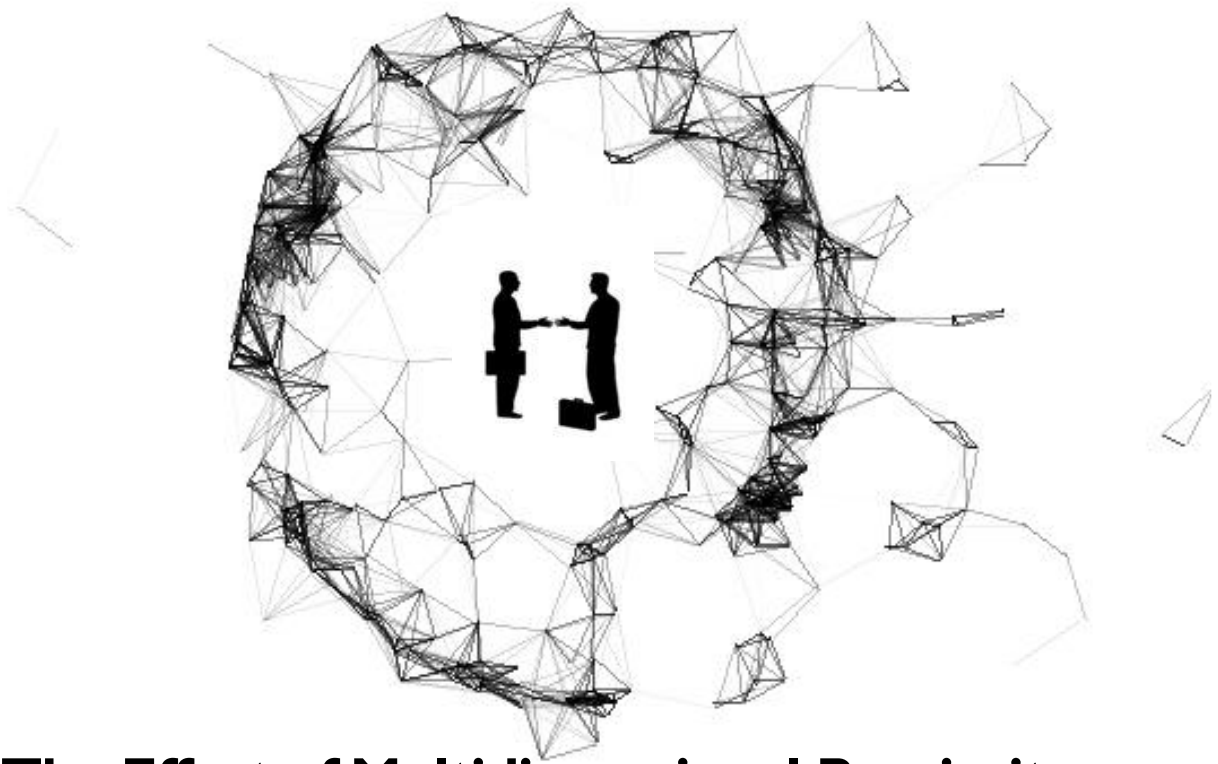




The Effect of Multidimensional Proximity on Business Angel Investments

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Abstract

Background: Business angels are a vital source of capital for innovative startup firms in the early development. However, many startups still fail and researchers argue that financial constraint is one of the major reasons for this. Even of those startups that have the potential to fulfill angel investors' expected return on investment, most are rejected during the angel's investment decision process. Information asymmetry, risk, and distrust in the relationship between the investor and the entrepreneur result in investment barriers. The concept of proximity has been proposed as a suitable conceptual foundation to understand how the relationship between angel and entrepreneur might hinder or benefit the investment decision.

Purpose: The purpose of this paper is to examine the influence of proximity on investment behavior and answer the research question: *What is the relationship between multidimensional proximity and the likelihood of business angel funding for innovative startups?*

Method: This study engages a mixed research design in consideration of the intermediate maturity of the business angel research field. Explorative literature review, confirmative qualitative pre-study and a quantitative survey were carried out. The resulting data is analyzed with structural equation modeling and applied to the theoretical framework of multidimensional proximity.

Conclusion: The conclusion of this paper is that multidimensional proximity can partly explain the likelihood of funding. A fully mediating effect of relational proximity regarding the relationship between functional proximity and the likelihood of funding is found. Moreover, social proximity appears to be the strongest determinant for the construct of relational proximity, followed by organizational and cognitive proximity dimensions.

Contribution: This thesis confirms conjectures in prior research that the functional proximity between business angels and entrepreneurs is mediated by the relational proximity of the two parties. Contradictory to prior notions we find a fully mediating effect of relational proximity that calls for confirmation in future studies. We test the novel theoretical framework of multidimensional proximity holistically in this research setting for the first time. The findings assist in provisionally explaining the funding of startups by dissecting the investor-founder relationship, and promoting future research directions.

Key words: *Informal venture capital, business angels, startup financing, investment decision, proximity theory, structural equation modeling, mediation*

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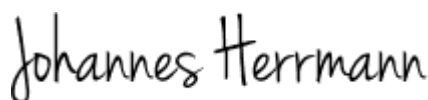
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Abbreviations

Acronym	Explanation
BAN	Business Angel Network
CA	Cronbach's Alpha
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
RMSEA	Root Mean Square Error of Approximation
SEM	Structural Equation Modeling
SRMR	Standardized Root Mean Residual
STING	Stockholm Innovation & Growth
STOAF	Stockholms Affärsänglar
SUP46	Start-Up People of Sweden
SVCA	Swedish Venture Capital Association
VC	Venture Capital
YEOS	Young Entrepreneurs of Sweden

Definition of Key Concepts

Concept	Synonyms	Description of the meaning
Business angel	<i>Angel or Informal investor</i>	“High-net worth individual, can act alone or in formal or informal syndicates, invests his or her own money (...) and generally takes an active role after investing.” (Mason & Harrison, 2008: 309)
Confirmatory Factor Analysis	<i>CFA</i>	The confirmatory factor analysis is a special case of structural equation modeling. Its aim is to test if a number of observed measures can explain a constructed higher-order variable (latent variable). The researcher testes, contrary to the exploratory factor analysis, existing factors that are based on a theoretical framework (hypothesis-driven). (Hair, 2014; based on Kline, 2011)
Entrepreneur(s)	<i>Founder(s)</i>	“An entrepreneur is a person starting a new company who takes on the risks associated with starting the enterprise, which may require venture capital to cover start-up costs.” (Campbell, 2014)
Funding	<i>Financing, investment, deal</i>	The instance in which angel investor and entrepreneur have signed an agreed-upon term sheet that outlines terms, conditions, amount, and equity share in return for a specified cash investment. (based on Florin, Dino, & Huvaj, 2013)
Innovative Startup(s)	<i>Startup(s)</i>	An innovative startup is a newly-founded, fast-growing organization designed to search for a new product, service, or business model under high uncertainty. (based on Blank, 2012, 2013; Ries, 2010)
Structural Equation Modeling	<i>SEM</i>	“Multivariate technique combining aspects of factor analysis and multiple regression that enables the researcher to simultaneously examine a series of interrelated dependence relationships among the measured variables and latent constructs as well as between several latent constructs.” (Hair, 2014: 546)
The informal venture capital market	<i>Business angel market</i>	“The informal venture capital market is the market in which entrepreneurs raise equity-type financing from private investors.” (Wetzel, 1987: 299)
Trust	<i>Trustworth- iness</i>	“...one party’s confidence that the other party in the exchange relationship will not exploit its vulnerabilities” (Dyer & Chu, 2000: 260).

I. Introduction

This first chapter describes the empirical and academic setting of the thesis, introduces the key concepts and theories, as well as presents the research problem & question, hence highlighting the overall purpose. Furthermore, a brief overview of the intended contribution is discussed. Finally, we lay out the structure of this thesis by showing how the study is scoped and how the sections are disposed.

I.1 Background

I.1.1 Business Angel Capital as a Source of Finance to Young Startups

Business angel investors are considered important actors for the growth of new companies (Avdeitchikova, Landstrom, & Månsson, 2008; Murray, 2007; Wiltbank, Read, Dew, & Sarasvathy, 2009). The magnitude of the business angel market is not fully understood, but is believed to be a significant driver to the whole entrepreneurial sector, and ultimately to overall economic growth (Kelly, 2007; Reynolds, Bygrave, Autio, Arenius, & Monitor, 2004a; Sohl, 2012; Van Osnabrugge, Robinson, & Osnabrugge, 2000). Business angels¹ are actors on the informal venture capital market (Rasila, 2004), and account in many countries for more private placements than formal venture capital in both number and total value of investments (Avdeitchikova, 2008a).

Formal venture capital firms increasingly invest in later stages of the startup lifecycle to decrease risks of their investments (Harrison, Dibben, & Mason, 1997; Lam, 2010; Silver, 2008). As a consequence of this change in the funding landscape, young innovative startups have to rely on business angels for funding at seed- and early stages (Florin et al., 2013). Indeed, the *Global Entrepreneurship Monitor Report* (2004b) has correspondingly provided extensive empirical support for the vital impact business angel capital has on the likelihood of the survival of startup enterprises. Therefore, angel-investing activity has become ever more important to the creation and sustainability of innovative startups (Amatucci & Sohl, 2007).

Startups face challenges in accessing needed funding (Beck & Demirguc-Kunt, 2006; Blumberg & Letterie, 2008; Cosh, Cumming, & Hughes, 2009; Freel, Carter, Tagg, & Mason, 2012). Financial constraint has been identified as one of the main reasons for the failure of innovative startup firms (Söderbloom & Samuelsson, 2014). In fact, an article published by Forbes in 2013, discussing the challenges for startups to survive the 'valley of death' stage, shows that as many as 90% of ventures fail within three years if not attracting funding (Gompers & Lerner, 2002).² Problematically, more than 95% of entrepreneurs seeking funding from business angels are unable to do so (Maxwell, 2011). At the same time the

¹ Originally, an *Angel* was a Broadway term for the well-heeled backers of Broadway shows who made risky investments by producing shows (Amis and Stevenson 2001).

² The 'death valley curve' (see also *Figure 2.1*) is "a slang phrase used in venture capital to refer to the period of time from when a startup firm receives an initial capital contribution to when it begins generating revenues. During the death valley curve, additional financing is usually scarce, leaving the firm vulnerable to cash flow requirements." (Investopedia, 2014).

business angels claim they would make more investments if only they could find suitable ventures to invest in (Mason & Harrison, 2002, 2004; Mason, 1999; Wetzel, 1983).

