SIGNAL OPACITY AND DEBT CONTRACTS IN

ENTREPRENEURIAL VENTURES

By

LEE H. GRUMBLES

Bachelor of Arts in Journalism
Texas A&M University
College Station, TX
2001

Master of Business Administration
Sam Houston State University
Huntsville, TX
2012

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY
July, 2020

SIGNAL OPACITY AND DEBT CONTRACTS IN

ENTREPRENEURIAL VENTURES

Dissertation Approved:

Dr. Matthew Rutherford

_____

Dissertation Adviser

Dr. Curt Moore

_____

Dr. Robert Evan Davis

_____

Dr. Bryan D. Edwards

_____

ACKNOWLEDGEMENTS

I would like to thank Dr. Matt Rutherford, Dr. Bryan Edwards, Dr. Curt Moore, and Dr. Evan Davis for their support throughout the entire dissertation process. Though it is difficult to express in words the gratitude I have for my dissertation committee, my hope is this final product will exemplify a summation of their collaborative investment into my growth as a researcher.

Thank you Cohort VI for all of the enjoyable and stressful times that we shared together. Thank you Donna Lamson, Dr. Stephanie Royce, and Dr. Toby Joplin for the tireless effort you exhibited to support each of us during this journey.

I would like to dedicate this to my wife, Lauren, who has been my rock and loudest cheerleader; I would have never made it without you. To my children, Ethan and Avery, my hope is that this experience has shown you the benefits of hard work and dedication and will translate to future success in your lives. To Mom, Dad, and Alyse, I could never have asked for a better set of parents or sister. To my family and friends, thank you for your emotional support over the past three years. To everyone who had a part in this accomplishment, thank you all.

Finally, I would like to thank God for blessing me with the ability and determination to complete this study.

Name: LEE HUTSON GRUMBLES

Date of Degree: JULY, 2020

Title of Study: SIGNAL OPACITY AND DEBT CONTRACTS IN ENTREPRENEURIAL VENTURES

Major Field: BUSINESS ADMINISTRATION

Abstract: New ventures that are unable to fund expansion using internal equity or that prefer to maintain complete firm ownership may supplement existing cash flow by accessing external funds in the form of debt contracts. To overcome liabilities of newness and/or smallness, these firms send signals to external stakeholders intended to represent a sufficient level of legitimacy and worthiness of investment. Stakeholders attempt to overcome information asymmetry by focusing primarily on costly signals from high-quality firms that represent honesty, credibility, and commitment. However, many new ventures are unable to send these signals because they do not possess them. In this study, I examine signal opacity as specific signals that capture stakeholders' attention by alleviating the imbalance of information asymmetry yet are difficult to fully verify due to distortion and a signaling environment of high information verification costs. I also examine the decision-making strategy of the debt financier who utilizes heuristics in the form of expertise to make a probability judgment of credit worthiness based on opaque information presented by the new venture. As an extension of institutional and signaling theory, I theorize that new venture signals that are opaque and exist in a signaling environment of high information verification costs will have a positive effect on stakeholders' perceptions of legitimacy. I also theorize that the effect of signal opacity and information verification costs is moderated by stakeholder expertise, which is comprised of industry experience.

The findings of the qualitative portion were leveraged to validate the hypothesized variable composition of the signal opacity construct as well as to develop the survey instrument used in the quantitative analysis. The results of the main study are intriguing, finding that within environments of high signal opacity, stakeholders will perceive superior and poor new venture signals similarly when granting legitimacy judgments. Alternatively, the findings also show that within environments of low signal opacity, stakeholders will perceive superior and poor new venture signals differently when assessing legitimacy. Lastly, the findings do not support the notion that stakeholder experience is an important factor when making legitimacy perceptions based on these specific signals.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

New ventures that are unable to fund expansion using internal equity or that prefer to maintain complete firm ownership may supplement existing cash flow by accessing external funds in the form of debt contracts (Berger & Udell, 1998). To overcome the liabilities of newness (Stinchcombe, 1965) and of smallness (Aldrich & Auster, 1986), firms attempt to send signals that represent a sufficient level of legitimacy and worthiness of investment to external stakeholders (Rutherford & Buller, 2007; Connelly, Certo, Ireland, & Reutzel, 2011; Karlsson & Middleton, 2015). The Bergh, Connelly, Ketchen, and Shannon (2014) research on signaling discusses a separating equilibrium as a mechanism that differentiates between high- and low-quality signal senders. Stakeholders attempt to overcome information asymmetry by focusing primarily on these high-quality and low-cost signals as they represent honesty, credibility, and commitment (Spence, 1973, Connelly et al., 2011). For example, according to signaling theory, a low-quality venture will incur higher costs to send signals compared to high-quality ventures (Bergh et al., 2014). However, many new ventures are unable to send preferred high-quality and low-cost signals (historical financials, collateral, liquidity, etc.) because they do not possess them. They are then faced with the obstacle of developing a strategy that instigates the

perception to stakeholders that a separating equilibrium will occur, which is unlikely due to the new venture's liabilities.

This sets the stage for one of this study's primary research questions: How are new ventures able to secure the perception of legitimacy and eventual funding when they do not always possess optimal signals comparable to a mature firm? A logical notion is that a pooling equilibrium exists, which occurs when there is a lack of an inverse quality-cost relationship. This would theoretically provide an accessible environment where a new venture may attain legitimacy when competing for external capital against comparable new ventures (Bergh et al., 2014). A pooling equilibrium suggests that new ventures may uniformly send signals at similar costs, thus creating a stakeholder conundrum in assessing the level of quality (Bergh et al., 2014). This conundrum brings about the second primary question of this study: How are stakeholders able to effectively process and evaluate new venture signals to make a legitimacy decision when actual quality is difficult to assess due to similar costs?

Existing management literature explores the phenomenon of signaling and perceptions of legitimacy with incomplete information. The Connelly et al. (2011) analysis of signaling literature explores multiple concepts, including signal fit, which describes the extent to which the signaler actually possesses the intended underlying qualities (honesty, credibility, and commitment). Bitektine (2011) explores evaluator judgments under conditions of uncertainty, such as utilizing heuristics when perceived information search costs are high and relying on easily observable qualities to compensate for the unknown. Suchman (1995) and Tost (2011, p. 696) research a stakeholder's passive evaluation of incomplete information by focusing on validity cues that can create "cognitive shortcuts" to perceptions of legitimacy.

However, there is currently a lack of literature that isolates and examines the perception of specific signals that possess preferred high-quality characteristics on the surface, yet motivates the signal receiver to take a passive- rather than active-processing judgment path (Bitektine & Haack, 2015). During an active evaluation, the stakeholder exerts a higher level of mental processing effort by basing the information received according to an "institutionally prescribed" set of social norms (Suchman, 1995; Bitektine & Haack, 2015). Existing research finds that a passive evaluation frequently predominates active when stakeholders could access validity cues and perform a visual conformity to social norms (Tost, 2011). By focusing on this, stakeholders can decrease the amount of time and effort exerted in the judgement formation process (Tost, 2011). In this study, I aim to build upon this research and to fill a gap in literature by introducing and clarifying the "Signal Opacity" construct. Signal opacity refers to a signal's ability to capture the receiver's attention by appearing as a verifiable high-quality signal and bringing balance to the disproportionate level of information asymmetry, yet demotivates the receiver from actively interpreting the signal due to its level of distortion and its existence within a signaling environment of high information verification costs. I also examine how signal opacity instigates the utilization of heuristics by a signal receiver by leveraging their expertise as a decision-making strategy to passively determine legitimacy (Tversky & Kahneman, 1974; Levie & Gimmon, 2008).

I focus on the context of debt contracts in entrepreneurial firms due to the evaluation processes and post-funding practices of financial institutions (commercial banks). Unlike equity lenders (venture capitalists) who work alongside ventures by providing real-time advice to aid in firm growth and positive returns (Winton & Yerramilli, 2008), debt providers are "hands off," mitigating default risk through interest rate premiums, loan covenants, and

the securitization of personal guarantees and/or collateral (Berger & Udell, 1998; Berger, Klapper, & Udell, 1999). Also, debt providers are able to offer a multitude of products and services (deposit accounts, treasury services, wealth management) that enable the creation of full banking relationships and aid in the perception of creditworthiness. This contrasts equity vehicles, which may be transaction driven primarily by venture profitability (Berger et al., 1999).

In this study, I will make the following contributions to existing research. First, I will extend signaling theory by identifying specific groups of signals with varying levels of opacity and information verification costs to test its effect on stakeholders' process of signal analysis. Signal opacity is theoretically effective when it lowers the amount of information asymmetry yet promotes passivity due to its distortion and verification costs. Information asymmetry is a core component of signaling theory focusing on the fact that "different people know different things" (Stiglitz, 2002, p. 469); and signals of honesty, credibility, and commitment act as a medium between two parties to bring balance to a skewed level of information asymmetry (Connelly et al., 2011). Within scenarios of potential opportunism where adverse selection may occur (financial transactions), receivers may focus on signals that alleviate information asymmetry and the chance of false signals (Ross, 1973; Jensen & Meckling, 1976). Distortion within a signal's environment consists of: 1) the observability of the signal, and 2) the noise caused by the signaler's behavior or other external referents (Connelly et al., 2011; Gomulya & Mishina, 2017). From a strategic perspective, signalers may leverage distortion in a signal environment to enhance an otherwise disappointing signal (Rynes, Bretz, & Gerhart, 1991; Connelly et al., 2011; Anderson & McMullen, 2012). For instance, a new venture may strategically send an underwhelming signal of performance

within a bullish financial market where seasoned competitors are performing well (Janney & Folta, 2006; Yao, Zhu, & Wei, 2019). In this example, the distortion in the signaling environment is the strong financial market and the success of industry competitors. This may create a perception to the investor that regardless of a lack of previous performance, a new venture may succeed based on the strong economy and its competitors' success. Information verification costs exists between the signal sender and receiver and consists of: 1) a sender signaling a high level of quality by inferring that high costs were required to produce the signal, and 2) a receiver incurring transactional (monetary and/or time and effort) costs to verify the actual quality of the signal (Spence, 1973; Connelly et al., 2011). Within the logic of signal opacity, a signaling environment with high information costs primarily corresponds with the verification costs incurred by signal receivers. This is due the fact that this theory focuses on how verification costs influence the perceptions of the signal receiver rather than the effort expended by the sender.

I also draw upon institutional theory to demonstrate that signal opacity in an environment of high verification costs effectively enacts passive legitimacy perceptions of stakeholders. For instance, during an investor's appraisal of a new venture, the investor may focus his/her attention away from the venture's economic performance to its conformity of acceptable societal norms or its abiding by formal rules and regulations (DiMaggio & Powell, 1983; March & Olsen, 1984). This is because the investor's ability to actively absorb and process the signal is hindered due to its level of opacity and verification costs (Peake & D'Souza, 2015). Investors must then rely on their own perception of how these signals relate to existing norms and formal rules through their own acknowledgment of cues that bring clarity to what is recognizable as of high quality.

This process relates to this study's next contribution to existing psychology literature (Tversky & Kahneman, 1974), which examines the utilization of heuristics and biases of decision makers. By extending the research of Tost (2011) and Bitektine and Haack (2015), I will examine passivity within the relationship of signal opacity and verification costs with legitimacy perceptions. Unlike the high-level of mental effort exerted in active evaluations, passivity is correlated with the accessing of validity cues when the entirety of information is unavailable and time is critical (Suchman, 1995; Tost, 2011; Bitektine & Haack, 2015). This processing method provides a potential theoretical explanation as to why specific signals are deemed legitimate without being fully verifiable. This is because investors must be efficient with their time and energy, which equates to ensuring that the costs of verifying quality (i.e., cognitive energy, transaction costs) are kept at a minimum to ensure eventual future profit is at an optimal level (Tost, 2011).

Further integrating literature from psychology, I examine a moderating role of receiver expertise on the effect of signal opacity and verification costs with a stakeholder's legitimacy perception. Expertise has been described as the amount of human capital of the signal receiver, such as years of experience as well as their depth of schemas or past experiences with similar signals (Heil & Robertson, 1991; Bruns, Holland, Shepherd, & Wiklund, 2008). This theory was expanded by Dane and Pratt (2007) through their expert-based schema construct, which utilized heuristics to recognize patterns from previous experiences to make logical decisions when the entirety of information is unavailable.

In the following, Chapter II will provide an extensive review of institutional theory across multiple streams of literature. This broad spectrum provides an avenue to efficiently illustrate institutional theory's evolution into modern management literature. Within this section, I will

explore legitimacy perceptions through passive processing by leveraging heuristics and biases to acknowledge and quickly validate cues that conform to social norms. This review will continue by providing an overview of signaling theory across literature to provide a theoretical basis for opacity levels in a signaling environment. This section also provides a glimpse into the methodological framework by detailing the overlap between signaling theory and a new venture's quest for external capital in the form of bank debt. This chapter concludes with a development of the hypotheses that illustrate the strategic power of signal opacity. Chapter III discusses the methodological procedures utilized for data collection, measure development, and analysis utilizing an exploratory sequential mixed methods research design. Chapter IV provides the qualitative and quantitative findings of the analysis, and Chapter V interprets the findings as well as provides implications, limitations and future directions for research.

CHAPTER II

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

To provide theoretical support, this study will focus on the microprocesses of institutional theory and signaling theory. Institutional theory explores the notion that to gain the perception of legitimacy, an organization must fit or conform to an evaluator's optimal "judgment scale," which aligns with current regulative, social, or cognitive norms (DiMaggio & Powell, 1983; Suchman, 1995; Deephouse, 1996; Suddaby, Bitektine, & Haack, 2017).

Existing literature explores institutional theory through individuals' social judgments (Berger & Luckmann, 1966, Bitektine & Haack, 2015). This focus on the microlevel is due to the fact that the explanatory factors of macro issues and the relationships between aggregate variables are predominantly found at this level (Felin & Foss, 2005). This "pulling down" effect (Powell & Colyva, 2008) enabled researchers to explore institutional theory within a multitude of contexts, such as individual schemas and social classifications (i.e., ethnomethodological approach) (Bittner, 1967; Zucker, 1977).

In contrast to these perspectives, researchers of institutional theory also view microfoundations as "half-truths," meaning examinations of the institution should not be limited to the individual level only, but should incorporate the unique and complex

interactions that collectively appear through individual communicative efforts (Barney & Felin, 2013). This means that microconcepts should not only be discussed within microlevel disciplines like psychology, but should blend other macrolevel disciplines and ultimately pair down to the microlevel (Barney & Felin, 2013). These viewpoints brought about research on microfoundations of legitimacy judgments, detailing passive modes of thought through cognitive processing of legitimacy judgments (Bitektine & Haack, 2015).

At its current state, signaling theory and its components should also be considered a microfoundational theory of macrolevel topics such as organizational behavior and strategy (Greve, 2013). However, this theory is evident across multiple levels of analysis, such as the organization and industry level and can be considered a macrofoundational theory as well (Etzion, 2009). From the reader's perspective, signaling theory at the macrolevel can become intertwined with institutional theory, with one highlighting the communication of information and the other legitimizing (Suchman, 1995). To differentiate between the macro and micro levels, this study focuses on the individual-level processes associated with signaling theory. Literature examines these microprocesses, such as *interaction rituals* (Goffman, 1967) and *sensegiving* (Polanyi, 1967; Gioia & Chittipeddi, 1991). Interaction rituals, or "face work," entail strategies individuals use to differentiate themselves to become accepted into more prestigious social groups (Goffman, 1967). Sensegiving evolved from an exploration of communication through speech to the use of strategic images and symbols to initiate sensemaking cues by the receiver. Sensegiving has also been found as a method of gaining stakeholder support by manipulating or influencing the ultimate outcome or perception from stakeholders (Hill & Levanhagen, 1995; Rouleau, 2005).

Within this study's theory, specific signals are sent to stakeholders who evaluate and determine judgments by utilizing cues that are embedded in signals and validated by their own preconceived notions or beliefs (Sherif & Hovland, 1961; Bitektine, 2011; Haack & Sieweke, 2018). When faced with a signal environment of incomplete information, evaluators may passively analyze cues through the use of cognitive processes, such as heuristics and biases (Bitektine & Haack, 2015). I will incorporate each of these theoretical microprocesses to provide a basis for the legitimacy perceptions of these signals. I will also provide a clarification of the signal opacity construct, a review of institutional and signaling theory across multiple literature disciplines, and a development of hypotheses to provide a basis for my theory.

Clarifying Signal Opacity

To fully clarify signal opacity, I followed the blueprint utilized by Suddaby (2010), which focuses on: 1) boundary conditions (scope and space), and 2) definitional robustness. A primary goal of signaling theory is to reduce the amount of information asymmetry by effectively communicating the quality of information (Spence, 1973; Connelly et al., 2011). This is accomplished by the signaler sending signals that enact the receiver's perception of costliness (Spence, 1973; Connelly et al., 2011). However, in terms of scope, signal opacity is not "costly" by definition, meaning the receiver interprets a signal's quality by the perceived cost incurred by the sender, but rather is perceived as components of costliness, such as honesty, credibility, or commitment (Spence, 1973; Connelly et al., 2011). For example, new ventures that align themselves with reputable third parties or who are able enact a separating equilibrium via costs already incurred are able to assume a portion of these

third party costs. This means that a stakeholder will find the signal credible (and thus cost) based upon its affiliation with a reputable third party (Plummer, Allison, & Connelly, 2016).

Signal opacity is not costless, also known as "cheap talk," which refers to information that is of low quality and is not easily verifiable (Crawford & Sobel, 1982). Costless signals are based on opinions or emotions and thus are easily faked and may be seen as low-quality signals by receivers (Crawford & Sobel, 1982; Anglin, Short, Drover, Stevenson, McKinney, & Allison, 2018). Examples of these costless signals may include smiling to portray positive psychological capital (hope, confidence, and resiliency); generosity towards the signal receiver; and visual symbols such as formality of dress, meeting settings, and staging of props. (Clarke, 2011; Gambetta & Székely, 2014; Centorrino, Djemai, Hopfensitz, Milinski, & Seabright, 2015; Anglin et al., 2018). However, signal opacity should also not be fully transparent since the signaling environment dissuades a signal receiver from proceeding through the verification process. Transparent signals exist in a distortion-free environment where information is symmetric and verification is of low cost. Diplomas as a costly signal of education (Spence, 1973) and audited financials as a costly signal of performance (Zimmerman & Zeitz, 2002) are examples of transparent signals. Investors prefer these signals since the cost-benefit and expected payoff from basing decisions on this information is highly skewed in their favor (Quek, 2016). However, many new ventures simply don't have those preferred transparent signals. For this reason and as explained in this clarification, signal opacity is an effective strategy in gaining new venture legitimacy.

In terms of context or space, a standard debt contract setting, such as a borrower-lender relationship, is an ideal environment for examining the existence and nature of signal opacity. As shown in Table 1 below, bank loans are an important source of external financing

for new ventures (e.g., Rutherford, 2015). Extant research finds that debt contracts rely on the entrepreneur maintaining organizational control and exerting the predominant amount of effort (e.g., De Bettignies, 2008). Theoretically, signal opacity would be most effective when the signal sender (new venture) is primarily in control of all positive and negative information that is shared with outside parties (bank). A venture capital relationship differs from banks in the degree of effort and information that both parties share. For example, venture capitalists require extensive monitoring of daily firm activities, while banks are concerned with collateral quality and financial reporting, usually on a quarterly or annual basis (Winton & Yerramilli, 2008). Venture capitalists may also hold seats on the firm's board of directors to implement more control over firm decisions (Kaplan & Stromberg, 2001). Literature shows that banks are more amicable to a broader range of venture types, while venture capitalists focus primarily on riskier investments that have a probability of greater returns (e.g., Sahlman, 1990). In relation to the strategic choice of which investor to seek, Ross (1977) finds that debt contracts improved the value of firms due to the exclusion of debt payments in computing corporate tax income. Moreover, contrary to the layman's belief, bankers are reasonably motivated to eschew active judgment and instead engage in a more passive process.

Table 1. External Sources of Finance Used to Establish Startups

Source	Population Percentage
Bank Loan	20.4
Friends/Family Loan	12.7
Mortgage on Home	6.5
Other Credit	4.7
Other External Sources	4.6
Credit Card	3.3
Venture Capital Equity	0.3

Source: Adapted from DeBettignes (2008) and Fraser (2005).
Note: These numbers refer to the subset of SMEs (businesses with less than 250 employees) that are defined as startups (aged less than two years)

Significant attributes within signal opacity align with existing constructs found in literature. Camouflaged signals, which include: 1) overcomplicated language, which increases information asymmetry; and 2) unorthodox writing styles (distortion) to confuse the reader, were examined as new ventures strategies used to persuade investors that they were legitimate. (Benson, Brau, Cicon, & Ferris, 2015). The coercive isomorphism and ceremonial conformity constructs were developed to express the process of adhering to societal norms by adopting valued practices of their constituents (Ashforth & Gibbs, 1990). In a similar vein, multiple variations of the mimicry construct were explored, such as the process of manipulating one's outward appearance or maintaining eye contact to be perceived legitimate (Gambetta, 2005). In terms of costs, signals were examined through the cost-benefit analysis of fabricating a signal and found that high-quality sellers were those that used costly and difficult-to-verify signals (Mavlanova, 2012). Based on these existing constructs with similar attributes, the definition of signal opacity is the strategic leveraging of signals that mimic a transparent signal, but that influence the signal receiver to bypass the active, sociopolitical judgment process due to its opaque nature. In the following, a review of institutional and signaling theory is utilized to further develop and support signal opacity.

A Review of Institutional Theory

Institutional theory provides a rich stream of literature that spans numerous research disciplines. It is imperative in this study to provide a historical summation of the overall themes of institutional theory in order to evaluate its evolution towards the modern view of legitimacy judgments. As such, there have been numerous contributions to the theory that instigate its evolution, such as a focus on the habits and behaviors of institutions as a template for existing social norms (Veblen, 1914), and the exploration of institutions as the

embodiment of moral views (Ayers, 1952). Institutions are regarded as "taken for granted" establishments that abide by social norms (Meyer & Rowan, 1977) and as structures of formal and informal guidelines that influence political, economic, and social decisions (North, 1989). To provide an efficient and thorough review of this literature, I will focus on disciplines with dense streams of institutional research. In the literature review by Weerakkody, Dwivedi, and Irani (2009), institutional theory was found to be prominent in management, sociology, political science, and economics journals. In accordance with these findings, I will focus the review within these subjects and detail its evolution into management literature's modern view of legitimacy judgments.

Old and New Institutionalism

In the seminal works by DiMaggio and Powell (1991) and Hirsch and Lounsbury (1997), institutional theory is reviewed across two categories of research: old and new institution-alism. The importance behind this work was not only the historical and analytical review of institutional theory, but also a "reconciliation" or "bridge" between the two streams of thought (Hirsch & Lounsbury, 1997). In the following review of the literature, I will explore old and new institutionalism within sociology, political science, and economics journals to provide a basis for institutional theory in signal opacity (Tables 2 and 3).

Table 2. Sample of Seminal Articles in Old Institutional Theory

Field	Article	Key Concepts
Sociology	Durkheim (1922)	Examines the administrative, coercive and intelligent functions of institutions through a political sociology lens.
	Weber (1949)	Examines social phenomena such as religion from a rationalist's point of view. Views institutions as social establishments; focuses on influence of charismatic leaders.
	Selznick (1957)	Institutionalization as a fluid process that occurs over time. To institutionalize is to instill firm values and go beyond the task at hand.
	Berger & Luckmann (1967)	Institutions as a social order filled with actors that perform repeated actions that are subjectively interpreted.
Economics	Veblen (1899)	Views institutions in terms of consumption, firm control, performance strategies, marketing, and economic cycles.
	Mitchell (1924)	Explores the behavior of institutions in the production of goods and the pursuit of money along with economic business cycles.
	Commons (1924)	Expresses that institutions are comprised of "collective action" and "collective will" where behavior is unconscious and consequences unplanned.
	Ayers (1944)	Focuses on technology as the primary vehicle for institutional evolution and economic prosperity.
Political Science	Wilson (1898)	As a leader of the progressive movement, attempts to alter the institution of the U.S. government away from a partisanship.
	Holmes (1909)	Examines common law as an institution and provides basis for an empirical approach for future research.
	Downs (1957)	Examines the rational actor in political parties and the strategies used to gain greater firm performance or election.
	Etzioni (1963, 1975)	Classification of institutions by their use of power to influence members (coercive, utilitarian, and normative) and their involvement (alienative, calculative and moral).

Table 3. Sample of Seminal Articles in New Institutional Theory

Field	Article	Key Concepts
Sociology	Meyer & Rowan (1977)	Explores rationality within organizations, such as through shared beliefs as taken-for-granted.
	Zucker (1977, 1983)	Examines institutionalization in terms of the subjective and objective conformity of cultural norms by actors.
	DiMaggio & Powell (1983)	Explores conformity among institutions through coercive, mimetic, and normative isomorphism.
Economics	Coase (1937, 1960)	Explores institutional partnerships and the influence of transaction costs on firm behavior.
	North & Thomas (1973)	Explores institutionalism as property, specifically the influence of property rights on western economic prosperity.
	Williamson (1975, 1985)	Views institutions as vehicles of innovation and individual choice as impenetrable by the external environment.
	Schotter (1981)	Instills game-theory as a framework for his argument that societal norms and routines are important within institutions.
	Grossman & Hart (1987)	Explores contracts and property rights as boundaries of an institution during negotiations.
	Eggertson (1990)	Researches the various struggles for managers and shareholders of open and closed institutions, such as the influence of transaction costs and behavior.
Political Science	March & Olsen (1984)	Focuses on values and norms as building blocks of institutions. Explores contextualism, reductionism, utilitarianism, functionalism, and instrumentalism.
	Moe (1984, 1990)	Explores institutional theory as rational choices and the emergence of firms as a functional solution to an economic problem.
	Jessop (1990)	Develops "strategic-relational approach" as a method of institutional analysis. Examines institutional turn (thematic, methodological and ontological).

Sociology

The stream of institutional research within sociology prior to the Meyer and Rowan (1977) seminal article is wholly regarded as "old institutionalism" (DiMaggio & Powell, 1991). The transition from old to new institutionalism was marked at this point due to the beginning of a rationalist view of institutions where organizational structures were based on formal rules and regulations (Powell & Colyvas, 2007). Prior to this, the sociological perspective of institutions was built on the works of French scholars (i.e., Durkheim, 2002)

who examined the administrative, coercive, and intelligent functions of institutions through a political sociology lens (Thompson, 2002). This sociological research was quickly noticed stateside and was adapted by American scholars (i.e., Selznick, 1957) who discovered that organizations frequently deviated from these formal rules and were rather built according to a "shadowland of informal interaction" such as cliques and coalitions (Scott, 1987). Also, during this time period, sociologists took a macro view towards the theory by incorporating a historical and functionalist approach to institutions (Scott, 1987). As an extension of Barnard (1938), scholars regarded institutionalism as a process that slowly evolved over time and noted that the importance of leadership was to instill an organization's morals and values (Scott, 1987). The Berger and Luckmann (1967) examination of knowledge and society discusses the transformation of subjective perceptions into objective facts through social constructionism. Social constructionism is best described as how society influences our perceptions of information and how it can become engrained as reality for future evaluations (DeLamater & Hyde, 1998). This paradigm also details how individuals or groups view events in a structured order, finding correlations and patterns that are shared in society (DeLamater & Hyde, 1998). This notion is expanded further into gender and sexuality, evaluating the role of attraction and sexual orientation within biological theories of preference (Berger and Luckmann, 1967).

The new institutionalists of sociological literature broke away from the social norms and values of old institutionalism and focused on how organizations leverage cognitive processes and schemas as legitimizing processes (DiMaggio & Powell, 1991). New institutionalism was built on a theory of action, meaning the historical and functionalist viewpoints of old were upgraded to the notion that institutions utilize motivations and behaviors to instill

change (DiMaggio & Powell, 1991). Meyer and Rowan (1977) expand on this work by focusing on the institutional processes of mimicking norms built within our society to gain legitimacy. This notion of gaining legitimacy includes resource funding, increased stability, and survival in a hostile environment (Meyer & Rowan, 1977). Their work also details how institutions follow normative and cognitive rules accepted by society and thus may be given legitimacy by decision makers regardless of their organizational efficiency (Starbuck, 1976). Scholars explored the processing of homogenizing with similar reputable organizations to gain legitimacy by describing coercive, mimetic, and normative mechanisms of institutional isomorphism (DiMaggio & Powell, 1983). This was a contribution to the works of Meyer (1979) and Fennell (1980) and their development of competitive and institutional isomorphism (DiMaggio & Powell, 1983). This work was important in understanding how institutions could strategically change or morph to gain legitimacy. For instance, through coercive isomorphism, institutions respond to political or regulative pressures to adhere to specific organizational standards (DiMaggio & Powell, 1983). Institutions employ mimetic isomorphism to overcome environments of high uncertainty by modeling previously legitimized structures or behaviors (March & Olsen, 1976). Lastly, firms adopt normative isomorphism as a form of "professionalization," which based the granting of legitimacy through formal education and professional networks (DiMaggio & Powell, 1983).

Political Science

Peters' (1999) review of institutional theory within political science literature provides an in-depth approach towards the evolution of political institutions. In his discussion on the relationship between institutional theory and political science, Peters (1999) elaborates on the primary features of an institution. First, having a formal (legislature) or informal (shared

values) structural component to provide a setting for societal interactions is imperative to the

growth of institutions (Peters, 1999). Second, institutions provide stability and can be

leveraged as a method of predicting individual behavior (Peters, 1999). Third, institutions

exist due to the mutually shared values of individuals, which uncover the overlap between

these different streams of literature (Peters, 1999).

Early scholars (i.e., Wilson, 1898) led the Progressive Movement with a focus on

reforming the institution of the United States government by ending partisanship and adding

additional layers of regulation (Peters, 1999). From a theoretical sense, old institutionalism

brought about a positivist approach, such as through legalism and the notion that laws and

regulations are a product of human choice and should be treated in themselves as institutions

(Peters, 1999). A second theoretical development of the era includes the importance of

structuralism and its reliance on a formal doctrine, such as the U.S. Constitution, to

determine changes in political institutions (Peters, 1999). Criticisms of these ideas center on

its existence in underdeveloped countries that lacked a formal doctrine (Almond & Coleman,

1960). Another approach in old institutionalism was holism, which involves scholars taking a

macro approach to comparing political systems rather than specific branches of government

(Peters, 1999). However, this approach creates difficulty in comparative analysis and theory

development, especially within whole political systems from multiple countries (Dogan &

Pelassey, 1990). Old institutionalists also relies on a historical approach to understanding the

development of political institutions (Peters, 1999). An interesting tenet of this era is the

relationship between socio-economic influences and a change in political institutions. Rather

than a unilateral effect, old institutionalists theorize that society and the State have a mutual

effect on each other in instilling political change (Peters, 1999).

The new institutionalist era in political science began with the March & Olsen (1984, 1989) seminal works reinvigorating a normative rather than coercive approach to institutions. This approach coincides with old institutional sociological theory by focusing on organizations' formal makeup of norms and values in affecting its ultimate choices (Peters, 1999). Scholars stipulate the importance of routines and rules stating, "Institutions have a repertoire of procedures and they use rules to select among them" (March & Olsen, 1989, pp. 21-26). Unlike the new institutional sociological focus on cognition in determining behavioral patterns, political science scholars and their normative approach view institutions as influencing individuals' rational choices (Peters, 1999). An important illustration detailing this approach is that of soldiers choosing to march in the face of imminent death by "behaving" in accordance to the norms instilled by their institution of government (March & Olsen, 1989). A criticism of new institutional political theory is that scholars of this period were attempting to dissuade the central political tenets found in new institutional sociological and economic theory and "save" their approach (Peters, 1999).

Economics

The old institutional economists viewed institutions as collections of moral beliefs and habitual behaviors (Ayers, 1952; Veblen, 1922). The notion that the economic man (Veblen, 1919) is that of "a lightning calculator of pleasures and pain," and it solidified the stance that neoclassical theory was flawed in its maximization of opportunities (Scott, 2008). Scholars of this period (i.e., Veblen) were proponents of economic change and strove to understand why technological innovations occur (Scott, 2008). They viewed institutions as structures of habit where knowledge and behavior passed down through sociological functions were essential to survival (Hodgson, 1989). Within law and economics, the "transaction," which was initially

derived from legalism, was discussed as an optimal unit for economic analysis (Commons, 1924; Rutherford, 2001). Also, banks were explored as institutions, such as their role with various for-profit organizations that operated in the "money economy" (Mitchell, 1924). This sparked research in understanding the behaviors of organizations within the business cycle (Mitchell, 1924; Mitchell, 1996; Rutherford, 2001).

With a focus on the relationship between transaction costs and benefits, new institutional economists elaborate on the role of uncertainty, information asymmetry, and verification costs by asserting that institutions provide a reliable framework for economizing behavior (DiMaggio & Powell, 1991). As an extension of Coase's (1937) theory that institutions exist as a means to lower transaction costs and increase benefits, research evaluates the role of opportunism (self-interest) within institutions (Williamson, 1975, 1985; Hodgson, 1989). On the other hand, many institutionalists of this era contrast with these cost-saving practices by sharing similar views of neoclassical economists, such as institutions' goals to "maximize utility" (North, 1981; Parada, 2003). This argues that organizations act as feedback processes to guide individuals to make rational choices; however, due to the subjectivity in their information processing, transaction costs are highly volatile (Parada, 2003).

Institutional Theory and Management

Institutional theory within the management research framework embodies a marriage of the sociological, political, and economic theories developed within old and new institutionalism. To integrate these historical and seminal notions within modern management literature, this review will examine the strategy of gaining legitimacy as well as the process of granting legitimacy judgments within institutional theory. This is particularly useful within this study's theoretical premise due to its examination of how signal opacity

21

may be leveraged through isomorphism to effectively enact passive legitimacy perceptions of stakeholders.

