683	-0.2132	0.3417
Ignore (H4)	-0.1491	0.0050	-0.0012	0.1502	-0.1904
Entrench (H6)	0.1036	0.0918	-0.0443	0.0162	0.0244

Table 5.14 Correlation Matrix for Substitute Product Responses

Summary of Analysis #3: Scenario #1 - The Introduction of a Kenyan Competitor with Stringent Requirements for Inclusion

As shown below, the predictive model was not supported by observational responses to the survey instrument. Again, the "Ignore" hypothesis fared the best of the six hypotheses, but both predictive and observational accuracy were not only well below the .65 cut-off required by this research. Interestingly, the Observed Accuracy was just barely above .50 which is a baseline measure of research that lends itself to logistic regression methodologies.



Figure 5.3: Results of Hypothesis Testing: Foreign Competition at Extremes

Summary of Analysis #4: Scenario #2 - The Introduction of a Substitute Product with Stringent Requirements for Inclusion

As shown below, the predictive model was not supported by observational responses to the survey instrument. Again, the "Ignore" hypothesis fared the best of the six hypotheses, but the predictive accuracy was well below the .65 cut-off required by this research. Interestingly, the Observed Accuracy scored well above the .65 cutoff. The "Eyeball" hypothesis reached .50 for predictive accuracy but was still below the .65 cutoff for support of the hypothesis.



Figure 5.4: Results of Hypothesis Testing: Substitute Product at Extremes

Anecdotal Support for Results of Hypothesis Testing

In order to add another level of credence to the study, I looked back through the data based on the SME's entrance into the world-wide-web. I expected to see early adopters being more inclined to expand than late/non-adopters. However, even among the SMEs that have demonstrated a tendency towards innovation and risk-taking, there was an overwhelming resistance to entering new markets in light of market opportunities or threats.

The surprising unwillingness of SMEs to expand into either the new geographic market or the new product market could foreshadow a long-term decline in the domestic presence in the heavy construction services market, and it could also be an indicator of the demise of aggressive innovation that has been a hallmark of SMEs in this field. Collectively, only 5.8% of the respondents indicated a willingness to expand into Africa, and a paltry 2.5% indicated a willingness to expand into wood products.

After analyzing the responses with loose criteria for inclusion with the first run through the data set, and after tightening the criteria with the second run through, and after comparing the results with early adopters of new technologies, the only conclusion that stands out is that the participants in this survey overwhelmingly don't want to respond to the environmental dynamism of market changes. When 75% to 83% of the participants indicated a reluctance to change, it is inconceivable that any amount of statistical wrangling can paint a more aggressive picture for dealing with extreme market dynamics.

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Support for Sample Size Limitations

Of course, one may argue that my sample size is too small to make grand conclusions. And, ideally, it would have been nice to have collected several hundred or a thousand survey instruments, and ideally, they would have all fallen nicely into the hypothesized distribution.

We must recognize that large sample sizes with small variations are considered valid. But, when the variations in the data are as large as what these results demonstrate, I would argue that the smaller sample size if just as valid.

The large variations from the proposed hypotheses are so striking because the data not only does not support the new additions to existing theory, but the data also seems to completely reject the established working theories that would follow the paths to "Expand" and to "Entrench."

Because this sampling of the industry produced data that was markedly swayed in opposition to the proposed hypotheses, I believe that the disparity between the observed responses and the predicted responses lend support to the validity of the study results even with fewer than 150 useable respondents.

From a practical standpoint, in order to validate the hypotheses, I would need to send roughly 13,000 more surveys out and hope for a 2% response rate.

Additionally, the responses would need to be evenly distributed according to the model on page 39 with virtually no deviation to achieve the desired results. A lack of funding and a low likelihood of an even distribution of responses are tangible hurdles that prevent further data collection and analysis at this time.

Fortunately, the data set can be easily added to at a future date if the opportunity presents itself again.

CHAPTER VI

DISCUSSION

This project began with the aim of potential contributions in four distinct but intertwined areas. The first area of potential contribution was to gain a better understanding of how managerial schema and managerial perception influence SMEs as they respond to market dynamism. The second was to bring together established concepts of competitive communities and strategic groups in the field of small businesses which are often difficult to find data for comparison purposes. The third was to gain a better idea of how SMEs understand market dynamism and how it can impact their organizations. And the fourth potential contribution of this research was to delve into turbulent market environments to determine if the responses are any different than in static market environments. Each of these areas has been touched by the research project, and the results have been highly enlightening.