1.1.2 The Investment Decision and Criteria

Scholars suggest the key lies in gaining a better understanding of the investment decision process itself and identifying why funding opportunities are turned down (Maxwell, 2011). Astonishingly, most of the proposals, which are perceived as objectively “suitable”, get rejected in the evaluation process (Mason, 2009; Smith, Mason, & Harrison, 2010). Most attention in the field of business angel research has been directed toward the investment decision, “that is to fund or not to fund a deal” (Aram, 1989; Florin et al., 2013: 4; Freear, Sohl, & Wetzel Jr, 1994; Haar, Starr, & MacMillan, 1989; Maxwell, Jeffrey, & Lévesque, 2011).

The fundamental problem in the investment decision process is concerned with the difficulties in estimating the potential of the opportunity and the risk of failure (Avdeitchikova, 2008a; Harrison et al., 1997; Harrison & Mason, 1996). This risk is coupled with the fact that information asymmetry exists between entrepreneurs and investors (Amit, Glosten, & Muller, 1990), resulting in investment barriers (Shane & Cable, 2002). Startups often hold limited information from their young history and are therefore difficult to evaluate (Isaksson, 2006).

Studies have constructed a list of varied criteria used by angels in making investment decisions (Feeney, Haines Jr, & Riding, 1999; Landström, 1995; Riding, 2008). Helle (2006) made an attempt to structure these criteria in four different groups: the people, the business opportunity, market potential and investment requirements. Moreover, researchers that investigated business angel investment criteria found that the people-related criterion is a key factor that influences investor’s decision-making (Bachher & Guild, 1996; Hall & Hofer, 1993; Landström, 2007; Macmillan, Siegel, & Narasimha, 1985). As MacMillan et al. (1985: 119) summarize their findings:

“There is no question that irrespective of the horse (product), horse race (market), or odds (financial criteria), it is the jockey (entrepreneur) who fundamentally determines whether the venture capitalist will place a bet at all”.

Business angels tend to take on an active role after investing (Mason & Harrison, 2008). Thus, not only the attributes and skills of the founder are important in the investment decision, but also the relationship between the investors and the entrepreneur (Helle, 2006; Landström, 2007). Consequently, the role of trust in the angel-entrepreneur relationship becomes an essential element for successful capital investments in business opportunities (Harrison et al., 1997).

1.1.3 Proximity

The role of geographical proximity in relation to investment behavior has gained researchers attention (Avdeitchikova, 2008b; Mason, 2007; Wong, Bhatia, & Freeman, 2009). Studies have looked at both how important business angels consider geographical proximity and how

actual investments are distributed (Mason, 2007). Angel investors themselves consider locality as relatively unimportant in their investment decision (Mason, 2007). Contrarily, studies observing the actual geographic investment patterns find a clear link between geographical closeness and increased investment activity (Avdeitchikova, 2008b; Mason, 2007). This has led research to assume that geographical proximity is related to the funding decision (Avdeitchikova, 2008b).

Recently, skepticism has been raised against the importance of physical space of proximity as determinant to investment behavior, arguing that it is an oversimplified understanding of proximity. Instead, theorists have suggested a multi-dimensional view of proximity as a better way of understanding the behavior and patterns of economic interaction (e.g. Boschma, 2005; Moodysson & Jonsson, 2007). By approaching the concept of proximity through a multiple dimension perspective, researchers argue that a deeper knowledge can be achieved of how proximity affects the connection between market actors. It is hypothesized that a more proximate relationship decreases information asymmetry, uncertainty and risk. In turn this can increase the level of trust in the relationship, whereas trust has been found to be a major determinant of the investment decision (Bruneel, Spithoven, & Maesen, 2007; Maxwell, 2011; Wilson, O'Leary, Metiu, & Jett, 2008).

In this way, the multi-dimensional view of proximity stands for dissecting proximity into different dimensions and questions the traditional concept of the arguably too basic view of geographical proximity as an explanation to investment activities (Avdeitchikova, 2008b).

1.2 Purpose of the Thesis and Research Question

Based on the premise of the above discussion, this study intends to open up the black box about proximity, unfolding the multi-faceted dimensions and drivers behind proximity, and its effect on investment decision-making. In this way, the thesis adds knowledge to the important empirical problem of startups experiencing difficulties to access funding and especially from high business angel rejection-rates, while at the same time provides academic evidence to the debated and poorly understood topic of proximity in an investment decision setting.

Based on this rationale, we have formulated the overall research question:

What is the relationship between multidimensional proximity and the likelihood of business angel funding for innovative startups?

1.3 Theoretical and Empirical Contribution

The aim of this paper is to develop an understanding for the relationship between proximity and investment decision-making. We chose this topic because of the lack of clarity in the literature about what proximity really brings to the table of investment decision-making (Avdeitchikova, 2008b), as well as the empirical need of equipping investors and entrepreneurs with a richer comprehension of what affects funding decisions.

This paper advocates the need to make a deeper inquiry into the concept of proximity to truly understand its influence on decision-making. Understanding the different types of proximities, relationships, and the way proximity matters, can provide a richer insight into business angel investing. To do this, the argument developed in this paper is based on literature suggesting that we also need to investigate the relational aspect of proximity (Boschma, 2005; Shaw, Gilly, & Torre, 2000). Although many studies on proximity have suggested a correlation between proximity and economic interaction, there is still a gap in the knowledge of what the true underlying drivers behind proximity are and how it effects decision-making (Avdeitchikova, 2008b). Thus, this study will contribute to enrich organizational studies' theoretical understandings of investment decision and behavior by incorporating multiple dimensions of proximity. By shifting the focus from functional proximity to relational proximity, we will challenge the traditional view of proximity in investment settings and add relevant and modern insights to the field of business angel research.

An increased professionalism in the business angel industry, the movement towards a globalized economy as well as a more digitally connected world, make the concept of proximity a highly relevant topic to study. This paper has an empirical contribution as it aims to enhance the understanding of how the investment decision in business angel funding is affected by proximity. Hence, in a more practical sense, this means that the results may guide and encourage business angels and entrepreneurs to build relationships with a counterpart that they are more proximate with, a better “match”, which ultimately could lead to fewer opportunity rejections in the decision process, and henceforth decrease entrepreneurial waste.

1.4 Thesis Structure

1.4.1 Scope

In the scoping of this study we look at the informal venture capital market and more specifically towards the more sophisticated investors often referred to as “visible” business angels. The study investigates the pre-investment and investment stage, with focus on the deal in the investment decision process. It is furthermore centered on the people-criteria, specifically looking into the relationship on an individual level between angels and startup entrepreneurs using a proximity framework. The scope of this study is illustrated in the *Figure 1.1* below.

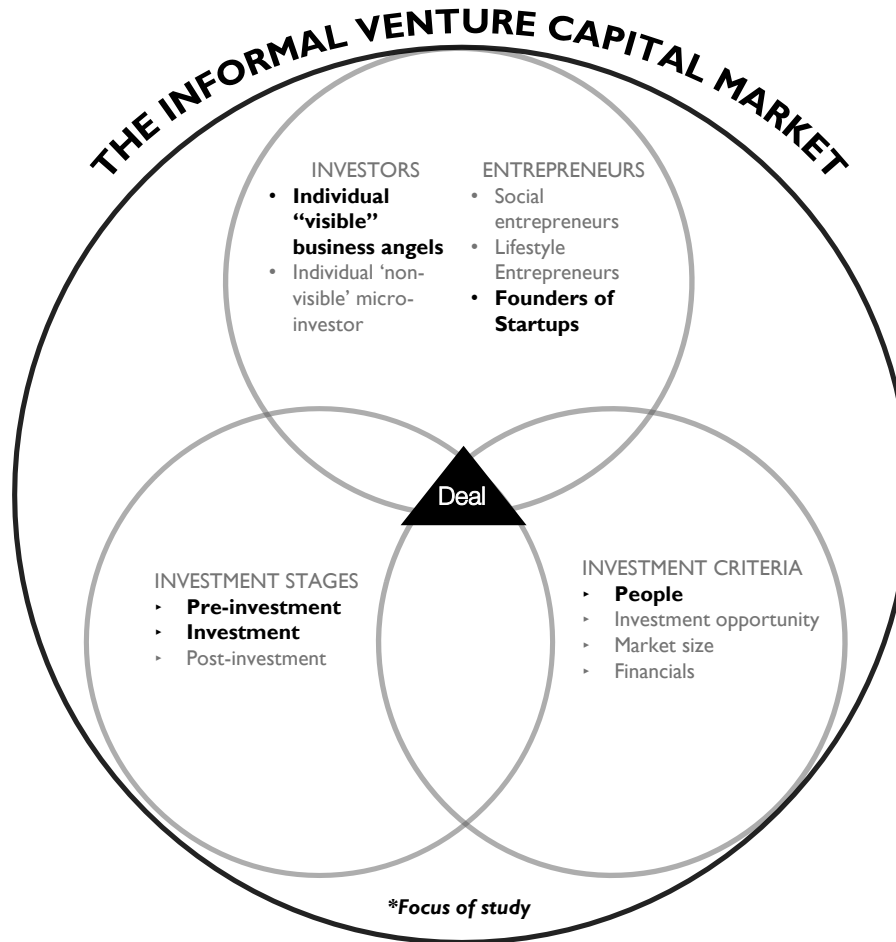


Figure 1.1: Scope of the Research Study

1.4.1 Disposition

The structure of this thesis is organized in mirrored chapters, as illustrated in the figure below (see *Figure 1.2*). We adopt Swales’ (1990) suggestion of an hourglass-arranged approach that emphasizes the level of analysis in the chapters of our thesis. We will first investigate business angel investments in a broader sense, followed by a more narrow examination of the relationship between proximity and business angel funding. In our discussion we first debate our immediate findings and then move to broader implications that reach beyond the field of business angel research. We will conclude the thesis by a short summary and place it in a broader research context.

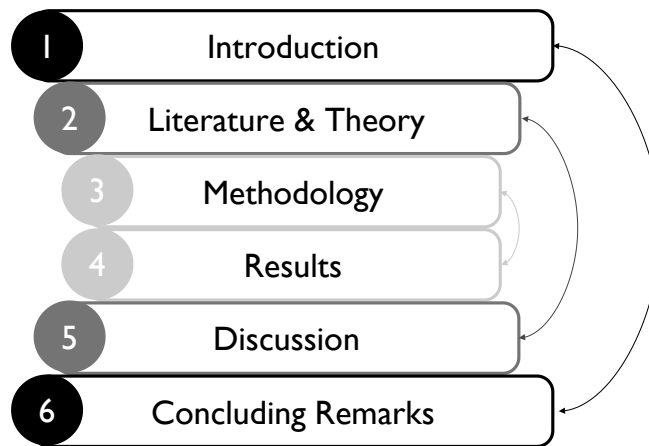


Figure 1.2: Thesis Disposition (based on Hill, Soppelsa, & West, 1982; Swales, 1990)

The *Introduction* underlines the problem in business angel investments and presents the purpose and the research question of this thesis.