New Ventures and Isomorphism

The study of institutions at the organizational level provided an overlap of cultural norms and regulatory frameworks (Scott & Meyer, 1983). As stated in the DiMaggio and Powell (1991, p. 9) introduction, institutions were no longer necessarily the "outcomes of purposive actions," but were considered products of cognitive and cultural norms. This is not to say that the tenets of rationality were no longer evident, since organizations still complied with homogenous industry standards, however the notion of "taken for granted" practices became a predominant topic also (DiMaggio & Powell, 1991). This brought about the exploration of strategic initiatives in gaining legitimacy through isomorphic processes of employing formal institutional rules and standards rather than being aware of environmental demands (Meyer & Rowan, 1977). Two perspectives associated with isomorphism exemplify strategic initiatives employed by new ventures in gaining legitimacy.

First, from a substantive perspective, new ventures comply with formal expectations and practices, such as adhering to expected *performance standards* (Nord, 1980). These expectations may be a product of either economic, political, or legal forces and are a necessary evil in the continuation of firm survival (Ashforth & Gibbs, 1990). As an extension of the sociological perspective of institutions, new ventures assume *coercive isomorphism*, which coincides with the notion of rational myths and that firms must adhere to previously approved industry rules and standards in order to gain legitimacy (DiMaggio & Powell, 1983). This may include producing formal business plans using sophisticated technology (Pfeffer, 1981). New ventures abide with professionalized pressures through *normative*

isomorphism, such as hiring personnel with formalized education or participating in professional networks (DiMaggio & Powell, 1983). When uncertainty is high and goals are ambiguous, new ventures will mimic industry-approved behavior through "modeling," or *mimetic isomorphism*, in order to appear legitimate (Cyert & March, 1963; DiMaggio & Powell, 1983).

Second, from a symbolic perspective, new ventures may offer "surface isomorphism" (Zucker, 1987, p. 672) so as to appear valid with norms and values (Richardson, 1985). For instance, firms practice *ceremonial isomorphism*, which is the adoption of highly regarded practices from an outsiders perceptive; however, the private mission of the firm is unchanged (Ashforth & Gibbs, 1990). From a legitimacy perception standpoint, symbolic isomorphism poses an accuracy problem since ambiguity and information asymmetry exists (DiMaggio & Powell, 1983).

New Ventures and Legitimacy

Existing research seeks to bring clarity to the legitimacy construct by analyzing legitimacy-as-property, as-process, and as-perception (Suddaby et al., 2017). This is particularly important in understanding how signal opacity is processed by stakeholders and the existence of passive legitimacy perceptions.

Legitimacy-as-property, or of value and substance, is built upon Weber's (1968) examination of traditional, charismatic, and rational-legal legitimacy. This research confirms that legitimacy is a measurable construct and spawned the Aldrich & Fiol (1994) development of sociopolitical and cognitive legitimacy and Suchman's (1995) cognitive, moral, and pragmatic legitimacy typologies. An interesting tenet in this research is the examination of the "rational myth" and how organizations that are the first to leverage new

ideas comply with formal procedures promoting optimal operations, while later-stage firms

employ isomorphic tendencies to attain cognitive legitimacy (Tolbet & Sucker, 1983). This is

evident when new ventures attempt to model successful firms by offering similar ideas or

products in an effort to gain legitimacy. This is also found at the individual level where those

who experience success are prone to being the subject of mimetic isomorphism as other

individuals attempt to gain legitimacy by modeling legitimized backgrounds (Fligstein,

1987).

Legitimacy-as-process views organizations through a format of change and evolution

through persuasive narrative techniques (Nielson & Rao, 1987). These microprocesses

leverage sensegiving and sensemaking through the use of strategic rhetoric and framing to

attempt to influence legitimacy perceptions (Benford & Snow, 2000; Lawrence & Phillips,

2004, Suddaby & Greenwood, 2005). This process is also found to engage action and

emotion to enact a "schemata of interpretation" for individuals to "locate, perceive, identify,

and label" signals (Goffman, 1974, pp.21).

Legitimacy-as-perception builds upon the subjective judgments found in the

microprocesses of cognitive legitimacy and the collective sensemaking found in social norms

(Suddaby et al., 2017). Within this tenet, decision makers developed a "judgment scale" that

compares the item of interest with current attitudes (Sherif and Hovland, 1961). These

decision-maker attitudes act as anchors of judgment, meaning the closer in proximity that the

items of interest fall with the anchor, the higher chance for acceptance (Suddaby et al., 2017).

An interesting distinction of legitimacy-as-perception is the fact that it is regarded as an

individual-level process, and not a collective consensus (Bitektine & Haack, 2015).

Cognitive legitimation processes are also explored by finding that decision-makers utilize

individual schemas to act as a representation of what items they deem as legitimate (Bandura, 1986; Bitektine & Haack, 2015). Also, the behavior of the subjects in accordance with social norms takes on a symbolic presence for decision makers to analyze (Bandura, 1986).

New Ventures and Passive Legitimacy-as-Perception

Legitimacy-as-perception has been explored in literature as either an active or passive process (Bitektine, 2011; Tost, 2011). Signal opacity will enact a passive evaluation by prompting stakeholders to access validity cues and perform visual conformity to social norms. Existing research builds upon social psychology literature in heuristics and biases to explain why stakeholders choose between the active and passive processing paths (Bitektine, 2011; Tost, 2011). The following discusses the overlap between these automatic processes of the human mind in evaluating information found in signals and eventual legitimacy perceptions.

During an active evaluation, stakeholders exert a higher level of mental processing effort by basing the information received according to an "institutionally prescribed" set of social norms (Suchman, 1995; Bitektine & Haack, 2015). This is comparable to the system two process where signals exist on a recursive path, requiring constant modification and reassessment (Kahneman & Frederick, 2002). From a processing path perspective, literature attempts to elaborate on active processing as the ability to absorb signals through a process of signal acquisition, assimilation, and transformation (Cohen & Levinthal, 1990; Cohen, 1991; Peake & D'Souza, 2015). This is the appropriate evaluation method when ventures are able to send transparent signals. To illustrate, an investor acquires a signal by observing and listening in order to extrapolate pertinent information. They then attempt to fully understand the information within the signal through the assimilation process and eventually transform

the newly assimilated information with existing knowledge to eventually form a judgment (Peake & D'Souza, 2015).

Since the central tenet of this study is that signal opacity within an environment of high information costs will enact passive processing, the absorptive capabilities of a passive decision maker will theoretically end at the signal acquisition stage. This is due to the fact that when the decision maker proceeds through the assimilation and transformation phases, the cognitive mind is actively and objectively processing the information within the signal and reassessing judgments (Peake & D'Souza, 2015). A passive processing path will theoretically bypass the assimilation and transformation path by instead relying on validity cues or compatibility with social norms to expend less cognitive energy and arrive more quickly at a legitimacy judgment.

Heuristics and Biases

Passive processing of signals have been explored through the use of heuristics and biases (Table 4). Extending Simon's (1957) work on bounded rationality, the social psychology literature has produced at least two important streams of research on heuristics and biases in judgment decision making. The first originated with the Tversky and Kahneman (1974) seminal work on heuristics and biases detailing both the availability and representativeness heuristics. Availability refers to the cognitive process of determining the probability of a final outcome based on the frequency of a similar past occurrence (Tversky & Kahneman, 1974). For instance, availability occurs when a stakeholder assumes that a new venture in the technology sector will fail simply because other numerous new ventures in the same sector failed in the past. Representativeness describes an individual's utilization of minimal information about an observation when making a final decision (Tversky & Kahneman,

1974). This is accomplished by an individual's willingness to base generalizations on specific traits, such as a firm's owners or customers, and compare with their own personal experiences to make a probability assumption (Busenitz & Barney, 1997).

The second stream of literature was developed within the finance literature by Gigerenzer (1996) as a contribution to the Tversky and Kahneman model (Gigerenzer 1996; Forbes, Hudson, Skerratt, & Soufian, 2015). Working with various co-authors, Gigerenzer formulates a simplistic viewpoint of recognition by focusing on the calculative ability of the mind to make quick decisions (Forbes et al., 2015). Numerous approaches, such as fast-and-frugal reasoning, are introduced that incorporate cue variables as a mechanism to accomplish three rules: search, stop, and decide (Gigerenzer, 1996; Gigerenzer & Brighton, 2009). For instance, an emergency medical doctor who is quickly reacting to cues utilizes this approach when assessing whether a patient is suffering a heart attack. This approach has evolved within the financial analysis and data mining field as an algorithm known as the fast-and-frugal decision tree. Criticisms of this approach are based around the notion of excessive overconfidence in results and relying heavily on a probabilistic viewpoint (Kahneman & Tversky, 1996). Other approaches that focus on recognition and evaluation include take-the-best heuristic (Gigerenzer & Gaissmaier, 2011). This approach followed the similar "three rules" of fast-and-frugal, but differ as it analyzes and values alternatives in a hierarchical order before making a final decision (Gigerenzer & Gaissmaier, 2011). For instance, literature shows that take-the-best is a strong predictor of participant judgments, such as a

Table 4. Sample of Articles on Heuristics and Decision Making

Field	Article	Key Concepts
Psychology	Simon (1955)	Explores human behavior as causation, social processes, motivation, and rationality.
	Tversky & Kahneman (1974)	Representiveness, availability, and adjustment heuristics and affiliated biases.
	Kahneman & Tversky (1996)	Response to Gigerenzer's critique in regard to systematic biases.
	Kahneman & Frederick (2002)	System 1 and System 2 processes to represent intuitive and reflective cognition.
	Gigerenzer (2007)	An examination of intuition and how better decisions are often made with less information.
	Lipshitz & Shulimovitz (2007)	Explores intuition and emotion in decision making in the form of affect heuristics.
Finance	Shanmugam & Bourke (1992)	Applies the representiveness heuristic to credit analysis. Identifies multiple biases.
	Kahneman & Riepe (1998)	Studies overconfidence, optimism, and hindsight as cognitive illusions in financial decision making.
	Levie & Gimmon (2008)	How investors utilize heuristics and biases to choose specific signals and cues that promote capital gain.
	Lucey & Dowling (2005)	Studies the affect heuristic and how investor feelings influence decision making.
	Baklouti (2015)	Examines loan officer judgments based on heuristics and emotional intelligence.
Management	Schwenk (1984)	Summary of cognitive simplification methods used in strategic decisions.
	Schwenk (1985)	Develops a process model to promote a commitment to a course of action by utilizing representiveness.
	Wright & Anderson (1989)	Examines subjective probability judgement processes using the anchoring heuristic.
	Busenitz & Barney (1997)	Focuses on representiveness in the decision-making processes of entrepreneurs and managers.
	Hodgkinson et al. (1999)	Finds that framing bias is a factor in decision making under uncertainty and using cognitive mapping.
	Zacharakis & Meyer (2000)	Examines availability heuristics as a method for investors to efficiently screen opportunities.
	Wickham (2003)	Conducts a conjoint experiment utilizing the representiveness heuristic to examine new ventures.
	Dane & Pratt (2007)	Develops model of intuitive decisions finding that learning and development of schemas are effective.
	Maxwell et al. (2011)	Angel investor's use of heuristics to pair-down excessive number of opportunities to analyze.
	Huang & Pearce (2015)	Explores investment decisions under uncertainty using intuition.

study that tested police officer's use of heuristics to determine which of a group of homes would be subject to burglary (Garcia-Retamero & Dhami, 2009).

These two streams of research on heuristics and biases provide a thorough understanding of how passive and quick decisions can be effectively utilized within the framework of this study. In the following review of signaling theory, the strategy of leveraging signals to gain legitimacy will be developed.

A Review of Signaling Theory

Signaling theory captures the process of overcoming a disequilibrium of information by signaling high cost and creating greater certainty (Spence, 1973). In the review by Connelly et al. (2011), signaling theory is broken down into a timeline of actors and events. The *signaler* is the catalyst for the problem of information asymmetry since the knowledge he/she possesses is unavailable to outsiders (Spence, 1973; Kirmani & Rao, 2000; Connelly et al., 2011). The *signal* can contain both positive and negative information and can be used strategically by individuals and organizations to manipulate the perception of signal receivers (Connelly et al., 2011). The *receiver* possesses the handicap of information and must have the wherewithal to accurately decipher the signals as honest or deceitful (Bliege-Bird et al., 2005). Since signal opacity may consist of a multitude of variations (third party affiliations, religious community involvement, shared trauma, existing short-term debt, etc.), it is imperative to review signaling theory across various subjects within literature.

Anthropology

Within anthropology literature, three classifications of signals are examined (Smith & Harper, 1995). The first, self-reporting signals, includes positive and/or negative information about the self, such as mating displays or warning colors of potential prey (Hasson, 1994;

Smith & Harper, 1995). The second, other-reporting signals, is comparable to the previous, but refers to others and not the self (Hasson, 1994; Smith & Harper, 1995). Lastly, a cue or a response to the environment is not necessarily considered a signal, but can evolve into one based on actions following the response (Hasson, 1994; Smith & Harper, 1995). The classification of these signals is examined based on cost as well. A minimal signal is one that depicts a cost-free or low-cost signal, such as through a mated male and female where conflict no longer is evident (Smith, 1956). A cost-added signal is at a higher cost than the minimum signal because higher quality signalers are sending them (Smith & Harper, 1995). Interestingly, this doesn't necessarily benefit the receiver as it does the sender, such as female toads choosing the male that sings the loudest (Arak, 1988). An index physically depicts the quality of the signal, such as spiders vibrating their webs to signal their weight to other competing spiders (Riechert, 1978).

As an extension of these classifications, research details three methods of displaying, known as the runaway approach, the sensory-exploitation view, and the costly signaling approach (Fisher, 1930). The first two examine how signal preferences of the receiver are based on innate genetic traits, thus mate selection is be based on specific evolutionary guidelines (Fisher, 1930). However, these two approaches also discuss that signalers attempting to stand out from the competition could exploit these preferred signals of the receiver (brighter colors or longer tails) and manipulate their decision structure (Bliege-Bird et al., 2005). The costly signaling, also known as the handicap approach, refers to honest and reliable signals that communicate ability, such as an antelope communicating stamina to a predator by jumping in the air instead of immediately retreating (Bliege-Bird et al., 2005).

Religion

Signaling theory has also been examined through the lens of religion as a method of communicating intentions, such as through religious behavior and dress (Sosis & Bressler, 2003). For instance, the distinct turbans and beard lengths of members of the Sikh religion or the Haredi garb of Orthodox Jews are distinct signals that represent views and preferences (Sosis & Bressler, 2003). The levels of cost within religious signals are discussed, finding that tattoos or involvement in ceremonies communicates difficult-to-fake signals that are regarded with greater certainty by the receiver (Rappaport, 1999). An interesting point regarding religious signaling is the debate between private and group involvement and a signal receiver's perception of cost. Sosis and Bressler (2003) find that convincing a receiver by signaling private rather than group commitment carries greater weight due to the elimination of false signalers that could "ride on the coat tails" of others. Also, the social bonding that is evident within religious sects promotes cooperation where falsely signaling can be uncovered through a lack of collective action from an individual (Sosis & Alcorta, 2003). Other costly signals of religion are found in the initiation activities of many groups. For instance, beatings, isolation, and death threats are extreme examples of these costly signals (Glucklich, 2001).

The study of religion and signaling theory uncovered the conversation between manipulation and deception (Cronk, 1994). An interesting example is that of a religious society attempting to convince and convert other secular communities (Cronk, 1994; Sosis & Alcorta, 2003). If their intentions are cooperative, then the religious signals will be unassuming and simple (Cronk, 1994). However, if the sect is attempting to convince and/or control another community, their signals may be elaborate and repetitive, which corresponds

with manipulation (Cronk, 1994). A primary distinction is that manipulation can include honest and dishonest signals; however, deceit primarily involves a lack of morality or dishonesty (Cronk, 1994).

Economics

A large proportion of economics and finance literature integrates "game theory," which refers to the ability to alter preconceived notions about information such as through negotiations (Von Neumann, 1944; Nash, 1951). An interesting tenet of this research finds that individuals will not alter their original course of action even after becoming aware of their opponents chosen strategy (i.e., Nash equilibrium) (Nash, 1951; Gibbons, 1997). Later, these approaches are integrated into signaling games, which examine an individual's choice of communication strategy when they are in possession of private information such as through negotiations and bargaining power through first offers (Rubenstein, 1982; Gibbons, 1997).

Spence's (1973) economics paper on job market signaling and hiring decisions under uncertainty is highly regarded as a seminal paper across multiple streams of literature (Connelly et al., 2011). This theory explores costly signaling through an applicant's education as a signal of ability that improves uncertainty (Spence, 1973). This approach is also explored within finance, such as signaling firm value by altering liabilities from equity to debt, since debt payments are not included in tax calculations (Ross, 1977). Private information is examined within auction settings where information asymmetry is created between auction bidders and agents (Vickrey, 1961). Also, incentives within signaling theory examine the power of private information and how managers are able to manipulate a firm's financial structure to ensure the highest possible profitability and eventual incentive (Ross,

1977). This notion is further discussed on product quality and uncertainty, finding that when agents possess the entirety of information of a poor quality product, they may have more incentive to market since the profit margins would be greater (Akerlof, 1970). However, from a long-term relationship view, this is found to have dire consequences on trade when true product quality is discovered (Riley, 2001).

Consumer Psychology

Within consumer psychology literature, a product's unobservable quality is examined through signaling, such as through longer warranty lengths as a signal of high quality (Boulding & Kirmani, 1993). Also, the perception of costs incurred by a signaler is found to have high signaling power of quality, such as through high advertising costs spent by a seller (Super Bowl advertising space) (Kirmani, 1990). These strategies of signaling quality bring about concerns of receivers misinterpreting and choosing the wrong signal (Kirmani & Rao, 2000). Known as adverse selection, research find that this problem is evident within precontractual settings due to a scarcity of available information (Kirmani & Rao, 2000). Within postcontractual settings, moral hazard is found to be a culmination of the buyer's ultimate revelation of true product quality (Kirmani & Rao, 2000). Since signal opacity exists primarily as a method of attaining stakeholder legitimacy prior to funding, the signals are leveraged in a precontractual setting. Therefore, it makes sense that stakeholders will be concerned with adverse selection and choosing to legitimize the wrong signaler. However, within this study's setting of debt contracts, adverse selection is not exclusive to only signal opacity, but should be considered a risk of all types of signals (transparent, costless, etc.).

Entrepreneurship

The Connelly et al. (2011) extensive review of signaling theory details its evolution and future directions across multiple subjects, including entrepreneurship. Scholars explore an entrepreneur's pursuit for growth by leveraging legitimacy-creating activities via signals (Suddaby et al., 2017). For instance, new venture signals, such as board structure and makeup, may be utilized to communicate firm performance in the pricing of initial public offerings (Certo, Daily, & Dalton, 2001). Entrepreneurs have also been examined through their ability to create social ties and alliances. Prestigious ties and third party affiliations are significant to investors in overcoming information asymmetry with new ventures (Gulati & Higgins, 2003; Plummer et al., 2016). Also, firm owners who have equity or "skin in the game" signal commitment to investors (Prasad, Bruton, Vozikis, 2000), but do not necessarily suggest future success of the venture (Busenitz, Fiet, & Moesel, 2005). Within the scope of this study, understanding how signals can be leveraged to acquire investor interest is particularly important. As such, a detailed examination of new ventures and their quest for capital is detailed in the following.

Table 5. Sample of Seminal Articles on Signaling Theory

Field	Article	Key Concepts
Anthropology	Fisher (1930)	Runaway Approach, Sensory-Exploitation View, Costly Signaling Approach are discussed as methods of signaling
	Riechert (1978)	Examines the costly signaling of spiders showing quality. Louder web vibrations signal a heavier and dominant spider.
	Arak (1988)	Notion that higher quality signalers can afford to send costly signals. Exemplified by the mating call of toads.
	Hasson (1994)	Signals of fitness displays are costly within the prey/predator analogy. Also mimicry and camouflage are possible, such as antelopes kicking to portray fitness.
	Smith & Harper (1995)	Review of animal signal classifications, including self-reporting and other-reporting signals, minimum cost, cost-added, and index signals.
	Bliegebird et al. (2005)	Examines signaling through generosity as a form of honest communication. Elaborates on Fisher's (1930) classification methods.
Religion	Cronk (1994)	Response to Rappaport (1999) detailing morality and manipulation in signaling. Argues that manipulation includes honest and dishonest signals, but morality is more associated with signaler intent.
	Rappaport (1999)	Was a strong proponent of religious rituals as unfalsifiable costly signals. Also expressed that information that is unverified objectively is verified emotionally, such as through experiences.
	Glucklich (2001)	Unfavorable initiations that involve pain as a costly signal.
	Sosis & Alcorta (1994)	Examines costly signals such as rituals and sacrifices. Also discusses deception, finding that complexity of behaviors and aggressiveness signal deception.
	Sosis & Bressler (2003)	Explores the evolution of religious signals as costly displays. Examples include religious dress and commitments not publicly accolated as costly signals.
Finance & Economics	Vickrey (1961)	Examines signaling in auction settings where agents possess information (bids). Creates competition within bidders through speculation.
	Akerlof (1970)	Explores signaling product quality in the auto industry. Finds that managers are incentivized to sell poor quality products due to higher margins.
	Spence (1973)	Examines signaling in the labor market. Finds that education is a costly signal of quality to hiring manager.
	Ross (1977)	Examines signals of firm profitability through choice of debt versus equity structure. Also finds that managers possess private information and leveraged incentives based on this.
	Bhattacharrya (1979)	Company dividends act as signals to outside investors of optimal cash flow. The extent of dividend is correlated to investor horizon.
	Gibbons (1997)	Game theory within economics explored as a signaling game in four variations (static, dynamic, complete, and incomplete information).
	Riley (2001)	Review of signaling theory within economics. Discusses pooling, equilibrium, game theory.

Field	Article	Key Concepts
Consumer Psychology	Kirmani (1990)	Advertising costs examined as a signal of product quality. Perceptions resemble "U" shape with high costs producing negative perceptions of quality.
	Boulding & Kirmani (1993)	Explore warranty lengths of products as signals of quality. The longer the warranty, the higher the perception of quality
	Kirmani & Rao (2000)	Examine communicating product quality through firm signaling. Problems associated with information asymmetry are adverse selection and moral hazard.
	Rupp & Mallory (2015)	Environmental information such as treatment as a signal of CSR and reputation.
	Gond et al. (2017)	Review of microfoundations of CSR. Explore signaling and CSR within the scope of job seekers through social exchange mechanisms.
Entrepreneurship	Fischer & Reuber (2007)	Theorize that reputation formation of new ventures should be of importance prior to seeking investors.
	Bruton et al. (2009)	Examine adverse selection and moral hazard within IPO offerings. Results suggest that retained ownership in venture augment adverse selection.
	Cornelissen et al. (2012)	Signals in the form of speech and gesture as metaphors are frequently incorporated by new ventures to gain cognitive legitimacy.
	Osmel et al. (2013)	The ability of new ventures to gain access into syndicate of investors is reliant upon their existence in other nonaffiliated networks.
	Van Werven et al. (2015)	Examine persuasion arguments used by entrepreneurs to plead legitimacy (analogy, classification, generalization, cause, signs, and authority).
	Plummer et al. (2016)	New venture characteristics are magnified when signaled to investors when they are affiliated with third parties.

New Venture Costly Signaling and External Capital

A new venture is an organization that exists in the early stages of a business life cycle (Zimmerman & Zeitz, 2002). These young firms are faced with a legitimacy barrier in the eyes of stakeholders due to liability of newness (Stinchcombe, 1965) and liability of smallness (Aldrich & Auster, 1986). Literature explores signaling tactics that new ventures are able to leverage to overcome these barriers, such as the development of legal entities or providing formal business plans (Karlsson & Honig, 2009). In the following, I will discuss the role of signaling theory in a new venture's quest for external capital.

External capital sources for new venture financing has been a topic of interest in signaling literature (Bruns et al., 2008; Berger & Udell, 1998, 1999). Although scholars have expanded on numerous funding options for new ventures, including venture capital (Kaiser et al., 2007), crowdfunding (Mitra, 2012), angel investors (Huang, 2018), and bootstrapping (Rutherford et al., 2017), I will focus primarily on the issuance of debt as an appropriate financial vehicle. I discuss here why a debt contract is relevant within the theory of signal opacity.

First, a debt provider such as a commercial bank is liable to a high level of information asymmetry in which the control and flow of information is highly skewed towards the business owner (Bruns et al., 2008). This is due to the fact that debt contracts rely on the entrepreneur to maintain organizational control and exert the predominant amount of effort (De Bettignies, 2008). However, information asymmetry is not a liability for all investors — venture capitalists and angel investors—who provide short-term funding in return for equity in new ventures (Kaiser, Lauterbach, & Verweyen, 2007). With a percentage of business ownership, VCs and angels work alongside new ventures to aid in operations and decision making, which dramatically balances the level of effort and information asymmetry (Fassin & Drover, 2017). Second, debt contracts are a relevant and timely option within the theory of signal opacity due to their popularity and availability among new ventures. (Fraser, 2005; De Bettignes, 2008). Third, as shown in Table 6, a rich stream of literature exists surrounding signaling and the financing of informationally opaque businesses with debt contracts. Existing research discusses the role of relationship banking as a tactic to overcome an investor's level of information asymmetry (Peterson & Rajan, 1994; Berger et al., 1999). This process extends beyond the evaluation of a borrower's historical financial information

by gathering pertinent data through third-party affiliations, reputation within the community, and relationships with other businesses (Berger et al., 1999). For this reason, my sample will include bankers that employ relationship banking as a tactic when making business decisions.

Table 6. Sample of Articles on Signaling and External Debt

Field	Article	Key Concepts
Economics	Stiglitz & Weiss (1981)	Debt financing with imperfect information. Interest rates as effect screening device.
	Diamond (1989)	Small firms access to external capital at each life cycle stage.
	Baas & Schrooten (2006)	Relationship banking can supersede the need for hard financials to make lending decisions.
	Cosh, Cumming & Hughes (2009)	Characteristics of firms seeking external capital. Assets were a strong predictor for debt.
Banking	Ulrich & Arlow (1981)	Survey of loan officers on factors affecting decision processes.
	Berger & Udell (1998)	Informationally opaque firms must overcome costly verification and adverse selection.
	Berger & Udell (2001)	Evaluated barriers to credit availability to informationally opaque firms.
	Ambrocio & Hasan (2019)	Measure of discretion to test if lenders tried to gain private information about borrowers.
Finance	Cole, Goldberg, & White (2004)	Smaller banks tend to rely more on borrower's character than formal financial variables.
	Ueda (2004)	Firms may choose to not partner with VC for fear of losing intellectual property or control.
	Robb & Robinson (2012)	Outsider debt in the form of bank loans was the choice of external capital for new firms.
Management	Chaganti, DeCarolis, & Deeds (1996)	Economic need and personal choice as a predictor for debt financing.
	DeBettignies & Brander (2007)	Equity is preferred over debt only if there is a managerial value-added component.
	Moro, Fink, & Kautonen (2014)	Voluntarily disclosing information to a loan officer influenced perception of competency.

Hypotheses Development

The Strategy of Costly Signaling and Opacity

In developing and understanding the hypotheses as they relate to signal opacity, I needed to first detail the strategy of costly signaling. Here I examine the theory of an equilibrium within costly signaling and notate how the theory of signal opacity should be evaluated from a strategic sense (Kirmani & Rao, 2000; Bergh et al., 2014). This distinction is discussed in

further detail within the theories of separating and pooling equilibriums and how high- and low-quality signalers are interpreted. I also examine signaling as a top-down or goal-oriented process so as to shed light on signal opacity as a strategy, not a fortunate accident. Also, from the stakeholder's point of view, I will discuss the bottom-up or stimulus-driven process of making sense of signals to explain how this strategy (top-down) is effective. Lastly, I will discuss the appropriate setting for this theory within the realm of a new venture signaling to external stakeholders.

Costly Signals and a Pooling Equilibrium

Separating and pooling equilibria were originally discussed in the exploration of high- and low-quality firms marketing products to consumers (Kirmani & Rao, 2000). Subsequently, this research was extended, exploring the separating equilibrium as a mechanism that differentiated between high- and low-quality signal senders (Bergh et al., 2014). An important distinction in this theory is the understanding of costs and quality. Bergh et al. (2014, p. 1337) state that in a separating equilibrium: "The costs of credible signals are inversely related to the quality of the sender. Low-quality senders – such as the lower-quality worker – must invest at a level disproportionately higher than high-quality senders to convey the same signal of high quality."

As shown in Figure 1, a high quality firm should choose to signal since the benefits are much larger than not (A > B); however, a low-quality firm should not choose to signal because falsely signaling quality will ultimately have a negative effect (D > C). This creates a separating equilibrium allowing the signal receiver to decipher which firm is of higher quality since a low-quality firm will not falsely send signals of quality (Kirmani & Rao, 2000). However, if the quality of the signaling firms cannot be distinguished as high or low,

such as when an investor is deciphering the quality of a new venture, then a pooling

equilibrium may occur (Kirmani & Rao, 2000).

Figure 1. Signals and Quality (Kirmani & Rao, 2000)

	Signal	Do Not Signal
High-Quality Firms	A	B
Low-Quality Firms	C	D

Within the realm of entrepreneurship, a new venture should not be considered as low-

quality in the sense that they are "inadequate" in regards to becoming profitable in the future,

but rather that they lack the ability to provide transparent (easily verifiable) signals that

verify historical profitability and future ability to produce a sufficient net income to pay the

principal and interest requirements of the debt contract. From a separating equilibrium view,

since a new venture lacks these transparent signals, they are instantly perceived as of low

quality when compared to the signals of mature firms. Although this seems to be a correct

formulation, there may be an alternative viewpoint where new ventures are able to attain

legitimacy when competing against each other rather than mature firms. This viewpoint

resembles a scenario where a pooling equilibrium is expected, which can create a difficult

assessment for the investor (Bergh et al., 2014). In the case of a pooled equilibrium, investors

must then leverage their own expertise to decipher a subjective appraisal of quality (Drover,

Wood, & Corbett, 2018). The new venture that is successful in gaining investor legitimacy is

the one that leverages signal opacity to achieve stakeholders' perceptions of higher quality in

an environment of similar costs. Thus, it is argued that signal opacity exists beyond the

separating equilibrium, which is known as a pooling equilibrium (Bergh et al., 2014, p.

1353): "Within a pooling equilibrium, all signalers offer the same signals and the receiver is

left unsure which signals to believe. This situation arises when signaling costs are the same

for groups of different quality. Under such conditions, one cannot prevent low-quality providers from imitating the signals of high-quality providers when the former benefits from doing so."

A second distinction of separating equilibrium is the Bergh et al. (2014, p. 1338) discussion on the role of penalty costs for false signaling. For instance, when managers increases their share ownership stake in firms, they are signaling a positive outlook in firm performance (Bergh et al., 2014). If they were falsely signaling this outlook, the hefty price in accordance with purchasing additional shares would dramatically affect their personal liquidity (penalty costs). However, this is not applicable to a pooling equilibrium since signal opacity is not leveraged to deceive stakeholders with completely false information, but rather to manipulate investors to not fully verify signals so as to appear as higher quality. As discussed earlier, manipulation, unlike deception, can involve honest and credible signals (Cronk, 1994). This is an important distinction when discussing the continuity of long-term relationships. For instance, in the case of false signaling, if an investor later discovers that blatant deception occurred (fabricated financials, forged documents, counterfeit passports and identification cards), the relationship may be fully marred. However, in the case of signal opacity (patent filing counts, business plans, social ties, etc.), the surface-level quality is actually honest; and since the onus to fully verify is on the investor, the underlying quality of the signal is not deceiving, but a manipulation of information.

Another interesting tenet of separating equilibrium is the element of signal confirmation. This states that a separating equilibrium is achieved based on the subsequent experience of the signal (Bergh et al., 2014). For instance, investors may only acknowledge high- and low-quality signalers once they have experienced the resulting payoff from the signal. This is not

41

applicable to signal opacity because the signals are not meant to be fully confirmed or verified after the fact. They exist in the precontractual stage of a transaction and lower stakeholders' perception of adverse selection by affecting the quality level. Figure 2 illustrates the process model of signal opacity and a pooling equilibrium. Due to the receivers inability to discern a distinction of new venture signal quality based on cost in a separating equilibrium, they determine quality utilizing heuristics on the passive processing path in a pooling equilibrium. To further detail and examine the strategy of signal opacity, I will also detail the dual process (top-down versus bottom-up) of new ventures signaling for external capital and investors interpreting and appraising the quality of new venture signals for potential opportunities.