In addition to touching the four areas mentioned above, the data collection process provided responses that were both encouraging as well as discouraging from a personal standpoint. Many of the respondents returned their surveys with handwritten notes of encouragement, and some people even signed their names to the anonymous survey instruments. Others chided the research for asking questions that they felt weren't important enough. My assistant even chose to discard a particular unanswered survey that was a profanity laden tirade about wasting his time!

Contribution #1: Managerial Schema and Personality Impacts upon Responses to Market Dynamism

Levesque, Minniti, and Shepherd (2009) proposed that prior successes or failures can impact a manager's willingness to engage with market uncertainty. This concept was somewhat supported by the data, but not in the manner that they intended.

Because the average respondent is

- 1. In the upper echelon of their organization,
- 2. Highly educated,
- 3. Certified as competent in their tasks, and
- 4. Highly experienced
 - a. Averaging 27 years in the industry
 - b. Averaging 14 ¹/₂ years in their position

These people have achieved a measure of success that may be constraining their efforts within the limits of their known successes. They may be willing to engage with market changes, but only in the manners that have served them well for the last 1 ½ to 3 decades.

Or, there may be a sense of willful blindness when it comes to seeing the long-term impacts on their company from threats and opportunities that are not immediately knocking at their door.

What was surprising was the reluctance on behalf of growth-minded managers who identified the proposed changes in their environment as "opportunities" to be willing to expand into that new market space. Not only is the "Expansion" model supported by existing theory, it even makes plain sense without having to dig deep into what the theories mean.

Perhaps the results would have been different had the sample been made up of nascent entrepreneurs in the construction field. But, I would suspect that new companies entering the market today are primarily spawned by employees leaving an established firm to start their own company. And that type of spin-off wouldn't truly bear the marks of a nascent enterprise.

Contribution #2: Studying Groups in Unexplored Areas

One of the unique offerings of this study is to dig into the small business arena of competitive communities and strategic taxonomic groups. Most of the work done in this type of research gathering tends to migrate towards larger companies. The approach of sampling a dilettante (broad, but shallow) layer within the construction industry showed a fairly consistent response pattern across the spectrum of companies and service providers.

This study brought together a fairly broad sampling of SME service providers without digging too deeply into any one provider line so as to unduly skew the results in favor of a single line. This is consistent with expectations and may indicate that companies within a flapper group tend to migrate towards a similar mindset or similar strategic outlook even though their specific capabilities may be markedly different.

While not a focus of this project, the ideas of competitive communities and "coopetition" that was discussed on page 5 would be an interesting source of further study. Where are the boundaries of the competitive communities in terms of willingness to share skills, resources, and customers? It would be interesting to dig deeper into the flapper group to see what the long-term impacts of coopetition are and where it makes sense to coopetate and where it seems to not make sense. But, that is for another study.

Contribution #3: Understanding SME Responses to Market Dynamism

This is perhaps the most shocking finding of this study. The data supports that SMEs overwhelmingly are reluctant to respond in any meaningful way in response to pending market changes.

Again, this could be influenced by an older, more established group of participants who value stability over uncertainty. But, this is the very group of people who should have decades of experience dealing with environmental changes. They should be the ones most capable of preparing for market shifts, but their observed unwillingness to invest in meaningful responses to market changes can either spell long term difficulties for their companies or their experience may filter out the less likely changes to allow the companies to reserve their efforts for more likely market changes.

Contribution #4: Studying Groups in Dynamic Environments

Because finding data from companies in calm environments – or at least from companies that present a façade of calm – is relatively easy, this study took the hard road and delved into small companies competing in a world of incredible pressures from changes to their market environment.

While it is beyond the scope of the data collected by this study, it is interesting to note that more surveys were returned by people and companies that are no longer in the business than were returned by current practitioners. So, I wonder if the companies who are no longer in business had similar reactions to market changes as the companies that did respond to the survey. If that is the case, it may be a foreshadowing of what the future may hold for the industry as a whole. If decisions that are made by the managers of SMEs have lasting impacts on their companies, it stands to reason that the lack of decisions can have long term negative impacts as well. The current state of the research data indicates a profound unwillingness to make strategic changes to respond to market shifts. This indicates a preference to remain in the status quo rather than invest in attempting to improve their position in the market.

Participant Testimonies

Several respondents provided information beyond the bounds of the survey instrument.