The proceeding part is a *Literature Review and Hypothesis Generation* over the business angel research in general, the investment decision and proximity. Hypotheses are generated and a theoretical gap is demonstrated along with the framework to structure the analysis.

We then outline the *Methodology* approach to this study. This section involves discussions around the scientific approach, the research design, data collection, analysis method as well as the quality. This part clarifies the assumption taken and the interpretability of the variables and data.

This is followed by the *Results* of the data. Here, our statistical method, structural equation modeling (SEM) is presented and explained.

In the next section *Discussion* we analyze the data, draw implications, and discuss the representativeness and generalizability. Additionally, we acknowledge the limitations of this study, touch upon both theoretical and managerial relevance, and recommend potential studies for future research.

The *Concluding Remarks* of the thesis will foremost address the research question, and conclude the overall paper.

2. Literature Review and Hypothesis Generation

The first section of this chapter provides an overview of business angel research in general. It furthermore presents the investment decision-making research stream and concentrates on the relationship between business angels and entrepreneurs. The proceeding discussion is then focused around various research topics in relation to business angel investment behavior, followed by a presentation of proximity and the multidimensional framework. Finally, the subsequent section elaborates on the research gap and generates hypotheses for the study.

2.1 Business Angel Research

2.1.1 The Emergence of Business Angel Research

The phenomenon of business angels, private individuals financing high-risk projects, dates back as far as the Babylonian era (Kelly, 2007). However, the emergence of the academic research field of business angels as such is unequivocally determined by the seminal work of Wetzel (Wetzel, 1981, 1983), who studied informal investors in the US (Avdeitchikova et al., 2008; Kelly, 2007; Månsson & Landström, 2006; Sohl, 2012).

Early ensuing studies replicated Wetzel's focus on the 'ABC's' (attitudes, behaviors, characteristics) of business angels in other parts of the US (Aram, 1989; Gaston & Bell, 1986; Haar et al., 1989; Krasner & Tymes, 1983). These initial and national studies were soon proceeded by international efforts, among them Canada (Riding & Short, 1987), the UK (Harrison & Mason, 1991) and especially the Nordic regions with research in Norway (Reitan & Sorheim, 2000), Denmark (Christensen, 1998), and Sweden (Landström, 1993). Moreover, initial research discussed the question of the size of the angel market and thereby its relevance and implications (Gaston, 1989; Mason & Harrison, 2000; Ou, 1987; Wetzel, 1986).

A following generation of intermediary studies can be dissected into three major research streams: the investment decision-making process of business angels (Landström, 1995, 1998; Riding, Duxbury, & Haines Jr, 1995; Van Osnabrugge, 2000), an economic examination of the business angel market (Harrison & Mason, 1996), and the application of existing theoretical frameworks to the business angel domain (Fiet, 1995; Landström, 1995; Sætre, 2003; Sørheim, 2003; Van Osnabrugge, 2000).

A third generation consists of the contemporary studies with diverse research streams. One stream of studies has looked at market statistics and developed two key metrics: yield rates and sector-level investing. These aim to measure business angel activity to sense the pulse of the angel market (Avdeitchikova, 2008a, 2008b; Mason, 2010; Sohl, 2011, 1999). Furthermore, to better grasp business angels exit behavior, two themes have gained attention among scholars; return rates and IPOs (Bruton, Chahine, & Filatotchev, 2009; Johnson & Sohl, 2012; Mason & Harrison, 2002; Sohl, 2011). Lately, the business angel industry has begun to demonstrate a more professional nature, where business angels have started to organize themselves in angel groups and networks (Florin et al., 2013). Even online portals have become more common and innovative initiatives are growing as a response to current

market inefficiencies (Amatucci & Sohl, 2007; Mason, 2009). Finally, studies have looked at the gender aspect of the market and specifically surveyed women angels and capital received by female entrepreneurs (Mason & Harrison, 2002, 2006; San José, Roure, & Aernoudt, 2005). An overview of some of the influential works on business angel research is summarized in *Table 2.1* below.

Generations of research	Research Streams	Descriptions	Influential Studies
Initial	Demographics: ABCs	Role of business angels (attitudes, behavior and characteristics) and features of the informal venture capital (VC) market (funding gap)	(Aram, 1989; Christensen, 1998; Gaston & Bell, 1986; Haar et al., 1989; Harrison & Mason, 1991; Krasner & Tymes, 1983; Landström, 1993; Reitan & Sorheim, 2000; Short & Riding, 1989; Wetzel, 1983)
	Informal venture capital market	The informal venture capital market size and scale	(Gaston, 1989; Mason & Harrison, 2000; Ou, 1987; Wetzel, 1986)
Intermediary	Investment decision-making	Pre-investment, investment and post-investment	(Landström, 1995, 1998; Riding et al., 1995; Van Osnabrugge, 2000)
	Economic examination	Macro- and micro economics, institutionalization and the role of policy, geographic aggregation	(Avdeitchikova, 2008a; Harrison & Mason, 1996; Mason, 2007)
	Understanding through theory application	Agency-, signaling and institutional theory. Social- & human capital	(Fiet, 1995; Landström, 1995; Sætre, 2003; Sørheim, 2003; Van Osnabrugge, 2000)
Contemporary	Market statistics	Yield rates and sectors. New second funding gap.	(Avdeitchikova, 2008a, 2008b; Mason, 2010; Sohl, 2011, 1999)
	Exits	Return rates and IPOs	(Bruton et al., 2009; Johnson & Sohl, 2012; Mason & Harrison, 2002; Sohl, 2011)
	Professionalization	Angel groups, networks, syndicates	(Amatucci & Sohl, 2007; Mason, 2009)
	Gender	Women angels	(Mason & Harrison, 2002, 2006; San José et al., 2005)

Table 2.1: Business Angel Research: Influential Research Streams (simplified) (based on Kelly, 2007; Sohl, 2012)

2.1.2 Definition of the Visible Business Angel Market

The research field of business angels has been criticized for inconsistency in scope and definitions in the past (Avdeitchikova et al., 2008). The set of investors identified as business angels was interpreted more general in research around the turn of the century and therein the scope of the object of study and sampling broadened (Avdeitchikova et al., 2008; Kelly, 2007).

Two important general exclusions need to be made regarding the field of business angels. First, business angels are private individuals and distinct from formal venture capital firms, which professionally manage funds from third-parties contrasting to business angels, who invest their own money (Mason, 1999). Second, business angels do not have any family connection with the venture they invest in (Mason & Harrison, 2000). An approximation of where business angels fit in the startup funding landscape is illustrated in *Figure 2.1* below.

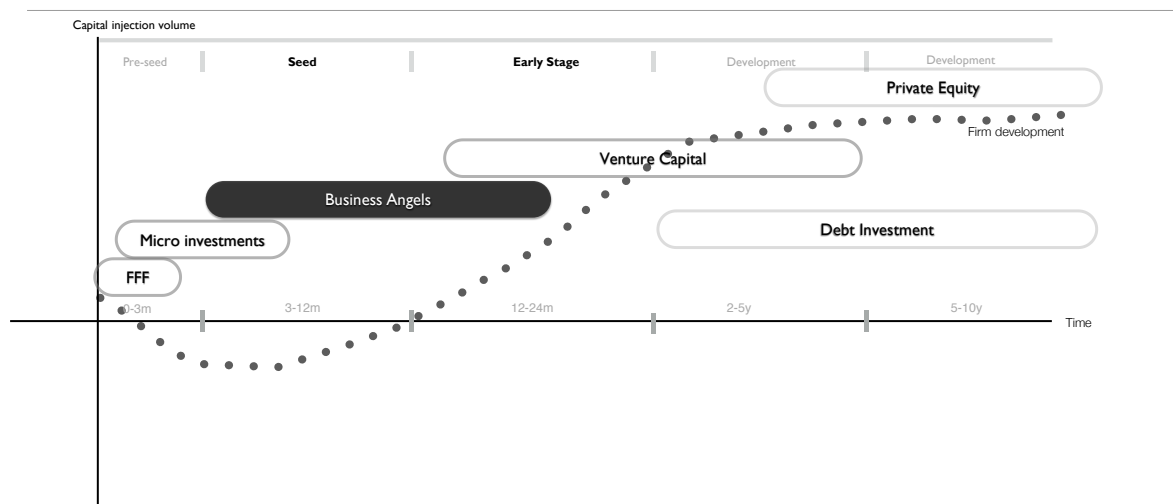


Figure 2.1: Investment Landscape (based on Cardullo, 1999)

However, as observed in many studies, this scope includes a highly heterogenic population of business angels that vary significantly in their characteristics and the relationship to their investee firms (Avdeitchikova, 2008a; Mason & Landström, 2012). Business angels can be dissected further into what is broadly understood as invisible and visible investors on the informal venture capital market (Avdeitchikova et al., 2008; CSES, 2012; Wetzel, 1983). Since many angel investments take place covertly, few directories or public records of transactions exist (Avdeitchikova, 2008a). A large part of this invisible market is dominated by smaller investments of occasional financiers, so-called micro-investors (Reynolds et al., 2004a). The visible business angels are in nature more professional, typically making larger investments, with higher frequency and take on a more operational role based on their knowledge and experience (Avdeitchikova et al., 2008; Wetzel, 1983). Hence, they contribute with both stronger financial- and non-financial resources (Avdeitchikova, 2008a). Additionally, angels are often registered to a business angel network (BAN) (Mason & Harrison, 2000). Based on this notion of what visible business angels contribute with, we can further scope our object of study in defining a business angel as:

- High net worth individual, who is accessible through organizations or public portals
- Invests proportion of his/her own financial asset into startups
- Contributes actively with experience, business skills, and social networks, often formalized in a position as advisor or board member (Freear et al., 1994; Mason & Harrison, 2008, 1995)

2.1.3 Business Angel Investment Decision-Making

A lion share of business angel research has been directed towards the investment decision (Aram, 1989; Erikson, Sørheim, & Reitan, 2003; Freear et al., 1994; Haar et al., 1989; Mason & Stark, 2004; Maxwell, 2011; Riding et al., 1995; Van Osnabrugge et al., 2000).