Figure 2. Process Model
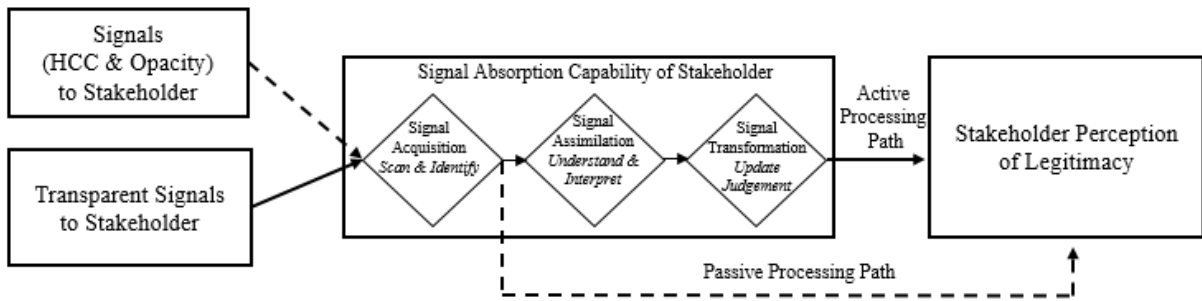
Process model derived from Bitketine & Haack (2015), Peake & D'Souza (2015)

Costly Signaling as a Top-Down Process

Literature explores the processing of signals as either a top-down or bottom-up processes (Posner, 1980; Shepherd, McMullen, & Ocasio, 2017). To attract the attention of a receiver, a signal must be sent with a purpose, especially when the signal's context is highly subjective and susceptible to numerous perceptions (Berger & Luckmann, 1966). As previously mentioned, signals from a new venture exists in a pooling equilibrium where quality is difficult fir receivers to appraise due to signalers' lack of cost fluctuation. To gain receivers'

attention, new ventures must utilize a top-down approach, which is a goal-driven and stimulus-creating process (Ocasio, 2011). For instance, new ventures are intentional in their signal choice to investors based on their preferred outcome once the signal is received. Literature explores signaling theory as a top-down process where signals are manipulated in an effort to frame meanings and create contextual effects (Celani & Singh, 2011). Signal observability is a key tenet within this notion, due to consensus that regardless of whether receivers are actively looking for the signal, its observability will have an effect on receivers' level of attention (Connelly et al., 2011). This top-down approach has also been explored from an attentional control perspective, theorizing that signals are able to manipulate receivers' backward- and forward-looking processes (Ocasio, 2011). For example, a new venture that signals prior industry experience or social ties can create signals that promote future success.

Passive Legitimation as a Bottom-Up Process

From a strategic point of view, utilizing a top-down approach is most effective when the signal receiver has a bottom-up perspective (Drover et al, 2018). The bottom-up or stimulus-driven process focuses on exogenous stimuli that enacts a passive or heuristic-driven attention process (Drover et al., 2018). This means that a signal receiver responds to signals as they are observed. In terms of new venture-seeking stakeholder funding, a debt contract is an appropriate financial vehicle that may instill a bottom-up approach. Within this theory, the stakeholder's (banker) role is as a service provider fielding loan requests from new ventures and appraising risk levels based on information sent. Since a pooling equilibrium exists due to homogenous signal cost levels across new ventures, stakeholders find difficulty in ascertaining signal quality (Bergh et al., 2014). Thus, they process exogenous information in

a reflexive manner, choosing to utilize heuristics to base decisions. An interesting tenet from literature is the relationship between the bottom-up process and signal observability. This research finds that signals with lower observability are less likely to be processed utilizing bottom-up (Drover et al., 2018). This is applicable with this theory since signal opacity will be highly observable due to its ability to balance the levels of information asymmetry by utilizing costly characteristics of honesty, credibility, and commitment. Once stakeholders appraise the cost to verify and the level of distortion, they choose to process by bottom-up. In the following, I will detail each of the hypotheses.

Hypotheses

Signal Opacity

Signal Honesty, Credibility, and Commitment

Information asymmetry is a core component of signaling theory focusing on the fact that "different people know different things" (Stiglitz, 2002, p. 469). Reducing information asymmetry by communicating the quality of information through signals of honesty, credibility, and commitment is a vital process within signaling theory (Spence, 1973; Connelly et al., 2011). By alleviating some level of ambiguity, signal receivers are able to effectively observe and appraise the cost of signals before making judgments (Busenitz et al., 2005; Gomulya & Boeker, 2014).

However, overcoming information asymmetry is a difficult obstacle for receivers. Management and finance literature examines the information asymmetry relationship with adverse selection and moral hazard due to the potentially opportunistic behavior of signal senders (Ross, 1973; Jensen & Meckling, 1976). Within the context of the entrepreneur-stakeholder dyad, research finds that the propensity for adverse selection is increasingly more

evident than moral hazard to occur in the precontractual stages of negotiation (Mavlanova, 2012). When there is a potential for information to be misrepresented and one party has control of its validity, stakeholders are faced with determining the few good opportunities from the numerous bad (Leland & Pyle, 1977). To lower this chance of adverse selection, stakeholders search and process specific signals sent by entrepreneurs that are regarded as of high quality to bring greater balance to the lopsided state of information asymmetry. Within this theory, these specific signals do not necessarily bring complete equilibrium to the high level of information asymmetry in the signaling environment, but rather allow the stakeholder to overcome the initial problem of adverse selection. This is because signal opacity will initially capture stakeholders' attention by resembling a signal with costly attributes (honesty, credibility, and commitment) (Spence, 1973; Connelly et al., 2011). Because of this, stakeholders will feel less concerned they are proceeding with a poor signaler (adverse selection) and will attempt to actively process the signal. However, as discussed, one of the main tenets of this theory is that once stakeholders realize the signals carry high levels of distortion and verification costs, they will still proceed and rather process the signal on a passive path.

Distortion

Signal opacity is also determined by its level of distortion, which is comprised of: 1) the observability of the signal, and 2) the noise caused by the signaler's behavior or other external referents (Connelly et al., 2011; Gomulya & Mishina, 2017). Existing research explores signal intensity (Gao, Darroch, Mather, & MacGregor, 2008) and clarity (Warner, Fairbank, & Steensma, 2006) to clarify a signal's observability as its strength or level of significance to a receiver in the absence of distortion (Connelly et al., 2011). A central tenet

of this construct asserts that if a signal is unnoticed due to its lack of clarity or strength, then the chance that a receiver will act upon the signal is severely diminished (Connelly et al., 2011; Anderson & McMullen, 2012). This is highly applicable within the theory of signal opacity since the signal must first and foremost catch the receiver's attention by having costly attributes such has honesty, credibility, and commitment.

Noise has been described in literature as an exogenous condition that influences the signaling environment, thus affecting a signal's observability (Rynes et al., 1991; Connelly et al., 2011; Anderson & McMullen, 2012). A key question in regard to signal noise is how the process can be leveraged as a strategic tactic. Multiple theoretical discussions within management and finance literature have researched signal noise as a tactical play for entrepreneurs within the entrepreneur-stakeholder dyad (Graffin, Carpenter, & Boivie, 2011; Plummer et al., 2016). Camouflaged signals in the form of overcomplicated language or unorthodox terminology in documents were found to be a highly persuasive technique for entrepreneurs seeking investment (Benson et al., 2015). Also, timing the release of positive and negative information or entrepreneurs' anticipatory obfuscation of signals suggested their ability to control a stakeholder's reaction (Elsbach, 1998). Leveraging external referents, such as third-party affiliations, was found to be an effective tactic for entrepreneurs to differentiate themselves in an otherwise noisy signal environment of similar ventures (Plummer et al., 2016). Finally, intentionally sending signals that focus primarily on positive aspects to overshadow the negative, such as the scalability of venture or an optimal market condition was found to be advantageous, especially for new ventures (Ko & McKelvie, 2018).

Existing literature finds empirical evidence that distortion in a signaling environment significantly affects investors' perceptions of signals (Yao et al., 2019). As mentioned earlier, the initial observability of a signal is paramount to instilling an investor's reaction to the signal's importance (Gulati & Higgins, 2003; Yao et al., 2019). When distortion enters a signaling environment, such as a bear financial market for investors, a lucrative contract signing by a venture can serve as a highly observable signal that can outweigh any other negatives (Yao et al., 2019). Distortion can also include behaviors or viewpoints of other signalers (Connelly et al., 2011). From a strategic view, a signaler may choose the timing of a signal's release based on overall performance of its competitors as a distorting factor (Janney & Folta, 2006). If a market is bullish, then an investor may overlook the negative factors of a new venture based on its competitor's success. Under the same veil, ventures that are competing for investment capital may leverage a rival's inconsistent performance as a distortion tactic to gain a competitive advantage (Yao et al., 2019).

> **Hypothesis 1:** There is a significant difference between a stakeholder's perception of legitimacy due to the levels of signal opacity.

Information Verification Costs

As previously discussed, a central tenant of signaling theory in management and finance literature is the dyadic effort to bring balance to an otherwise imperfect level of information asymmetry by signaling to the receiver that a high cost was incurred to send the signal (Spence, 1973; Connelly et al., 2011). However, this only partially accomplishes the goal of costly signaling due to the fact that the information verification cost incurred by the signal receiver may be as or more important than the effort expensed by the signal sender. This begs

the question: if the information cost for the receiver exceeds the expected benefits of verifying, is the costly signal worthless?

Information verification costs have been a topic of interest within literature on signaling costs through intellectual rights such as patents (Hayes, 1999; Hansmann & Kraakman, 2002; Long, 2002). These verification costs may include hiring experts and attorneys or simply equate to the time expended in performing firm due diligence (Long, 2002). The central tenet in this research finds that a venture's patent and/or patent counts serve as costly signals of quality to investors due to its investment of capital and R&D (Long, 2002; Hsu & Ziedonis, 2008). This research also finds that investors concerned with opportunism and attempting to verify the dense information found in patents are able to pass a bulk of the verification costs on to other reputable authorities (Long, 2002). For instance, a new venture that has compiled numerous patents must comply with regulations of the Patent Trademark Office (PTO) and make honest statements or claims about their patents (Long, 2002). If ventures are deceitful and intentionally deliver false statements or claims, the substantial upfront investment of capital and time will be ultimately forfeited (Long, 2002). Investors are aware of this and thus are able to transfer a bulk of the costs in verifying honest statements about the patent to the PTO. This is highly applicable to signal opacity due to the fact that from an investor's point of view, the credibility of a signaler and the honesty of its signal is verified by a reputable third party (the PTO), and thus the investor doesn't need to assume this already sunk cost. At this point in the precontractual transaction, the investor has not incurred any real costs in verifying the quality of the signal. Thus they are not overly concerned with adverse action, and the benefits to verify the signal further is still far greater.

The benefit-cost scale swings once the investor begins to fully verify the signal. For instance, in the case of patents, Long (2002) examines the cost distinction between verifying the quantity and quality of signals. Obviously, the cost of verifying the quantity of patents in a portfolio is much less than verifying its quality (accuracy). Thus, the investor, who in this case has already verified a signal's credibility through the sunk costs of a third party, must choose to either incur a very high cost to verify its accuracy or a much lower cost to verify the quantity (Cohen, Nelson, & Walsh, 2000; Long, 2002). If investors choose to incur the high verification cost and find that a patent is inaccurate, they must then expend more costs to prove that the inaccuracy is material and was intentional in order to recoup their initial lost capital (Grossman, 1981; Long, 2002). Since a breach of good faith or "inequitable conduct" may be difficult and costly to prove in a court of law (Long, 2002), literature finds that focusing on a signal's credibility may be a more cost-effective option (Certo et al., 2001; Sanders & Bovie, 2004; Busenitz et al., 2005; Connelly et al., 2011).

Within the realm of signal opacity, signalers are able to signal their credibility to investors through the sunk costs of another party. The investor chooses to not actively verify the signal further due to the fact that information costs will exceed the benefit, and a very important attribute of the signal (credibility) has already been verified. Also, investors realize that if they choose to incur high information costs to actively verify the signal and uncover inaccuracies, they must then sustain even greater costs to prove the inaccuracies were intentionally deceitful to recoup their original investment. Signalers may be aware of this quandary and choose to send specific opaque signals that exist in a signaling environment of high information costs where credibility can easily be verified through the sunk costs of another party (Plummer et al., 2016). Since verification costs carry a particular objective

evaluation process and exist within the signal environment, the variable is proposed separately from signal opacity.

> **Hypothesis 2**: There is a significant difference between a stakeholder's perception of legitimacy due to the levels of signal verification costs.

Interaction of Signal Opacity and Information Verification Costs on Legitimacy

In this study, I propose that an interaction occurs between signal opacity and verification costs that will enhance or reduce the variable's main effect on stakeholder legitimacy perceptions. This means that business owners' ability to capture stakeholders' attention and create distortion may be affected by the amount of information verification costs in the signal environment. In a similar vein, business owners' ability to influence passive legitimacy judgments of stakeholders through high verification costs may be influenced by how effectively they can initially capture their attention and create distortion.

> **Hypothesis 3**: There is a significant difference between a stakeholder's perception of legitimacy due to the interaction between signal opacity and signal verification costs.

Receiver Expertise

As signals are received, the interpretation process can be significantly heterogeneous across audience groups (Kim & Jensen, 2014). The Heil and Robertson (1991) study on competitive market signals finds that signal receptivity, which consists of the expertise level of the signal receiver and their domain-specific experiences with similar signals, were influential in their ability to interpret. At the microfoundational level, expertise can be especially complex in the investment field since individual members of an investment team may have a wide range of receptivity levels.

Receiver expertise considers the accuracy of interpreting information based on the receivers' relevant knowledge or skill levels (Alba & Hutchinson, 1987; Argote, 1999). Literature examines this construct, finding that experts in a field have a greater understanding of the ambiguous qualities of signals due to their industry knowledge and ability to complete complex analysis (Ocasio, 1997). Johnson and Russo (1984) find that individuals with higher expertise perform effective information searches and efficiently translate cryptic signals. Bruns et al. (2008) explore loan officer expertise within the banking industry, remarking that credit guidelines only solve part of the problem in determining the credit worthiness of a borrower. They remark that the final approval determination is primarily based on the loan officers' expertise level and overcoming information asymmetry (Bruns et al., 2008).

Dane and Pratt (2007) contribute to research on intuitive decision making in their research on "expert" schemas, which is described as highly complex and domain-specific schemas (Dreyfus & Dreyfus, 1986). These expert schemas are developed by individuals through explicit and implicit learning (Dane & Pratt, 2007). Explicit learning involves the conscious improvement of an individual's knowledge base through three types of practice: duration, repetition, and feedback (Dane & Pratt, 2007). This gives decision makers "domain specific" content that can be applied when viewing signals that are difficult to verify. On the other hand, implicit learning describes an individual's unconscious accrual of patterns of knowledge retained (Reber, 1992; Dane & Pratt, 2007). As noted by Prietula and Simon (1989), individuals who have leveraged explicit and implicit learning are able to develop domain-relevant schemas (Dane & Pratt, 2007). Building on Simon and Chase's (1973) study on the ability of chess masters to visually recognize thousands of strategies utilizing familiar patterns in memory, Dane and Pratt (2007) apply similar logic to expert schemas through

explicit and implicit learning. As discussed previously, expert schemas utilize heuristics to make decisions when the entirety of information is currently unavailable (Dreyfus & Dreyfus, 1986; Dane & Pratt, 2007). This is accomplished by recognizing patterns of information, such as through signals, and utilizing past experiences and expertise to make decisions (Dane & Pratt, 2007; Huang, 2018). In a similar vein, Klein (1998) explores the acknowledgment of cues based on comparable information store in individuals' memories through their recognition-primed decision models. As discussed previously in the research by Dane and Pratt (2007), passive processing of information requires ample prior experience to allow for timely decision making (Klein, 1998).

Hypothesis 4a: The difference between a stakeholder's perception of legitimacy due to the levels of signal opacity is significantly enhanced when stakeholder expertise is high and reduced when it is low.

Hypothesis 4b: The difference between a stakeholder's perception of legitimacy due to the levels of signal verification costs is significantly enhanced when stakeholder expertise is high and reduced when it is low.

Figure 3. Theoretical Model
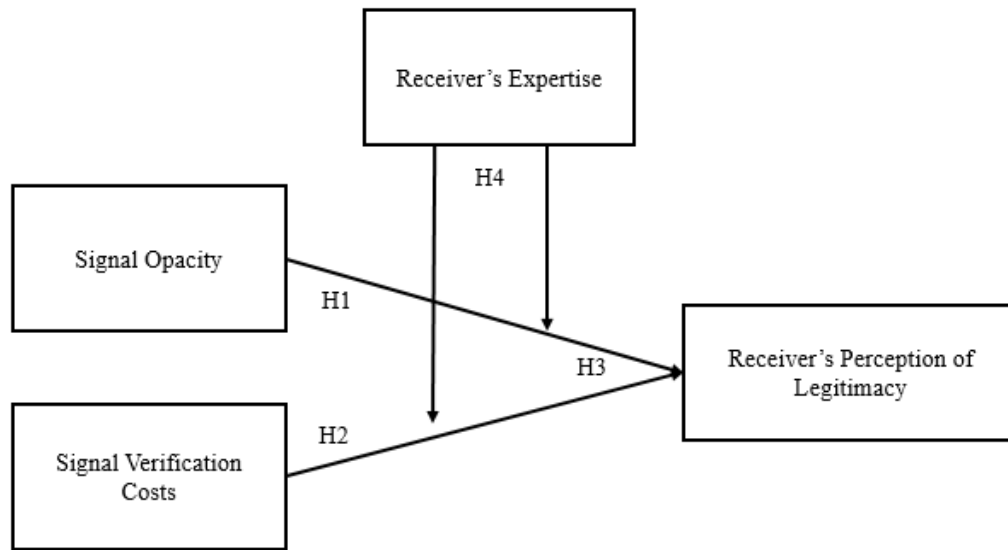
CHAPTER III

METHODOLOGY

Research Design

In this chapter, I discuss the methodological procedures utilized for data collection, measure development, and analysis to empirically test this study's hypotheses. To develop an instrument to quantitatively assess and analyze the effect of signal opacity, I initiated an exploratory sequential mixed methods research design. Commonly regarded as the "third methodological orientation," this design leverages the use of qualitative and quantitative analysis to explore and answer the focused research question(s) (Teddlie, Tashakkori, & Johnson, 2008). Within an exploratory design, qualitative data is initially collected to organically build upon preliminary findings and eventually transition towards a quantitative analysis (Creswell & Plano-Clark, 2011). Unlike concurrent research designs that examine data from many different viewpoints to uncover themes, such as triangulation, sequential designs utilize gathered data to instigate further data collection and analyses (Myers & Oetzel, 2003). The use of this research design is appropriate due to this study's reliance on transforming subjective data into objective findings. As shown in Figure 4, the qualitative and quantitative research designs for this study were split into two sequential phases (Myers & Oetzel, 2003). Phase One illustrates the qualitative data collection and analysis leveraged to develop the survey instrument. Phase

Two depicts the quantitative data collection and analysis utilized to answer this study's research questions.

Selection of Qualitative Study Participants

In contrast to the use of random sampling in quantitative studies, data collection using qualitative methods relies on purposive recruitment to further theoretical perspectives (Lincoln & Guba, 1985, p. 40). As an extension of this premise and to develop specific "signals" to be utilized in the main study, banking experts ($N = 10$) and business owners ($N = 10$) were intentionally recruited for face-to-face interviews. Literature suggests that a minimum sample of 15 is acceptable in data collection of this type (Bertaux, 1981). Institutional Review Board (IRB) approval detailing the anonymity of the study and participants' rights were attained prior to recruiting subjects for this study. Banking experts and business owners were recruited by leveraging the professional network of the researcher. Participants were selected using a sufficient amount of inclusionary and exclusionary detail to ensure a robust collection. This included a minimum of ten years of experience for the bank experts and five years of experience for business owners. The stricter experience requirement for bank experts was due to the study's focus on banker judgments as the outcome variable. The full scope of the research study was not divulged during the qualitative stage, so as to not bias quantitative results in the main study. Therefore, bankers participating in the qualitative portion of this study were given the option to participate in the quantitative portion as well.

Figure 4. Research Design Phases

Phase One		Phase Two		

Timeline: February - March 2020	Timeline: April - May 2020	Timeline: May - June 2020

Qualitative Data Collection → Qualitative Data Analysis → Qualitative Findings → Development of Survey Instrument → Quantitative Data Collection → Quantitative Data Analysis → Quantitative Findings → Interpretation of Findings
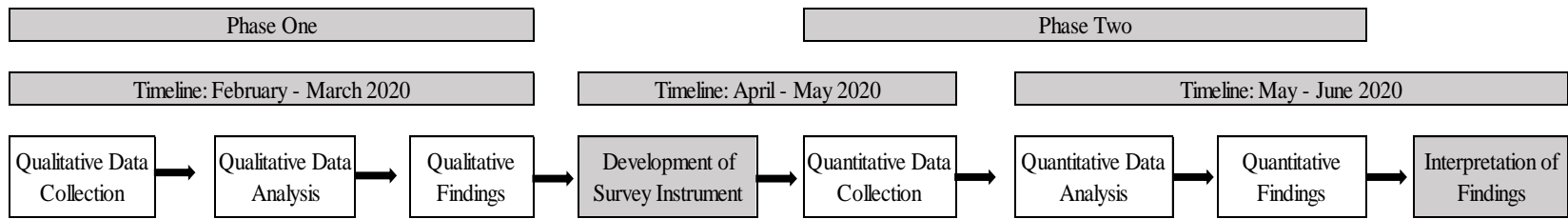
Qualitative Data Collection and Analysis

Qualitative Data Collection

Qualitative research designs utilizing interviews have been criticized due to their subjective nature and difficulty in ensuring the validity and reliability of findings (Arbnor & Bjerke, 1997). To address these issues and in accordance with guidance from extant literature, the interviews in this study were semistructured but consistent, using questions similar to those found in previous research. As an illustration, "tell me about a new venture that you invested in (didn't invest in)" as well as techniques to promote story-telling, such as "and then what happened next?" (Spradley, 1979; Huang, 2018) were included in questioning. Also, to ensure the trustworthiness of the findings, each interview was intentionally lengthened, lasting a minimum of 30 to 45 minutes (Teddlie et al., 2008). Literature has suggested the validity of qualitative data is enhanced when grounded in existing theory (Swinton & Mowat, 2006). In accordance with this suggestion, a preliminary review of extant literature was performed prior to the interviews to uncover potential signals that would potentially align within the hypothesized criteria. As shown in Table 7, this preliminary list spanned across multiple streams of literature emphasizing the broadness of this construct and ability to be applied in various facets. This review was leveraged to coincide with interviewee responses as well as to extend hypothesized categories.

Table 7. Preliminary List of Potential Signals

Year	Author(s)	Journal	Literature Stream	Costly Signal	Opaque?	Explanation
2002; 2015	Long; Hoenig & Henkel	University of Chicago Law Review; Research Policy	Business Law; Management	Patent Filing Counts; Intellectual Rights	Yes	Provisional patent counts signal product quality. However, provisional patent fees can be as little as $65 for a micro entity. A large number of valid provisional patents carries a high information cost for the verifier.
2001; 2002; 2013	Certo et al.; Filatotchev & Bishop; Mitteness, Baucus, & Norton.	ET&P; Strategic Management Journal; Journal of Small Business Strategy	Entrepreneurship; Management	Board of Directors / TMT	Yes	Board composition, board reputation, board leadership, board size. Theranos utilized their board makeup to gain legitimacy and funding without a viable product.
2016	Plummer et al.	Academy of Management	Management	3rd Party Affiliations	Yes	Memberships in highly reputable organizations signal quality. However, there is effort and information costs for a verifier to meet with high ranking officials of the organizations to verify levels of leadership and engagement.
2001	Wang, Chua, & Megginson	Working Paper	Finance	Confidentiality Agreement	Yes	Signals that the intellectual property is of enough value that confidentiality is required. However, this can be used as "smoke in mirror" to portray value when it doesn't necessarily exist.
2003; 2013; 2014	Bhattacharya & Dittmar; Utset; Eddleston, Ladge, & Mitteness.	FIRS Conference on Banking; Boston College Review; ET&P	Finance; Business Law; Entrepreneurship	Existing Short-term External Debt	Yes	Existing short-term debt signals that due diligence on the firm has been performed since debt holders must renew the note on a regular basis. However, many large banks offer smaller unsecured business lines of credit through a simple online approval process without much of due diligence. Making small purchases and paying off each month builds business credit.
2005	Busenitz et al.	ET&P	Entrepreneurship	Sweat Equity	Yes	Signals value in the firm. Can be signaled through equity ownership and projections

Year	Author(s)	Journal	Literature Stream	Costly Signal	Opaque?	Explanation
1973; 2011; 2012	Spence; Connelly et al.; Nagy, Rutherford, & Lohrke.	Quarterly Journal of Economics; Journal of Management; ET&P	Economics; Management; Entrepreneurship	Educational Background	Yes	Education is a costly signal to the investor to require a devotion of time and money. However, online certification courses can be completed in a short period of time, such as courses in finance, strategy, business law and business writing.
1992; 2004; 2017	Bruderl, Preisendorfer, & Ziegler; Delmar & Shane; Nagy, Rutherford, Truong, & Pollack.	American Sociological Review; Journal of Business Venturing; Journal of Small Business Strategy	Sociology; Entrepreneurship	Human Capital	Yes	Founder's family reputation, age, education, prior self-employment. Applies to employees of the firm as well.
2006; 2014; 2015	Choi & Triantis; Garud, Schildt, & Lant; Ahlers, Cumming, Gunther, & Schweizer	Journal of Economic Behavior & Organization; Organization Science; ET&P	OB; Management; Entrepreneurship	Providing Financial Projections	Yes	Provides potential for investor disappointment if they are inaccurate. However, supplying projections signals the owner has an understanding of their product and market.
2013	Utset	Boston College Review	Business Law	Corporate Signals	Yes	Reinvesting retained earnings (reduces owner distributions) and paying a dividend (reduces free cash flow) signals the company is in strong financial position and committed to growing.
2002	Zimmerman & Zeitz	Academy of Management	Management	Hiring Auditors	Yes	Exemplifies to investors that there is a second layer of quality control in place. However, the business may still be at an infant stage not yet requiring the due diligence that an auditor can provide.

Year	Author(s)	Journal	Literature Stream	Costly Signal	Opaque?	Explanation
2009; 2015	Rutherford, Bueller, & Stebbins; Santos & Eisenhardt; Karlsson & Middleton	ET&P; Academy of Management; Industry and Higher Education	Entrepreneurship; Management; OB	Social Ties	Yes	Within nascent markets, forming influential ties can signal leadership, convey a unique identity and disseminate stories that reinforce an identity.
2013	Phillips, Tracy, & Karra.	Journal of Business Venturing	Entrepreneurship	Religion & Values	Yes	Utilizes homophily or shared identity to build tie portfolios (relationships). Philanthropic
2013	Phillips et al.	Journal of Business Venturing	Entrepreneurship	Shared Trauma	Yes	Utilizes shared adversity or hardships experienced.
2010	Prakash & Gugerty	Regulation & Governance	Political Science	Self-Regulation	Yes	Principals might be more likely to provide resources if the company is part of a regulatory program. However, regulatory programs are of variable quality and, in some cases, could be designed to obscure rather than reveal information.
2015	Bertomeu & Marinovic	The Accounting Review	Finance	Offering Unfavorable Information	Yes	Unfavorable financial forecasts are deemed credible. Opens the possibility that projecting positive returns for a startup is perceived as more credible if part of those projections include unfavorable early years.
2004; 2009; 2009; 2012	Delmar & Shane; DeClercq; Karlsson & Honig; Pollack, Rutherford, & Nagy.	Journal of Business Venturing; International Small Business Journal; ET&P	Entrepreneurship	Business Plan	Yes	The development of a business plan brings regulative legitimacy. However even though the information presented may be based on historical industry figures, they are projections and not a firm prediction of outcome.
2007	Millett & Dewitte	Journal of Research in Personality	Psychology	Altruistic Behavior	Yes	Unconditional altruism shown as an honest signal of intelligence.
2004; 2009	Delmar & Shane; DeClercq	Journal of Business Venturing; International Small Business Journal	Entrepreneurship	Business License	Yes	The issuance of a business license signals the owner's adherence to governmental regulations.

Year	Author(s)	Journal	Literature Stream	Costly Signal	Opaque?	Explanation
2000	Prasad	Venture Capital	Entrepreneurship	Proportion of Owner Net Worth Invested	Yes	An owner's net worth or shareholder level signals commitment in the firm. Signifies "skin in the game".
1992; 2004; 2005; 2012	Bruderl et al; Delmar & Shane; Busenitz et al.; Nagy et al.	American Sociological Review; Journal of Business Venturing; ET&P	Sociology; Entrepreneurship	Industry Experience	Yes	Signals the owner has potential for success due to knowledge of industry requirements, reputation in the field and an understanding of potential pitfalls.
2002; 2006	Zimmerman & Zeitz; Choi & Triantis	Academy of Management; Journal of Economic Behavior & Organization	Management; OB	Existing Customer Contracts	Yes	Existing accounts receivable signal others have legitimized this company. However, a potential investor would need to analyze these customer financials to gain insight on the value of these contracts.

The primary purpose of the interviews with business owners was to extend pre-defined categorical themes by asking them to recall signals that they had intentionally sent in various contexts anticipating they would not be verified. Examples of interview questions included, "tell me about a time that you gave information about you or your company and you were confident of how they would perceive it" and "what do you feel are the most important characteristics a banker looks for in a new venture." Similarly, the banking experts were asked to recall signals in various contexts where they chose not to actively process their decisions, but rather move forward passively with impartial information. As the interviews continued, these questions too became gradually more focused upon the debt financing context. Examples of interview questions included, "tell me about a time when you approved a loan with insufficient collateral" and "what do you feel are the most important characteristics of a new venture when evaluating credit risk."

Acknowledging and overcoming bias was an important concern at this stage of the study. First, this portion of the study was prone to selection bias due to the researcher's familiarity with the business owners, but was mitigated by including business owners and bankers in the sample that were unfamiliar to the researcher (Tech, 2018). Second, participant bias was examined to ensure the interview questions were not probing or leading, but rather open-ended allowing the interviewee to answer freely and not feel compelled to respond in a specific direction (Galdas, 2017). Third, researcher bias was avoided by considering all obtained data regardless of its content (confirmation bias) and refraining from asking study-focused questions at the beginning of the interview (question-order bias) (Chenail, 2011). A full list of the interview questions can be found in Appendix A.

Qualitative Analysis

After completion, interviews were transcribed and analyzed utilizing deductive content analysis to uncover potential signals within flagged statements made by interviewees (Boyatizis, 1998; Elo & Kyngäs, 2008). In contrast to inductive analysis, which is used when knowledge is highly fragmented and new, broad categories must be identified in qualitative data; deductive analysis is appropriate when a general knowledge base exists. This base is then leveraged to utilize the existing broad categories to increase specificity (Boyatizis, 1998; Elo & Kyngäs, 2008). Therefore, the purpose of the analysis here was not to explore and generate new categories, but to match data found within the completed interviews to grounded theoretical categories from extant literature and stated within the study's hypotheses.

To develop a coding scheme for the analysis, specific statements from the interviews were isolated and matched to hypothesized categories (information asymmetry, distortion and information verification costs) using definitions from the grounded theory. Literature has suggested to enhance the reliability of qualitative data, the findings at each stage should be repeatedly evaluated and compared using impartial subjects (Silverman, 2013). In accordance with this, pilot tests were executed to improve upon the coding scheme and to isolate the hypothesized variables within the categories (signal honesty, signal credibility, signal commitment, distortion-signaler behavior, distortion-external factors and information verification costs) and match them to flagged interview statements. To ensure content validity and reliability of these analyses and to identify high and low statements coinciding with each hypothesized variable, doctoral students were recruited to perform similar tasks.

The inter-rater reliability (see "Findings") were examined to potentially exclude statements that didn't match prespecified variable characteristics.

Development of the Survey Instrument

In accordance with recommended item development practices, I conducted a literature review to identify survey items to ensure face validity of the instrument (Rudestam & Newton, 2014). This included a review of existing literature to identify applicable items to measure each identified variable. I then executed pilot testing with doctoral students to create a more robust survey instrument. To ensure the validity and reliability of the variables and survey items, I performed a factor analysis (Conway & Huffcut, 2003). I examined the variables for multicollinearity via linear regression to determine whether they were highly correlated to each other (Conway & Huffcut, 2003).

An important component of this analysis was to also examine the rotations within the pattern matrices of each of the high and low statements identified in the pilot tests. This was necessary to identify cases of convergent and divergent validity (Williams, Onsman, & Brown, 2010). The variables and measures utilized in the quantitative analysis of the main study are detailed below.

Outcome Variable

The stakeholder's perception of legitimacy variable was measured with a single item to identify whether the receiver perceived the signaler as legitimate by choosing to move forward with the loan request based upon the information provided (Bruns et al., 2008). Respondents were asked to "rate the probability that you would support the new venture's loan request and move forward to the next stage of the underwriting process." The single

item was measured on a seven-point Likert scale anchored by "extremely unlikely" (1) and "extremely likely" (7).

Predictor Variables

Signal honesty, credibility, and commitment are a specific group of signals that will initially capture the signal receiver's attention by alleviating the imbalanced level of information asymmetry between the signaler and receiver (Ross, 1973; Jensen & Meckling, 1976). Information asymmetry occurs when "different people know different things" (Stiglitz, 2002). Signal receivers will focus on signals with these costly characteristics.

The signal honesty variable captures the degree to which a signal communicates information that is perceived as genuine. As honest signalers are confident about their signals, they intentionally and forcefully highlight information that supports their signal's quality (Weiler & Weinstein, 1972; Spence, 1973; Bergara, Henisz, & Spiller, 1998; Connelly et al., 2011). Respondents were asked to rate the level of high and low signal honesty based on a seven-point Likert scale anchored by "strongly disagree" (1) and "strongly agree" (7) using the single item, "This information inspires me with confidence" (Moussa & Touzani, 2008). The original use of this scale within existing literature reported sufficient reliability ($\alpha > 0.818$) of the item. (Moussa & Touzani, 2008).

The signal credibility variable pertains to signalers' reputations through their experiences or the believability of statements made by reputable third parties (Weiler & Weinstein, 1972; Spence, 1973; Bergara et al., 1998; Connelly et al., 2011). Respondents were asked to rate signal credibility based on a seven-point Likert scale anchored by "strongly disagree" (1) and "strongly agree" (7) and using the following items to measure high signal credibility: "the organization passed serious tests before issuing this information" (Moussa & Touzani, 2008)

and low signal credibility, "this information comes from a recognized organization or experts" (Moussa & Touzani, 2008). The original use of this scale within existing literature reported sufficient reliability ($\alpha > 0.818$) of the item. (Moussa & Touzani, 2008).