For example, Response #175 said, "Good Luck in your project. Some questions were difficult to answer as we have focused on [new applications for our current services] rather than [working with foreign competitors] to stay competitive." Followed by, "Cheers, [Signature]"

That comment opened up an opportunity for further consideration. The study does not take into account other strategic options such as finding new avenues for your existing products and specialties. However, it may be argued that finding new avenues for work is essentially exiting a current area of operations to search for unexplored opportunities.

Respondent #212 said that their key to finding work is by maintaining a visible presence at industry conferences and a "constant search for one more good-paying customer who appreciates the best [service that we offer]." What is interesting about the approach of networking at conferences is that the example specifically was chosen to represent the use of wood as a substitute product have been demonstrated and discussed at major industry conferences as well as industry publications over the past few years. Also, while African nations have not played a prominent role in recent times in terms of competitive influence, I have met conference attendees from African nations of Libya, Chad, Niger, Egypt and others which points to the possibility of emerging opportunities and threats from new continental forces.

One respondent (#145) actually wrote on their survey that their best customers would not send work to an overseas company. My company had similar beliefs when, several years ago, our number one client met with us and assured us that they had no interest in finding overseas subcontractors. That was good news for us because, in any given time-frame, this customer typically accounted for 25-40% of our sales. Today, however, they represent roughly 8% of our total revenue. Another client told me that we may have the opportunity to quote some small packages, but then he said, "Of course, all of our big projects go overseas" for the services that my company provides.

Many companies in the field have taken the approach that they are content to allow their customers to engage with foreign competitors because there is a belief that the domestic suppliers will be brought back on board once their clients discover how poor the quality is from the foreign suppliers. This approach is short-sighted. The advantages that domestic suppliers have are primarily bound to their experience and longevity in their fields. As foreign sources gain experience, the gap between the perceived quality of domestic suppliers and foreign suppliers shrinks rapidly and the cost differential is too great to overcome without organizational pain.

One company in the respondent pool declared in the early 2000s that they would "rather go out of business than send work overseas." Today, that company maintains two overseas offices with roughly 60% of its employee base off-shore. Eventually, this company realized that there may be an opportunity to engage with the market changes rather than continue to fight them.

In looking back over the survey response data, there seems to be a slightly higher willingness to engage with foreign companies than to respond to wood-based substitutes. Perhaps

this can be attributed to the growth of suppliers from India, China, and the Philippines, which makes foreign competitors a little more believable than the threat of substitute products.

Another respondent called me the day he put his survey in the mail, and he commented that my hypothetical situations were "too far-fetched" to be taken seriously. Two days later, he called me back and wanted to change his answers because he did some research on industry websites and realized that the hypothetical situations were based in legitimate happenings in the industry. We laughed about it together because we get the same industry publications, and he realized that he wasn't using all of the tools available to prepare for changes in the marketplace.

Personal Thoughts

While reviewing the survey data and speaking with people in the sample group, it is surprising how overwhelmingly the target population resists reacting to changes in their market environment. Given the turbulent nature of the construction industry, the flapper group of lower tier suppliers seems to find more joy in complaining about market turbulence than in engaging with the market changes to help drive the direction for the immediate future of the industry.

Looking Forward

Armed with data that demonstrates the desire to ignore the changes happening in the industry, our goal as educators should be to raise awareness that our perceptions and personalities may need to be given a push from the evidence around us that we must be willing to engage in market changes if we are to remain relevant to the market. There seems to be a tendency for SMEs to be birthed in an environment of innovation and aggressiveness, but as they mature they appear to lose the desire to hold fast to innovation and aggression in their dynamic environments.

Hopefully, by raising awareness among business leaders of the propensity to migrate toward a posture of ignoring or entrenching we can help turn the corner and see a new generation of business leaders who will value the difficulties of innovation in the face of their dynamic markets.

The aim of educating future entrepreneurs should encourage young business owners to constantly scan the market horizon and to maintain the nimbleness that SMEs have a long history of displaying. Perhaps more research into the reaction of Flapper Groups as they experience market dynamism is needed to further validate the conclusions of the study, but with such a strong disparity in the distribution of the responses, I would be surprised if other similar studies revealed markedly different results.

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APPENDICES

The following appendices include copies of the Survey Instrument, the Cover Letter, the Participant Information Sheet, the Winner Notification letter, and other pertinent information.