The assessment of risk is a central concern of angel investing (Mason & Harrison, 2004), as at the heart of the process, a business angel investor must decide whether or not to invest personal funds into a risky startup (Landström, 2007). Fiet (1995) classifies risk in market risk, the uncertainty about demand and conditions of the market, and agency risk, which is concerned with differing interests between the principal (angel) and agent (entrepreneur). Significant information asymmetries allow entrepreneurs to engage in opportunistic behavior after an investment is made, making it crucial that the initial decision to invest is well-grounded (Sahlman, 1988). Previous studies have found that angel investors view the agency risk associated with the entrepreneur as more important than the market risk associated with the venture itself (Fiet, 1995).

As angels tend to invest early and as one of the first external investors, they face higher uncertainties than institutional venture capitalists that prefer later investment stages (Florin et al., 2013; Mason & Landström, 2012). Therefore, angel investors have developed different strategies on how to approach the investment process and the evaluation (Landström, 2007; Van Osnabrugge, 2000). Previous studies have produced a list of varied processes and investment criteria business angel use in order to assess the potential of the deal (Clark, 2008; Feeney et al., 1999; Landström, 1995; Maxwell, 2011; Paul, Whittam, & Wyper, 2007; Riding, 2008; Van Osnabrugge et al., 2000).

Furthermore, aforementioned studies have concluded that there is no universal strategy or checklist of criteria used in the assessment process, and point out that the degree of sophistication in the evaluation procedure varies widely, from what has been described simple assessment techniques to rigorous due diligence processes that touch upon numerous measures (Maxwell, 2011). The key considerations in the investors decision to invest are associated with the attributes of the entrepreneurs and the market-product characteristics of the business (Mason & Harrison, 2006). Helle (2006) adds to this discussion with his evaluation model, which addresses the typical questions in the investment dialog between the business angel and entrepreneur, grouping four criteria areas: the people, the business opportunity, market potential and investment requirements (see *Figure 2.2*).

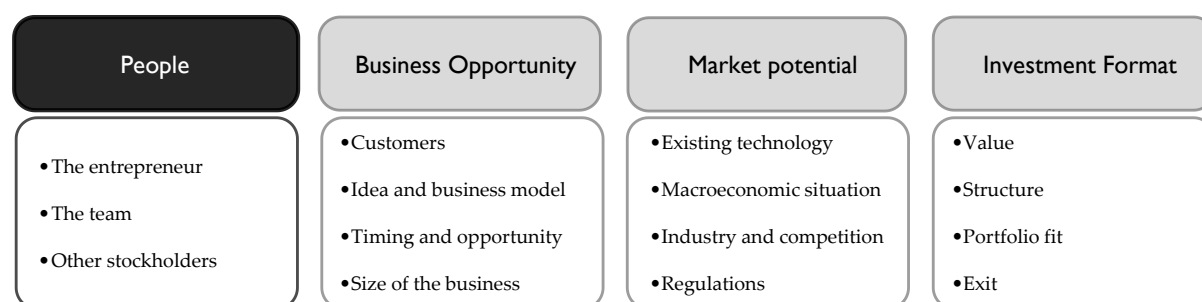


Figure 2.2: Grouped Investment Criteria (based on Helle, 2006: 23)

Researchers that investigated business angel investment criteria found that people-related criteria are the key factor that influences their decision-making (Bachher & Guild, 1996; Hall & Hofer, 1993; Macmillan et al., 1985). Angels believe that investing in a capable and trustworthy entrepreneur serves as a likely risk avoidance strategy that can reduce their losses (Florin et al., 2013). Likewise, Harrison et al. (1997) find that trust is an essential prerequisite for the investment to take place. Consequently, the relationship between the angel and the entrepreneur is recognized as paramount to any investment decision (Sørheim, 2003).

2.2 The Relationship between Founders and Business Angels

A number of studies within business angel research have looked at the individual relationship between the business angels and startup founders, and particularly what mechanisms facilitate exchange of information, knowledge transfer, and risk mitigation, and how those in turn might influence the deal (Dimov, 2007; Florin et al., 2013; Maxwell, 2011; Peterson & Mayfield, 2007; San José et al., 2005).

Below are some key theories and previous studies on angel research that discuss the impact of the relationship on a funding decision from different perspectives.

2.2.1 Social Capital and Network Approaches

The concept of social capital has been applied to a number of areas within social science (Adler & Kwon, 2002), and has been defined as “resources gained through relationship networks” (Bourdieu, 1986; Green, Brush, & Hart, 1999; Nahapiet & Ghoshal, 1998; Sørheim & Landstrom, 2001; Sørheim, 2008: 180). A social capital approach proposes that knowledge emerges from norms, networks and social relationships, and the interaction between people promotes exchange of information (Coleman, 1988; Nahapiet & Ghoshal, 1998). To better understand this, scholars have tried to unpack the concept of social capital in the pre-investment phase (Amatucci & Sohl, 2007; Politis & Landström, 2002; Sørheim, 2003).

First, Shane and Cable (2002) derived an approach consisting of network ties that describes a bridging of social connections on a structural level. If an investor or entrepreneur has more connections through their network, it may increase the likelihood of coming across valuable information (Nahapiet & Ghoshal, 1998; Shane & Cable, 2002). Indeed, evidence from previous studies indicates that business angels commonly find investment opportunities through personal, entrepreneurial and business networks (Harrison et al., 1997; Landström, 1993; Mason & Harrison, 2000, 1995; Politis & Landström, 2002; Sørheim & Landstrom, 2001; Wetzel, 1983). In respect to the actual decision, accessing relevant information is often associated with a time-consuming and costly process (Sørheim, 2003). However, receiving this information through established networks may reduce this cost significantly and consequently ease investment barriers (Burt, 1992).

A second aspect unfolded in the investigation of social capital is a relational dimension of social capital. This dimension is often referred to as the bonding element as it describes the

characteristics of the connections and the development of personal relationships (Sørheim, 2003). This means that actors can feel attraction by liking, identifying, and trusting one another (Bolino, Turnley, & Bloodgood, 2002). This form of social capital is central to reveal the intentions of actors engaging in the investment process. The stronger the social closeness, the greater the chance of establishing trust, trustworthiness, and motivation (Bolino et al., 2002; Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998).

To conclude, previous research on social capital and network ties have found a strong link between enhanced communication and exchange of information in the interaction around a potential deal. Two main arguments have been highlighted in this context. First, a networking approach, which helps accelerating the deal-flow through strong network ties as well as decrease cost associated to retrieving relevant information. Secondly, a relational approach has been discussed, in which social closeness in a relationship helps develop stronger trust between the parties, which in turn influence the prospect of a deal to take place. A key finding in the literature on social capital is that the social embeddedness between the business angel and the entrepreneur, and their ability to build a long-term trusting relationship, is believed to be central for an investment to take place. Thus, one can deduce a convincing linkage between the investment decision and social capital.

2.2.2 Human Capital Approaches

To better understand how relationships can be developed in investment situations, earlier studies have also used a human capital approach, looking at variance in certain characteristics, such as education, experience, culture and gender (Aram, 1989; Robinson & Cottrell, 2007). It is assumed that social capital is an important factor in the development of human capital (Fukuyama, 1995; Nahapiet & Ghoshal, 1998). In its purest form, human capital reflects the knowledge and skills people have acquired through education and experience (Becker, 1975).

Studies on human capital typically differentiates between general human capital, which relates to overall education and life experience, and specific human capital, which concerns know-how from a specific context, for example from a prior industry-, role or entrepreneurial experience (Cassar, 2014; Dimov & Shepherd, 2005; Gimeno, Folta, Cooper, & Woo, 1997; Landström, 2007; Pennings, Lee, & Van Witteloostuijn, 1998; Sætre, 2003).

In the interaction between business angels and entrepreneurs, the general human capital aspect can function as a connection, where common understandings from similar cognitive backgrounds can facilitate communications through shared codes and language (Reitan & Sørheim, 2000). This view is also supported by Tsai and Ghosal (1998), who argue that semantics aid people to create common ground and ultimately a shared vision. This creation of common ground eases exchange of information as well as building trusting relationships embedded in the ability to easily understand one another (Sitkin & Roth, 1993; Tsai & Ghoshal, 1998). This is linked to the relational aspect of social capital, where bonding in relationships can be explained by matching of characteristics. For example, angels and

entrepreneurs sharing similar educational backgrounds can strengthen trust in their relationship, and likely influence the investors' willingness to fund the venture.

Looking at the specific human capital, we find that business angels have often run their own successful startups, and in this way are likely to hold relevant experience from being an entrepreneur in the past (Klein, 2008). This experience can help angels to better connect with the entrepreneur as well as make more informed investment decisions (Read & Sarasvathy, 2005). Similarly, Politis and Landström (2002) studied informal venture capital investing as part of the entrepreneurial career and concluded that the experience from building a business as an entrepreneur shows to be a transferable resource that can be leveraged as a business angel when investing.

Based on the studies on human capital, we can exert that the importance of shared experiences, from a general life background, specific context knowledge or prior entrepreneurial experience, prove to enable information exchange and set a common understanding between the investor and entrepreneur. It is therefore safe to assume that human capital is an important foundation for any investment decision.

2.2.3 Organizational Approaches

Studies in business angel research have shown how variance at the institutional level influences networks, groups, and individuals' investment decisions (Caves, 1964; Florin et al., 2013). A trend towards institutionalization and professionalization in the business angel market has led to individual angels operating in a more organized format, for example in business angel networks, groups, syndicates, or even online portals (Florin et al., 2013). However, entrepreneurs have equally institutionalized how they operate, linking up with incubators, accelerators, co-working spaces and other intermediaries. Two main reasons can explain how these "organizations" can influence the funding decision (Florin et al., 2013).

First, by cooperating or syndicating, angels can increase the size of funding as well as mitigate risks (Manigart et al., 2006). Moreover, with a more institutionalized approach, angel investor can become more efficient, leveraging a collective search-power, and hence discover more funding prospects (Sohl, 2012). For example, angel networks organize more events and networking seminars, and therefore attract more entrepreneurs (May, 2002).

Second and more importantly, with both angels and entrepreneurs operating in a more organized format, angels and entrepreneurs now meet in more professional forums, which can generate legitimacy for both parties (May, 2002). This encounter in a more organized setting might reflect stronger values, norms and cultures than what the individuals could portray themselves (Aulakh, Kotabe, & Sahay, 1996). Relationships founded through mutual organizations can therefore provide a feeling of "familiarization", which strengthens the closeness between the actors and instils trust in their relationship (Bruneel et al., 2007). What is more, organizational arrangements are not only mechanisms that coordinate transactions, but also means that enable transfer and exchange of information and knowledge in a world full of uncertainty (Cooke & Morgan, 1998).