The signal commitment variable pertains to signalers' intent or underlying motivation behind sending signals. This can be expressed through their statements or actions exhibited, which are controlled by the signaler. Commitment can mean to sacrifice or endure hardships to meet prespecified goals (Spence, 1973; Bergara et al., 1998; Connelly et al., 2011). Respondents were asked to rate the level of high and low signal commitment based on a seven-point Likert scale anchored by "strongly disagree" (1) and "strongly agree" (7) using the single item, "this information tells me the new venture/founder is willing to put in a great deal of effort beyond what normally is expected in order to be successful" (Porter, Mowday, & Steers 1979). The original use of this scale within existing literature reported sufficient reliability ($\alpha > 0.820$) of the item (Porter, Mowday, & Steers 1979).

Distortion may occur within a signal's environment and will affect observability (i.e., clarity, significance) (Kao & Wu, 1994; Warner et al., 2006). Distortion signaler behavior includes actions that create noise or disruption, thus making it difficult for receivers to ascertain the true quality of signals (Connelly et al., 2011; Gomulya & Mishina, 2017). Respondents were asked to rate the level of high and low distortion signaler behavior based on a seven-point Likert scale anchored by "strongly disagree" (1) and "strongly agree" (7) using the single item, "this information from the founder/new venture would make it difficult for us to recognize inadequacies" (Jensen & Szulanski, 2004; Li & Hsieh, 2009). The original use of this scale within existing literature reported sufficient reliability ($\alpha > 0.84$) of the item (Jensen & Szulanski, 2004). Distortion external factors include factors such as

economic or market conditions and behavior or information from other signalers in the environment (Connelly et al., 2011; Gomulya & Mishina, 2017). Respondents were asked to rate the level of high and low distortion external factors based on a seven-point Likert scale anchored by "strongly disagree" (1) and "strongly agree" (7) using the single item, "this external information would often cause disagreements about how we should proceed with the new venture" (Carson, Wu, & Moore, 2012). The original use of this scale within existing literature reported sufficient reliability ($\alpha > 0.74$) of the item (Carson, Wu, & Moore, 2012).

Information verification cost is associated with acquiring knowledge pertaining to verifying the accuracy of signals (Choudhury & Sampler, 1997; Yang, Yu, & Lee, 2002; Yeoh, 2005). Verification costs may include monetary or time/effort costs. Respondents were asked to rate the level of high and low verification costs based on a seven-point Likert scale anchored by "strongly disagree" (1) and "strongly agree" (7) using the following items to measure high, "to verify this information, I would need to spend time collecting more than less data and knowledge"(Choudhury & Sampler, 1997; Lim & Klobas, 2000; Salojarvi, Furu, & Sveiby, 2005) and low, "to verify this information, I would need to have a significant investment budget in seeking external information and knowledge, such as acquiring consulting services from outside experts or subscribing to major journals and periodicals related to your industry" (Salojarvi, Furu, & Sveiby, 2005; Yang et al., 2002). The original use of these scales within existing literature reported sufficient reliability ($\alpha = 0.74$, $\alpha > 0.915$) of the item (Yang et al., 2002).

Moderating Variable

Stakeholder expertise assesses the accuracy of interpreting information based on the relevant knowledge or skill level of the receiver (Alba & Hutchinson, 1987; Argote, 1999).

Literature shows that experts in various field have a greater understanding of the ambiguous qualities of signals due to their industry knowledge and ability to complete complex analysis (Ocasio, 1997). Johnson and Russo (1984) find that individuals with higher expertise perform effective information searches and efficiently translated cryptic signals. Signal receiver expertise measures industry experience by asking respondents to state their number of years employed in the banking industry (Bruns et al., 2008).

Control Variables

Positive and negative affect coincides with the positive and negative emotions that can inadvertently influence decision making. To test for this, the 20-item Positive and Negative Affect Schedule (PANAS) was administered to respondents using a five-point Likert scale anchored by "very slightly or not at all" (1) and "extremely" (5) (Watson, Clark & Tellegen, 1988). Item examples for positive affect included, "to what extent do you generally feel interested" and for negative affect, "to what extent do you generally feel irritable." The original use of this scale within existing literature reported sufficient reliability ($\alpha > 0.87$) of the items (Watson, Clark & Tellegen, 1988). The original items also reported sufficient convergent and discriminant validity based on factor loading results (Watson, Clark & Tellegen, 1988).

Uncertainty avoidance refers to the propensity to avoid risk and uncertainty when making decisions. To test for this, the seven-item Uncertainty Avoidance Scale was administered to respondents using a seven-point Likert scale anchored by "strongly disagree" (1) and "strongly agree" (7)" (Jung & Kellaris, 2004). Item examples included, "I would not take risks when an outcome cannot be predicted" and "I tend to get anxious easily when I don't know an outcome". The original use of this scale within existing literature reported sufficient

reliability ($\alpha = 0.75$) of the items (Jung and Kellaris, 2004). The scale also reported sufficient convergent and discriminant validity based on findings from a previous study of the same items (Hofstede, 1980; Jung, 2002).

To control for "age," respondents were asked to state their date of birth. To control for "race," respondents were asked to state their ethnicity using the categories: white, black or African American, American Indian or Alaska native, Asian, native Hawaiian or Pacific Islander, and other. A dummy variable (1,0) was created to transform each specific race classification into a quantitative variable. To control for "gender," respondents were asked to state their gender using the categories: male, female, and non-binary. A dummy variable (1,0) was also created for each gender category.

Selection of Study Participants for Quantitative Analysis

Banking participants were recruited for the quantitative portion of this study by leveraging specific banking industry groups, such as LinkedIn, the Texas Banker's Association, and the Risk Management Association. IRB approval was attained detailing the anonymity and participants' rights prior to recruiting subjects. Although on the surface, the sample may be considered nonrandom due to its exclusionary recruitment criteria, the selection of participants and responses within industry groups was completely random. To increase the probability of finding an effect, a statistical power analysis was performed to determine an appropriate number of participants (Cohen, 1992a). Utilizing a conditional power calculation with eight predictor variables (two IVs, one moderator, and five controls), an anticipated effect size of 0.10, and the ability to achieve a probability level of 0.05, a sample size of 200 was found to produce an observed statistical power of 0.90 (Soper, 2020).

Achieving this power level allows the avoidance of the probability of committing a Type II error or failing to reject an objectively false null hypothesis (Cohen, 1992a).

Quantitative Data Collection and Analysis

Quantitative Collection

Using a within-subjects design, the quantitative portion of this study began with collecting data on the participants' preferences for passive or active decision-making processes. This allowed me to determine whether individuals' underlying decision-making preferences would be altered when faced with scenarios of variable manipulations. After providing consent, participants were asked to respond to a 16-item instrument (Betsch & Ianello, 2009; Pachur & Spaar, 2015) designed to measure their preferences for active and passive processing using the Unified Scale to Assess Individual Differences in Intuition and Deliberation (USID) (Betsch & Ianello, 2009; Pachur & Spaar, 2015). Examples of items measuring active processing included, "I want to have a full understanding of all problems" and for passive processing, "when I make a decision, I trust my inner feelings and reactions." This instrument was specifically designed to improve upon the weaknesses of the original Preference for Intuition and Deliberation scale (Betsch, 2004). For instance, during the factor analysis portion of the original PID study, two key factors for intuition (affect and automatic/spontaneous) and deliberation (cognition and planned/structured) were identified, but were ultimately not included in the final version of the instrument (Pachur & Spaar, 2015). The improved scale (USID) included these omitted items as well as integrated other instrument inventories found in literature that isolated an individual's use of cognition when making decisions (Pachur & Spaar, 2015). The original use of this scale within existing literature reported sufficient reliability for active and passive processing ($\alpha = 0.81$, $\alpha = 0.86$)

items (Pachur & Spaar, 2015). The scale also reported sufficient external validity due to its incorporation of previously validated items from literature (Pachur & Spaar, 2015).

To gather data on the predictor variables, four vignettes were developed and structured utilizing existing social science literature as a guide to ensure validity and reliability of the analyses (Gould, 1996; Hughes & Huby, 2012) Literature suggests that using short vignettes is imperative to keep respondent interest and avoid test fatigue (O'Conner & Hirsch, 1999). In compliance with this requirement, each manipulated vignette was kept to a maximum of four sentences, allowing for each variable of interest to be included in a separate statement. Also, the realism of vignettes is paramount to actively engage readers and peak their interest to produce a realistic response (Hughes & Huby, 2012). To comply, banking experts were recruited to review the vignettes and appraise their accuracy and realism. Finally, flexibility of time allowed for responding was a topic of interest in that asking respondents to read a scenario and answer questions under a time restriction was unnecessary and might inhibit the quality of results (Stolte, 1994).

In relation to vignette content, existing literature examines the use of experimental manipulation within vignette design (Evans et al., 2015). This is of substantial importance for a within-subjects design since conformity of nonmanipulated items must be consistent so as to avoid inhibiting the variables of interest (Evans et al., 2015). Since the main study utilizes a within-subjects design, the content unrelated to the variables of interest was kept consistent for each manipulated vignette.

In developing the vignettes to be used in conjunction with the developed survey instrument, a primary concern was their internal validity. Existing literature holds that vignettes displaying sufficient internal validity should build from existing case studies and be

validated by a panel of experts who have sufficient experience within these scenarios (e.g., Gould, 1996). In accordance with these recommendations, peer- and nonpeer-reviewed case studies were examined to identify specific lending scenarios to be used within the vignettes (Jankowicz & Hisrich, 1987; Wilson et al., 2007; Charter Capital, 2018). Once the vignettes were constructed, banking experts were recruited to review the scenarios to validate their accuracy and realism. Researchers also recommend that vignettes should be piloted prior to implementation to strengthen their internal validity (Hughes & Huby, 2012), I did this prior to conducting the main study. This is discussed further in the findings.

Utilizing a within-subjects design, each participant responded to all four manipulated vignettes (High-High, High-Low, Low-High, Low-Low) through a survey instrument administered via Qualtrics (Appendix D). Literature finds that a within-subjects design has a distinct power advantage over between-subjects designs (Smith, Kassin, & Ellsworth, 1989) because each participant is responding to all treatments rather than only one. Within-subjects designs also require fewer participants, which aids in lowering the error variance and increasing statistical power (Lamb, 2003). To lower the chance of order bias, vignettes were randomly counterbalanced to respondents within Qualtrics.

Following each vignette, respondents were asked to rate their probability of moving forward with the loan request. Manipulation checks were also included asking participants to rate each specific vignette statement using the applicable item measures previously identified in the qualitative study. Data pertaining to the moderator and control variables were collected as well.

Quantitative Analysis

Interaction Hypothesis

To evaluate the interaction of signal opacity and signal verification costs on the stakeholder's perception of legitimacy, I performed a one-way repeated measures ANOVA using SPSS software. Using this form of analysis is effective when there exists a fluctuation in mean values over three or more conditions in a within-subjects design (Krueger & Tian, 2004). Performing a repeated measures ANOVA also lowers the likelihood of performing a Type II error due to its reduction of error from individual differences (Stevens, 2012). Since this portion of the analysis included four manipulations of the predictor variables, the use of a one-way repeated measures ANOVA was appropriate.

Of the four ANOVA tests, this study utilized the Pillai's test, which has been found to be the most robust and generally leveraged with the existence of homogenous and heterogeneous variances of two variables (Olson, 1974; Ateş, Kaymaz, Kale, & Tekindal, 2019). A detailed overview of the properties for each of the four ANOVA tests has been provided in the table below (Ruiz, 2019).

Table 8. ANOVA Tests

	Pillai's	Wilk's	Hotelling's	Roy's
Test Stat	$V^{(s)} = tr((E+H)^{-1}H)$	$\Lambda = \dfrac{\lvert E \rvert}{\lvert E+H \rvert}$	$U^{(s)} = tr(E^{-1}H)$	$\min(p,q)$
Test Stat Eigen Values	$\displaystyle\sum_1^s \dfrac{\lambda_i}{1+\lambda_i}$	$\Lambda = \pi_{i=1}^s \dfrac{\lambda_i}{1+\lambda_i}$	$\displaystyle\sum_1^s \lambda_i$	$\theta = \dfrac{\lambda_i}{1+\lambda_i}$
Robust	Yes	Yes	Yes	No
Power	Reverse	Reverse	Reverse	High if correlated
Measure of Association	$A_p = \dfrac{V^{(s)}}{S}$	$\eta_\Lambda^2 = 1 - A$	$A_H = \dfrac{U^{(s)/s}}{1+U^{(s)/s}}$	$\eta_\theta^2 = \theta$

Main Effect Hypotheses

A paired samples *t*-test was performed to evaluate the main effect of signal opacity and information verification costs on the perception of stakeholder legitimacy using SPSS software. Prior to initiating this analysis, I identified the mean values of each predictor using the mean values of the four conditions (Figure 5). For the first predictor variable, I calculated the difference between "High Signal Opacity," column "AC" and "Low Signal Opacity," column "BD." For the second predictor variable, I calculated the difference between "High Signal Verification Costs," column "AB" and "Low Signal Verification Costs," column "CD."

Figure 5. Predictor Main Effects (Rosenbaum, Mama, & Algom, 2017)

All Conditions			
High Verification Costs		Low Verification Costs	
High Signal Opacity	Low Signal Opacity	High Signal Opacity	Low Signal Opacity
A	B	C	D
M	*M*	*M*	*M*

Moderator Hypothesis

To analyze the moderating role of stakeholder expertise on signal opacity and signal verification costs, a linear mixed model with repeated measures was performed in SPSS. This particular method of analysis is utilized when there is an existence of a within-subjects factor (stakeholder's perception of legitimacy) and a between-subjects factor (stakeholder expertise) (Verbeke & Molenberghs, 2012). To perform this, dummy codes for each manipulated treatment of the outcome variable were developed (0100 = High-High Treatment; 0010 = High-Low Treatment; 0001 = Low-High Treatment; 0000 = Low-Low Treatment). The fixed effects, or variables for this hypothesized relationship, were identified

as: (1) dummy-coded outcome treatments, (2) years of banking experience, (3) years of banking experience * dummy-coded outcome treatments. The random effects in this analysis corresponded with the variability within the sample (Verbeke & Molenberghs, 2012). To identify the fixed and random effects, the interaction between the dummy codes and the moderator variable were calculated and then regressed onto the moderator, dummy codes and the interaction to test for significance.

CHAPTER IV

FINDINGS

Overview

In this chapter, I will discuss the qualitative findings used in the survey instrument's development as well as the quantitative findings leveraged to answer this study's two research questions.

RQ1: How are new ventures able to secure the perception of legitimacy and eventual funding when they do not always possess optimal signals comparable to a mature firm?

RQ2: How are stakeholders able to effectively process and evaluate new venture signals to make a legitimacy decision when actual quality is difficult to assess due to similar costs?

Following the interviews with banking experts and business owners, I assessed the validity and reliability of the findings and built upon these to isolate high and low statements that coincided with the variables of interest. I then identified potential item measures through an extensive review of extant literature and empirically tested them to ensure construct validity. Using a factor analysis, I then examined these variables and item measures for convergent and divergent validity to ensure the accuracy

and reliability of construct makeup. This factor analysis also enabled the researcher to identify high and low levels of each variable to be used in the vignette manipulations.

Qualitative Sample Descriptive Statistics

I gathered demographic information, including professional experience and industry affiliation, for each interviewee to insure they were an appropriate subject and to avoid confounding results (Pannucci & Wilkins, 2010). An additional purpose for gathering demographic information was to add validity of the interviewee responses. This was imperative since further data and findings in this study will be a product of these initial interviews. Existing research suggests that to be valid, qualitative data must be viewed as "trustworthy and useful" (Yardley, 2008). To ensure credibility of the interview data, I gathered information on the interviewee's expertise as well as an extensive analysis of responses to check for abnormalities and outliers (Mishler, 1990, p. 419).

Of the male (80%) and female (20%) banking experts interviewed, 90% were white and 10% were Latino or Hispanic. Their mean age was 42 years old; and they held the corporate titles of vice president (30%), senior credit officer (10%), senior vice president (20%), executive vice president (10%), market president (10%), managing director (10%), and chief credit officer (10%). As shown in Figure 6 below, in reviewing a 2017 study performed by the global consulting firm McKinsey & Company on employment levels by gender and ethnicity in the banking industry, this study's sample descriptive statistics seem as an appropriate representation (Chin, Nadeau & Krivkovich, 2018). The McKinsey study surveyed over 14,000 bankers from 39 financial institutions and offered insights on demographics at varying executive levels.

Figure 6. 2017 Employment Levels in Banking by Gender and Ethnicity
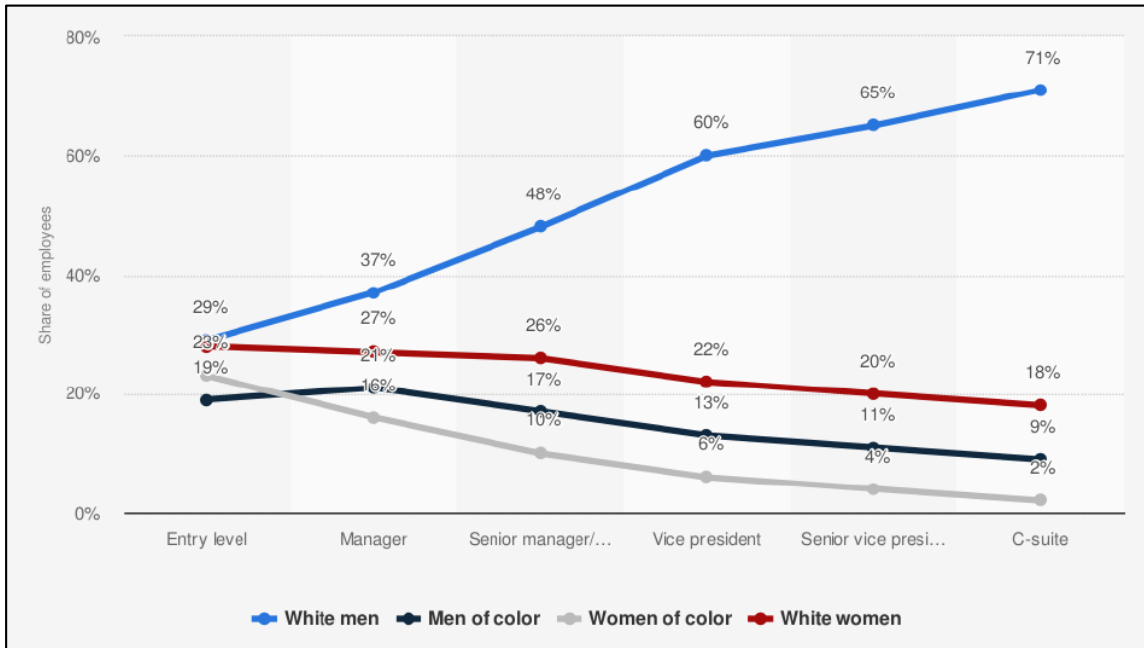
Of the male (60%) and female (40%) business owners interviewed, 90% were white and 10% were Latino or Hispanic. Their mean age was 51 years old; and they held the titles of CEO (10%), CEO and founder (60%), and managing member or co-founder (30%). Table 9 provides a detailed overview of these statistics.

Qualitative Findings

Coding Scheme Development

Once the interviews were a completed and transcribed, I flagged a total of 466 interviewee statements and cleaned for missing data or duplicates, which paired them down to 309 statements. Using these results, I developed a coding scheme to be used to identify and match statements to hypothesized categories using definitions from existing literature. These categories included: Information Asymmetry (IA), Distortion (D), and Information

Verification Costs (VC). To ensure content validity and reliability of these findings, three doctoral students were recruited to perform the same task producing a sufficient IRR (r (4) = 0.87). Only the statements with 100% agreement were selected to move forward. Table 10 provides the definitions used in these tasks.

Table 9. Interview Sample Descriptive Statistics

Bank Experts		Business Owners	
	Mean (SD)		**Mean (SD)**
Age	42 (5.76)	Age	51 (13.80)
Categories	**n (%)**	**Categories**	**n (%)**
Gender		Gender	
Male	8 (80)	*Male*	6 (60)
Female	2 (20)	*Female*	4 (40)
Race		Race	
White	9 (90)	*White*	9 (90)
Hispanic or Latino	1 (10)	*Hispanic or Latino*	1 (10)
Professional Title		Professional Title	
Vice President	3 (30)	*CEO*	1 (10)
Senior Credit Officer	1 (10)	*CEO, Founder*	6 (60)
Senior Vice President	2 (20)	*Managing Member, Co-Founder*	3 (30)
Executive Vice President	1 (10)		
Market President	1 (10)	Industry	
Managing Director	1 (10)	*Fine Granite and Stone*	1 (10)
Chief Credit Officer	1 (10)	*Oil and Gas*	2 (20)
		Residential Construction	3 (30)
Industry		*Insurance Services*	1 (10)
Commercial & Industrial	4 (40)	*Music Production*	1 (10)
Commercial Real Estate	2 (20)	*Industrial Equipment*	1 (10)
Commercial Relationship Banking	3 (30)	*Restaurant Franchising*	1 (10)
Technology	1 (10)		
		Experience (years)	
Experience (years)		*5-9*	3 (30)
10 - 14	2 (20)	*10-14*	1 (10)
15 - 19	6 (60)	*15-19*	2 (20)
20 -24	1 (10)	*20-24*	1 (10)
25+	1 (10)	*25-29*	2 (20)
		30+	1 (10)

Table 10. Hypothesized Category Definitions

Variations	Definition
Information Asymmetry:	Occurs when "different people know different things" (Stiglitz, 2002). Signal receivers focus on signals with costly characteristics (**honesty, credibility,** and **commitment**). Signals with these attributes initially capture the signal receiver's attention due to their ability to alleviate the imbalanced amount of information asymmetry between the signaler and the receiver (Ross, 1973; Jensen & Meckling, 1976).
Distortion:	Occurs within a signal's environment and negatively affects the observability (clarity, significance) of the signal (Kao & Wu, 1994; Warner et al., 2006). Distortion will include **behaviors or actions made by the signaler or external referents**. In the absence of distortion, a signal receiver has a clear understanding of the signal's quality and is able to make a confident decision.
Information Verification Costs:	Associated with acquiring knowledge pertaining to verifying the accuracy of a signal (Choudhury & Sampler, 1997; Yang et al., 2002). Verification costs include **monetary or time/effort costs**.

To extend the coding scheme, I identified statements within hypothesized groups of each category by conducting a pilot test to isolate the target score. I provided the five doctoral students with definitions from existing literature and asked them to analyze and match the 93 interviewee statements (53 information asymmetry, 26 distortion, and 14 verification costs statements). These variable groups included: Signal Honesty (SH), Signal Credibility (SCR), Signal Commitment (SCM), Distortion-Signaler Behavior (DSB), Distortion-External Factors (DEF), and Verification Costs (VC). I initiated a survey through Qualtrics asking respondents to assess each statement using existing definitions of each group based on a Likert scale (1 = Strongly Disagree, 7 = Strongly Agree).

Table 11. Hypothesized Variable Definitions

Category	Definition
Signal Honesty	Signalers communicate information about themselves that is perceived as genuine and possessing underlying quality. Honest signalers are confident about their signals and intentionally and forcefully highlight information that supports their signals' quality (Weiler & Weinstein, 1972; Spence, 1973; Bergara et al., 1998; Connelly et al., 2011).
Signal Credibility	Pertains to signalers' reputations through their experiences or the believability of statements made by reputable third parties (Weiler & Weinstein, 1972; Spence, 1973; Bergara et al., 1998; Connelly et al., 2011).
Signal Commitment	Pertains to signaler's intent or underlying motivations behind sending signals. This can be expressed through their statements or actions, which are controlled by signalers. Commitment can mean to sacrifice or endure hardships to meet a prespecified goal (Spence, 1973; Bergara et al., 1998; Connelly et al., 2011).
Distortion – Signaler Behavior	Includes actions of signalers that create noise or disruption, thus making it difficult for receivers to ascertain the true quality of signals (Connelly et al., 2011; Gomulya & Mishina, 2017).
Distortion – External Factors	Includes external factors such as economic or market conditions and behavior or information from other signalers in the environment (Connelly et al., 2011; Gomulya & Mishina, 2017).
Information Verification Costs	Refers to the financial costs receivers incur to verify signals' quality (Choudhury & Sampler, 1997: Yang et al., 2002) and the time/effort receivers invest/endure to verify signals' quality (Choudhury & Sampler, 1997: Yang et al., 2002).

For each group, three to five statements with the highest and lowest means were calculated and isolated. The resulting IRR for all variable responses was (r (5) = 0.67). The coding scheme was then finalized by utilizing the following high and low statements (Table 12).

Table 12. High and Low Statements

Variable	Code	Statement	Mean
Signal Honesty High	SHH	The founder has borrowed money in the past, which was paid as agreed.	6.40
	SHH	The founder has sweat equity in the new venture.	6.00
	SHH	The founder reinvests profits back into the new venture rather than taking a salary.	6.00
	SHH	The new venture has a list of investors who have already contributed equity.	6.00
Signal Honesty Low	SHL	The founder has numerous credit cards with outstanding balances.	2.00
	SHL	The founder has taken all profits out of the new venture to pay for living expenses.	3.00
	SHL	The founder tells you this new venture is more of a hobby.	3.20
	SHL	The new venture has not received any start-up equity from outside investors.	3.20

Variable	Code	Statement	Mean
Signal Credibility High	SCRH	The new venture is referred to you from a reputable industry source.	6.20
	SCRH	Reputable companies within the industry have secured contracts with the new venture.	6.00
	SCRH	The new venture has equity investors who have signed letters of intent to contribute start-up capital.	6.00
Signal Credibility Low	SCRL	The new venture was not referred to you, but rather walked into the bank unannounced.	1.88
	SCRL	Unknown companies in unrelated industries have secured contracts with the new venture.	2.00
	SCRL	The new venture has not received any start-up equity from outside investors.	2.20
Signal Commitment High	SCMH	The founder was able to identify problems early on and create a solution quickly.	5.60
	SCMH	The founder has spent years developing the new venture's product.	5.40
	SCMH	The founders tell they have personal equity invested in the venture.	5.40
	SCMH	The founders' non-compete from a former company recently expired, so they can now call on customers.	5.20
Signal Commitment Low	SCML	The founders rely on other people to identify problems and solutions rather than put forth the effort themselves	1.80
	SCML	The founder recently developed the new venture's product and doesn't have all the details figured out yet.	2.00
	SCML	The founder refuses to use any personal capital or "skin in the game" to fund the new venture	2.00
	SCML	Due to a non-compete, the founder is not able to call on any customers.	2.20
Distortion Signaler Behavior High	DSBH	When requesting the loan, the founders of the new venture tell you they are very good friends with the bank president	5.80
	DSBH	The founders explain that they liquidated personal assets to make past-due liability payments rather than let eh debt go to collection.	5.40
	DSBH	When you ask about experience, the founders state that they have 50 years of industry experience; but they are both in their 40s.	5.20
	DSBH	Although the new venture is entering during an economic downturn, the founders have the ability to purchase equipment at liquidated prices.	4.80
Distortion Signaler Behavior Low	DSBL	The founders tell you that they don't have any reputable contacts in banking.	1.20
	DSBL	You receive the new venture's request during a time when economic analysts are predicting a recession.	1.20
	DSBL	Although the local economy is doing very well, the national economy has taken a downturn	1.40
	DSBL	The new venture is entering a cyclical industry that is currently experiencing a downturn, but is expected to rebound soon.	1.40
Distortion External Factors High	DEFH	The business plan was solid; however, the economic downturn dramatically effected the ability to meet first quarter projections	6.80
	DEFH	You receive the new venture's request during a time when economic analysts are predicting a recession.5.04	6.60
	DEFH	The new venture's request is during an economic panic where the government calls on banks to help small businesses recover.	5.80
	DEFH	Due to the economic downturn, the new venture is in desperate need of funds.	5.80

Variable	Code	Statement	Mean
Distortion External Factors Low	DEFL	The business plan was solid and well planned out	1.20
	DEFL	The new venture's request had a unanimous response by the loan officer and credit team.	1.40
	DEFL	It is very clear how the Bank should handle the new venture's loan request	1.60
	DEFL	The founders tell you they don't necessarily need a bank loan, but would like to start a credit history for their business.	2.20
Verification Costs High	VCH	The founders tell you they have strong integrity.	6.40
	VCH	The new venture supplies you with a list of contracts with unrecognizable companies they venture is currently working with.	5.00
	VCH	The founders tell you about all of the industry awards they received.	4.80
	VCH	The new venture is not publicly traded.	4.80
	VCH	The founders supply you with a list of unrecognizable industry professionals they have worked with in the past.	4.80
Verification Costs Low	VCL	The founder of the new venture is your city's former mayor.	1.40
	VCL	The new venture supplies you with a list of contracts, which is comprised of companies that bank with you.	2.20
	VCL	The founder is the spouse of one of your best customers	3.20
	VCL	The new venture is publicly traded so financial information is easy to find.	3.60
	VCL	The founders tell you they were referred to you by a banker you know very well.	4.20

Survey Instrument Development

To ensure content validity and clarity of the items, which were identified in a review of extant literature, a pilot test was conducted through Amazon Mechanical Turk (N = 98) utilizing the three to five high and low statements from the target score findings with doctoral students. Mturk participants were asked to respond to each of the three to five high and low statements representing each variable using items developed from existing literature based on a Likert scale (1 = Strongly disagree, 7 = Strongly agree). Initial IRR results were excellent (r (98) = 0.99). To assess the reliability of the items, the means of each statement were evaluated to ensure the items were accurately measuring the high and low statements. Also, a corrected item total correlation analysis was initiated to measure the correlations between each item and the total score. The primary purpose was to identify whether any items would greatly affect the reliability if deleted. As shown in Table 13, the initial results reported that high and low statements were correctly identified using the proposed item measures. Also, all

items within each of the groups reported similar correlation values and exceeded the

minimum recommended corrected item-total correlation values of 0.3 (Cristobal, Flavian, &

Guinaliu, 2007) showing high internal consistency (Cronbach's alpha) of 0.88 – 0.98. Lastly,

the two highest and lowest statements as well as the two items with the highest item-total

correlation for each variable were flagged to be used in an additional pilot test for reliability

(Table 13).