APPENDIX A: SAMPLE COVER LETTER FOR MAILING

Would you mind helping a steel detailer graduate?

After two decades in the business, I've gone back to graduate school at Oklahoma State University. My last major project is to conduct a survey of industry related firms, and I could use your help to graduate!

Your voluntary and confidential responses to this study will form the basis for a major international research project that may be published in both academic as well as industry publications.

If you return the completed survey with your business card, my assistant will put your card in a drawing for one (or two) of twenty \$25 Amazon gift cards! Surveys received by October 1's^t will have two chances to win, as the cards will be in a preliminary drawing tentatively scheduled for October 15th, and they will be put into the final drawing to be held on or about November 17th, 2018.

This study is seeking information from members of the AAMA (American Architectural Manufacturers Association) - Fiberglass Material Council, the AGA (American Galvanizers Association), the ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers), the NCSEA (National Council of Structural Engineers Associations), the NISD (National Institute of Steel Detailing), NAAMM (National Association of Architectural Metal Manufacturers), and the AISC (American Institute of Steel Construction).

The purpose of this study is to gain a better understanding of how businesses in support of the heavy construction industry react to changes in market conditions. I would appreciate your voluntary participation by taking about 15 minutes to answer the enclosed questionnaire and returning it in the postage-paid envelope.

Thank you in advance for your willingness to support this research effort. If you should have any questions regarding this survey, please contact David Gregor through email at david.gregor@okstate.edu.

Sincerely,

David E. Lugar

David Gregor Department of Marketing Oklahoma State University

APPENDIX B: PARTICIPANT INFORMATION SHEET OKLAHOMA STATE UNIVERSITY - PARTICIPANT INFORMATION

(THE FINE PRINT)

Title: Navigating the Seas of Change

Investigators: David Gregor, Graduate Candidate; Todd Arnold, Ph.D.

Purpose: The purpose of the research study is to understand how business leaders respond to changes in their market environment.

What to Expect: This research study is administered by a questionnaire. Participation in this research will involve completion of the questionnaire. The questionnaire will ask for your opinion about two hypothetical situations followed by questions for analysis purposes. You are asked to complete the questionnaire once. It should take you about 15 minutes to complete.

Risks: There are no risks associated with this project which are expected to be greater than those ordinarily encountered in daily life.

Benefits: There are no direct benefits to you. However, the results of the survey will be made available to industry outlets either through publications or through conference presentations.

Compensation: You will be entered into a drawing(s) for a \$25 Amazon.com gift card. There will be two drawings. The first drawing will be held on or about October 15th for early entrants, and the second drawing will be held on or about November 17th. Early entrants will be placed in both drawings. You can double your chances by returning the survey early! A total of twenty gift cards will be available for the drawings.

Your Rights and Confidentiality: Your participation in this research is voluntary. There is no penalty for refusal to participate, and you are free to withdraw your consent and participation in this project at any time.

Confidentiality: Your survey is anonymous. However, participation in the drawing is by using a business card. The returned forms will be opened by an assistant who will separate your business card from the survey prior to handing the survey to the researcher. The business cards will not be made available to the researcher at any time during the course of the study.

The records of this study will be kept private. Any written results will discuss group findings and will not include information that will identify you. Research records will be stored on a password-protected computer and only researchers and individuals responsible for research oversight will have access to the records.

Contacts: You may contact any of the researchers at the following addresses and phone numbers, should you desire to discuss your participation in the study and/or request information about the results of the study:

David Gregor, Graduate Student 13903 Woodland Ridge Ave. Baton Rouge, LA 70816 225-229-9351 Todd Arnold, Ph.D. 316 North Hall 700 N. Greenwood Ave., School of Marketing and International Business, Tulsa, OK 74106 918-594-8596.

If you have questions about your rights as a research volunteer, you may contact the IRB Office at 223 Scott Hall, Stillwater, OK 74078, 405-744-3377 or <u>irb@okstate.edu.</u>

If you choose to participate: Please answer the survey questions survey and return them in the envelope provided. Returning your completed survey indicates your willingness to participate in this research study.

APPENDIX C: SURVEY INSTRUMENT

FIRST: Please tell us what you would do in these two hypothetical situations:

SITUATION #1: You have heard rumors of contracts being awarded to companies in Africa that offer the same goods and services as your company at a significant discount. One of your best customers has confirmed that they have been sending work to a company headquartered in Kenya.