Thus, being associated with a professional organizational setting, or being connected through a context such as an association, incubator or even event, might strengthen credibility in the relationship by sharing the same reference space and knowledge (Avdeitchikova, 2008b; Boschma, 2005). In this light, one could argue that organizational affinity has an effect on the outcome of the deal decision.

2.2.4 Geographical Approaches

The geography of financial markets in an investment context has been a subject of interest for geographers and regional economists for at least three decades (Avdeitchikova, 2008b). A common line of reasoning in this research has been that financial markets are influenced by economic, social, cultural and other factors, leaving an uneven distribution of capital, both within and between countries (Martin, 1999).

Streams of research on business angel investments have reached three different views on geography's influence on the relationship between angels and entrepreneurs (Avdeitchikova, 2008b).

The first view concludes that geographical proximity is rather unimportant to business angels in the investment decision (Coveney & Moore, 1998; Freear, Sohl, & Wetzel Jr, 1992; Haar et al., 1989; Van Osnabrugge et al., 2000). Being geographically close to the entrepreneur, these studies argue, is much less important than many other decision-making criteria.

A second stream of research advocates that geographical closeness is in fact important in the investment decision, however not central enough may the angel find a more financially attractive opportunity elsewhere. While geography seems to explain localized investment behavior and promote business within the near group of friend and relationships, researchers argue that angels will go beyond the resident preference and in spite of the cost associated with operating over distance in hope of getting higher financial returns (Mason, 2007; Riding, 1993).

A third and more recent understanding looks at the actual patterns of business angel activity concludes that investors normally do not engage in long-distance investing (Avdeitchikova, 2008b). The explanations laid out in these studies not only refer to the increased cost coupled with non-localized investments but also the insecurity that the distance entails. Furthermore, Mason (2007) introduces the term "distance decay", meaning that investment opportunities that are geographically far away will have low probability of reaching angels in first place, as information flow is reduced by spatial distance. Moreover, he argues that even if the information reaches the investor and an opportunity is present, he/she will be reluctant to pursue it because of the limited ability to properly evaluate the deal (Mason & Harrison, 2004; Mason, 2007). The competence and trustworthiness of local actors is easier to establish and it is believed to be easier to recognize signs of good faith from individuals who are from the same region as the investor (Mason, 2007). Evidence of investments show that well over half of the investments are conducted within the investor's immediate proximity (Avdeitchikova, 2008b; Landström, 1998; Lumme, Mason, & Suomi, 1998; Riding, 1993; Wetzel, 1983). In accordance to this view, it can be argued that the geographical location is a

main predictor for investment activity of business angels.

To conclude, despite the contradictory view of the importance of geography in investment behavior, it has been largely accepted that geographical proximity plays a part in business angel investing. Thought provoking though is the fact that at least one out of four investments occurs outside the geographical proximity of the investor. This incongruity has only partly been addressed by past literature and hence geographical proximity remains an ambiguous topic (Avdeitchikova, 2008b).

2.3 Multidimensional Proximity

2.3.1 Proximity as Facilitator of Economic Exchange

Proximity as a concept has been present in economic literature since the influential work of Marshall (1890), who examined the geographic concentration of economic activity. The term has been used since in different streams of research and recently caught attention in the field of geographical economics (Shaw et al., 2000). French industrial economists, known as the 'Proximity Dynamics Group', researched the physical dimension of economic transactions in the 1990s to establish the importance of geography in contemporary economic theory (Shaw et al., 2000).

However, Torre and Gille (2000) recognized that proximity entails more dimensions than the geographic (Avdeitchikova, 2008b). Synthesizing research developed additional dimensions of proximity to further dissect the concept and the importance of its individual parts. The sophistication and diversity of the proximity research field has furthermore led to varying definitions of proximity and its associated dimensions, and thus the need to clearly scope research related to proximity (Knoben & Oerlemans, 2006).

2.3.2 Dimensions of Proximity

Dimensions of proximity are usually defined by "*being close to something measured on a certain dimension*" (Knoben & Oerlemans, 2006: 71). However, through differing applications and objectives, the proximity literature has employed various dimensions in the past (Knoben & Oerlemans, 2006). We adopt Boschma's (2005) original classification that identifies in addition to the geographical dimension the cognitive, organizational, social, and institutional dimension of proximity.

Knoben & Oerlemans (2006) suggest a differentiation of proximity research between a structural and dyadic approach. Whereas structural proximity considers proximities within networks of several players, the dyadic approach examines the proximity between dyadic pairs of actors (Knoben & Oerlemans, 2006). As the angel-entrepreneur relationship is an exchange between individual actors, our research utilizes proximity in a dyadic approach only.

Cognitive Proximity

Cognitive proximity is considered with the similarities in the way actors perceive, interpret and evaluate the world (Ben Letaifa & Rabeau, 2013; Nooteboom, 2000). Moodysson and Jonsson (2007) more precisely consider actors proximate when they share a similar educational or professional background and thus have a similar frame of reference. In the field of angel investing, entrepreneurial experience is another important determinant for cognitive proximity (Avdeitchikova, 2008b). In that, cognitive proximity enables actors to communicate more effectively since they share common expertise and knowledge (Boschma, 2005).

Social Proximity

The concept of social proximity stems from the research in social embeddedness (Granovetter, 1985). In the proximity literature this component has been framed as the individual's levels of relationships and includes trust based on friendship, kinship and experience (Ben Letaifa & Rabeau, 2013; Boschma, 2005).

Organizational Proximity

In inter-firm proximity research, organizational proximity is often described as the degree of organizational connection between the actors that ranges from weak organizational ties (autonomy) to close organizational collaboration with possible control dependencies (Ben Letaifa & Rabeau, 2013; Moore, 2006; Wilkof, 1995). Although authors have been referring to the same concept in much broader definitions (Knoben & Oerlemans, 2006; Shaw et al., 2000), the context of this study requires a more narrow view of organizational connectedness of both actors to minimize overlap with other proximity dimensions.

Geographical Proximity

In its most basic definition geographical proximity has been described as the physical distance between two actors (Howells, 2002). However, researchers have been criticizing that physical distance does not accurately describe the perceived proximity of the actors (Moodysson & Jonsson, 2007). Thus, we adopt the functional definition of proximity promoted by Moodysson & Jonsson (2007) who add the dimensions of time and cost of travel and communication to the mere physical distance.

Institutional Proximity

Institutional proximity can be classified in a formal and informal distinction. The formal category includes governmental regulations, tax policies, and other legal systems, while the informal one constitutes cultural norms and habits (Avdeitchikova, 2008b; Boschma, 2005).

The by Boschma (2005) proposed institutional dimension is problematic in our research for two reasons. First, the differentiation of organizational and institutional proximity is problematic and cause of ambiguity. Researchers have even proposed to see institutional proximity on a dyadic analysis level as simply a part of the organizational one (Knoben &

Oerlemans, 2006). As our research focuses on dyadic investor relationships, both dimensions can be agglomerated. Second, the varying degree of institutional proximity is explicitly important in multi-national studies, since cross-border transactions often display significant differences in formal as well as informal institutional norms (Boschma, 2005). Since our study is based on a national survey, institutional influences are expected to be minimal. In line with the previous arguments, the dimension of institutional proximity is disregarded in this study.

2.3.3 The Relationship between Functional and Relational Proximity

The selected four dimensions can be further classified into the constructs of relational and functional proximity, as seen in *Figure 2.3* (Moodysson & Jonsson, 2007). Functional proximity as discussed in the previous section not only measures the sheer physical distance of a dyad, but rather the accessibility of the opposing (Moodysson & Jonsson, 2007). Relational proximity on the other hand refers to a “non-tangible dimension based on affinity and similarity” (Moodysson & Jonsson, 2007: 117) that groups the remaining proximity dimensions.

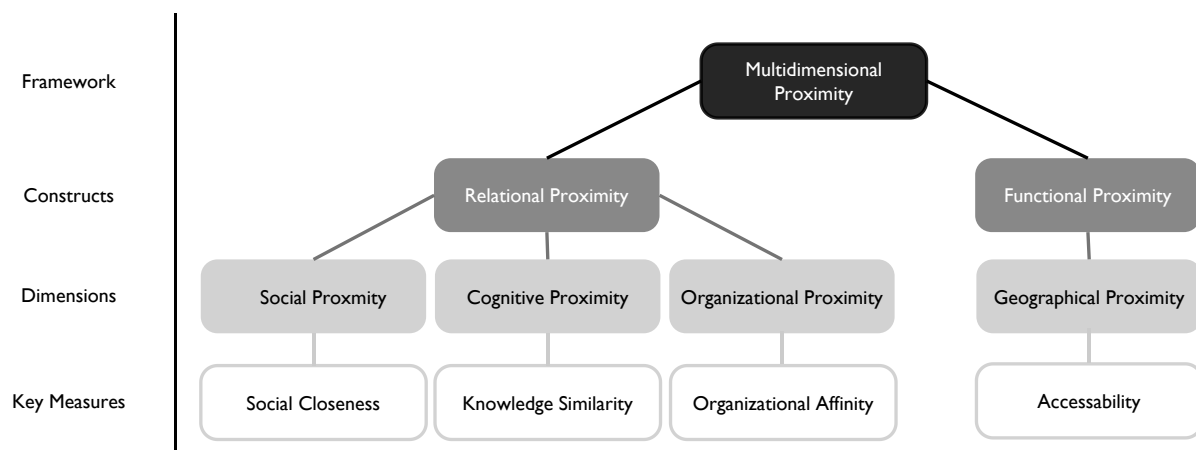


Figure 2.3: Dimensions of Proximity and Associated Measures

The relationship between relational and functional proximity has been researched with mixed and contradictory results. Moodysson and Jonsson (2007) find strong differing degrees of dependence of relational proximity on functional proximity with regards to knowledge exchange. Aguilera et.al (2012) observe independence of relational dimensions from the geographic ones. Rabeau and Letaifa (2013) find a negative relationship between geographical and social proximity in their examination of innovation and entrepreneurship. Avdeitchikova (2008b) argues that functional proximity has both a direct and indirect effect on business angel investing. The direct effect exists of cost savings, when physical presence is required, and the availability of information that would without physical presence not be available to the parties (Avdeitchikova, 2008b). The indirect effect describes the ability of geography to facilitate other proximity dimensions and positions relational proximity therefore as a mediator of the functional one (Avdeitchikova, 2008b). To conclude, although research generally agrees on a causal relationship of functional on relational proximity, the direction, and degree is still a subject of debate.