Table 13. High and Low Items and Statements

Items	Group	Statement	Mean
Signal Honesty Moussa & Touzani (2008) *Perceived Credibility of Quality Label (PCQL) Scale* **1. I can trust what this information says. (0.54, α = 0.91)** 2. This information is honest. (0.52, α = 0.91) **3. This information inspires me with confidence. (0.53, α = 0.91)**	**SHH**	**The founder has borrowed money in the past, which was paid as agreed.**	**5.40**
	SHH	The founder has sweat equity in the new venture.	5.20
	SHH	The founder reinvests profits back into the new venture rather than taking a salary.	5.37
	SHH	**The new venture has a list of investors who have already contributed equity.**	**5.44**
	SHL	The founder has numerous credit cards with outstanding balances.	4.98
	SHL	**The founder has taken all profits out of the new venture to pay for living expenses.**	**4.78**
	SHL	**The founder tells you this new venture is more of a hobby.**	**4.71**
	SHL	The new venture has not received any start-up equity from outside investors.	4.88
Signal Credibility Moussa & Touzani (2008) *Perceived Credibility of Quality Label (PCQL) Scale* **1. This information comes from a recognized organization or experts. (0.53, α = 0.89)** 2. The organization that gives this information has good intentions. (0.48, α = 0.89) **3. The organization passed serious tests before issuing this information. (0.58, α = 0.88)**	SCRH	The new venture is referred to you from a reputable industry source.	5.37
	SCRH	**Reputable companies within the industry have secured contracts with the new venture.**	**5.38**
	SCRH	**The new venture has equity investors who have signed letters of intent to contribute start-up capital.**	**5.57**
	SCRL	**The new venture was not referred to you, but rather walked into the bank unannounced.**	**4.55**
	SCRL	**Unknown companies in unrelated industries have secured contracts with the new venture.**	**4.59**
	SCRL	The new venture has not received any start-up equity from outside investors.	4.70
Signal Commitment Mowday, Steers, & Porter (1979) *Organizational Commitment* **1. This information tells me the new venture/founder is willing to put in a great deal of effort beyond what normally is expected in order**	**SCMH**	**The founder was able to identify problems early on and create a solution quickly.**	**5.42**
	SCMH	The founder has spent years developing the new venture's product.	5.39
	SCMH	**The founders tell they have personal equity invested in the venture.**	**5.46**
	SCMH	The founders' noncompete from a former company recently expired, so they can now call on customers.	5.12

Items	Group	Statement	Mean
to be successful. (0.55, α = 0.94)	**SCML**	The founders rely on other people to identify problems and solutions rather than put forth the effort themselves	4.61
2. This information tells me the founder is loyal to the new venture. (0.51, α = 0.94)	SCML	**The founder recently developed the new venture's product and doesn't have all the details figured out yet.**	**4.57**
3. This information tells me the new venture/founder is inspired to be the very best in the way of performance. (0.54, α = 0.94)	SCML	**The founder refuses to use any personal capital or "skin in the game" to fund the new venture**	**4.41**
4. This information tells me the new venture/founder really cares about the fate of the organization. (0.56, α = 0.94)	**SCML**	Due to a noncompete, the founder is not able to call on any customers.	4.76
Distortion - Signaler Behavior Jensen & Szulanski (2007) Li & Hsieh (2009) *Knowledge Stickiness*	**DSBH**	**When requesting the loan, the founders of the new venture tell you they are very good friends with the bank president**	**5.01**
1. The information sent from the founder/new venture would be a disruption to our normal operations. (0.61, α = 0.96)	DSBH	The founders explain that they liquidated personal assets to make past-due liability payments rather than let eh debt go to collection.	4.57
2. This information from the founder/new venture would make it difficult for us to recognize inadequacies. (0.63, α = 0.96)	**DSBH**	**When you ask about experience, the founders state that they have 50 years of industry experience; but they are both in their 40s.**	**4.78**
	DSBH	Although the new venture is entering during an economic downturn, the founders have the ability to purchase equipment at liquidated prices.	4.62
3. Based on this information from the founder/new venture, we would not know what questions to ask (0.71, α = 0.96)	**DSBL**	**The founders tell you that they don't have any reputable contacts in banking.**	**4.56**
	DSBL	You receive the new venture's request during a time when economic analysts are predicting a recession.	4.62
	DSBL	**Although the local economy is doing very well, the national economy has taken a downturn**	**4.58**
4. After receiving this information from the founder/new venture, we would be less knowledgeable than before.(0.69, α = 0.96)	DSBL	The new venture is entering a cyclical industry that is currently experiencing a downturn, but is expected to rebound soon.	4.74
Distortion - External Factors Nwagu & Ibeku (2016) *Absorptive Capacity* Carson et al. (2012) *Environmental Ambiguity* Li & Liu (2014) *Dynamic Capabilities*	**DEFH**	**The business plan was solid; however, the economic downturn dramatically effected the ability to meet first quarter projections**	**5.07**
	DEFH	**You receive the new venture's request during a time when economic analysts are predicting a recession.**	**5.04**
1. Application of this external information affects our knowledge of the venture. (0.58, α =0.91)	DEFH	The new venture's request is during an economic panic where the government calls on banks to help small businesses recover.	4.99
	DEFH	Due to the economic downturn, the new venture is in desperate need of funds.	5.04
2. Based on this external information, it was difficult to know what we needed to make a decision about the new venture. (0.64, α = 0.96)	**DEFL**	**The business plan was solid and well planned out**	**4.58**
	DEFL	The new venture's request had a unanimous response by the loan officer and credit team.	4.59
	DEFL	It is very clear how the Bank should handle the new venture's loan request	4.58

Items	Group	Statement	Mean
3. This external information would often cause disagreements about how we should proceed with the new venture. (0.63, α = 0.96)	**DEFL**	**The founders tell you they don't necessarily need a bank loan, but would like to start a credit history for their business.**	**4.48**
4. Based on this external information, we could easily make mistakes about moving forward with the new venture. (0.66, α = 0.96)			
5. It is difficult to understand the impact of the external environment on this information. (0.54, α = 0.96)			
Information Verification Costs Lim & Klobas (2000) Yang et al. (2002) Salojarvi, Furu, & Sveiby, 2005 *Knowledge Acquisition Costs*	VCH	The founders tell you they have strong integrity.	4.83
1. To verify this information, I believe data and knowledge collected would be expensive to acquire. (0.69, α = 0.98)	**VCH**	**The new venture supplies you with a list of contracts with unrecognizable companies they venture is currently working with.**	**5.18**
	VCH	The founders tell you about all of the industry awards they received.	4.80
2. To verify this information, I would need to spend a lot of time sorting relevant from irrelevant data and knowledge. (0.62, α = 0.98)	VCH	The new venture is not publicly traded.	4.66
	VCH	**The founders supply you with a list of unrecognizable industry professionals they have worked with in the past.**	**5.07**
3. To verify this information, I would need to spend time collecting more than less data and knowledge. (0.64, α = 0.98)	VCL	The founder of the new venture is your city's former mayor.	4.26
	VCL	**The new venture supplies you with a list of contracts, which is comprised of companies that bank with you.**	**4.17**
4 To verify this information, I would need to have a significant investment budget in seeking external information and knowledge, such as acquiring consulting services from outside experts or subscribing to major journals and periodical related to your industry. (0.68, α = 0.98)	VCL	The founder is the spouse of one of your best customers	4.24
	VCL	The new venture is publicly traded so financial information is easy to find.	4.22
5. To verify this information, there would be significant time spent by employees in classifying and selecting acquired knowledge. (0.65, α = 0.98)	**VCL**	**The founders tell you they were referred to you by a banker you know very well.**	**4.18**

Note: Bolded items are highest item-total correlation and Cronbach's alphas. Bolded statements are high and lowest means.

To ensure reliability and create a more distinct instrument, I completed a test-retest via a survey through Qualtrics with 25 doctoral students. Respondents performed similar tasks to the Amazon Mechanical Turk survey and analyzed the previously identified two high and low statements based on a Likert scale (1 = Strongly disagree, 7 = Strongly agree) using survey all items. Initial IRR results were excellent (r (25) = 0.95). The means and alphas of the single high and low statements were calculated. To assess item reliability, a corrected item total correlation was calculated to measure the correlations between each item and the total score. The items with the highest correlation values corresponded with the two highest items previously identified in the Amazon Mechanical Turk survey showing sufficient reliability.

Table 14. Test Retest

Variable	Statement	Mean	Alpha
SHH	The founder has borrowed money in the past, which was paid as agreed.	5.71	0.95
SHL	The founder tells you this new venture is more of a hobby.	3.56	0.73
SCRH	Reputable companies within the industry have secured contracts with the new venture.	5.64	0.8
SCRL	Unknown companies in unrelated industries have secured contracts with the new venture.	2.88	0.84
SCMH	The founders tell they have personal equity invested in the venture.	6.1	0.9
SCML	The founder refuses to use any personal capital or "skin in the game" to fund the new venture	1.76	0.95
DSBH	When requesting the loan, the founders of the new venture tell you they are very good friends with the bank president	3.75	0.84
DSBL	The founders tell you that they don't have any reputable contacts in banking.	3.7	0.84
DEFH	You receive the new venture's request during a time when economic analysts are predicting a recession.	5.2	0.86
DEFL	The founders tell you they don't necessarily need a bank loan, but would like to start a credit history for their business.	3.47	0.86
VCH	The founders supply you with a list of unrecognizable industry professionals they have worked with in the past.	5.3	0.9
VCL	The founders tell you they were referred to you by a banker you know very well.	2.7	0.9

Exploratory Factor Analysis

I performed an exploratory factor analysis (EFA) to provide additional clarity to the composition of the predictor variables (Conway & Huffcut, 2003). Prior to conducting the EFA, I conducted a pilot test on Amazon Mechanical Turk ($N = 50$). Survey takers were asked to respond to each of the identified high (6) and low (6) statements based on all items together (12). IRR results were excellent ($r(50) = 0.98$).

Initially, I analyzed the data to determine if it was suitable for factor analysis (Field, 2005). I created a correlation matrix for each variable to examine intercorrelations representing potential clusters or factors (Reitwald & Van Hout, 1993; Field, 2005). Each of the variables reported suitable item correlations, suggesting that factor analysis was appropriate (Appendix C). In addition, I performed a Kaiser-Meyer-Olkin (KMO) test on each variable, which reported loadings ranging between 0.73 - 0.84, meeting the minimum threshold of 0.50 (Williams et al., 2010). I also examined the data using the Bartlett's test of sphericity, which showed significance ($p < .001$) or that correlations existed and factor analysis would be appropriate (Williams et al., 2010). Next, I evaluated the variables to identify evidence of multicollinearity using the variance inflation factor (VIF). Based on the VIF recommendation for acceptance of less than 10, all variables reported VIF values below required levels (Hair, Anderson, Tatham, & Black, 1995; Neter, Kutner, Nachtsheim, & Wasserman, 1996; Gaur & Gaur, 2006).

Utilizing the maximum likelihood extraction method, initial Eigen values greater than one reported that over 70% of the total variance was explained by two and three factors. I performed further analysis by examining the pattern rotations of each variable using an oblimin rotation, which allowed for the loadings to show communalities (Williams et al.,

2010). The purpose of this was to identify evidence of convergent and divergent validity of the hypothesized variables by analyzing loadings with the pattern matrices for signal opacity (signal honesty, signal credibility, signal commitment, distortion signaler behavior and distortion external factors) and signal verification costs (verification costs). All factor loadings less than 0.45 were suppressed, which resulted in nine of the 12 variables showing distinct correlational patterns (Field, 2005). Of the two and three-factor patterns, factor loadings reported evidence of communalities between distortion-signaler behavior, distortion-external factors and verification costs. The internal consistency of these communalities reported good values for this factor ($\alpha = 0.75$). This contradicted the originally hypothesized composition of the signal opacity construct. Further analysis also revealed that signal honesty, signal credibility and signal commitment showed distinct communalities, which again contradicted the initial hypothesized variable compositions. The internal consistency of these communalities reported good values for this factor ($\alpha = 0.84$).

The overall findings from the communalities within the pattern matrices suggests the construct of signal opacity should be comprised of distortion signaler behavior, distortion external factors and verification costs. Signal honesty, signal credibility and signal commitment should be combined to form the second construct, which for the purpose of this study was labeled "Signal HCC." Figure 8 below depicts the modified constructs within the theoretical model.

Figure 7. Two and Three-Factor Pattern Results

Item	Signal Honesty High HCC	Opacity	Distortion-SB High HCC	Opacity	Signal Commit Low HCC	Opacity	Verification Costs Low HCC	Opacity
Signal Honesty (1)	0.903		0.924		0.910		0.902	
Signal Honesty (2)	0.876		0.884		0.839		0.877	
Signal Credibility (1)	0.780		0.881		0.767		0.628	
Signal Credibility (2)	0.725		0.867		0.751		0.625	
Signal Commitment (1)	0.662		0.855		0.720			
Signal Commitment (2)	0.642		0.787		0.693			0.796
Distortion-Sign Behav (1)		0.916		0.823	0.685			0.761
Distortion-Sign Behav (2)		0.735		0.648	0.645			0.632
Distortion-Ext Factors (1)		0.684		0.627				0.500
Distortion-Ext Factors (2)		0.629		0.549		0.883		0.490
Verification Costs (1)		0.575		0.529		0.750		
Verification Costs (2)		0.547		0.499		0.593		

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.

ents

Item	Distortion-EF Low HCC	HCC	Opacity	Signal Honesty Low HCC	Opacity	Verification Costs High HCC	Opacity	Signal Cred High HCC	HCC	Opacity	Signal Commit High HCC	HCC	Opacity
Signal Honesty (1)		0.981		0.904		0.967		1.000			0.913		
Signal Honesty (2)	0.920	0.590		0.896		0.847		0.683			0.766		
Signal Credibility (1)	0.880			0.689		0.801			0.891				
Signal Credibility (2)	0.745			0.687		0.786			0.833		0.911		
Signal Commitment (1)	0.628			0.663		0.750			0.763		0.767		
Signal Commitment (2)	0.549					0.636			0.702		0.737		
Distortion-Sign Behav (1)							0.853			0.747	0.642		
Distortion-Sign Behav (2)			0.774				0.699			0.722			
Distortion-Ext Factors (1)			0.554		0.736		0.599						0.834
Distortion-Ext Factors (2)			0.515		0.735		0.592						0.553
Verification Costs (1)			0.490		0.470								0.491
Verification Costs (2)			0.483							0.500			

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.

Figure 8. Modified Theoretical Model
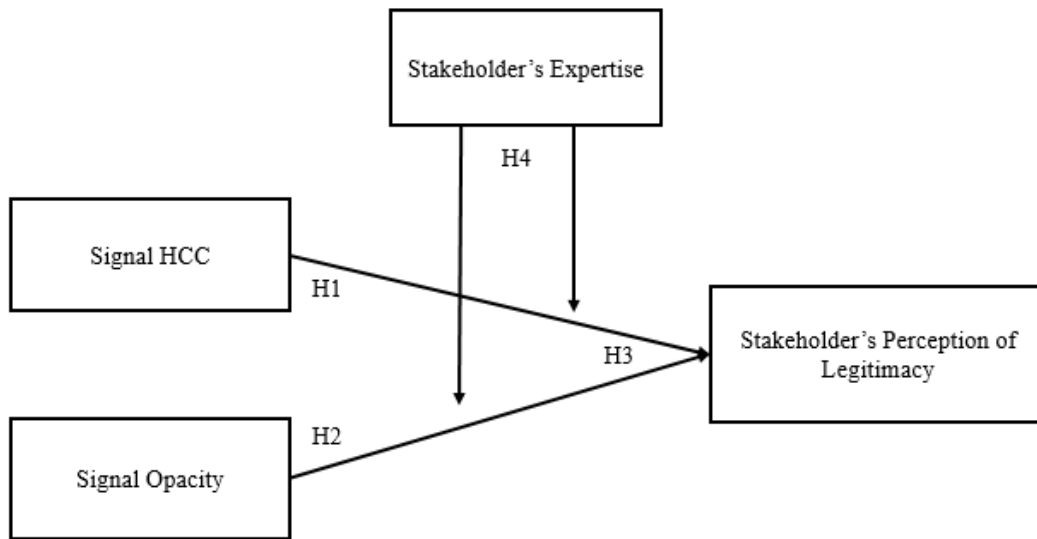
Identification of High and Low Vignette Statements

Determining the appropriate high and low statement for each manipulated vignette was important due to the fact that an interaction between the two variables was hypothesized. By examining the mean values from the factor loading results, it was identified that, although a statement may be high or low in one factor (ex. signal HCC), it may also contain varying high and low levels of the other factor (ex. signal opacity) as well. When developing the four manipulated vignettes with varying high and low condition levels (high-high, high-low, low-high, low-low), the factor analysis findings were leveraged to isolate specific high and low statements for each condition.

The mean value for each statement with the highest item total correlations (in bold) was isolated and used to calculate the group mean values for signal HCC ($M = 4.64$) and signal opacity ($M = 4.59$). For all signal HCC statements, the means for signal opacity were calculated and compared with its group mean ($M = 4.59$). Alternatively, for all signal opacity

statements, the means for signal HCC were calculated and compared with its group mean ($M = 4.64$). The purpose of this was to identify which statements should be utilized in the specific manipulated vignette variation (Figures 9 and 10).

Quantitative Sample

Participants ($N = 306$) of the quantitative study included individuals with current or former experience in the banking industry. The survey was implemented via Qualtrics and responses were then reviewed and analyzed for missing data using SPSS software (Brick & Kalton, 1996). While reviewing the data, it was imperative to discern if (1) nonresponse data was isolated to a certain question, (2) was not usable due to inexplicable responses, (3) or was lost (Battaglia, Sampling, & Lavrakas, 2008). The review of non-responses was also analyzed to discern whether the data was missing at random (MAR), missing completely at random (MCAR), or not missing at random (NMAR) and determine whether it should be removed or replaced (Battaglia et al., 2008). Of the 106 responses with missing values, 85% occurred within the first module, and were found to be missing completely at random based on the Little's test ($p = 0.690$) (Little, 1988). Specifically, these missing values consisted of those that did not provide consent ($N = 10$, 9.4%) and those that consented, but never started the survey ($N = 39$, 36.8%). Within the first module, which measured active and passive decision preferences, participants either quit the survey after completing the first question ($N = 14$, 13.2%), after completing half of the module ($N = 13$, 12.3%), three-quarters of the module ($N = 8$, 7.5%), or the full module ($N = 6$, 5.7%). Of the few remaining missing responses ($N = 16$, 15.1%), participants did not fully complete the four vignettes.

Figure 9. High and Low Vignette Statements

<div align="center"><u>Statements</u></div>

Item	SHH	SHL	SCRH	SCRL	SCMH	SCML	DSBH	DSBL	DEFH	DEFL	VCH	VCL
SH 1	5.16		5.24	4.51	5.20		4.46				4.53	5.00
SH 2		4.27				4.13		4.71	4.37	4.96		
SCR 1				4.45	4.69	4.31			5.08		4.62	
SCR 2	5.10	4.14	4.88				4.33	4.49		4.55		4.61
SCM 1	4.82		4.88	4.61	5.18	3.90	4.45				4.80	
SCM 2		4.16						4.59	4.51	4.86		4.82
DSB 1	4.10	4.71	4.22	4.42		4.27						4.57
DSB 2					4.10		4.96	4.61	4.45	4.55	4.80	
DEF 1	4.18			4.39	4.41	4.22	4.84	4.18	4.78	4.59		4.59
DEF 2		4.29	4.33								4.71	
VC 1				4.90					4.96		5.14	
VC 2	4.44	4.88	4.96		4.73	4.67	4.71	4.20		4.43		4.71

Note: Shaded items represent high and low statement means and items with highest item total correlation

<div align="center"><u>Mean</u></div>

	SHH	SHL	SCRH	SCRL	SCMH	SCML	DSBH	DSBL	DEFH	DEFL	VCH	VCL	Group Mean
HCC							**4.41**	**4.59**	**4.65**	**4.79**	**4.65**	**4.81**	**4.64**
Opacity	**4.29**	**4.69**	**4.62**	**4.65**	**4.49**	**4.46**							**4.59**

Note: Bolded items are the mean values of each statement's secondary variable

Figure 10. High and Low Vignette Statements in 2 × 2 Factorial Design

Signal Opacity

		High	*Low*
Signal HCC	*High*	1. Signal Credibility-High 2. Distortion External Factors-High 3. Verification Costs-High	1. Signal Honesty-High 2. Signal Commitment-High 3. Distortion External Factors-Low 4. Verification Costs-Low
	Low	1. Signal Honesty-Low 2. Signal Credibility-Low 3. Distortion Signaler Behavior-High	1. Signal Commitment-Low 2. Distortion Signaler Behavior-Low

In retrospect, these surveys were administered during the peak of the Federal Reserve Board's "Paycheck Protection Program." which was processed solely by local bankers. Since the vast majority of missing values were found to exist prior to completing the first module, it is logical to assume that respondents simply were forced to pause the survey due to extreme job commitments. Once these missing responses were removed, the final data set ($N = 200$) was reviewed and the remaining missing ordinal values were then substituted using the mean and categorical variables with "no response" (Battaglia et al., 2008).

I recorded the demographic information of the final data set of respondents. The participants ages ranged from 22 to 80 with a mean age of 45.33 (SD = 13.23). Of the male (69%) and female (31%) participants, 84% were white, 6% were black or African American, 3% were Asian, 1% native Hawaiian or Pacific Islander, and 0.5% American Indian or Alaska Native (Table 15). I also included the sample descriptive statistics for all predictor,

outcome and control variables included in the model. Before generating the interaction, the moderator variable (BNK_YRS) was centered (Table 16).

Table 15. Quantitative Sample Descriptive Statistics

Banking Experts		
	Mean	**(SD)**
Age	45	(13)
Gender	**n**	**(%)**
Male	132	(69.0)
Female	58	(31.0)
Race		
White	157	(84.0)
Black or African American	12	(6.0)
Asian	5	(3.0)
Native Hawaiian or Pacific Islander	2	(1.0)
American Indian or Alaska Native	1	(0.5)
Other	11	(6.0)
Marital Status		
Married	150	(79.0)
Divorced	13	(7.0)
Separated	1	(0.5)
Never Married	23	(12.0)
Widowed	3	(1.5)
Education		
Junior Secondary School	1	(0.5)
Senior High School	8	(4.0)
Some University	31	(16.0)
Bachelor's Degree	87	(45.0)
Master's Degree	61	(32.0)
Doctoral Degree	4	(2.0)
Bank Title		
Other	53	(26.5)
Officer	16	(8.0)
Assistant Vice President	16	(8.0)
Vice President	45	(22.5)
Senior Vice President	40	(20.0)
Executive Vice President	16	(8.0)
President	10	(5.0)
Chief (Credit, Lending, Operating) Officer	3	(1.5)
Chief Executive Officer	1	(0.5)
Income		
Less than $10,000	4	(2.0)
$10,000-49,999	13	(7.0)
$50,000-99,999	40	(21.5)
$100,000-149,999	42	(22.5)
$150,000+	87	(47.0)
Employment Status		
Employed Full Time	165	(90.0)
Unemployed Looking for Work	6	(3.0)
Student	2	(1.0)
Retired	10	(5.0)

Table 16. Correlation Table

	1	2	3	4	5	6	7	8	9	10	11	12	13	M	SD
HCC_H	1													4.7925	1.21059
HCC_L	.237**	1												2.9400	1.27654
Opacity_H	.652**	.728**	1											3.8175	1.35169
Opacity_L	.629**	.577**	.363**	1										3.9150	1.00640
LEGIT_HH	.826**	.306**	.777**	.338**	1									3.8000	1.70100
LEGIT_HL	.727**	.039	.183**	.679**	.215**	1								5.7900	1.39600
LEGIT_LH	.203**	.828**	.790**	.233**	.229**	.074	1							3.8400	1.74700
LEGIT_LL	.170*	.749**	.322**	.721**	.257**	-.020	.248**	1						2.0500	1.47800
BNK_YRS	-.128	-.128	-.104	-.177*	-.140*	-.052	-.025	-.192**	1					17.8900	11.84500
PA	-.039	.013	-.060	.016	-.004	-.064	-.089	.082	-.070	1				3.8390	0.52790
UA	.023	.056	.051	.030	-.051	.102	.129	-.056	-.203**	.043	1			4.3657	1.00217
NA	.047	.025	.038	.038	.014	.065	.045	-.010	-.146*	-.234**	.225**	1		1.4600	0.42900
AGE	-.116	-.146	-.112	-.172*	-.182*	.022	.005	-.253**	.705**	-.126	-.207**	-.189*	1	45.3100	13.17900

** Correlation is significant at the 0.01 level (2-tailed).

 * Correlation is significant at the 0.05 level (2-tailed).

Quantitative Findings

The initial portion of this experiment focused on answering the first research question –
how are new ventures able to secure the perception of legitimacy when they don't always
possess optimal signals comparable to a mature firm? To answer this, the sample of bankers
($N = 200$) responded to a survey to test their preference for active or passive decision-
making. Of the sample, the findings reported that 96% of bankers preferred to actively and
deliberately make decisions. This was an important finding due to the fact that if results
reported that bankers chose to move forward with a scenario of high signal opacity
(distortion and verification costs), then their innate preference for active processing was
successfully manipulated. To test for this, the following hypotheses were examined within
the experiment.

Hypothesis 1

H_1: There is a significant difference between a stakeholder's perception of
legitimacy due to the levels of signal HCC.

I conducted a paired samples t-test to compare stakeholders' perceptions of legitimacy in
conditions of high and low signal HCC. Prior to conducting the test, I evaluated the
assumption of normally distributed difference scores. The assumption was satisfied since the
skew and kurtosis levels were estimated at -0.076 and 0.134, which is less than the maximum
allowable values for t-tests (skew $< |2.0|$, kurtosis $< |9.0|$; Posten, 1984). I estimated the
bivariate correlation between the two conditions at $r = 0.237$, $p < .001$. The main effect of
signal HCC was statistically significant, $t (199) = 17.05$, $p < .001$. These results suggest the
likelihood that stakeholder legitimacy perceptions were greater in the high HCC condition
($M = 4.79$, $SD = 1.21$) than the low HCC condition ($M = 2.94$, $SD = 1.28$). Cohen's d for the

signal HCC condition resulted in a value of 1.49, which is considered a large effect size (Cohen, 1992b).
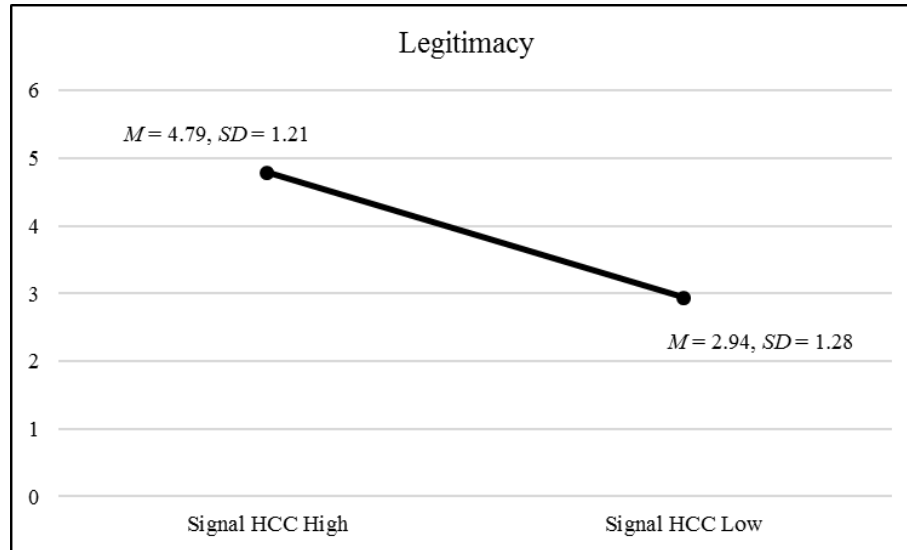
Hypothesis 2

H_2: There is a significant difference between a stakeholder's perception of

legitimacy due to the levels of signal opacity.

I conducted a paired samples *t*-test to compare stakeholders' perceptions of legitimacy in conditions of high and low signal opacity. Prior to conducting the test, I evaluated the assumption of normally distributed difference scores. The assumption was satisfied since the skew and kurtosis levels were estimated at -0.459 and 1.59, which is less than the maximum allowable values for *t*-tests (skew $< |2.0|$, kurtosis $< |9.0|$; Posten, 1984). I estimated the bivariate correlation between the two conditions at $r = 0.363$, $p < .001$. The main effect of signal opacity was not significant, $t(199) = -1.01$, $p = 0.312$, failing to reject the null hypothesis and suggesting there is not a difference in stakeholder perceptions of legitimacy based on signal opacity. Cohen's *d* for the signal opacity condition resulted in a value of 0.085, which is considered a small effect size (Cohen, 1992b).
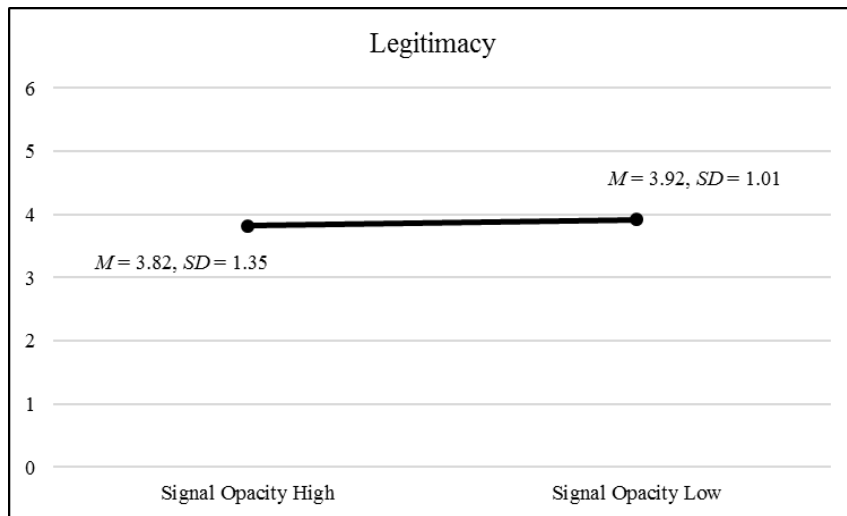
Hypothesis 3

H_3: There is a significant difference between a stakeholder's perception of

legitimacy due to the interaction between signal opacity and signal

verification costs.

I performed a one-way repeated measures ANOVA to evaluate the interaction of signal

opacity on the main effect of signal HCC on stakeholder legitimacy perceptions (Hypothesis

3a). I also evaluated the interaction of signal HCC on the main effect of signal opacity on

stakeholder legitimacy perceptions (Hypothesis 3b). In visually reviewing the descriptive

statistics, mean values of "Legitimacy High-High" ($M = 3.80$, $SD = 1.70$) and "Legitimacy

Low-High" ($M = 3.83$, $SD = 1.75$) initially appear similar, while "Legitimacy High-Low"

($M = 5.78$, $SD = 1.40$) and "Legitimacy Low-Low" ($M = 2.05$, $SD = 1.48$) seem different.

To provide further analysis to support these initial results, I discuss the following results.

To ensure validity of the repeated measures ANOVA and reduce the chance of a Type 1

error, literature notes that the results must comply with three assumptions (Huynh & Feldt,

1970; Stevens, 2012; Cohen, 2001). I insured the first assumption, an independence of

observations, through the use of random selection of the participants (Keppel & Zedeck, 1989). I evaluated the second assumption, multivariate normality, using the Pillai's Trace test. Although each of the four tests [Wilk's Lambda = 0.229, $F(3, 197) = 220.66$, $p < .001$; Hotelling's Trace = 3.360, $F(3, 197) = 220.66$, $p < .001$; Roy's Largest Root = 3.360, $F(3, 197) = 220.66$, $p < .001$] reported significance, the Pillai's Trace has been found to represent a more robust test for violations of assumptions (Olson, 1974). The results of Pillai's Trace was 0.771, $F(3, 197) = 220.66$, $p < .001$ and supports that the null hypothesis should be rejected, stating that there is no significant difference between the means.

The third assumption is that there is a homogeneity of variance of differences or a sphericity across treatments (Kogos, 2000). Violating sphericity can increase the Type 1 error rate (Stevens, 2012). This assumption was not violated, $\chi^2(2) = 5.469$, $p = 0.361$, showing that the variances of the mean differences are equal (Stevens, 2012). Since sphericity is assumed, the results of the test of within-subjects effects, $F(3, 597) = 224.09$, $p < .001$, show that there is a statistically significant difference between the means of the within-subjects variable "legitimacy."

I then conducted four pairwise comparisons to isolate where the mean differences occurred. Utilizing the Bonferroni post hoc test to keep the Type 1 error at 5% overall, a significant difference ($p < .001$) was identified between the means of all legitimacy conditions except between High-High and Low-High ($p = 1.00$).
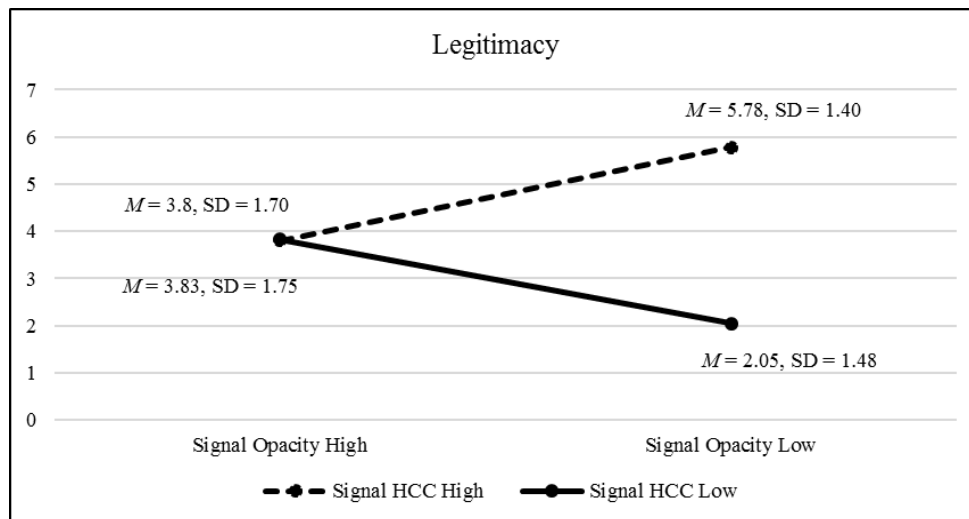
Legitimacy

Hypothesis 4

H_{4a}: The difference between a stakeholder's perception of legitimacy due to the levels of signal HCC is significantly enhanced when stakeholder expertise is high and reduced when it is low.

H_{4b}: The difference between a stakeholder's perception of legitimacy due to the levels of signal opacity is significantly enhanced when stakeholder expertise is high and reduced when it is low.

To answer the second research question of how stakeholders are able process new venture signals when quality is difficult to assess due to similar costs, I evaluated the moderating role of stakeholder expertise. I initiated a linear mixed effects model with repeated measures with a normalized dummy-coded variation of legitimacy (0100 = high-high, 0010 = high-low, 0001 = low-high, 0000 = low-low) as the repeated effects outcome variable. Included in the data set was the between-subjects, fixed effects of 46 levels of bank years; the within-subjects, four levels of dummy-coded legitimacy; and the 184 levels of the

interaction of bank years and dummy coded legitimacy. Although the fixed main effect of the dummy-coded legitimacy was significant $F_{(3, 462)} = 124.02$, $p < .001$, the fixed main effect of bank years $F_{(45, 154)} = 1.25$ and the fixed interaction effect of bank years and dummy-coded legitimacy $F_{(135, 462)} = 0.914$ was not significant, $p = 0.161$, $p = 0.733$. These findings suggest that stakeholder experience does not have a significant moderating effect on the main effect of signal HCC and signal opacity on the stakeholder legitimacy perceptions.

This analysis was repeated and controlled for positive and negative affect, uncertainty avoidance, age, race and gender. The fixed effect of the dummy-coded legitimacy, controlled for positive affect $F_{(23, 6)} = 0.969$, $p = 0.570$, negative affect $F_{(19, 6)} = 0.863$, $p = 0.632$, uncertainty avoidance $F_{(30, 6)} = 1.022$, $p = 0.543$, age $F_{(45, 6)} = 0.890$, $p = 0.636$, race $F_{(5, 6)} = 1.038$, $p = 0.473$ and gender $F_{(1, 6)} = 2.293$, $p = 0.181$ was found to not have a significant effect on the main effect of signal HCC and signal opacity on the stakeholder legitimacy perceptions.

CHAPTER V

DISCUSSION AND CONCLUSION

Overview

In this chapter, I provide a summation and further interpretation of my findings to understand the unique and strategic role new venture signals play when requesting external capital to fund growth. This discussion will include (1) an examination of how new ventures are able to secure a stakeholder perception of legitimacy, and (2) how stakeholders are able to decipher new ventures' quality when their cost exists within a pooling equilibrium. To address these questions, I conducted an extensive literature review, detailing extant literature surrounding signaling and institutional theory. I then isolated variables of interest, developed and operationalized to be empirically tested by leveraging a sample of banking experts. In the following, I discuss these results along with their implications for theory and practice, concluding with the limitations of this study and future directions for research.