1.) On the scale below, please circle how you would describe this situation:

Opportunity for Company Growth 1 2 3 4 5 6 7 Threat to Company Success

2.) What is the likelihood that your company would dedicate funds to investigate expanding into Africa?

Not Very Likely 1 2 3 4 5 6 7 Highly Likely

3.) What percentage of your annual sales would you be willing to dedicate to expanding into Africa?

0% up to 1% 1-2% 3-4% 5-6% 7-9% 10%+

- 4.) Which of these options would best describe your actions in response to this situation (Circle One)
 - A.) I would quickly move toward opening an office (or a strategic partnership) in Kenya or the surrounding area.
 - B.) I would start researching the feasibility of opening an office (or a strategic partnership) in Kenya or the surrounding area.
 - C.) I would "keep my eyes on" the Kenyan supplier to see if they will develop into a genuine threat.
 - D.) I would see this as a threat to my long-term success, and I would look for a new job opportunity (or if you are the owner, try to sell your company).
 - *E.*) *I* wouldn't consider an African company to be a real threat.
 - *F.*) *I* would work on driving the cost of my goods and services down in order to compete with the foreign company.

SITUATION #2: You have recently seen stories in industry publications about design houses experimenting with the feasibility of using wood instead of steel for tall buildings. The wooden sky-scrapers are called "plyscrapers."

1.) On the scale below, please circle how you would describe this situation:

Opportunity for Company Growth 1 2 3 4 5 6 7 Threat to Company Success

2.) What is the likelihood that your company would dedicate funds to expand into wood-based products?

Not Very Likely 1 2 3 4 5 6 7 Highly Likely

3.) What percentage of your annual sales would you be willing to dedicate to expanding into wood-based products?

0% up to 1% 1-2% 3-4% 5-6% 7-9% 10%+

- 4.) Which of the options below would best describe your actions in response to this situation (Circle One)A.) I would quickly move toward investing in a wood-products company or a timber-services company in order to be one of the first of my competitors in this new market.
 - *B.) I* would start researching the feasibility of partnering with a wood-products company or a timberservices company.
 - *C.)* I would "keep my eyes on" the wooden skyscraper movement to see if it will develop into something more than an engineering fad.
 - D.) I would see this as a threat to my long-term success, and I would look for a new job opportunity (or if you are the owner, try to sell your company).
 - E.) I wouldn't consider "plyscrapers" to be a real game-changer in my industry.
 - *F.*) *I* would work on continuing to make my goods and services better to keep the wooden substitute from becoming attractive to my customers.

NEXT: Please tell us about your company:

1.) What primary products or services does your company offer?

2.) What year was your company founded?

3.) Roughly how many employees does your company have?____

- a. How many of those employees are in the U.S. and Canada?_____
- b. How many of those employees are in Mexico?_____
- c. How many of those employees are in India?
- d. How many of those employees are in China?_____
- e. Where else, and how many are in other locations?_____

4.) In addition to your global employees, what countries do you sub-contract your projects to?_____

5.) If your company has any "strategic partnerships," partial investments, or wholly owned subsidiaries, please list the countries in which they are located:

6.) Does your company have a fully functioning website?_____

a. If so, roughly when was your primary domain name secured?

7.) Does your company utilize social media?_____

a. If so, which platforms do you use?_____

8.) What is your company's approximate annual revenue?

9.) Compared to your main competitors, how profitable do you feel that your company is? (Circle One)

- a. Significantly more profitable than my main competitors
- b. Somewhat more profitable than my main competitors
- c. About the same level of profitability as my main competitors
- d. Somewhat less profitable than my main competitors
- e. Significantly less profitable than my main competitors
- 10.) How satisfied are you with your level of profitability? (Circle One)
 - a. Highly satisfied
 - b. Somewhat satisfied
 - c. Profitability is acceptable given current market conditions
 - d. Somewhat dissatisfied
 - e. Highly dissatisfied

FINALLY: Please tell us about yourself:

On a scale of 1 (Disagree Strongly) to 7 (Agree Strongly), how much do you agree with the following?

Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
Disagree 1 2 3 4 5 6 7	Agree
·	
	Disagree 1 2 3 4 5 6 7 Disagree 1 2 3

What is the highest level of education you have completed?_____

What industry certifications do you have?_____

What is your age?_____ What is your Gender?_____

How would you describe your race/ethnicity?