2.4 The Theoretical Gap

2.4.1 The Gap of Subject Matter

This thesis aims to contribute to existing literature by examining one of the most fundamental topics within the field of business angel research: the investment decision. Although past research has identified various motives for why one becomes a business angel (Aernoudt, 1999; Freear et al., 1994), the focal point of business angel activity remains to be the investment itself (Florin et al., 2013). Past research has identified the relationship between business angel and entrepreneur as one of the most influential criteria in the investment decision (see *Business Angel Investment Decision-Making*).

Nevertheless, investigations within this area are limited to observing isolated phenomena without identifying an integrative and clear link between the drivers of the angel-entrepreneur relationship and the investment decision. The secluded examination of relationship determinants can neither explain their interaction amongst each other nor the relative importance they have on the investment decision.

The importance of geolocation, a topic of much debate in the literature, is examined from different perspectives that do not find a conclusive explanation on why angels invest in geographically close startups. Studies that survey angel investors find little consideration of them for location, while studies researching the location of actual investments find strong correlations (Mason, 2007).

Based on the above discussion it appears that it remains considerable room for research on the nature of the investment decision itself (Mason & Landström, 2012). Our research aims to bridge those opposing empirics by investigating proximity as part of a higher-order relationship framework in order to explain investment behavior. From those separated and contrasting research streams, we can infer an addressable knowledge gap that our thesis aims to reduce.

2.4.2 The Methodological Gap

Notwithstanding, angel researchers have additionally been calling for different approaches on how to conduct research studies, in addition to what the study investigates (Mason & Landström, 2012). Since many open research questions remain in this relatively nascent scientific area of interest (Mason & Landström, 2012), scholars argue that current efforts should be directed towards establishing business angel research as sound conceptual field in the social sciences (Florin et al., 2013). Thus, novel methodological approaches and theoretical perspectives can be considered as important contributions to the field. In turn, the three major considerations of our research approach to address those field-specific apertures will be discussed (see *Figure 2.4*).

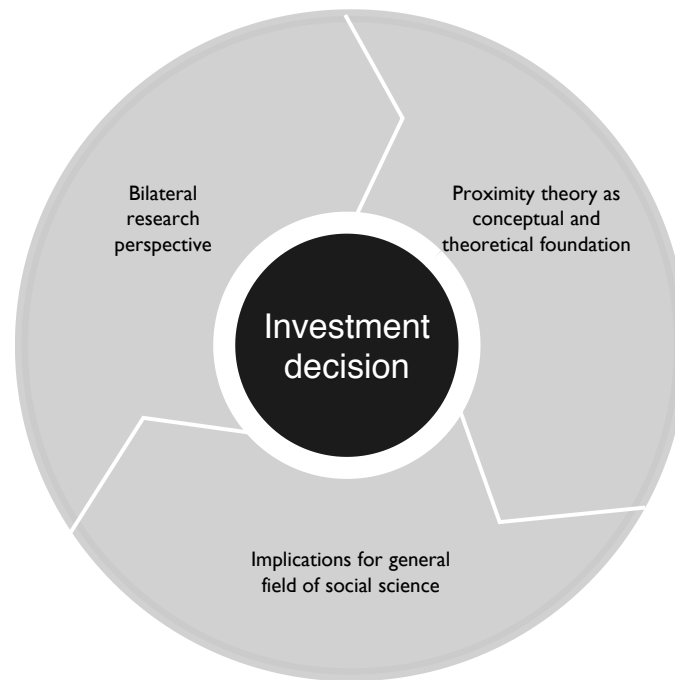


Figure 2.4: *The Theoretical Gap in Business Angel Research*

In order to understand the investment decision taken, research needs to consider both angels and entrepreneurs in relation to each other (Florin et al., 2013; Sætre, 2003). A large stream of past research has considered angel characteristics as explanatory variables on whether an investment is made or not (e.g. Feeney et al., 1999; Riding, 2008). Scarce studies have attempted to understand the other side of the investment process by observing entrepreneurial decision-making during angel investments (Eckhardt, Shane, & Delmar, 2006; Zhang & Wong, 2008). Adopting a relative perspective between angel and entrepreneur could potentially yield richer insights into the investment decision process and explain what connections need to exist for successful funding.

Additionally, research on angel investments has due to its nascent nature mainly been focusing on descriptive and explanatory examinations of the business angel market (Florin et al., 2013). An individual stream of business angel research emerged that applied theoretical frameworks from other domains such as agency, social capital, institutional, and network theory (Kelly, 2007). Nevertheless, these studies focused largely on singular phenomena within the broader context of the relationship between business angels and entrepreneurs. Current research points out the importance of singular factors, such as social embeddedness and geographical closeness, but does not determine the relationships and interactions between them in a holistic manner. Thus, there is a need for an integrating conceptual framework to unite this research streams with a strong theoretical base. Lingelbach (2012) gives this suggestion for future researchers in venture capital and business angels: “Focus on theory-building from the start...” and “Be as conceptual as possible.” Thus, we aim to contribute in that regard in framing our empirical research in a proven theoretical concept that adds conceptually to the field of angel research.

Finally, scholars have been pointing out that the research within angel investing and venture capital has often limited applications in other areas of the social sciences (Mason & Landström, 2012). In order to establish a discipline of the social sciences as an independent research field, it must be able to explain phenomena beyond the observed ones in other research fields (Shane & Venkataraman, 2000). We hope to contribute with our study beyond the object of study of angel investing by applying a universal theoretical framework that may result in implications for other disciplines of the social sciences.

2.5 Theoretical Framework

2.5.1 A Multidimensional Proximity Framework of Angel Investing

We combine our findings from past research in both angel investing and proximity theory to create a multiple dimension proximity framework of angel investing (see *Figure 2.5*). This framework includes the relevant relationships we aim to test with our following empirical study.

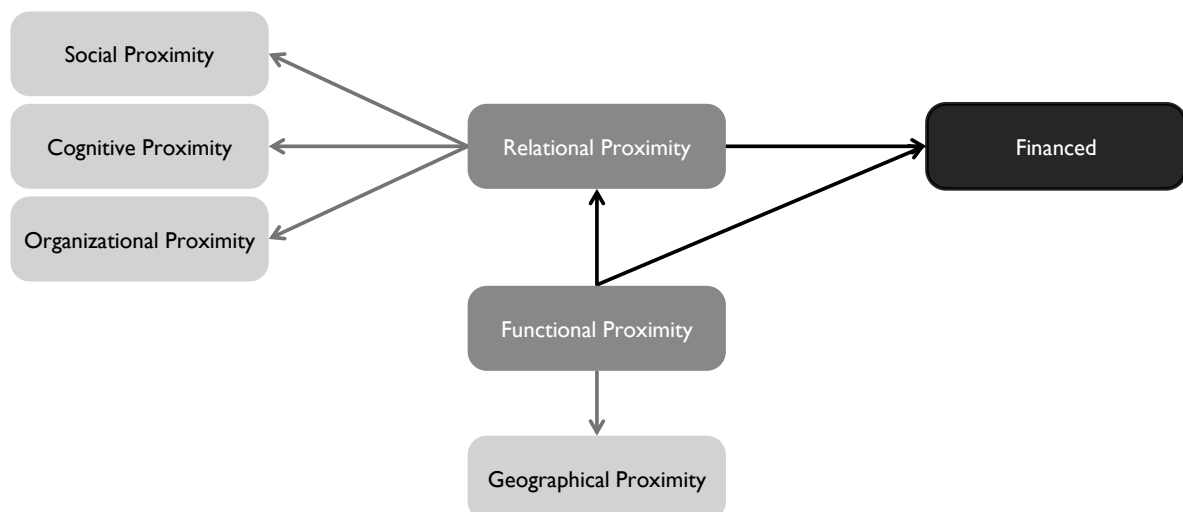


Figure 2.5: A Multidimensional Proximity Framework of Angel Investing³

Relational proximity is constructed out of the cognitive, organizational, and social proximity dimensions. Functional proximity is determined by several geographical measures of the relationship between angel and entrepreneur. Finally, we construct a causal relationship between functional and relational proximity as well as the investment decision. The framework thus aims to capture all drivers of the angel-entrepreneur relationship that can explain the investment decision.

2.5.2 Research Question and Hypotheses

In consideration of our developed model and the actual decision whether to invest as our dependent variable and unit of focus, the following research question can be inferred:

³ The illustration of variable relationships, including the direction of arrows and shape types, follows the conventions of path diagrams in structural equation modeling to stay consistent throughout the thesis. For an overview of path diagram notation see Hair (2014: 555).

What is the relationship between multidimensional proximity and the likelihood of business angel funding for innovative startups?

The remaining section of this chapter will develop the underlying hypotheses of our general research objective. We aim thereby to structure our empirical and analytical approach in accordance with our developed model.

The Dimensions of Relational Proximity

The first area of interest is to which degree the singular dimensions of cognitive, social, and organizational proximity can explain the overall construct of relational proximity. We draw premises from the two previously discussed fields of research: the angel-entrepreneur relationship and previous applications of the proximity theory in other fields of the social sciences. Additionally, we observed patterns in our qualitative pre-study of which dimension appeared to be the strongest determinant in the investment relationship.

The social interrelatedness of business angels and entrepreneurs has been researched extensively, since the informal character and high uncertainties of this particular investment market make actors still rely largely on social connections (Mason & Harrison, 2000; Sørheim, 2003; Wetzel, 1983). As discussed earlier, social proximity can contribute in two ways to the likelihood funding: the investment becomes apparent to the business angel in his or her deal flow, and secondly social closeness can increase trust in the investment opportunity (Sørheim, 2003).

Garbotz et al. (2010) observe the quantity and quality of angel investors' deal flow and find a positive effect of its contact network on both. Moreover, their research suggests a lower than expected influence of factors that belong to cognitive and organizational dimensions, such as entrepreneurial experience, membership in a BAN, and investment experience (Garbotz et al., 2010). Other studies find similar results on the reliance on and effectiveness of social networks as a source of investment opportunities (Landström, 1993; Mason & Harrison, 2000; Politis & Landström, 2002; Wetzel, 1983). The closeness of the relation has equally proven to increase trust, and in turn the quality of the relationship and the likelihood of funding (Sørheim, 2003). Sørheim and Landström (2001) even suggest that highly active angel investors rely solely on information from their business and personal network for making investment decisions and therefore distinguish social factors as the major determinant of the likelihood of funding.

The review on the literature of angel- entrepreneur dyads suggest that the most frequently researched concept of social capital and embeddedness is the strongest determinant of the relation between the two actors (Sørheim, 2003). The direct link between common social contacts and the quality and closeness of the relationship generate awareness and a high level of trust, which in turn leads the actors to meet and feel proximate to each other. Social proximity can therefore be considered as a stronger determinant than other factors of the angel- entrepreneur relationship. Thus, the following suggestion can be made:

HYPOTHESIS 1A. Social proximity is expected to be the strongest determinant of relational proximity.