Results

As two sides exists for every coin, the funding of a new venture debt contract is only successfully completed when both parties converge towards a negotiated agreement. On one side of the debt contract, the new venture complies with the requirement to provide collateral and pay a nominal interest rate to the stakeholder in exchange for capital (Williamson, 1987).

The new venture also agrees to adhere to scheduled monitoring requirements due to the stakeholder's passive or "hands off" approach to the relationship (Berger & Udell, 1998; Berger et al., 1999). Alternatively, the stakeholder makes an informed decision to provide the new venture with funded capital by mitigating the risk of default through an evaluation of creditworthiness (Berger & Udell, 1998).

However, before this agreement can be executed, the two parties must have an initial meeting concluding with the stakeholder's decision to move forward with the loan process. This delicate stage, although seemingly insignificant on the surface, holds extreme importance for the ultimate goal of external capital funding for the new venture. When the perception of legitimacy is attained, the stakeholder ultimately becomes the advocate of the new venture. Behind the curtain of the lending process exists a multitude of decision makers who comprise the bank's loan committee. Although during the loan presentation, the committee has access to objective information about the new venture, many times they are very interested in the inaccessible subjective details as well (Chen, Huang, Tsai, & Tzeng, 2015). The committee looks to advocates to provide this information as well as their opinion of legitimacy, which interestingly was determined during that initial meeting. For this reason, my research questions hold high importance within the strategy of entrepreneurship.

Research Question 1

The first research question aimed to understand how new ventures were able to secure the perception of stakeholder legitimacy when they're unable to provide costly signals similar to those of mature firms. Utilizing the results from the main effect and interaction tests of signal HCC and signal opacity, I found that in environments of high signal opacity, new ventures who possess only low HCC signals have the same opportunity of potentially gaining

stakeholder legitimacy as those possessing high HCC signals. This supports the notion that bankers may be less focused on signals with costly characteristics when their attention has been distracted due to opacity. This also implies that the "playing field" for new ventures becomes figuratively even when signal opacity is high.

In relation to stakeholders bypassing their innate preferences for active decision making, the findings show that high signal opacity instigates passivity. For example, when faced with a scenario of high and low signal opacity, stakeholders are more apt to move forward with a new venture that signals low HCC when signal opacity was high. This supports the notion that when faced with high distortion and verification costs, stakeholders may choose to move forward passively rather than fully verifying the low HCC signals.

Research Question 2

My second research question aimed to understand how stakeholders were able to ascertain a new venture's quality when cost was difficult to assess. I proposed that stakeholders were able to use their years of expertise to leverage similar new venture schemas in making legitimacy perceptions. Unfortunately, the moderating relationship did not report a significant effect and could not be used to answer this second research question. Despite this, these findings do not explicitly conclude that stakeholder expertise is unimportant in legitimacy decisions, but rather only specifically within this study's narrow scope of signal HCC and signal opacity. In reviewing the mean values of stakeholder legitimacy perceptions, the findings do show that a stakeholder effectively passes on a new venture request due to poor signal HCC when signal opacity is low and will occasionally move forward when signal opacity is high. This partially answers the question by illustrating

that when new ventures send signals of similar costs (low signal HCC), stakeholders can effectively ascertain quality and make legitimacy decisions when signal opacity is low.

The Strategy and Morality of Signal Opacity

Signal opacity can be viewed both as a strategic tactic for new ventures to leverage and capitalize upon as well as a hindrance to stakeholders, as evidenced by the net losses due to charged-off debt contracts. As shown through recent economic crises within the United States due to poor lending decisions, signal opacity exemplifies a conversation that cautiously walks a "tight rope of morality." An important component of this study's primary purpose lies within its moral compass that signal opacity should be used not to deceive stakeholders, but to strategically manipulate them to acknowledge signalers' quality (Cronk, 1994). For instance, since many new ventures are unable to provide costly signals similar to mature firms, leveraging opacity such as mentioning "a friendship with the bank's president," aims to enhance stakeholders' perceptions of quality when cost is difficult to assess. Signal opacity allows new ventures to have opportunities for legitimacy similar to those with superior signals.

However, opacity is not always controlled and manipulated by the signaler, but rather by external forces such as economic conditions or disasters (Yao et al., 2019). For example, as a result of the recent Coronavirus pandemic, the Federal Reserve asked financial institutions to provide working capital loans to small businesses via the CARES Act (Humphries, Neilson, & Ulyssea, 2020). Assuming that small businesses are able to provide the required verification within the specified time window that funds were used as intended, the Federal Reserve will ultimately forgive the outstanding loan balance (Boccia et al., 2020). From a lender's perspective, the distortion created not only from the pandemic (economic factors),

but also the desperation of business owners (signaler's behavior), significantly hindered their ability to objectively ascertain the true creditworthiness of the borrower. Also, since there was a limited allotment of funds to be dispersed, lenders were forced to underwrite loan request quickly, which presumably impacted the time and effort allotted towards verification costs. This example provides a current illustration of how signal opacity exists within a non-strategic environment as well.

Research Implications

This study offers implications for researchers of strategic management, specifically within the field of entrepreneurship. Literature has examined the state of strategic management, specifically chronicling its metamorphosis from a field primarily composed of case studies to a robust and theoretically driven domain (Hitt, Ireland, Camp, & Sexton, 2004). Within entrepreneurship, strategic theories have been developed utilizing extant literature from economics, psychology, sociology and organizational behavior (Ireland, Camp, & Sexton, 2014). As a result of this evolution, literature has expanded upon signaling and institutional theory to uncover new venture legitimacy strategies (Suchman, 1995; Bitektine, 2011; Connelly et al., 2011). For instance, the examination of legitimacy-as perception provided a detailed level of understanding as to the multiple levels and variations of stakeholder legitimacy (Suddaby et al., 2017).

Existing literature has examined strategic signaling utilizing a top-down or "stimulus-creating" approach that leverages signal observability to capture a receivers initial attention (Berger & Luckmann, 1966; Ocasio, 2011). Literature has also expanded upon a stakeholder's use of the bottom-up or "stimulus-driven" perspective in passively searching for exogenous stimuli to make an informed decision (Drover et al., 2018). This study

contributes to theory and practice within strategic entrepreneurship by combining these theoretical perspectives to explore new venture signals that strategically leverage opacity to instigate passive decision-making by stakeholders. The findings suggests that signal opacity promotes a bottom-up perspective by inhibiting a stakeholder's ability to actively process and differentiate between superior and poor signals.

This study also contributes to psychology literature concerning the use of heuristics to passively make legitimacy decisions when information is scarce (Tversky & Kahneman, 1974; Gigerenzer, 1996). Literature has noted that passivity is related to the accessing of validity cues when the entirety of information is unavailable and time is critical (Suchman, 1995; Tost, 2011; Bitektine & Haack, 2015). This study's findings suggests that signal opacity disrupts a stakeholder's use of validity cues to passively decipher superior from poor signals when signal opacity is high. This is due to the shift in a stakeholder's focus caused by the signal's distortion and verification costs.

This study contributes to the signaling and legitimacy conversation within strategic entrepreneurship research by focusing on the banker as a representation of the stakeholder. Extant literature has focused on the new venture's quest for external capital through the lens of the venture capitalist, angel investor and crowdfunding stakeholder (Kaiser et al., 2007; Mitra, 2012; Huang, 2018). By contributing to existing research that has utilized the banking and debt contract context (Berger & Udell, 1998; Berger et al., 1999), this study extends the conversation regarding strategic entrepreneurship. This provides an alternative perspective where the stakeholder is not considered an equity partner that is actively engaged in daily decisions, but rather a passive party that monitors growth via information controlled and provided by the new venture (Berger & Udell, 1998; Berger et al., 1999).

New Ventures and Bankers

This study offers practical implications for entrepreneurs and industry professionals within the lending space by bridging the gap between research and practice (Briner et al., 2012). The impact of the growth of small businesses to this nation's economy has been a topic of interest for many years (Brock, Evans, Phillips, 1986; Robu, 2013). According to the United States Small Business Administration, two-thirds of net new jobs and 44% of economic activity is attributed to the success small businesses (SBA Office of Advocacy, 2019). By furthering the conversation of new venture strategy within the perspective of banking industry professionals, this study adds an additional layer of legitimacy to its theory. This perspective also affirms the importance of scholarly research pertaining to the topic of new venture growth through external capital.

Limitations and Directions for Future Research

Several limitations and opportunities for future research exists within this research study, particularly within the examination of the moderating effect of stakeholder expertise and the development of the survey instrument.

A limitation of this study was the decision to utilize "years of bank experience" as the single measure to represent stakeholder expertise. This may have limited this study's ability to robustly examine the moderating role of stakeholder expertise. Within the hypotheses development of this study, the topic of receiver schemas was discussed as a component of stakeholder expertise. Receiver schemas have been described in literature as set of cognitions based on similarities between the signal and/or sender and previous firms the receiver has evaluated. (Anderson, Lepper, & Ross, 1980; Heil & Robertson, 1991; Gulati & Higgins, 2003). Schemas aid in the sensemaking processes of a signal receiver when there is a high

level of information asymmetry or ambiguity. (Reger, Gustafson, Demarie, & Mullane, 1994; Plummer et al., 2016). Receivers with extensive domain-specific schemas that are interpreting signal opacity may possess a greater portfolio of similar experiences to access. This can potentially strengthen or weaken the effectiveness of signal opacity based on the depth of receiver schemas.

Future research should incorporate receiver schemas within the examination of stakeholder expertise. For instance, research should examine how a signal receiver's past experiences can produce positive or negative reactions to signal opacity, which the signal sender has no way of predicting. An interesting theory proposed by Drover et al. (2018) described how the valence of one signal may be interpreted differently than if it was sent within a set of multiple signals with a range of positive and negative effects. Ultimately, the negative reaction of one signal may be alleviated if coupled within a group of positive signals and vice versa. The valence of these signal groups was theorized as uniform, imbalanced and balanced congruence with the positive and negative symbols depicting signal receiver reactions (Drover et al., 2018). An example of this as an extension of the examination of signal opacity is included in the table below.

Table 16. Signal Set Valence

Signal Set Valence		
Uniform Congruence	**Imbalanced Incongruence**	**Balanced Incongruence**
Signal HCC/Opacity Set 1 + + + +	+ − − −	+ + − −
Signal HCC/Opacity Set 2 − − − −	− + + +	− − + +
Signal HCC/Opacity Set 3		
Signal HCC/Opacity Set 4		

Another limitation of this study was the inability to recruit bank experts during the survey instrument development process. However, to ensure the validity and reliability of the survey

instrument, doctoral students and respondents from Amazon Mechanical Turk were recruited to collect data. An additional layer of robustness would have been added to the instrument if bank experts would have been accessible for collection at this stage of development. Unfortunately, due to the Coronavirus pandemic, the sample of bank experts were intentionally earmarked specifically for the main study to ensure reliable results. As discussed within the findings of this study, a test-retest was performed during development to ensure reliability of the survey instrument despite the inability to recruit bank experts. Future research should utilize bank experts to replicate the instrument development process.

In conclusion, this study demonstrated the influence of opacity on signaling and legitimacy perceptions. By potentially shedding light on *how* new ventures are able to secure external capital and *why* stakeholders grant them legitimacy, this study hopes to provide further discussion to the conversation of strategic entrepreneurship.

REFERENCES

Ahlers, G.K., Cumming, D., Günther, C., & Schweizer, D. (2015). Signaling in equity crowdfunding. *Entrepreneurship Theory and Practice*, *39*(4), 955-980.

Akerlof, G.A. (1970). The market for lemons: Quality and the market mechanism. *Journal of Economics*, *84*, 488-500.

Alba, J.W., & Hutchinson, J.W. (1987). Dimensions of consumer expertise. *Journal of Consumer Research*, *13*(4), 411-454.

Aldrich, H., & Auster, E.R. (1986). Even dwarfs started small: Liabilities of age and size and their strategic implications. *Research in Organizational Behavior*, *8*. 165-198.

Aldrich, H.E., & Fiol, C.M. (1994). Fools rush in? The institutional context of industry creation. *Academy of Management Review*, *19*(4), 645-670.

Almond, G., & Coleman, J. (1960). *The Politics of the Developing Areas*. Princeton, NJ: Princeton University Press.

Ambrocio, G., & Hasan, I. (2019). What drives discretion in bank lending? Some evidence and a link to private information. *Journal of Banking & Finance*, *106*, 323-340.

Anderson, C.A., Lepper, M.R., & Ross, L. (1980). Perseverance of social theories: The role of explanation in the persistence of discredited information. *Journal of Personality and Social Psychology*, *39*(6), 1037.

Anderson B.S., & McMullen, J.S. (2012). Does the market reward entrepreneurial strategies? *Frontiers of Entrepreneurship Research*, *32*(17), 2.

Anglin, A.H., Short, J.C., Drover, W., Stevenson, R M., McKenny, A.F., & Allison, T.H. (2018). The power of positivity? The influence of positive psychological capital language on crowdfunding performance. *Journal of Business Venturing*, *33*(4), 470-492.

Arak, A. (1988). Female mate selection in the natterjack toad: Active choice or passive atraction?. *Behavioral Ecology and Sociobiology*, *22*(5), 317-327.

Argote, L. (1999). Organizational Learning: Creating. In *Retaining and Transferring*, 321-331

Ashforth, B.E., & Gibbs, B.W. (1990). The double-edge of organizational legitimation. *Organization Science*, *1*(2), 177-194.

Ayres, C.E. (1944) *The Theory of Economic Progress*, 2nd edition. New York: Schocken.

Ayres, C.E. (1952). *The Industrial Economy: Its Technological Basis and Institutional Destiny*. Boston: Houghton Mifflin.

Baklouti, I. (2015). On the role of loan officers' psychological traits in predicting microcredit default accuracy. *Qualitative Research in Financial Markets*, *7*(3), 264-289.

Bandura, A. 1986. *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice-Hall.

Barnard, C. (1938). 1.(1938). *The functions of the executive*.

Barney, J.A.Y., & Felin, T. (2013). What are microfoundations? *Academy of Management Perspectives*, *27*(2), 138-155.

Battaglia, M., Sampling, N., & Lavrakas, P.J. (2008). *Encyclopedia of Survey Research Methods*. Thousand Oaks, CA: Sage Publications.

Benford, R.D., & Snow, D.A. (2000). Framing processes and social movements: An overview and assessment. *Annual Review of Sociology*, *26*(1), 611-639.

Benson, D.F., Brau, J.C., Cicon, J., & Ferris, S.P. (2015). Strategically camouflaged corporate governance in IPOs: Entrepreneurial masking and impression management. *Journal of Business Venturing*, *30*(6), 839-864.

Bergara, M.E., Henisz, W.J., & Spiller, P.T. (1998). Political institutions and electric utility investment: A cross-nation analysis. *California Management Review*, *40*(2), 18-35.

Berger, A.N., Klapper, L.F., & Udell, G.F. (1999). *The Ability of Banks to Lend to Informationally Opaque Small Businesses*. The World Bank.

Berger, P. L., & Luckmann, T. (1966). *The Social Construction of Reality*. New York: Anchor.

Berger, P.L., & Luckmann, T. (1967). *The Social Construction of Reality: Everything that Passes for Knowledge in Society*. London: Allen Lane.

Berger, A.N., & Udell, G.F. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking & Finance*, *22*(6-8), 613-673.

Bergh, D.D., Connelly, B.L., Ketchen Jr, D.J., & Shannon, L.M. (2014). Signaling theory and equilibrium in strategic management research: An assessment and a research agenda. *Journal of Management Studies*, *51*(8), 1334-1360.

Bertaux, D. (1981). From the life-history approach to the transformation of sociological practice. In Daniel Bertaux (Ed.), *Biography and Society: The Life History Approach in the Social Sciences* (pp.29-45). London: Sage.

Bertomeu, J., & Marinovic, I. (2015). A theory of hard and soft information. *The Accounting Review*, *91*(1), 1-20.

Betsch, C. (2004). Präferenz für intuition und deliberation (PID). *Zeitschrift für Differentielle und Diagnostische Psychologie*, *25*(4), 179-197.

Betsch, C., & Iannello, P. (2009). Measuring individual differences in intuitive and deliberate decision-making styles. *Foundations for Tracing Intuition: Challenges and Methods*, 251.

Bhattacharya, S. (1979). Imperfect information, dividend policy, and "the bird in the hand" fallacy. *Bell Journal of Economics*, *10*(1), 259-270.

Bhattacharya, U., & Dittmar, A. (2003). Costless versus costly signaling: Theory and evidence from share repurchases. In *Seminar Paper at Alabama, Humboldt, Frankfurt, Illinois, Indiana, INSEAD, Norwegian School of Management, Notre Dame, Penn State and Pittsburgh*.

Bitektine, A. (2011). Toward a theory of social judgments of organizations: The case of legitimacy, reputation, and status. *Academy of Management Review*, *36*(1), 151-179.

Bitektine, A., & Haack, P. (2015). The "macro" and the "micro" of legitimacy: Toward a multilevel theory of the legitimacy process. *Academy of Management Review*, *40*(1), 49-75.

Bittner, E. (1967). *The Police on Skid-Row: A Study of Peace Keeping*. London: Ardent Media.

BliegeBird, R., Smith, E., Alvard, M., Chibnik, M., Cronk, L., Giordani, L., ... & Smith, E. (2005). Signaling theory, strategic interaction, and symbolic capital. *Current Anthropology*, *46*(2), 221-248.

Boccia, R., Burke, L., Burton, D.R., Greszler, R., Michel, A., Michel, N.J., ... & Winfree, P. (2020). Congress should focus on pandemic control and fix the CARES Act for an economic rebound. *Heritage Foundation Backgrounder* (3484), 2020-04.

Boulding, W., & Kirmani, A. (1993). A consumer-side experimental examination of signaling theory: Do consumers perceive warranties as signals of quality? *Journal of Consumer Research*, *20*(1), 111-123.

Boyatzis, R.E. (1998). *Transforming Qualitative Information: Thematic Analysis and Code Development*. Thousand Oaks CA: Sage.

Brick, J.M., & Kalton, G. (1996). Handling missing data in survey research. *Statistical Methods in Medical Research*, *5*(3), 215-238.

Briner, R.B., Engwall, L., Juillerat, T.L., Mintzberg, H., Morgeson, F.P., Pratt, M.G., & Tengblad, S. (2012). Bridging the management theory and practice gap. In *The Work of Managers: Towards a Practice Theory of Management*, *318*. Oxford U.K.: Oxford University Press.

Brock, W.A., Evans, D.S., & Phillips, B.D. (1986). *The Economics of Small Businesses: Their Role and Regulation in the US Economy*. New York: Holmes & Meier.

Bruns, V., Holland, D. V., Shepherd, D. A., & Wiklund, J. (2008). The role of human capital in loan officers' decision policies. *Entrepreneurship Theory and Practice*, *32*(3), 485-506.

Bruton, G.D., Chahine, S., & Filatotchev, I. (2009). Founders, private equity investors, and underpricing in entrepreneurial IPOs. *Entrepreneurship Theory and Practice*, *33*(4), 909-928.

Bruton, G.D., Ahlstrom, D., & Li, H.L. (2010). Institutional theory and entrepreneurship: where are we now and where do we need to move in the future. *Entrepreneurship Theory and Practice*, *34*(3), 421-440.

Burns, L.R., & D'Zurilla, T.J. (1999). Individual differences in perceived information processing styles in stress and coping situations: Development and validation of the perceived modes of processing inventory. *Cognitive Therapy and Research*, *23*(4), 345-371.

Burton, M.D., & Beckman, C.M. (2007). Leaving a legacy: Position imprints and successor turnover in young firms. *American Sociological Review*, *72*(2), 239-266.

Busenitz, L.W., & Barney, J.B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, *12*(1), 9-30.

Busenitz, L.W., Fiet, J.O., & Moesel, D.D. (2005). Signaling in Venture Capitalist—New Venture Team Funding Decisions: Does it Indicate Long-Term Venture Outcomes? *Entrepreneurship Theory and Practice*, *29*(1), 1-12.

Carson, S.J., Wu, T., & Moore, W.L. (2012). Managing the trade-off between ambiguity and volatility in new product development. *Journal of Product Innovation Management*, *29*(6), 1061-1081.

Celani, A., & Singh, P. (2011). Signaling theory and applicant attraction outcomes. *Personnel Review*, *40*(2), 222-238.

Centorrino, S., Djemai, E., Hopfensitz, A., Milinski, M., & Seabright, P. (2015). Honest signaling in trust interactions: Smiles rated as genuine induce trust and signal higher earning opportunities. *Evolution and Human Behavior*, *36*(1), 8-16.

Certo, S.T., Daily, C.M., & Dalton, D.R. (2001). Signaling firm value through board structure: An investigation of initial public offerings. *Entrepreneurship Theory and Practice*, *26*(2), 33-50.

Charter Capital (2018). *Case Studies*. Scottsdale, AZ

Chen, Y., Huang, R.J., Tsai, J., & Tzeng, L.Y. (2015). Soft information and small business lending. *Journal of Financial Services Research*, *47*(1), 115-133.

Coase, R.H. (1937). The nature of the firm. *Economica*, *4*(16), 386-405.

Cohen, M.D. (1991). Individual learning and organizational routine: Emerging connections. *Organization Science*, *2*(1), 135-139.

Cohen, J. (1992a). Statistical power analysis. *Current Directions in Psychological Science*, *1*(3), 98-101.

Cohen, J. (1992b). A power primer. *Psychological Bulletin*, *112*(1), 155.

Cohen, W.M., Nelson, R.R., & Walsh, J.P. (2000). *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)* (No. w7552). National Bureau of Economic Research.

Commons, J.R. (1924). *Legal Foundations of Capitalism. Clifton: Augustus M*.

Connelly, B.L., Certo, S.T., Ireland, R.D., & Reutzel, C.R. (2011). Signaling theory: A review and assessment. *Journal of Management*, *37*(1), 39-67.

Conway, J.M., & Huffcutt, A.I. (2003). A review and evaluation of exploratory factor analysis practices in organizational research. *Organizational Research Methods*, *6*(2), 147-168.

Cornelissen, J.P., Clarke, J.S., & Cienki, A. (2012). Sensegiving in entrepreneurial contexts: The use of metaphors in speech and gesture to gain and sustain support for novel business ventures. *International Small Business Journal*, *30*(3), 213-241.

Creswell, J.W., & Plano-Clark, V.L. (2011). Choosing a mixed methods design. *Designing and Conducting Mixed Methods Research*, *2*, 53-106.

Cristobal, E., Flavian, C., & Guinaliu, M. (2007). Perceived e-service quality (PeSQ). *Managing Service Quality: An International Journal*, *17*(3), 317-340.

Cronk, L. (1994). The use of moralistic statements in social manipulation: A reply to Roy A. Rappaport. *Zygon®*, *29*(3), 351-355.

Cyert, R.M., & March, J.G. (1963). A behavioral theory of the firm. In *Organizational Behavior 2: Essential Theories of Process and Structure* (169-187). Englewood Cliffs, NJ: Prentice Hall.

Dane, E., & Pratt, M.G. (2007). Exploring intuition and its role in managerial decision making. *Academy of Management Review*, *32*(1), 33-54.

Davila, A., Foster, G., & Gupta, M. (2003). Venture capital financing and the growth of startup firms. *Journal of Business Venturing*, *18*(6), 689-708.

De Bettignies, J.E. (2008). Financing the entrepreneurial venture. *Management Science*, *54*(1), 151-166.

Deephouse, D.L. (1996). Does isomorphism legitimate? *Academy of Management Journal*, *39*(4), 1024-1039.

DeLamater, J.D., & Hyde, J.S. (1998). Essentialism vs. social constructionism in the study of human sexuality. *Journal of Sex Research*, *35*(1), 10-18.

DiMaggio, P.J., & Powell, W.W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 147-160.

DiMaggio, P.J., & Powell, W.W. (1991). Introduction. The new institutionalism in organizational analysis. In *The New Institutionalism in Organizational Analysis* (1-38)*, Chicago: University of Chicago Press.

Dogan, M., & Pelassy, D. (1990). How to compare nations. In *Strategies in Comparative Politics*. Chatham NJ: Chatham House Publishers.

Downs, A. (1957) *An Economic Theory of Democracy*. New York: Harper & Row.

Dreyfus, H.L., & Dreyfus, S.E. (1986) *Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer*. Oxford U.K.: Basil Blackwell.

Drover, W., Wood, M.S., & Corbett, A.C. (2018). Toward a cognitive view of signaling theory: Individual attention and signal set interpretation. *Journal of Management Studies*, *55*(2), 209-231.

Durkheim, É. (1922). Éducation et sociologie [1922]. *Presses Universitaires de France, Paris*.

Durkheim, E. (2002). Readings from Emile Durkheim, Ed. by K. Thompson.

Eggertsson, Thráinn. (19090. *Economic Behavior and Institutions*. New York: Cambridge University Press.

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of advanced nursing*, *62*(1), 107-115.

Elsbach, K.D. (1998). The process of social identification: With what do we identify. *Identity in Organizations: Building Theory through Conversations* (237). Thousand Oaks CA: Sage.

Etzioni, A. (1963) *The Comparative Study of Complex Organizations*. New York: Free Press.

Etzion, D. (2009). Signal dynamics: An industry level analysis of the diffusion of environmental management systems. In *Academy of Management Proceedings,* 1-6.

Evans, S.C., Roberts, M C., Keeley, J.W., Blossom, J.B., Amaro, C.M., Garcia, A M., ... & Reed, G.M. (2015). Vignette methodologies for studying clinicians' decision-making: validity, utility, and application in ICD-11 field studies. *International Journal of Clinical and Health Psychology*, *15*(2), 160-170.

Fassin, Y., & Drover, W. (2017). Ethics in entrepreneurial finance: Exploring problems in venture partner entry and exit. *Journal of Business Ethics*, *140*(4), 649-672.

Felin, T., & Foss, N. J. (2005). Strategic organization: A field in search of micro-foundations.

Fennell, M.L. (1980). The effects of environmental characteristics on the structure of hospital clusters. *Administrative Science Quarterly*, *25*(3), 485-510.

Field, A. (2005). Factor analysis using SPSS. In *Measuring Psychosocial Variable in Patients with (Sub) Acute Low Back Pain Complaints, at Risk for Chronicity*. Brooklyn NY: Alden Press.

Fischer, E., & Reuber, R. (2007). The good, the bad, and the unfamiliar: The challenges of reputation formation facing new firms. *Entrepreneurship Theory and Practice*, *31*(1), 53-75.

Fligstein, N. (1987). The intraorganizational power struggle: Rise of finance personnel to top leadership in large corporations, 1919-1979. *American Sociological Review*, *52*(1), 44-58.

Forbes, W., Hudson, R., Skerratt, L., & Soufian, M. (2015). Which heuristics can aid financial-decision-making? *International Review of Financial Analysis*, *42*, 199-210.

Fraser, S. (2005). *Finance for Small and Medium-Sized Enterprises: A Report on the 2004 UK Survey of SME Finances.* DTI.

Galecki, A. & Burzykowski, T. (2013). *Linear Mixed-Effects Models Using R*. New York: Springer.

Gambetta, D., & Székely, Á. (2014). Signs and (counter) signals of trustworthiness. *Journal of Economic Behavior & Organization*, *106*, 281-297.

Gao, H., Darroch, J., Mather, D., & MacGregor, A. (2008). Signaling corporate strategy in IPO communication: A study of biotechnology IPOs on the NASDAQ. *Journal of Business Communication (1973)*, *45*(1), 3-30.

Garcia-Retamero R., Dhami M.K. (2009). Take-the-best in expert-novice decision strategies for residential burglary. *Psychonomic Bulletin & Review, 16*(1), 163–169.

Gaur, A.S., & Gaur, S.S. (2006). *Statistical Methods for Practice and Research: A Guide to Data Analysis Using SPSS*. Thousand Oaks CA: Sage.

Gibbons, R. (1997). An introduction to applicable game theory. *Journal of Economic Perspectives*, *11*(1), 127-149.

Gigerenzer, G. (1996). On narrow norms and vague heuristics: A reply to Kahneman and Tversky. *Psychological Review, 127*(3), 592-596.

Gigerenzer, G. (2007). *Gut Feelings: The Intelligence of the Unconscious.* New York: Penguin.

Gigerenzer, G., & Brighton, H. (2009). Homo heuristicus: Why biased minds make better inferences. *Topics in Cognitive Science*, *1*(1), 107-143.

Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic decision making. *Annual Review of Psychology*, *62*, 451-482.

Gioia, D.A., & Chittipeddi, K. (1991). Sensemaking and sensegiving in strategic change initiation. *Strategic Management Journal*, *12*(6), 433-448.

Glucklich, A. (2001). *Sacred Pain: Hurting the Body for the Sake of the Soul.* Oxford U.K.: Oxford University Press on Demand.

Goffman, E. (1967). On face-work. *Interaction Ritual*, 5-45.

Gomulya, D., & Boeker, W. (2014). How firms respond to financial restatement: CEO successors and external reactions. *Academy of Management Journal*, *57*(6), 1759-1785.

Gomulya, D., & Mishina, Y. (2017). Signaler credibility, signal susceptibility, and relative reliance on signals: How stakeholders change their evaluative processes after violation of expectations and rehabilitative efforts. *Academy of Management Journal*, *60*(2), 554-583.

Gond, J.P., El Akremi, A., Swaen, V., & Babu, N. (2017). The psychological microfoundations of corporate social responsibility: A person-centric systematic review. *Journal of Organizational Behavior*, *38*(2), 225-246.

Gould, D. (1996). Using vignettes to collect data for nursing research studies: How valid are the findings? *Journal of Clinical Nursing*, *5*(4), 207-212.

Graffin, S.D., Carpenter, M.A., & Boivie, S. (2011). What's all that (strategic) noise? Anticipatory impression management in CEO succession. *Strategic Management Journal*, *32*(7), 748-770.

Greve, H R. (2013). Microfoundations of management: Behavioral strategies and levels of rationality in organizational action. *Academy of Management Perspectives*, *27*(2), 103-119.

Grossman, S.J. (1981). The informational role of warranties and private disclosure about product quality. *The Journal of Law and Economics*, *24*(3), 461-483.

Grossman, S.J., & Hart, O. (1987). Vertical integration and the distribution of property rights. In *Economic Policy in Theory and Practice* (504-548).London: Palgrave Macmillan.

Gulati, R., & Higgins, M.C. (2003). Which ties matter when? The contingent effects of interorganizational partnerships on IPO success. *Strategic Management Journal*, *24*(2), 127-144.

Haack, P., & Sieweke, J. (2018). The legitimacy of inequality: Integrating the perspectives of system justification and social judgment. *Journal of Management Studies*, *55*(3), 486-516.

Hair, J.F. Anderson, R.E., Tatham, R.L., & Black, W.C., 1995, Multivariate Data Analysis. Tulsa OK: Petroleum Publishing.

Hansmann, H., & Kraakman, R. (2002). Property, contract, and verification: The numerus clausus problem and the divisibility of rights. *Journal of Legal Studies*, *31*(S2), S373-S420.

Hasson, O. (1994). Cheating signals. *Journal of Theoretical Biology*, *167*(3), 223-238.

Hayes, D L. (1999). What the general intellectual property practitioner should know about patenting business methods. *Computer Lawyer*, *16*, 3-18.

Heil, O., & Robertson, T.S. (1991). Toward a theory of competitive market signaling: A research agenda. *Strategic Management Journal*, *12*(6), 403-418.

Hill, R. C., & Levenhagen, M. (1995). Metaphors and mental models: Sensemaking and sensegiving in innovative and entrepreneurial activities. *Journal of Management*, *21*(6), 1057-1074.

Hirsch, P. M., & Lounsbury, M. (1997). Ending the family quarrel: Toward a reconciliation of "old" and "new" institutionalisms. *American Behavioral Scientist*, *40*(4), 406-418.

Hitt, M.A., Ireland, R.D., Camp, S.M., & Sexton, D.L. (2001). Strategic entrepreneurship: Entrepreneurial strategies for wealth creation. *Strategic Management Journal*, *22*(6-7), 479-491.

Hodgkinson, G.P., Bown, N.J., Maule, A.J., Glaister, K.W., & Pearman, A.D. (1999). Breaking the frame: An analysis of strategic cognition and decision making under uncertainty. *Strategic Management Journal*, *20*(10), 977-985.

Hodgson, G.M. (1989). Institutional economic theory: The old versus the new. *Review of Political Economy*, *1*(3), 249-269.

Holmes, O.W. (1909) *The Common Law*. Boston: Little, Brown.

Hsu, D.H., & Ziedonis, R.H. (2008). Patents as quality signals for entrepreneurial ventures. In *Academy of Management Proceedings, 2008*(1), 1-6. Briarcliff Manor, NY: Academy of Management.

Huang, L. (2018). The role of investor gut feel in managing complexity and extreme risk. *Academy of Management Journal*, *61*(5), 1821-1847.

Hughes, R., & Huby, M. (2012). The construction and interpretation of vignettes in social research. *Social Work and Social Sciences Review*, *11*(1), 36-51.

Humphries, J.E., Neilson, C., & Ulyssea, G. (2020). The evolving impacts of COVID-19 on small businesses since the CARES Act. Cowles Foundation Discussion Paper No. 2230. New Haven CT: Yale University.

Ireland, R.D., Camp, S.M., & Sexton, D.L. (2002). *Strategic Entrepreneurship: Creating Value for Individuals, Organizations, and Society,* M.A. Hitt (Ed.). Boston: Blackwell Publishing.

Jankowicz, A.D., & Hisrich, R.D. (1987). Intuition in small business lending decisions. *Journal of Small Business Management*, *25*(3), 45.

Janney, J.J., & Folta, T.B. (2006). Moderating effects of investor experience on the signaling value of private equity placements. *Journal of Business Venturing*, *21*(1), 27-44.

Jensen, M.C., & Meckling, W.H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305-360.

Jessop, B. (1990). *State Theory: Putting the Capitalist State in Its Place*. University Park PA: Penn State Press.