That is the last of the questions that will be used in the formal analysis for this research project. However, if you wish to leave further comments, we would be most interested in what you have to say. Feel free to use the back of this page to add any comments that you wish. If you would like to correspond about this survey, please email David Gregor at david.gregor@okstate.edu. Please return this survey in the envelope provided, and don't forget to include your business card for the drawing(s) for \$25 Amzon.com gift cards.

Thank you for your participation

APPENDIX D: WINNER NOTIFICATION LETTER

International Study on Dealing with Changes in the Heavy Construction Industry

Congratulations! Your name was chosen as one of the winners of a \$25 Amazon gift card!

Thank you for your recent participation in returning your survey to help me complete the requirements for graduation.

I greatly appreciate your willingness to support this research effort.

If you should have any questions, please contact me through email at david.gregor@okstate.edu. Sincerely,

David E. Lugar

David Gregor Department of Marketing Oklahoma State University

APPENDIX E: DRAWING WINNERS

First drawing held October 11. Gift Certificates mailed on October 12' 2018.

- 1. Gary D.*, Tangent, Oregon
- 2. David E.*, Kalispell, Montana
- 3. Jonathan H., Winsted, Minnesota
- 4. Matt M., Florence, South Carolina
- 5. Tim M., Whitefish, Ontario, Canada
- 6. Joel N., Baton Rouge, Louisiana
- 7. Chase S., Mesa, Arizona
- 8. Mark S., Idaho Falls, Idaho
- 9. Pat S.*, Walker, Louisiana
- 10. Anthony T., Lafayette, Louisiana

Second drawing held November 20. Gift Certificates mailed on November 21, 2018.

- 1. Marie G.*, Baker, Oregon
- 2. Kevin B.*, Belgrade, Montana
- 3. Austin D., Montgomery, Alabama
- 4. Kent C., Sioux City, Iowa
- 5. Paul N., Billings, Montana
- 6. Earl G.*, Nashville, Arkansas
- 7. Michael N., Reserve, Louisiana
- 8. Katrina R.*, Fort Worth, Texas
- 9. Brittany Q.*, Texarkana, Texas
- 10. Mallory S.*, Tallassee, Alabama

"*" indicates that the winner desired to have their gift cards donated to charity. The gift cards were given to support foster children in the care of the Department of Children and Family Services, Baton Rouge, Louisiana Region which services East Baton Rouge, East Feliciana, Iberville, Pointe Coupee, West Baton Rouge, and West Feliciana Parishes.

APPENDIX F: IRB APPROVAL LETTER



Oklahoma State University Institutional Review Board

Date:	08/17/2018
Application Number:	BU-18-28
Proposal Title:	Navigating the Seas of Change: How Small Businesses Respond to Environmental Dynamism
Principal Investigator:	David Gregor
Co-Investigator(s):	
Faculty Adviser:	Todd Arnold
Project Coordinator:	
Research Assistant(s):	
Processed as:	Exempt

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

- 1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
- 2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
- Report any unanticipated and/or adverse events to the IRB Office promptly.
- 3. 4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 223 Scott Hall (phone: 405-744-3377, irb@okstate.edu).

Sincerely.

Lat Manne

Hugh Crethar, Chair Institutional Review Board

VITA

David Earl Gregor

Candidate for the Degree of

Doctor of Philosophy

Thesis: NAVIGATING THE SEAS OF CHANGE: HOW SMALL BUSINESSES RESPOND TO ENVIRONMENTAL DYNAMISM

Major Field: Doctor of Philosophy Business Administration

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Marketing at Oklahoma State University, Stillwater, Oklahoma in May 2019.

Completed the requirements for the Master of Business Administration at Louisiana State University, Baton Rouge, Louisiana in 2009.

Completed the requirements for the Bachelor of Arts in Business Administration at Harding University, Searcy, Arkansas in 1992.

Experience:

Vice President of Marketing and Chief Operating Officer, Innovative Steel Detailing, Inc., Baton Rouge, Louisiana, (2012-Current). Previous Positions: General Manager, Quality Control Supervisor, Master Scheduler, and Quality Control Inspector (1995-2011).

Professional Memberships:

U.S. Association of Small Business and Entrepreneurship, 2012-Current.
Academy of Marketing Science, 2015-Current.
Academy of Management, 2012-Current.
International Council for Small Business, 2012-Current.
National Institute of Steel Detailing, 2002-Current.
American Institute of Steel Construction, 2002-Current.
Editorial Review Boards Journal of Ethics & Entrepreneurship, 2014 - Current