The remaining two dimensions are not as clearly to differentiate in their effect on the overall relational proximity. Cognitive factors in form of human capital have been on the agenda of angel research since the initial efforts of Wetzel (1983) from both an angel and entrepreneurial perspective. These studies suggest a significant effect of factors such as entrepreneurial experience, education and industry experience on the angel investment decision by increasing trust in the other party (Kelly, 2007; Wetzel, 1983). Business angels prefer to invest into industries and fields closely related to their own expertise (Hindle & Wenban, 1999; Tashiro, 1999). One could thus argue that the business angels also prefer to invest in entrepreneurial teams with similar fields of expertise to their own. Moreover, cognitive proximity can enhance communication in the investment process, and therefore favor actors with similar knowledge bases (Avdeitchikova, 2008b).

The organizational literature on the other hand is inconclusive. Many studies argue that organizations, such as business angel networks, increase transparency in the business angel market (Mason, 2009). Research has however pointed at several shortcomings of BANs and a considerable debate with papers such as 'Should we ban the BANs?' (Goossens & Aernoudt, 2002) has ensued (Aernoudt, 1999; Lindgaard Christensen, 2011). Since research in cognitive proximity largely points toward a positive influence on the relationship, whereas the impact of organizational connections remain inconclusive, we hypothesize organizational proximity to be the weakest determinant in the relational proximity construct:

HYPOTHESIS 1B. Organizational proximity is expected to be the weakest determinant of relational proximity.

The Relationship between Functional and Relational Proximity

The second and main research interest lies in the relationship between functional and relational proximity and how both effect the funding decision. As we have seen in previous discussions, the observed relation between the two concepts was often inconclusive. However, two caveats have to be considered regarding these mixed results. Proximity theory has been applied in different contexts that often trace back to the field of geographical economy (Albino, Carbonara, & Petruzzelli, 2007; Knobén & Oerlemans, 2006). The dependent variables differ in proximity studies and thus general notions about this relationship cannot be made. Additionally, the dimensions of the two constructs are often decided upon an individual case consideration, and therefore relational proximity does not consistently measure the same thing. Second, many of the studies are of qualitative nature and therefore only give an indication of the discussed relation.

The constructs of relational and functional proximity have in past literature been both conceptually and empirically described as closely related (Aguiléra et al., 2012; Boschma, 2005; Knobén & Oerlemans, 2006). Aguiléra et al. (2012) find correlations among functional and relational proximity combinations and thereby confirm the relatedness of the concepts. In a business angel context a relationship between functional proximity and relational dimensions has been proposed by Avdeitchikova (2008b). Previous studies suggest a correlation of functional and relational proximity in angel-entrepreneur relationships. Thus, it can be formalized:

HYPOTHESIS 2A. Functional proximity is expected to be significantly correlated with relational proximity.

Previous business angel research, although occasionally contradictory, suggests that angel investors primarily choose investments in their close local surroundings (see Geographical Approaches). Moreover, since business angels are often actively involved in the daily operations of their investments, cost advantages and convenience have been suggested as explanation for local investing (Avdeitchikova, 2008b), and thus suggest a causal relationship between geographical influences (functional proximity) and the investment decision. We therefore hypothesize:

HYPOTHESIS 2B. Functional proximity is expected to significantly influence the likelihood of funding.

Relational proximity as a construct has not been tested thus far as an influencer of the investment decision. However, the singular dimensions have been empirically linked to the funding decision in isolation (Mason & Landström, 2012; Mason, 2009; Shane & Cable, 2002; Sørheim, 2003). The relationship of angel and entrepreneur has been pointed out as one of the single most important determinants of the actual funding decision (Mason & Stark, 2004; Sørheim, 2003). Therefore, we assume a causal relationship between relational proximity and the funding decision:

HYPOTHESIS 2C. Relational proximity is expected to significantly influence the likelihood of funding.

While this two causal relationships are either empirically proven or to a large extent theoretically assumed, the interrelation of relational and functional proximity with the funding decision remains unclear (Avdeitchikova, 2008b). Most business angel investments are made locally (Mason, 2007). There exists however a considerable amount of long-distance investments, estimated at 45-25% of total angel investments, questioning geography as a direct explanation of the funding decision (Avdeitchikova, 2008b). Studies on the actual preferences of angels confirm a relative unimportance of locality of the investment (Mason, 2007). We suspect, based on similar assumptions in previous literature that geography is a facilitator of the relational proximity, which in turn influences the funding decision. This would explain why angels do not value geography in their investment decision directly, but other important dimensions such as social, organizational, and cognitive connections that are influenced by the actual locality. Geography has in empirical studies of proximity theory in other contexts been shown to influence the relational dimensions directly (e.g. Aguilera et al., 2012). A mediating effect of relational dimensions has been at least partly observed in a business angel research context (Avdeitchikova, 2008b). Therefore, we suspect if both functional and relational proximity are taken into consideration, a moderating role of relational proximity. Thus, the following can be assumed:

HYPOTHESIS 3. Functional proximity is expected to affect the likelihood of funding through its effect on relational proximity.

The resulting hypotheses to be tested are summarized in the table below (Table 2.2).

HYPOTHESIS 1A	<i>Social proximity is expected to be the strongest determinant of relational proximity.</i>	H1A
HYPOTHESIS 1B	<i>Organizational proximity is expected to be the weakest determinant of relational proximity.</i>	H1B
HYPOTHESIS 2A	<i>Functional proximity is expected to be significantly correlated with relational proximity.</i>	H2A
HYPOTHESIS 2B	<i>Functional proximity is expected to significantly influence the likelihood of funding.</i>	H2B
HYPOTHESIS 2C	<i>Relational proximity is expected to significantly influence the likelihood of funding.</i>	H2C
HYPOTHESIS 3	<i>Functional proximity is expected to affect the likelihood of funding through its effect on relational proximity.</i>	H3

Table 2.2: Summary of Derived Hypotheses

Moreover, a visualization of which relationships in our theoretical framework are to be tested is given in Figure 2.6.

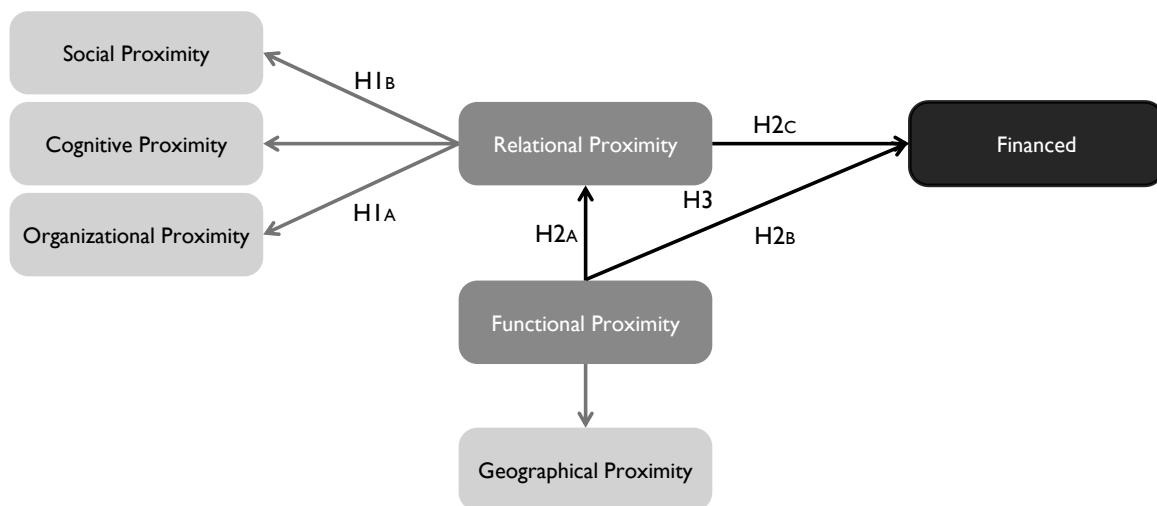


Figure 2.6: Hypotheses in the Context of the Proximity Path Model

3. Methodology

This chapter describes the research method employed in this study. The choice of scientific approach is firstly argued for and the research design is presented – divided into three main steps. The first step concerns the investigation of the literature and the search strategy. The second step involves a pre-study of 12 interviews and discusses the method in which this data was sampled, collected, and analyzed. The third and final step explains the main-study's purpose, sample & size (226 datasets), survey design, distribution, data collection- and analysis, as well as the limitations of the methodology.

3.1 Scientific approach

3.1.1 Intermediate Theory Research

Almost three decades of research on angel investing have helped to improve the understanding of this concept and its potential for significant theoretical contributions (Florin et al., 2013). Moreover, theorists in the area of proximity have developed a richer multi-dimensional view of proximity as a way of understanding economic interaction (Boschma, 2005; Moodysson & Jonsson, 2007), which is further elaborated on and incorporated into business angel literature by Avdeitchikova (2008b).

Considering this background, research regarding proximity and the field of investment decision-making has been conducted previously. Hence, the scientific areas underlying this study draw upon existing theoretical foundations. However, the study introduces proximity with a new structure, and the research question proposes to test a new relationship, namely between multidimensional proximity and business angel decision-making. Therefore, the scientific approach for this study can be considered that of intermediate theory, being positioned between a nascent and mature state of theory. Although the research questions may allow the development of testable hypotheses, similar to mature theory research, one or more of the constructs involved is often still tentative, similar to nascent theory research (Edmondson & McManus, 2007). Moreover, as the study involves data collected from a population at one specific point in time, our approach can be considered as a cross-sectional study (Creswell, 2009).

This state of the intermediate theory is best approached with a hybrid method, collecting both qualitative and quantitative data to test new propositions (Edmondson & McManus, 2007). A qualitative method has the purpose of exploring and understanding the overall picture and dimensions, while a quantitative method's objective is to explain the relationships and more specific characters of a research area (Anderson, 1998; Bryman, 1992; Evans, Gruba, & Zobel, 2011). Furthermore, an abductive reasoning is applied in that hypotheses have been abduced from both theory and observation through existing literature and complimented by empirical findings, and tested in a specific context that ranges from interviews to surveys (Alvesson & Sköldberg, 2009; Edmondson & McManus, 2007; Patel, 1991).

Thus, the aforementioned methodological structure in this study is testing established theory in a new context, the multiple dimension proximity theory in conjunction with business angel decision-making. The measures are derived from both previous academia as well as from empirics and tested with statistical models. Finally, with the results from the analysis we aim to offer provisional contributions to the theory of business angel investment behavior.