Johnson, E.J., & Russo, J.E. (1984). Product familiarity and learning new information. *Journal of Consumer Research*, *11*(1), 542-550.

Jung, J.M., & Kellaris, J.J. (2004). Cross-national differences in proneness to scarcity effects: The moderating roles of familiarity, uncertainty avoidance, and need for cognitive closure. *Psychology & Marketing*, *21*(9), 739-753.

Kaiser, D G., Lauterbach, R., & Verweyen, J.K. (2007). Venture capital financing from an entrepreneur's perspective. *The International Journal of Entrepreneurship and Innovation*, *8*(3), 199-207.

Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. *Heuristics and Biases: The Psychology of Intuitive Judgment*, *49*, 81.

Kahneman, D., & Tversky, A. (1996). On the reality of cognitive illusions. *Psychological Review, 103*(3), 582-591.

Kahneman, D., & Riepe, M.W. (1998). Aspects of investor psychology. *Journal of Portfolio Management*, *24*(4), 52-+.

Karlsson, T., & Honig, B. (2009). Judging a business by its cover: An institutional perspective on new ventures and the business plan. *Journal of Business Venturing*, *24*(1), 27-45.

Karlsson, T., & Middleton, K.W. (2015). Strategies for creating new venture legitimacy. *Industry and Higher Education*, *29*(6), 469-479.

Kim, H., & Jensen, M. (2014). Audience heterogeneity and the effectiveness of market signals: How to overcome liabilities of foreignness in film exports? *Academy of Management Journal*, *57*(5), 1360-1384.

Kirmani, A. (1990). The effect of perceived advertising costs on brand perceptions. *Journal of Consumer Research*, *17*(2), 160-171.

Kirmani, A., & Rao, A.R. (2000). No pain, no gain: A critical review of the literature on signaling unobservable product quality. *Journal of Marketing*, *64*(2), 66-79.

Klein, G. (1998). *Sources of Power: How People Make Decisions*. Cambridge MA: MIT Press.

Ko, E.J., & McKelvie, A. (2018). Signaling for more money: The roles of founders' human capital and investor prominence in resource acquisition across different stages of firm development. *Journal of Business Venturing*, *33*(4), 438-454.

Krueger, C., & Tian, L. (2004). A comparison of the general linear mixed model and repeated measures ANOVA using a dataset with multiple missing data points. *Biological Research for Nursing*, *6*(2), 151-157.

Lackey, N.R., & Wingate, A.L. (1998). The pilot study: One key to research success. *Advanced Design in Nursing Research*, *2*(1), 375-387.

Lamb, G.D. (2003). Understanding "within" versus "between" ANOVA Designs: Benefits and Requirements of Repeated Measures. Presented at the Annual Meeting of the Southwest Educational Research Association, San Antonio, TX.

Lawrence, T.B., & Phillips, N. 2004. From Moby Dick to Free Willy: Macro-cultural discourse and institutional entrepreneurship in emerging institutional fields. *Organization*, *11,* 689–711.

Leland, H.E., & Pyle, D.H. (1977). Informational asymmetries, financial structure, and financial intermediation. *The Journal of Finance*, *32*(2), 371-387.

Levie, J., & Gimmon, E. (2008). Mixed signals: why investors may misjudge first time high technology venture founders. *Venture Capital*, *10*(3), 233-256.

Li, C.Y., & Hsieh, C.T. (2009). The impact of knowledge stickiness on knowledge transfer implementation, internalization, and satisfaction for multinational corporations. *International Journal of Information Management*, *29*(6), 425-435.

Lincoln, Y.G., & Guba, E.G. (1985). *Naturalistic inquiry*.

Lipshitz, R., & Shulimovitz, N. (2007). Intuition and emotion in bank loan officers' credit decisions. *Journal of Cognitive Engineering and Decision Making*, *1*(2), 212-233.

Long, C. (2002). Patent signals. *The University of Chicago Law Review*, 625-679.

Lucey, B. M., & Dowling, M. (2005). The role of feelings in investor decision-making. *Journal of economic surveys*, *19*(2), 211-237.

March, J.G., & Olsen, J.P. (1976). Organizational choice under ambiguity. *Ambiguity and Choice in Organizations*, *2*, 10-23.

March, J.G., & Olsen, J. (1984). The new institutionalism: organizational factors in political life. *The American Political Science Review*, *78*(3), 734-749.

March, J.G., & Olsen, J.P. (1989) *Rediscovering Institutions: The Organizational Basis of Politics*. New York: The Free Press.

Mavlanova, T. (2012). *Signaling Theory and Information Asymmetry in Online Commerce from the Seller and Buyer Perspectives*. New York: City University.

Maxwell, A. L., Jeffrey, S. A., & Lévesque, M. (2011). Business angel early stage decision making. *Journal of Business Venturing*, *26*(2), 212-225.

McCullagh, P, & Nelder, J.A. (1989). *Generalized Linear Models*, 2nd ed. London: Chapman & Hall/CRC Press.

Mee, R.W., & Chua, T.C. (1991). Regression toward the mean and the paired sample t test. *The American Statistician*, *45*(1), 39-42.

Meyer, J.W. (1979). The Impact of the Centralization of Educational Funding and Control on State and Local Organizational Governance. Presented at Institute for Research on Educational Finance and Governance, Stanford University.

Meyer, J.W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, *83*(2), 340-363.

Mitchell, W.C. (1924) The prospects of economics. In R.G. Tugwell (Ed), *The Trend of Economics* (1-34). Port Washington, NY: Kennikat Press.

Mitchell, W.C. (1996). Money economy and modern civilization. In M. Rutherford (Ed.), *History of Political Economy* (329-357). (Read Before the Cross-Roads Club of Stanford, May 6, 1910), Fall, 28.

Mitra, D. (2012). The role of crowdfunding in entrepreneurial finance. *Delhi Business Review*, *13*(2), 67.

Moe, T. M. (1984). The new economics of organization. *American journal of political science*, *28*(4), 739-777.

Moe, T. M. (1990). Political institutions: The neglected side of the story. *JL Econ & Org.*, *6*, 213.

Moussa, S., & Touzani, M. (2008). The perceived credibility of quality labels: A scale validation with refinement. *International Journal of Consumer Studies*, *32*(5), 526-533.

Myers, K.K., & Oetzel, J.G. (2003). Exploring the dimensions of organizational assimilation: Creating and validating a measure. *Communication Quarterly*, *51*(4), 438-457.

Nash, J. (1951). Non-cooperative games. *Annals of Mathematics, 54*(2), 286-295.

Neter, J., Kutner, M.H., Nachtsheim, C.J., & Wasserman, W. 1996. *Applied Linear Statistical Models*. Chicago: Irwin.

Nielsen, E.H., & Rao, M.V.H. 1987. The strategy-legitimacy nexus: A thick description. *Academy of Management Review, 12,* 523–533.

Nord, W.R. (1980), The study of organizations through a resource-exchange paradigm. In K.J. Gergen, M.S. Greenberg, & R.H. Willis (Eds.), *Social Exchange: Advances in Theory and Research* (119-139). New York: Plenum Press.

North, D. C., & Thomas, R. P. (1973). *The rise of the western world: A new economic history*. Cambridge University Press.

North, D.C. (1981). *Structure and Change in Economic History*. New York: Norton.

North, D.C. (1989). Institutions and economic growth: An historical introduction. *World Development*, *17*(9), 1319-1332.

Ocasio, W. (1997). Towards an attention-based view of the firm. *Strategic Management Journal*, *18*(S1), 187-206.

Ocasio, W. (2011). Attention to attention. *Organization Science*, *22*(5), 1286-1296.

O'Connor, T.G., & Hirsch, N. (1999). Intra-individual differences and relationship-specificity of mentalising in early adolescence. *Social Development*, *8*(2), 256-274.

Olson, C.L. 1974. Comparative robustness of six tests in multivariate analysis of variance. *Journal of the American Statistical Association, 69, 348,* 894-908.

Pachur, T., & Spaar, M. (2015). Domain-specific preferences for intuition and deliberation in decision making. *Journal of Applied Research in Memory and Cognition*, *4*(3), 303-311.

Ozmel, U., Reuer, J. J., & Gulati, R. (2013). Signals across multiple networks: How venture capital and alliance networks affect interorganizational collaboration. *Academy of Management Journal*, *56*(3), 852-866.

Pannucci, C.J., & Wilkins, E.G. (2010). Identifying and avoiding bias in research. *Plastic and Reconstructive Surgery*, *126*(2), 619.

Parada, J.J. (2003). Original institutional economics and new institutional economics: Revisiting the bridges (or the divide). *Revista de Economía Institucional*, *5*(8), 92-116.

Peake, W.O., & D'Souza, D. (2015). Toward an integrative research framework for new venture legitimacy judgement formation. *Journal of Small Business Strategy*, *25*(1), 82-104.

Peterson, M.A., & Rajan, R.G. (1994). The Benefits Of Lending Relationships: Evidence From Small Firm Data. *Journal of Finance*, *49*, 3-38.

Pfeffer, J. (1981), Management as symbolic action: The creation and maintenance of organizational paradigms. In L.L. Cummings & B.M. Staw (Eds.), *Research in Organizational Behavior*, Vol. 3 (1-52). Greenwich, CT: JAI Press.

Plummer, L.A., Allison, T.H., & Connelly, B.L. (2016). Better together? Signaling interactions in new venture pursuit of initial external capital. *Academy of Management Journal*, *59*(5), 1585-1604.

Polanyi, M. (1967). Sense-giving and sense-reading. *Philosophy*, *42*(162), 301-325.

Porter, L.W., Mowday, R.T., & Steers, R.M. (1979). The measurement of organizational commitment. *Journal of Vocational Behavior*, *14*(2), 224-247.

Posner, M.I. (1980). Orienting of attention. *Quarterly Journal of Experimental Psychology*, *32*(1), 3-25.

Posten, H.O. (1984). Robustness of the two-sample t-test. In *Robustness of Statistical Methods and Nonparametric Statistics* (92-99). New York: Springer.

Powell, W.W., & Colyvas, J.A. (2007). The new institutionalism. *The International Encyclopedia of Organization Studies*, *2*. Thousand Oaks CA: Sage

Powell, W.W., & Colyvas, J.A. (2008). Microfoundations of institutional theory. In R. Greenwood, C. Oliver, R. Suddaby, & K. Sahlin-Anderson (Eds.), *The Sage Handbook of Organizational Institutionalism*, *276*, 298. Thousand Oaks CA: Sage.

Prasad, D., Bruton, G.D., & Vozikis, G. (2000). Signaling value to business angels: The proportion of the entrepreneur's net worth invested in a new venture as a decision signal. *Venture Capital: An International Journal of Entrepreneurial Finance*, *2*(3), 167-182.

Prietula, M.J., & Simon, H.A. (1989). The experts in your midst. *Harvard Business Review*, *67*(1), 120-124.

Quek, K. (2016). Are costly signals more credible? Evidence of sender-receiver gaps. *The Journal of Politics*, *78*(3), 925-940.

Rappaport, R.A. (1999). *Ritual and Religion in the Making of Humanity* (Vol. 110). Cambridge U.K.: Cambridge University Press.

Reber, A.S. (1992). An evolutionary context for the cognitive unconscious. *Philosophical Psychology*, *5*(1), 33-51.

Reger, R.K., Gustafson, L.T., Demarie, S.M., & Mullane, J.V. (1994). Reframing the organization: Why implementing total quality is easier said than done. *Academy of Management Review*, *19*(3), 565-584.

Richardson, A.J. (1985), Symbolic and substantive legitimation in professional practice. *Canadian Journal of Sociology, 10*, 139-152.

Riechert, S.E. (1978). Games spiders play: behavioral variability in territorial disputes. *Behavioral Ecology and Sociobiology*, *3*(2), 135-162.

Riley, J.G. (2001). Silver signals: Twenty-five years of screening and signaling. *Journal of Economic Literature*, *39*(2), 432-478.

Robu, M. (2013). The dynamic and importance of SMEs in economy. *The USV Annals of Economics and Public Administration*, *13*(1 (17)), 84-89.

Ross, S.A. (1973). The economic theory of agency: The principal's problem. *The American Economic Review*, *63*(2), 134-139.

Ross, S.A. (1977). The determination of financial structure: The incentive-signaling approach. *The Bell Journal of Economics*, *8*(1), 23-40.

Rubinstein, A. (1982). Perfect equilibrium in a bargaining model. *Econometrica: Journal of the Econometric Society*, *50*(1), 97-109.

Rudestam, K.E., & Newton, R.R. (2014). *Surviving your Dissertation: A Comprehensive Guide to Content and Process*. Thousand Oaks CA: Sage Publications.

Ruiz, P.S. (2019). *Configurations of Durability Capabilities and Their Performance Implications During An Economic Shock: An Exploratory Study on New Ventures* (Doctoral dissertation, Oklahoma State University).

Rupp, D. E., & Mallory, D. B. (2015). Corporate social responsibility: Psychological, person-centric, and progressing. *Annu. Rev. Organ. Psychol. Organ. Behav.*, *2*(1), 211-236.

Rutherford, M. (2001). Institutional economics: then and now. *Journal of Economic Perspectives*, *15*(3), 173-194.

Rutherford, M.W. (2015). *Strategic Bootstrapping*. Business Expert Press.

Rutherford, M.W., & Buller, P.F. (2007). Searching for the legitimacy threshold. *Journal of Management Inquiry, 16*(1), 78-92.

Rutherford, M.W., Pollack, J.M., Mazzei, M.J., & Sanchez-Ruiz, P. (2017). Bootstrapping: Reviewing the literature, clarifying the construct, and charting a new path forward. *Group & Organization Management*, *42*(5), 657-706.

Rynes, S.L., Bretz, R.D., & Gerhart, B. (1991). The importance of recruitment in job choice: A different way of looking. *Personnel Psychology, 44*(3), 487-521.

Salojärvi, S., Furu, P., & Sveiby, K. E. (2005). Knowledge management and growth in Finnish SMEs. *Journal of knowledge management*.

Sanders, W.G., & Boivie, S. (2004). Sorting things out: Valuation of new firms in uncertain markets. *Strategic Management Journal*, *25*(2), 167-186.

Scott, W.R. (1987). The adolescence of institutional theory. *Administrative Science Quarterly*, *32*(4), 493-511.

Scott, W.R. (2008). Approaching adulthood: The maturing of institutional theory. *Theory and Society*, *37*(5), 427.

Schotter, A. (1981). The Economic Theory of Social Institutions.

Schwenk, C. R. (1984). Cognitive simplification processes in strategic decision-making. *Strategic management journal*, *5*(2), 111-128.

Schwenk, C. R. (1985). Management illusions and biases: Their impact on strategic decisions. *Long Range Planning*, *18*(5), 74-80.

Scott, W.R., & Meyer, J.W. (1983). The organization of societal sectors: propositions and early evidence. In W.W. Powell & P.J. DiMaggio (Eds.), *The New Institutionalism in Organizational Analysis*. Chicago: University of Chicago Press.

Selznick, P. (1957). Leadership in administration. Berkeley.

Shanmugam, B., & Bourke, P. (1992). Biases in appraising creditworthiness. *International Journal of Bank Marketing*, *10*(3), 10-16.

Shepherd, D.A., McMullen, J.S., & Ocasio, W. (2017). Is that an opportunity? An attention model of top managers' opportunity beliefs for strategic action. *Strategic Management Journal*, *38*(3), 626-644.

Sherif, M., & Hovland, C.I. (1961). *Social Judgment: Assimilation and Contrast Effects in Communication and Attitude Change*. New Haven CT: Yale University Press.

Simon, H.A. (1955). A behavioral model of rational choice. *The Quarterly Journal of Economics*, *69*(1), 99-118.

Simon, H.A. (1957). *Models of Man; Social and Rational*. Hoboken NJ: Wiley and Sons.

Simon, H.A., & Chase, W G. 1973. Skill in chess. *American Scientist, 61*, 394–403.

Small Business Administration, Office of Advocacy (2019). *Small Businesses Generate 44 Percent of U.S. Economic Activity* [Press Release]. Retrieved from https://advocacy.sba.gov/2019/01/30/small-businesses-generate-44-percent-of-u-s-economic-activity/

Smith, J.M. (1956). Fertility, mating behaviour and sexual selection in Drosophila subobscura. *Journal of Genetics*, *54*(2), 261.

Smith, M.J., & Harper, D.G. (1995). Animal signals: Models and terminology. *Journal of Theoretical Biology*, *177*(3), 305-311.

Smith, V.L., Kassin, S.M., & Ellsworth, P.C. (1989). Eyewitness accuracy and confidence: Within-versus between-subjects correlations. *Journal of Applied Psychology*, *74*(2), 356.

Soper, D.S. (2020). Post-hoc Statistical Power Calculator for Multiple Regression (Software). Available from http://www.danielsoper.com/statcalc

Sosis, R., & Alcorta, C. (2003). Signaling, solidarity, and the sacred: The evolution of religious behavior. *Evolutionary Anthropology: Issues, News, and Reviews: Issues, News, and Reviews*, *12*(6), 264-274.

Sosis, R., & Bressler, E.R. (2003). Cooperation and commune longevity: A test of the costly signaling theory of religion. *Cross-Cultural Research*, *37*(2), 211-239.

Spence, M. 1973. Job market signaling. *Quarterly Journal of Economics, 87,* 355-374.

Starbuck, W.H. (1976). Organizations and their environments. In *Handbook of Industrial and Organizational Psychology*.

Stevens, J.P. (2012). *Applied Multivariate Statistics for the Social Sciences*. New York: Routledge.

Stiglitz, J.E. (2002). Information and the change in the paradigm in economics. *American Economic Review*, *92*(3), 460-501.

Stinchcombe, A.L. (1965). Organizations and social structure. *Handbook of Organizations*, *44*(2), 142-193.

Stolte, J.F. (1994). The context of satisficing in vignette research. *The Journal of Social Psychology*, *134*(6), 727-733.

Suchman, M.C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, *20*(3), 571-610.

Suddaby, R. (Ed.). (2010). Editor's comments: Construct clarity in theories of management and organization. *Academy of Management Review, 35*(3), 346-357.

Suddaby, R., Bitektine, A., & Haack, P. (2017). Legitimacy. *Academy of Management Annals*, *11*(1), 451-478.

Suddaby, R., & Greenwood, R. (2005). Rhetorical strategies of legitimacy. *Administrative Science Quarterly*, *50*(1), 35-67.

Tech, R.P. (2018). *Financing High-Tech Startups*. New York: Springer.

Teddlie, C., Tashakkori, A., & Johnson, B. (2008). Emergent techniques in the gathering and analysis of mixed methods data. In S.N. Hesse-Biber & P. Leavy (Eds.). *Handbook of Emergent Methods* (389-413). New York: Guilford Publications.

Tolbert, P.S., & Zucker, L.G. (1983). Institutional sources of change in the formal structure of organizations: The diffusion of civil service reform, 1880-1935. *Administrative Science Quarterly, 28*(1), 22-39.

Tost, L.P. (2011). An integrative model of legitimacy judgments. *Academy of Management Review*, *36*(4), 686-710.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. S*cience*, *185*(4157), 1124-1131.

Van Teijlingen, E.R., & Hundley, V. (2001). The importance of pilot studies. *Social Research Update*. University of Aberdeen

Veblen, T. (1919). *The Place of Science in Modem Civilization*. New York: BW Heubsch.

Veblen, T. (1922). *The Instinct of Workmanship and the State of the Industrial Arts, 1914*. New York: BW Huebsch.

Verbeke, G., & Molenberghs, G. (Eds.). (2012). *Linear Mixed Models in Practice: A SAS-Oriented Approach* (Vol. 126). New York: Springer Science & Business Media.

Vickrey, W. (1961). Counterspeculation, auctions, and competitive sealed tenders. *The Journal of Finance*, *16*(1), 8-37.

Von Neumann, J. (1944). *Morgenstern, 0. Theory of Games and Economic Behavior*, *3*. Princeton NJ: University of Princeton Press.

Warner, A.G., Fairbank, J.F., & Steensma, H.K. (2006). Managing uncertainty in a formal standards-based industry: A real options perspective on acquisition timing. *Journal of Management*, *32*(2), 279-298.

Watson, D., Clark, L.A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063.

Weber, M. (1949) *The Methdology of the Social Sciences,* translated by E. Shils and H. A. Finch (Glencoe, IL: Free Press).

Weber, M. (1968). *Economy and Society: An Outline of Interpretive Sociology*. New York: Bedminster Press.

Weerakkody, V., Dwivedi, Y.K., & Irani, Z. (2009). The diffusion and use of institutional theory: A cross-disciplinary longitudinal literature survey. *Journal of Information Technology*, *24*(4), 354-368.

Wickham, P. A. (2003). The representativeness heuristic in judgements involving entrepreneurial success and failure. *Management Decision*, *41*(2), 156-167.

Williams, B., Onsman, A., & Brown, T. (2010). Exploratory factor analysis: A five-step guide for novices. *Australasian Journal of Paramedicine*, *8*(3).

Williamson, O.E. (1975). Markets and hierarchies. *American Economic Review, 63*(2), 316-325.

Williamson, O. (1985). *The Economic Institutions of Capitalism*. New York: The Free Press.

Williamson, S.D. (1987). Costly monitoring, loan contracts, and equilibrium credit rationing. *The Quarterly Journal of Economics*, *102*(1), 135-145.

Wilson, W. (1898) *The State: Elements of Historical and Practical Politics*. Boston: D.C. Heath.

Wilson, F., Carter, S., Tagg, S., Shaw, E., & Lam, W. (2007). Bank loan officers' perceptions of business owners: The role of gender. *British Journal of Management*, *18*(2), 154-171.

Wright, W. F., & Anderson, U. (1989). Effects of situation familiarity and financial incentives on use of the anchoring and adjustment heuristic for probability assessment. *Organizational Behavior and Human Decision Processes*, *44*(1), 68-82.

Yang, J., Yu, L., & Lee, C.C. (2002). The hidden value of knowledge in new products. *Asia Pacific Journal of Management*, *19*(4), 573-586.

Yao, N., Zhu, W., & Wei, J. (2019). Managing noise in signaling effectiveness: An empirical test of listed companies in China. *Baltic Journal of Management*, *14*(2), 235-249.

Zacharakis, A. L., & Meyer, G. D. (2000). The potential of actuarial decision models: can they improve the venture capital investment decision?. *Journal of Business Venturing*, *15*(4), 323-346.

Zimmerman, M.A., & Zeitz, G.J. (2002). Beyond survival: Achieving new venture growth by building legitimacy. *Academy of Management Review*, *27*(3), 414-431.

Zucker, L.G. (1977). The role of institutionalization in cultural persistence. *American Sociological Review*, *42*(5), 726-743.

Zucker, L. G. (1983). Organizations as institutions. *Research in the Sociology of Organizations*, *2*(1), 1-47.

Zucker, L G. (1987). Institutional theories of organization. *Annual Review of Sociology*, *13*(1), 443-464.
.

APPENDICES

APPENDIX A: Interview Questions

Business Owners
1. Please describe your business in detail.
2. What is your level of experience as an entrepreneur?
3. What do you feel are the most important characteristics in a new venture?
4. What do you feel are the most important characteristics in an entrepreneur?
5. What do you feel are the least important characteristics in a new venture?
6. What do you feel are the least important characteristics in an entrepreneur?
7. Tell me about a time that you provided information about you or your company that you knew would be difficult for them to fully verify.
8. Tell me about a time that you gave information about you or your company and you were confident of how they would perceive it.
9. Tell me about a time when someone asked a lot of probing questions about you or your company after receiving a piece of information from you.
10. What do you feel are the most important characteristics a banker looks for in a new venture?
11. What do you feel are the most important characteristics a banker looks for in an entrepreneur?
12. What do you feel are the least important characteristics a banker looks for in a new venture?
13. What do you feel are the least important characteristics a banker looks for in an entrepreneur?
14. Tell me about why you chose to request a bank loan.
15. Tell me about the positives and negatives you remember from the loan process.
16. Tell me about a time that you provided the banker with information about you or your company that you knew would be difficult for them to fully verify.
17. Tell me about a time that you gave a banker information about you or your company and you were confident of how they would perceive it.
18. Tell me about a time when the banker asked a lot of probing questions about you or your company after receiving a piece of information from you.

Bankers:
1. What is your level of experience in lending to new ventures?
2. What are the main challenges in assessing credit risk of a new venture?
3. What do you feel are the most important characteristics of a new venture?
4. What do you feel are the most important characteristics of an entrepreneur?
5. What do you feel are the least important characteristics of a new venture?
6. What do you feel are the least important characteristics of an entrepreneur?
7. Tell me about a time when you took someone's word instead of fully verifying what they said.
8. What do you feel are the most important characteristics of an entrepreneur when evaluating credit risk?
9. What do you feel are the most important characteristics of a new venture when evaluating credit risk?
10. What do you feel are the least important characteristics of an entrepreneur when evaluating credit risk?
11. What do you feel are the least important characteristics of a new venture when evaluating credit risk?
12. Tell me about borrowers in your loan portfolio that have been the most profitable for the bank.
13. Tell me about a time when you approved a loan with insufficient collateral.

Spears School of Business

CONSENT FORM
Opaque Costly Signals and Debt Contracts in Entrepreneurial Ventures

Background Information
You are invited to be in a research study about the strategy of new venture signals that create perceptions of legitimacy when applying for bank debt. You were selected as a possible participant because of your experience as a business owner or a professional in the banking industry. We ask that you read this form and ask any questions you may have before agreeing to be in the study. Your participation is entirely voluntary.

This study is being conducted by: Lee Grumbles, Spears School of Business at Oklahoma State University under the direction of Matt Rutherford, Spears School of Business.

Procedures
If you agree to be in this study, we would ask you to participate in an interview that will ask questions based on your expertise as an entrepreneur and your experience working with banks in the loan process.

Participation in the study involves the following time commitment: 60 minutes

Risks and Benefits of being in the Study

There are no known risks associated with this project, which are greater than those ordinarily encountered in daily life.

The benefits to participation are: There are no direct benefits to you. More broadly, this study may help the researchers learn more about the relationship between new venture signals and investor and may help future entrepreneurs and investors in understanding the process of legitimacy judgment formation.

Compensation
You will receive no payment for participating in this study.

Confidentiality
The information your give in the study will be stored confidentially. This means that your name will not be collected or linked to the data in any way. Only the researchers will know that you have participated in the study. The researchers will not be able to remove your data from the dataset once your participation is complete.

We will collect your information through interviews and audio recording. This information will be stored on a password protected computer locked in a office. When the study is completed and the data have been analyzed, the code list linking names to study numbers will be destroyed. This is expected to occur no later than 4 weeks following the study completion. The audio/video recording will be transcribed. The recording will be deleted after the transcription is complete and verified. This process should take approximately 4 weeks following the study completion.

It is unlikely, but possible, that others responsible for research oversight may require us to share the information you give us from the study to ensure that the research was conducted safely and appropriately. We will only share your information if law or policy requires us to do so. Finally, confidentiality could be broken if materials from this study were subpoenaed by a court of law.

Voluntary Nature of the Study
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. The alternative is to not participate. You can skip any questions that make you uncomfortable and can stop the interview/survey at any time.

Approved: 02/13/2020
Protocol #: IRB-20-86

Contacts and Questions

The Institutional Review Board (IRB) for the protection of human research participants at Oklahoma State University has reviewed and approved this study. If you have questions about the research study itself, please contact the Principal Investigator at 832-640-8483, lee.grumbles@okstate.edu. If you have questions about your rights as a research volunteer or would simply like to speak with someone other than the research team about concerns regarding this study, please contact the IRB at (405) 744-3377 or irb@okstate.edu. All reports or correspondence will be kept confidential.

You will be given a copy of this information to keep for your records.

Statement of Consent

I have read the above information. I have had the opportunity to ask questions and have my questions answered. I consent to participate in the study.

Indicate Yes or No:
I give consent to be audiotaped during this study.
 ___Yes ___No

I give consent for my data to be used in future research studies:
 ___Yes ___No

I give consent to be contacted for follow-up in this study or future similar studies:
 ___Yes ___No

Signature:_____ Date: _____

Signature of Investigator:_____ Date: _____

Signal Honesty – High

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.629	1.000										
	SCR_1	.591	.593	1.000									
	SCR_2	.644	.601	.540	1.000								
	SCM_1	.530	.441	.557	.703	1.000							
	SCM_2	.821	.602	.606	.683	.619	1.000						
	DSB_1	.275	.213	.455	.239	.314	.392	1.000					
	DSB_2	.368	.340	.222	.316	.335	.454	.643	1.000				
	DEF_1	.353	.209	.366	.234	.281	.437	.740	.668	1.000			
	DEF_2	.028	.021	.048	.208	.138	.171	.588	.579	.590	1.000		
	VC_1	.079	.108	.212	.052	.095	.155	.516	.297	.467	.260	1.000	
	VC_2	.201	.180	.259	.315	.319	.236	.552	.441	.386	.313	.566	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.000											
	SCR_1	.000	.000										
	SCR_2	.000	.000	.000									
	SCM_1	.000	.001	.000	.000								
	SCM_2	.000	.000	.000	.000	.000							
	DSB_1	.029	.073	.001	.051	.015	.003						
	DSB_2	.005	.009	.065	.014	.010	.001	.000					
	DEF_1	.007	.077	.005	.054	.027	.001	.000	.000				
	DEF_2	.424	.444	.373	.078	.175	.122	.000	.000	.000			
	VC_1	.296	.232	.074	.362	.260	.147	.000	.020	.000	.037		
	VC_2	.086	.111	.038	.015	.014	.053	.000	.001	.003	.015	.000	

a. Determinant = .000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.813
Bartlett's Test of Sphericity	Approx. Chi-Square	336.115
	df	66
	Sig.	.000

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		3.723	3.833	3.785	3.829	2.604	3.817	3.848	3.765	3.75	3.826	3.839
SH_2	2.202		1.989	2.183	2.286	2.288	2.29	2.16	2.268	2.224	2.225	2.214
SCR_1	2.795	2.452		2.815	2.72	2.806	2.394	2.495	2.789	2.751	2.822	2.824
SCR_2	3.167	3.09	3.231		2.507	3.112	3.144	3.162	3.235	2.932	3.233	3.161
SCM_1	2.713	2.738	2.642	2.122		2.638	2.743	2.687	2.727	2.741	2.684	2.608
SCM_2	2.946	4.379	4.355	4.208	4.213		4.313	4.308	4.365	4.365	4.356	4.167
DSB_1	3.936	3.993	3.386	3.875	3.994	3.93		3.818	3.68	3.548	3.947	3.618
DSB_2	2.788	2.646	2.479	2.738	2.749	2.758	2.683		2.515	2.693	2.759	2.696
DEF_1	3.234	3.294	3.285	3.321	3.306	3.313	3.065	2.982		3.074	3.165	3.283
DEF_2	2.263	2.27	2.277	2.114	2.335	2.327	2.076	2.243	2.16		2.336	2.271
VC_1	1.898	1.867	1.92	1.917	1.88	1.91	1.899	1.889	1.828	1.921		1.457
VC_2	2.263	2.207	2.283	2.227	2.17	2.171	2.068	2.193	2.253	2.219	1.732	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

Signal Honesty – Low

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.413	1.000										
	SCR_1	.261	.635	1.000									
	SCR_2	.187	.671	.746	1.000								
	SCM_1	.369	.606	.427	.567	1.000							
	SCM_2	.331	.716	.625	.668	.657	1.000						
	DSB_1	.426	.532	.631	.573	.419	.597	1.000					
	DSB_2	.437	.429	.510	.438	.356	.389	.635	1.000				
	DEF_1	.318	.118	.388	.377	.227	.191	.363	.535	1.000			
	DEF_2	.239	.529	.365	.475	.443	.523	.498	.448	.253	1.000		
	VC_1	-.051	.258	.126	.280	.274	.237	.254	.113	.242	.371	1.000	
	VC_2	.032	.481	.387	.572	.458	.456	.523	.293	.237	.548	.562	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.002											
	SCR_1	.038	.000										
	SCR_2	.104	.000	.000									
	SCM_1	.005	.000	.001	.000								
	SCM_2	.012	.000	.000	.000	.000							
	DSB_1	.001	.000	.000	.000	.002	.000						
	DSB_2	.001	.001	.000	.001	.007	.003	.000					
	DEF_1	.015	.216	.003	.004	.063	.100	.006	.000				
	DEF_2	.053	.000	.006	.000	.001	.000	.000	.001	.043			
	VC_1	.367	.040	.198	.028	.031	.054	.043	.224	.051	.005		
	VC_2	.416	.000	.004	.000	.001	.001	.000	.023	.054	.000	.000	

a. Determinant = .001

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.827
Bartlett's Test of Sphericity	Approx. Chi-Square	293.672
	df	66
	Sig.	.000

132

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		3.723	1.921	1.941	1.913	1.985	1.757	1.993	1.717	1.983	1.907	1.927
SH_2	2.914		3.158	3.535	3.525	3.376	3.476	3.486	2.85	3.427	3.469	3.569
SCR_1	3.604	3.294		2.923	3.685	3.717	3.399	3.722	3.544	3.548	3.602	3.742
SCR_2	3.367	3.409	2.703		3.32	3.396	3.46	3.432	3.336	3.435	3.455	3.399
SCM_1	2.12	2.171	2.176	2.12		1.915	2.129	2.192	2.208	2.21	2.197	2.181
SCM_2	3.12	2.951	3.115	3.078	2.718		2.824	3.081	3.13	3.105	3.132	3.132
DSB_1	2.709	2.98	2.794	3.076	2.963	2.77		2.62	2.994	3.016	3.022	2.97
DSB_2	2.383	2.316	2.372	2.365	2.365	2.342	2.031		1.867	2.372	2.308	2.368
DEF_1	1.987	1.833	2.186	2.225	2.306	2.303	2.246	1.807		2.261	2.081	2.308
DEF_2	1.877	1.803	1.79	1.874	1.887	1.869	1.851	1.878	1.849		1.888	1.743
VC_1	1.59	1.608	1.601	1.661	1.653	1.661	1.634	1.61	1.5	1.663		1.418
VC_2	2.153	2.216	2.228	2.189	2.199	2.225	2.151	2.213	2.228	2.057	1.9	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

Signal Credibility – High

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.470	1.000										
	SCR_1	.451	.366	1.000									
	SCR_2	.571	.324	.212	1.000								
	SCM_1	.627	.340	.185	.622	1.000							
	SCM_2	.560	.434	.603	.265	.349	1.000						
	DSB_1	.315	.141	.301	.203	.212	.184	1.000					
	DSB_2	.303	.231	.103	.257	.261	.098	.778	1.000				
	DEF_1	.020	-.111	.160	.194	.101	-.010	.568	.579	1.000			
	DEF_2	.262	.073	-.003	.428	.383	.014	.675	.737	.588	1.000		
	VC_1	.190	.341	.101	.166	.230	.166	.368	.314	.245	.255	1.000	
	VC_2	.153	.395	.275	.207	.119	.262	.382	.372	.259	.264	.683	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.000											
	SCR_1	.001	.006										
	SCR_2	.000	.013	.076									
	SCM_1	.000	.010	.106	.000								
	SCM_2	.000	.001	.000	.036	.008							
	DSB_1	.016	.172	.020	.086	.076	.108						
	DSB_2	.019	.059	.245	.041	.038	.257	.000					
	DEF_1	.447	.228	.141	.095	.249	.474	.000	.000				
	DEF_2	.038	.312	.491	.001	.004	.462	.000	.000	.000			
	VC_1	.101	.010	.249	.132	.060	.132	.005	.016	.049	.042		
	VC_2	.153	.003	.030	.081	.213	.037	.004	.005	.040	.036	.000	

a. Determinant = .001

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.741
Bartlett's Test of Sphericity	Approx. Chi-Square	276.322
	df	66
	Sig.	.000

133

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		2.901	2.818	2.577	2.725	2.666	2.917	2.789	2.752	2.928	2.92	2.863
SH_2	2.343		2.097	2.364	2.36	2.302	2.094	1.964	1.87	2.35	2.362	2.211
SCR_1	2.272	2.093		2.354	2.356	2.146	2.004	2.143	1.985	2.16	2.305	2.354
SCR_2	1.869	2.123	2.118		1.912	2.103	2.052	2.106	2.104	1.954	2.087	2.054
SCM_1	2.018	2.164	2.164	1.951		2.133	2.142	2.167	2.162	2.047	2.127	2.148
SCM_2	1.881	2.012	1.879	2.046	2.033		2.051	2.02	2.056	2.051	2.065	2.049
DSB_1	4.33	3.849	3.69	4.2	4.294	4.314		2.838	4.254	3.675	4.285	4.309
DSB_2	4.34	3.784	4.136	4.517	4.553	4.454	2.975		3.812	4.484	4.538	4.553
DEF_1	2.502	2.105	2.239	2.638	2.655	2.65	2.606	2.228		2.376	2.659	2.621
DEF_2	3.56	3.538	3.259	3.276	3.361	3.534	3.011	3.504	3.177		3.557	3.511
VC_1	2.303	2.307	2.255	2.27	2.266	2.308	2.277	2.301	2.307	2.308		1.293
VC_2	2.556	2.444	2.608	2.528	2.59	2.592	2.592	2.613	2.574	2.578	1.463	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

Signal Credibility – Low

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.724	1.000										
	SCR_1	.813	.767	1.000									
	SCR_2	.679	.633	.741	1.000								
	SCM_1	.632	.746	.633	.693	1.000							
	SCM_2	.556	.696	.580	.571	.727	1.000						
	DSB_1	.569	.521	.667	.692	.675	.540	1.000					
	DSB_2	.606	.471	.526	.456	.542	.404	.541	1.000				
	DEF_1	.430	.314	.347	.400	.420	.358	.509	.683	1.000			
	DEF_2	.396	.272	.336	.334	.350	.100	.336	.549	.471	1.000		
	VC_1	.224	.291	.160	.118	.262	.201	.151	.292	.237	.469	1.000	
	VC_2	.177	.238	.106	.269	.252	.154	.175	.133	.295	.203	.554	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.000											
	SCR_1	.000	.000										
	SCR_2	.000	.000	.000									
	SCM_1	.000	.000	.000	.000								
	SCM_2	.000	.000	.000	.000	.000							
	DSB_1	.000	.000	.000	.000	.000	.000						
	DSB_2	.000	.000	.000	.001	.000	.002	.000					
	DEF_1	.001	.015	.008	.002	.001	.006	.000	.000				
	DEF_2	.003	.031	.010	.010	.007	.248	.010	.000	.000			
	VC_1	.063	.022	.138	.212	.036	.085	.153	.022	.052	.000		
	VC_2	.114	.052	.237	.032	.042	.147	.117	.184	.021	.083	.000	

a. Determinant = .000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.834
Bartlett's Test of Sphericity	Approx. Chi-Square	361.839
	df	66
	Sig.	.000

134

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		3.622	3.097	3.742	3.761	3.74	3.717	3.566	3.773	3.759	3.774	3.753
SH_2	4.155		3.601	4.312	3.546	4.221	4.131	4.316	4.323	4.329	4.287	4.327
SCR_1	4.379	4.438		4.709	5.178	5.326	4.731	5.316	5.257	5.343	5.342	5.186
SCR_2	3.497	3.513	3.113		3.413	3.449	3.379	3.435	3.53	3.4	3.267	3.257
SCM_1	4.619	3.797	4.497	4.485		3.814	4.241	4.438	4.57	4.49	4.598	4.525
SCM_2	3.135	3.085	3.158	3.094	2.603		3.162	3.155	3.035	2.603	2.957	2.952
DSB_1	2.827	2.74	2.545	2.75	2.627	2.869		2.856	2.761	2.869	2.87	2.873
DSB_2	2.804	2.959	2.957	2.891	2.842	2.96	2.954		2.184	2.895	2.943	2.821
DEF_1	2.499	2.497	2.463	2.502	2.465	2.398	2.405	1.84		2.348	2.413	2.263
DEF_2	2.256	2.265	2.268	2.183	2.194	1.863	2.264	2.209	2.127		1.7	2.123
VC_1	2.219	2.198	2.222	2.056	2.201	2.074	2.219	2.2	2.142	1.665		1.446
VC_2	1.937	1.947	1.894	1.799	1.902	1.818	1.95	1.852	1.763	1.826	1.27	

a. Dependent Variable: SH_1   SH_2   SCR_1   SCR_2   SCM_1   SCM_2   DSB_1   DSB_2   DEF_1   DEF_2   VC_1   VC_2

Signal Commitment – High

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.549	1.000										
	SCR_1	.366	.367	1.000									
	SCR_2	.190	.173	.694	1.000								
	SCM_1	.247	.220	.320	.255	1.000							
	SCM_2	.429	.330	.270	-.040	.382	1.000						
	DSB_1	.117	.252	.561	.506	.155	.115	1.000					
	DSB_2	.286	.266	.423	.362	.151	.285	.606	1.000				
	DEF_1	.115	.100	.398	.519	.254	-.065	.616	.679	1.000			
	DEF_2	.228	.365	.322	.317	.172	.195	.339	.654	.656	1.000		
	VC_1	.250	.185	.335	.237	.214	.260	.355	.537	.562	.556	1.000	
	VC_2	.231	.117	.533	.400	.202	.284	.426	.418	.496	.471	.688	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.000											
	SCR_1	.006	.006										
	SCR_2	.103	.125	.000									
	SCM_1	.049	.071	.015	.044								
	SCM_2	.001	.012	.035	.395	.004							
	DSB_1	.220	.045	.000	.000	.151	.223						
	DSB_2	.027	.037	.002	.007	.158	.027	.000					
	DEF_1	.224	.254	.003	.000	.045	.335	.000	.000				
	DEF_2	.064	.006	.015	.016	.127	.097	.011	.000	.000			
	VC_1	.047	.109	.011	.057	.077	.040	.008	.000	.000	.000		
	VC_2	.061	.219	.000	.003	.089	.028	.002	.002	.000	.000	.000	

a. Determinant = .001

135

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		1.441	1.93	1.965	1.964	1.844	1.784	1.915	1.946	1.902	1.964	1.97
SH_2	1.505		2.055	2.057	2.032	2.054	1.759	2.022	1.857	1.715	2.052	2.006
SCR_1	3.215	3.278		2.138	3.244	3.24	3.031	3.271	3.19	3.265	3.259	2.971
SCR_2	2.818	2.825	1.84		2.79	2.623	2.825	2.822	2.682	2.812	2.798	2.825
SCM_1	1.514	1.5	1.502	1.5		1.231	1.492	1.466	1.364	1.483	1.519	1.518
SCM_2	2.089	2.228	2.203	2.072	1.809		2.196	2.048	1.848	2.18	2.224	2.175
DSB_1	2.586	2.442	2.637	2.857	2.806	2.811		2.57	2.304	2.51	2.823	2.841
DSB_2	2.98	3.013	3.055	3.063	2.958	2.813	2.759		2.834	2.75	2.995	2.924
DEF_1	4.62	4.222	4.547	4.442	4.2	3.874	3.774	4.324		3.822	4.463	4.664
DEF_2	2.801	2.419	2.887	2.889	2.833	2.834	2.55	2.603	2.371		2.902	2.718
VC_1	2.508	2.509	2.498	2.492	2.515	2.506	2.486	2.457	2.4	2.516		1.768
VC_2	2.911	2.839	2.635	2.911	2.909	2.837	2.896	2.776	2.902	2.727	2.046	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

Signal Commitment – Low

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.582	1.000										
	SCR_1	.721	.789	1.000									
	SCR_2	.450	.595	.657	1.000								
	SCM_1	.450	.769	.743	.626	1.000							
	SCM_2	.371	.647	.625	.616	.710	1.000						
	DSB_1	.487	.492	.550	.448	.516	.469	1.000					
	DSB_2	.268	.233	.288	.468	.437	.544	.327	1.000				
	DEF_1	.585	.458	.604	.313	.389	.272	.266	.389	1.000			
	DEF_2	.393	.575	.406	.196	.378	.272	.355	.330	.674	1.000		
	VC_1	.196	.342	.434	.553	.491	.344	.133	.252	.235	.070	1.000	
	VC_2	.319	.545	.590	.625	.552	.486	.300	.251	.296	.286	.607	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.000											
	SCR_1	.000	.000										
	SCR_2	.001	.000	.000									
	SCM_1	.001	.000	.000	.000								
	SCM_2	.007	.000	.000	.000	.000							
	DSB_1	.000	.000	.000	.001	.000	.001						
	DSB_2	.041	.066	.030	.001	.002	.000	.016					
	DEF_1	.000	.001	.000	.020	.005	.039	.042	.005				
	DEF_2	.005	.000	.003	.104	.006	.039	.010	.015	.000			
	VC_1	.104	.012	.002	.000	.000	.012	.197	.051	.065	.328		
	VC_2	.018	.000	.000	.000	.000	.000	.025	.052	.027	.032	.000	

a. Determinant = .000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Bartlett's Test of Sphericity	Approx. Chi-Square	325.147
	df	66
	Sig.	.000

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		2.623	2.461	2.728	2.677	2.677	2.591	2.678	2.581	2.633	2.687	2.729
SH_2	6.809		6.818	5.834	5.814	6.45	6.774	5.36	7.083	5.212	6.878	7.085
SCR_1	5.7	6.085		6.134	5.999	6.044	6.038	5.812	4.751	5.619	6.306	6.05
SCR_2	3.741	3.082	3.631		3.652	3.727	3.569	3.015	3.455	3.631	3.277	3.671
SCM_1	3.719	3.112	3.598	3.7		3.682	3.732	3.471	3.761	3.746	3.465	3.741
SCM_2	3.474	3.226	3.387	3.528	3.44		3.539	2.588	3.272	3.542	3.533	3.446
DSB_1	1.683	1.695	1.693	1.691	1.745	1.771		1.772	1.699	1.615	1.729	1.764
DSB_2	2.806	2.164	2.629	2.303	2.617	2.089	2.858		2.462	2.775	2.835	2.84
DEF_1	4.358	4.607	3.462	4.253	4.57	4.256	4.415	3.966		3.056	4.26	4.504
DEF_2	3.592	2.739	3.308	3.611	3.677	3.722	3.392	3.613	2.469		3.62	3.549
VC_1	2.179	2.149	2.207	1.938	2.022	2.207	2.159	2.194	2.046	2.152		1.802
VC_2	2.272	2.272	2.174	2.228	2.242	2.21	2.261	2.256	2.221	2.166	1.85	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

Distortion Signaler Behavior – High

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.774	1.000										
	SCR_1	.766	.657	1.000									
	SCR_2	.754	.811	.806	1.000								
	SCM_1	.737	.710	.785	.824	1.000							
	SCM_2	.694	.741	.693	.693	.706	1.000						
	DSB_1	.548	.477	.591	.526	.556	.470	1.000					
	DSB_2	.356	.368	.371	.379	.265	.398	.558	1.000				
	DEF_1	.202	.316	.396	.362	.473	.469	.550	.505	1.000			
	DEF_2	.176	.261	-.069	.140	.217	.160	.229	.361	.340	1.000		
	VC_1	.082	-.036	.080	.070	.103	.135	.338	.278	.302	.373	1.000	
	VC_2	.345	.461	.451	.575	.498	.446	.646	.685	.607	.448	.413	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.000											
	SCR_1	.000	.000										
	SCR_2	.000	.000	.000									
	SCM_1	.000	.000	.000	.000								
	SCM_2	.000	.000	.000	.000	.000							
	DSBH_1	.000	.000	.000	.000	.000	.000						
	DSBH_2	.006	.005	.004	.004	.033	.002	.000					
	DEF_1	.082	.014	.002	.005	.000	.000	.000	.000				
	DEF_2	.114	.035	.318	.168	.067	.136	.057	.005	.008			
	VC_1	.289	.402	.292	.316	.240	.178	.009	.027	.017	.004		
	VC_2	.008	.000	.001	.000	.000	.001	.000	.000	.000	.001	.002	

a. Determinant = 4.447E-5

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.823
Bartlett's Test of Sphericity	Approx. Chi-Square	432.556
	df	66
	Sig.	.000

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		6.351	6.453	5.927	5.623	6.343	6.166	6.26	6.183	6.487	6.499	6.006
SH_2	4.754		4.74	3.704	4.867	4.44	4.774	4.803	4.797	4.772	4.238	4.873
SCR_1	7.744	7.598		6.358	6.509	7.743	7.693	7.686	7.173	4.424	7.77	7.604
SCR_2	7.649	6.386	6.839		8.401	8.386	8.211	8.393	7.469	8.311	8.316	7.838
SCM_1	4.909	5.676	4.736	5.683		5.536	5.658	4.798	5.672	4.703	5.672	5.681
SCM_2	3.407	3.186	3.467	3.49	3.406		3.228	3.444	2.957	3.468	3.268	3.492
DSB_1	3.214	3.325	3.342	3.316	3.378	3.132		3.267	3.239	3.387	3.026	3.13
DSB_2	2.559	2.623	2.618	2.658	2.247	2.621	2.562		2.587	2.588	2.607	2.37
DEF_1	2.665	2.761	2.576	2.494	2.8	2.372	2.678	2.727		2.605	2.805	2.802
DEF_2	3.112	3.057	1.768	3.089	2.584	3.096	3.117	3.037	2.9		3.064	2.831
VC_1	1.758	1.531	1.751	1.742	1.757	1.645	1.57	1.724	1.76	1.727		1.682
VC_2	3.904	4.231	4.118	3.947	4.229	4.225	3.902	3.768	4.226	3.836	4.043	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

Distortion Signaler Behavior – Low

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.346	1.000										
	SCR_1	.547	.434	1.000									
	SCR_2	.195	.471	.544	1.000								
	SCM_1	.421	.601	.458	.574	1.000							
	SCM_2	.390	.669	.437	.353	.580	1.000						
	DSB_1	-.008	.173	.404	.405	.221	.179	1.000					
	DSB_2	.199	.261	.354	.349	.553	.393	.461	1.000				
	DEF_1	.026	.394	.297	.407	.500	.553	.417	.634	1.000			
	DEF_2	-.011	.243	.235	.385	.382	.187	.362	.595	.421	1.000		
	VC_1	-.027	.278	.312	.357	.342	.401	.440	.628	.557	.582	1.000	
	VC_2	.041	.394	.249	.340	.554	.501	.400	.708	.645	.565	.695	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.006											
	SCR_1	.000	.001										
	SCR_2	.085	.000	.000									
	SCM_1	.001	.000	.000	.000								
	SCM_2	.002	.000	.001	.006	.000							
	DSBL_1	.478	.112	.002	.002	.059	.104						
	DSBL_2	.081	.032	.005	.006	.000	.002	.000					
	DEF_1	.428	.002	.017	.002	.000	.000	.001	.000				
	DEF_2	.471	.043	.049	.003	.003	.095	.005	.000	.001			
	VC_1	.426	.024	.013	.005	.007	.002	.001	.000	.000	.000		
	VC_2	.388	.002	.039	.007	.000	.000	.002	.000	.000	.000	.000	

a. Determinant = .001

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.840
Bartlett's Test of Sphericity	Approx. Chi-Square	314.607
	df	66
	Sig.	.000

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		2.414	1.691	2.407	2.323	2.119	2.4	2.398	2.049	2.389	2.4	2.367
SH_2	2.925		2.918	2.816	2.564	2.229	2.916	2.788	2.853	2.823	2.899	2.893
SCR_1	1.933	2.753		2.683	2.757	2.716	2.607	2.674	2.606	2.755	2.759	2.746
SCR_2	2.159	2.084	2.105		1.919	2.098	2.116	2.159	2.088	2.12	2.146	2.116
SCM_1	2.965	2.701	3.078	2.731		3.079	2.987	2.949	3.053	3.079	3.049	2.939
SCM_2	3.056	2.652	3.425	3.372	3.479		3.423	3.451	2.447	3.378	3.452	3.433
DSB_1	1.607	1.611	1.526	1.579	1.567	1.589		1.544	1.578	1.608	1.615	1.598
DSB_2	2.846	2.73	2.775	2.855	2.742	2.84	2.737		2.862	2.721	2.7	2.714
DEF_1	2.519	2.894	2.802	2.861	2.941	2.086	2.898	2.965		2.967	2.942	2.956
DEF_2	1.848	1.803	1.864	1.829	1.866	1.812	1.859	1.774	1.868		1.754	1.835
VC_1	2.365	2.358	2.379	2.358	2.355	2.36	2.379	2.242	2.359	2.234		2.158
VC_2	2.624	2.647	2.662	2.615	2.553	2.639	2.646	2.535	2.666	2.63	2.427	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

Distortion External Factors – High

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.395	1.000										
	SCR_1	.553	.358	1.000									
	SCR_2	.443	.306	.527	1.000								
	SCM_1	.435	.439	.377	.503	1.000							
	SCM_2	.428	.449	.517	.521	.568	1.000						
	DSB_1	.371	.559	.359	.378	.573	.512	1.000					
	DSB_2	.116	.528	.406	.303	.432	.512	.339	1.000				
	DEF_1	.203	.291	.331	.326	.468	.410	.363	.511	1.000			
	DEF_2	.369	.259	.518	.420	.234	.495	.298	.379	.458	1.000		
	VC_1	.295	.406	.274	.181	.304	.381	.403	.439	.428	.312	1.000	
	VC_2	.204	.278	.425	.202	.275	.301	.144	.593	.401	.357	.397	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.002											
	SCR_1	.000	.005										
	SCR_2	.001	.014	.000									
	SCM_1	.001	.001	.003	.000								
	SCM_2	.001	.000	.000	.000	.000							
	DSB_1	.004	.000	.005	.003	.000	.000						
	DSB_2	.209	.000	.002	.015	.001	.000	.007					
	DEFH_1	.077	.019	.009	.010	.000	.001	.004	.000				
	DEFH_2	.004	.033	.000	.001	.049	.000	.017	.003	.000			
	VC_1	.018	.002	.026	.102	.015	.003	.002	.001	.001	.013		
	VC_2	.075	.024	.001	.078	.025	.016	.157	.000	.002	.005	.002	

a. Determinant = .004

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.839
Bartlett's Test of Sphericity	Approx. Chi-Square	245.098
	df	66
	Sig.	.000

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		2.141	1.717	2.119	1.915	2.13	2.147	1.983	2.053	2.081	2.134	2.147
SH_2	2.4		2.39	2.399	2.307	2.411	1.91	1.954	2.301	2.409	2.407	2.365
SCR_1	1.716	2.13		2.109	2.087	2.146	2.144	2.108	2.05	2.148	2.149	2.093
SCR_2	1.631	1.648	1.625		1.564	1.653	1.645	1.646	1.648	1.651	1.654	1.641
SCM_1	2.356	2.532	2.57	2.5		2.516	2.636	2.646	2.313	2.45	2.638	2.596
SCM_2	2.422	2.446	2.443	2.442	2.326		2.368	2.183	2.38	2.395	2.432	2.203
DSB_1	2.265	1.797	2.264	2.255	2.261	2.197		2.142	2.239	2.262	2.195	2.269
DSB_2	2.837	2.493	3.018	3.059	3.077	2.746	2.904		3.064	3.064	3.039	2.408
DEF_1	2.956	2.956	2.955	3.081	2.707	3.013	3.055	3.084		2.632	3.085	2.946
DEF_2	1.936	1.999	2	1.996	1.853	1.959	1.994	1.992	1.701		1.955	1.983
VC_1	1.574	1.584	1.586	1.585	1.582	1.577	1.535	1.567	1.58	1.55		1.581
VC_2	2.16	2.121	2.106	2.143	2.122	1.948	2.163	1.693	2.058	2.143	2.156	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

Distortion External Factors – Low

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.407	1.000										
	SCR_1	.405	.297	1.000									
	SCR_2	.272	.580	.439	1.000								
	SCM_1	.309	.411	.399	.469	1.000							
	SCM_2	.442	.621	.315	.486	.435	1.000						
	DSB_1	.480	.219	.462	.349	.361	.118	1.000					
	DSB_2	.212	.280	.497	.444	.380	.331	.554	1.000				
	DEF_1	.162	.296	.337	.561	.311	.295	.363	.339	1.000			
	DEF_2	.330	.061	.438	.339	.272	.282	.478	.418	.474	1.000		
	VC_1	.325	.216	.539	.423	.199	.178	.409	.450	.556	.581	1.000	
	VC_2	.319	.419	.451	.537	.345	.570	.413	.486	.676	.543	.478	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.002											
	SCR_1	.002	.017										
	SCR_2	.027	.000	.001									
	SCM_1	.014	.001	.002	.000								
	SCM_2	.001	.000	.012	.000	.001							
	DSB_1	.000	.061	.000	.006	.005	.205						
	DSB_2	.067	.023	.000	.001	.003	.009	.000					
	DEFL_1	.128	.017	.008	.000	.013	.018	.004	.008				
	DEFL_2	.009	.335	.001	.007	.027	.022	.000	.001	.000			
	VC_1	.010	.064	.000	.001	.081	.105	.001	.000	.000	.000		
	VC_2	.011	.001	.000	.000	.007	.000	.001	.000	.000	.000	.000	

a. Determinant = .002

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.803
Bartlett's Test of Sphericity	Approx. Chi-Square	276.220
	df	66
	Sig.	.000

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		1.916	1.937	1.909	1.835	1.71	1.65	1.924	1.922	1.934	1.939	1.821
SH_2	2.074		2.094	1.983	2.098	1.763	2.072	2.092	2.091	1.85	2.027	2.099
SCR_1	1.945	1.942		1.916	1.76	1.931	1.946	1.823	1.931	1.945	1.924	1.935
SCR_2	2.259	2.167	2.259		2.247	2.11	2.29	2.262	2.113	2.272	2.27	2.162
SCM_1	2.136	2.256	2.041	2.21		2.248	2.107	2.091	2.19	2.243	2.204	2.254
SCM_2	2.886	2.749	3.247	3.009	3.259		2.807	3.261	3.253	3.25	3.09	2.4
DSB_1	2.133	2.474	2.506	2.502	2.34	2.15		2.144	2.506	2.449	2.382	2.428
DSB_2	2.886	2.899	2.724	2.868	2.694	2.899	2.488		2.852	2.908	2.55	2.687
DEF_1	2.43	2.442	2.432	2.257	2.379	2.437	2.451	2.404		2.449	2.327	1.888
DEF_2	2.028	1.792	2.031	2.013	2.02	2.019	1.985	2.032	2.031		1.893	1.919
VC_1	2.295	2.217	2.269	2.271	2.241	2.167	2.181	2.012	2.179	2.137		2.294
VC_2	3.729	3.97	3.948	3.741	3.965	2.912	3.846	3.667	3.058	3.748	3.969	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

Verification Costs – High

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.602	1.000										
	SCR_1	.711	.715	1.000									
	SCR_2	.692	.681	.683	1.000								
	SCM_1	.674	.758	.650	.540	1.000							
	SCM_2	.621	.653	.613	.654	.694	1.000						
	DSB_1	.335	.478	.303	.455	.249	.167	1.000					
	DSB_2	.248	.426	.192	.332	.292	.226	.538	1.000				
	DEF_1	.323	.302	.186	.066	.386	.115	.297	.587	1.000			
	DEF_2	.381	.284	.209	.401	.343	.274	.518	.615	.511	1.000		
	VC_1	-.011	.186	-.025	.193	.168	.187	.314	.325	.189	.278	1.000	
	VC_2	-.137	-.158	-.087	.004	.024	.061	.035	.174	.104	.162	.381	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.000											
	SCR_1	.000	.000										
	SCR_2	.000	.000	.000									
	SCM_1	.000	.000	.000	.000								
	SCM_2	.000	.000	.000	.000	.000							
	DSB_1	.009	.000	.017	.001	.042	.126						
	DSB_2	.043	.001	.094	.010	.021	.059	.000					
	DEF_1	.012	.018	.100	.325	.003	.215	.019	.000				
	DEF_2	.003	.024	.074	.002	.008	.028	.000	.000	.000			
	VC_1	.469	.100	.431	.091	.124	.100	.014	.011	.096	.027		
	VC_2	.174	.140	.276	.488	.435	.339	.405	.116	.239	.134	.003	

a. Determinant = .000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.772
Bartlett's Test of Sphericity	Approx. Chi-Square	330.021
	df	66
	Sig.	.000

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		3.606	3.714	3.147	3.444	3.792	3.764	3.795	3.544	3.833	3.668	3.586
SH_2	5.672		5.501	5.743	4.865	5.625	5.458	5.682	5.93	5.614	6.077	5.388
SCR_1	3.254	3.064		3.26	3.296	3.362	3.292	3.32	3.366	3.356	3.247	3.248
SCR_2	3.282	3.808	3.881		3.789	3.86	3.95	3.891	3.648	4.014	3.867	3.912
SCM_1	4.413	3.964	4.821	4.656		4.331	4.618	4.933	4.888	4.929	4.902	4.772
SCM_2	3.56	3.358	3.603	3.476	3.174		3.447	3.615	3.475	3.497	3.587	3.621
DSB_1	2.46	2.268	2.456	2.476	2.356	2.4		2.512	2.421	2.208	2.478	2.506
DSB_2	2.419	2.303	2.416	2.379	2.454	2.454	2.449		2.179	2.111	2.459	2.435
DEF_1	2.019	2.148	2.189	1.993	2.174	2.109	2.11	1.947		2.026	2.197	2.204
DEF_2	2.518	2.344	2.516	2.529	2.527	2.446	2.218	2.176	2.336		2.525	2.535
VC_1	1.357	1.429	1.371	1.372	1.415	1.413	1.402	1.427	1.426	1.422		1.342
VC_2	1.304	1.246	1.348	1.365	1.354	1.402	1.394	1.389	1.406	1.403	1.319	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

Verification Costs – Low

Correlation Matrix

		SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
Correlation	SH_1	1.000											
	SH_2	.427	1.000										
	SCR_1	.383	.370	1.000									
	SCR_2	.612	.462	.434	1.000								
	SCM_1	.496	.592	.386	.475	1.000							
	SCM_2	.385	.499	.563	.642	.440	1.000						
	DSB_1	.414	.216	.396	.508	.243	.408	1.000					
	DSB_2	.357	.304	.218	.439	.298	.438	.437	1.000				
	DEF_1	.349	.285	.287	.450	.413	.404	.501	.559	1.000			
	DEF_2	.197	.230	.379	.352	.372	.519	.357	.490	.521	1.000		
	VC_1	.395	.295	.317	.291	.440	.319	.465	.271	.408	.242	1.000	
	VC_2	.520	.296	.226	.618	.440	.548	.577	.681	.535	.356	.377	1.000
Sig. (1-tailed)	SH_1												
	SH_2	.001											
	SCR_1	.003	.004										
	SCR_2	.000	.000	.001									
	SCM_1	.000	.000	.003	.000								
	SCM_2	.003	.000	.000	.000	.001							
	DSB_1	.001	.066	.002	.000	.045	.002						
	DSB_2	.005	.016	.064	.001	.018	.001	.001					
	DEF_1	.006	.023	.021	.001	.001	.002	.000	.000				
	DEF_2	.085	.054	.003	.006	.004	.000	.005	.000	.000			
	VC_1	.002	.019	.013	.020	.001	.012	.000	.029	.002	.045		
	VC_2	.000	.019	.057	.000	.001	.000	.000	.000	.000	.006	.003	

a. Determinant = .002

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.821
Bartlett's Test of Sphericity	Approx. Chi-Square	268.692
	df	66
	Sig.	.000

Variance Inflation Factor (VIF)

	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2
SH_1		1.977	2.048	1.762	1.997	2.02	2.067	2.037	2.072	2.074	2.058	1.927
SH_2	2.103		2.207	2.188	1.94	2.078	2.207	1.86	2.201	2.065	1.978	1.81
SCR_1	1.559	1.579		1.57	1.495	1.485	1.53	1.573	1.553	1.577	1.571	1.513
SCR_2	2.496	2.913	2.922		2.836	2.751	2.586	2.931	2.812	2.925	2.905	2.864
SCM_1	2.094	1.912	2.059	2.099		2.167	2.173	2.095	2.016	2.101	2.145	2.087
SCM_2	2.317	2.24	2.238	2.227	2.371		2.355	2.378	2.354	2.306	2.352	2.109
DSB_1	2.161	2.169	2.101	1.909	2.167	2.147		2.167	2.168	2.123	2.083	2.067
DSB_2	2.975	2.553	3.018	3.021	2.918	3.028	3.027		2.793	2.62	2.62	2.058
DEF_1	2.066	2.063	2.034	1.979	1.917	2.046	2.067	1.907		1.987	1.978	2.068
DEF_2	1.698	1.589	1.695	1.69	1.64	1.645	1.662	1.468	1.631		1.679	1.607
VC_1	2.004	1.81	2.009	1.997	1.992	1.996	1.94	1.747	1.932	1.998		1.885
VC_2	3.697	3.263	3.812	3.878	3.818	3.527	3.791	2.703	3.979	3.766	3.713	
a. Dependent Variable:	SH_1	SH_2	SCR_1	SCR_2	SCM_1	SCM_2	DSB_1	DSB_2	DEF_1	DEF_2	VC_1	VC_2

APPENDIX D: Vignette Scenarios

Vignette – HCC-High, Opacity-High

You are having the first meeting with the founder of a new venture to discuss a new business loan request. The founder informs you the new venture has secured contracts with reputable companies within the industry. During the discussion, you are thinking about the current economic climate and the fact that analysts are predicting a recession soon. The founder then supplies you with a list of unrecognizable industry professionals they have worked with in the past.

Vignette – HCC-High, Opacity-Low

You are having the first meeting with the founder of a new venture to discuss a new business loan request. The founder informs you they have borrowed money in the past and paid back as agreed. The founder also tells you they have personal equity invested in the venture. As the conversation continues, you find out that the new venture doesn't necessarily need a bank loan, but would like to start a credit history for their business. Finally, the founder tells you they were referred to you by another banker that you know very well.

Vignette – HCC-Low, Opacity-High

You are having the first meeting with the founder of a new venture to discuss a new business loan request. The founder informs you that this new venture is more of hobby. The founder also tells you they have secured contracts with unknown companies in unrelated industries. As the conversation continues, you find out that the founder of the new venture is very good friends with your bank president.

Vignette – HCC-Low, Opacity-Low

You are having the first meeting with the founder of a new venture to discuss a new business loan request. The founder informs you they refuse to use any personal capital or have "skin in the game" to fund the new venture. As the conversation continues, you find out that the founder does not have any reputable contacts in banking.

VITA

Lee H. Grumbles

Candidate for the Degree of

Doctor of Philosophy

Dissertation: SIGNAL OPACITY AND DEBT CONTRACTS IN
ENTREPRENEURIAL VENTURES

Major Field: Business Administration

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Business
Administration at Oklahoma State University, Stillwater, Oklahoma in July, 2020.

Completed the requirements for the Master of Business Administration at Sam
Houston State University, Huntsville, TX in 2012.

Completed the requirements for the Bachelor of Arts in Journalism at Texas
A&M University, College Station, TX in 2001.

Experience:

Texas A&M University Corpus Christi [2020] – Adjunct Instructor, Finance
Independent Financial [2018-2020] – Vice President, Commercial Lending
Trustmark National Bank [2012-2018] – Vice President, Commercial Lending
Bank of America [2011-2012] – Assistant Vice President, Business Banking
Wells Fargo Bank [2007-2011] – Registered Personal Banker II
Fieldstone Investment Corp. [2002-2007] – Senior Mortgage Banker

Professional Memberships:

Academy of Management
United States Association of Small Business and Entrepreneurship
Risk Management Association