3.2 Research Design

3.2.1 Multistep Approach

The approach of the study is a mixed research design, similar to the one used in *'Network ties, reputation and the financing of new ventures'* by Shane and Cable (2002), in a new contextual proximity-setting that can be divided into a 3-phase process.

The first step, *Literature investigation*, was simply an exploratory approach in order to identify, categorize and collect previous research from the field (Creswell, 2009). The second step, *Qualitative pre-study*, involved a series of interviews with experts, business angels and entrepreneurs to fortify and confirm knowledge on the funding topic, especially from an empirical perspective. In the third and final step, *Quantitative main study*, of the research approach we developed and tested our hypotheses via a survey. The following steps are illustrated *Figure 3.1* below and elaborated on in the subsequent sections.

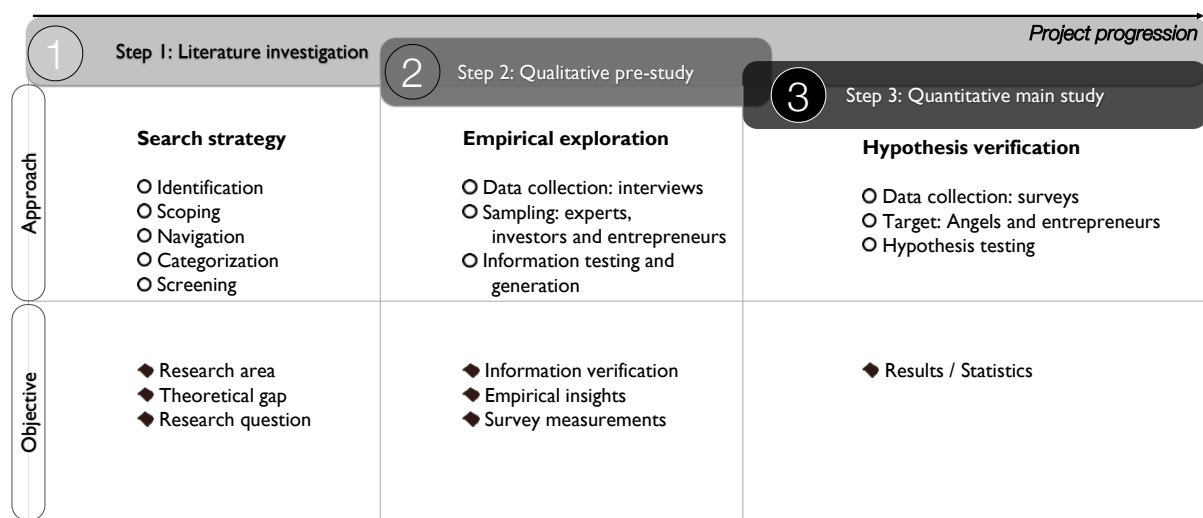


Figure 3.1: Research Design: Multiple-Stage Approach

Notably, as all research faces degrees of uncertainty and inability to predict outcomes, this study also gives rise to possible limitations. The quality of the data is discussed in the various sections below. Additionally, along the research process, ethical aspects were considered when constructing and executing the study during the different stages. Specifically, neutrality, objectivity, and honesty were stressed in all means of communication to minimize any bias in the collection of data, the interpretation, and the assurance of confidentiality (Bell, 2010; Gregory, 2003; Resnik, 2010).

3.3 Step 1: Literature Research

3.3.1 Exploratory Search

With entrepreneurial finance as the point of departure in the quest of finding an interesting and relevant research question, the first approach to understand this stream of research was to engage with secondary data from various indirect sources in the search of finding recent articles and publications in the field. Among the most used databases and search instruments were 'Google Scholar', 'EBSCO' and 'JSTORE'. Subsequently, a list of relevant synonyms and keywords was compiled to ease navigation within the research field (e.g. business angels, informal venture capital, and decision-making). Thereafter a "snowball-strategy" was used to backtrack influential publications via citations (Creswell, 2009). As a result, we could identify prominent research while avoiding an overload of literature or articles of limited value. The aim of this screening strategy was to include publications with substantial contribution, ensuring both breadth and depth in our research while avoiding any outdated studies.

3.4 Step 2: Pre-Study

3.4.1 Purpose of Qualitative Method

While the indirect sources of previous research offered a rich insight to the business angel investment field, as well as rewarding knowledge about proximity in a relevant theoretical context, the study could be enhanced by the use of primary data, considering that it is investigating a new construct of two different bodies of research. Additionally, another objective of the pre-study was to validate measures used in previous studies, as well as develop additional variables that could measure the proximity dimensions adequately. Therefore, the purpose of the qualitative study was to contribute to the development of the survey for the main quantitative study. The hope was hence to achieve benefits, such as improve the qualitative context, vindication and verification of the survey questions, and heighten the assurance of making the findings modern and relevant (Creswell et al. 2003; Creswell 2012).

3.4.2 Data Collection Method

The data was collected by conducting semi-structured in-depth interviews (Silverman, 2010, 2013). These were either carried out over the phone (skype) or face-to-face. Each interview was between 30-60 min long, and recorded as well as transcribed in a summary arrangement. To avoid any biased results, only limited background information about the research purpose was given to the interviewee in advance. To ensure that the proximity dimensions were discussed, the interviews followed a planned interview-template that generated possible measure metrics, but allowed for a looser structure and open-ended questions towards the end in accordance with Silverman's (2013) recommendations (see *Appendix 2*).

3.4.3 Population and Sample

The target population for the pre-study consisted of three general groups: (a) Experts on the field of informal venture capital and business angels (b) Active business angels and (c) Founding entrepreneurs of startups. The sample group was collected from the whole of Sweden with one international interview (see *Appendix 1*). The selection criterion for the sample was that the respondents were still active in each respective field to avoid any archaic views. With a diverse sample our aim was to capture the multi-sided perspective of proximity in decision-making, getting scholars' views on the angel market in general, the investors' attitudes towards the possible effect of proximity, as well as the opposing views from the entrepreneurs. The total sample size of the pre-study included 12 interviewees with an equal weight distribution of four interviewees per target group. The motivation behind the sample size was to minimize bias by hearing more than one person from each group, while having a small enough sample to coordinate the interviews within a practical time-limit (Mason, 2010).

3.4.4 Findings

Firstly, dialogues from the interviews generated rich empirical insights that guided us in our hypotheses generation. A small selection of adjusted quotes from the interviewees are seen below:

"I almost always invest through my social network (...) having a social connection to the founders is to me the most central aspect in the investment decision". – Business angel

"If the founders have previous entrepreneurial experience then we tend to understand each other much better [through common ground]". – Founder and business angel

"We met our last investor through an event organized by the incubator we are part of. It was a great forum to meet through since she had invested in a few other startups here (...). I think we found trust in each other a bit easier that way". – Founding entrepreneur

Secondly, an analysis of the measures found in the pre-study consisted of systematically categorizing the respondents' answers and matching them with each proximity dimension. In this way, we could identify common answers and use this pattern to develop a list of plausible measurements. These were furthermore compared to proposed metrics by previous studies to ensure applicability, hence either accepted or rejected. The chosen items were then used as variables in our survey. The final findings are summarized in *Table 3.1* below.

Type	Dimension	Function	Previous theoretical measure*	Pre-study finding of measures	Variables measured in survey
Functional proximity	Geographical	Physical distance	-Time -Distance -Cost	-Time between offices -Time between meeting points -Transport distance -Convenience of location -Cost of travelling	[Geographical] [Distance] - Physical distance between offices [Time] - Travelling time between offices [Cost] - Approximate cost of travelling between offices
	Cognitive	Knowledge and experience	-Type of education -Level of education -Type of role -Industry experience -Entrepreneurial level	-Type of education -Length of education -Non-professional experience -Position/role -Type of job -Type of skills -Entrepreneurial experience	[Cognitive] [Educational] - Similar types of educational background [Professional] - Similar type work experience from either job position or industry [Entrepreneurial] - Similar entrepreneurial experience
	Social	Connectedness	-No ties -Indirect ties -Direct ties	-Previous contact -Acquaintanceship -Friends -Family or relatives -Strength in relationship	[Social] [Ties] - No connection, connection through mutual connections or direct personal connection [Closeness] - Strength in relationship
Relational proximity	Organizational	Solidarity, credibility, culture- and value understanding	-Belonged to same organization -Affinity from previous organizational branch cooperation or partnership	-Affinity from events -Affinity from associations, societies or clubs -Affinity from similar or same companies	[Organizational] [Organization] – Affinity from working together in the same company [Membership] – Affinity from a mutual connection through network or association [Cooperation] – Affinity from cooperation through events or similar activity

Table 3.1: Output Variables from Pre-Study to be used as Measurements in the Survey

3.5 Step 3: Main-Study

3.5.1 Purpose of the Quantitative Method

The purpose of our main-study was to test the framework of proximity in a business angel context empirically. Although the qualitative primary data we collected gave us indications on which dimensions of proximity are relevant and how they affect the funding decision, the quantitative study was intended to quantitatively confirm those assumptions. Moreover, this method could be used as a foundational approach on how to research proximity in a business angel investment setting for future studies.

3.5.2 Data Collection Method

Our main study consists of a survey collection, taken from the visible business angel and innovative startup population in Sweden between October 20th and November 12th 2014. The first consideration in choosing our quantitative method design was that between primary and secondary data. The measures of proximity theory have, to the extent our study requires, to our best knowledge never been tested before. Moreover, angel researchers have been calling for more primary empirical studies in the field to completely comprehend the examined topic (Mason & Landström, 2012). Hence, we chose primary data collection as our point of departure. Quantitative data collection can be carried out in experiments or surveys (Creswell, 2009). The basic intent of an experiment is to test the impact of an intervention on an outcome while controlling for other influencing factors, while a survey provides “a quantitative description of trends, attitudes, or opinions of a population by studying a sample of that population” (Babbie, 1990; Creswell, 2009: 145). Confounding factors in the angel-entrepreneur relationship are numerous, making an experimental design impractical. Additionally, we want to infer conclusions from our sample to the overall business angel population, hence supporting a survey method.

Questionnaire Design

The survey was constructed based on previous collection methods used in business angel research and the identified item scales from our pre-study. The general structure was adapted from Shane and Cable (2002), who divided their sample of formal venture capitalists and business angels into two randomly selected groups: one group was asked to think of the most recent seed-stage investment that they made, the other about the most recent seed-stage investment they evaluated, but did not make (see *Appendix 5*).

Initially, respondents were asked to identify themselves either as private investors, entrepreneurs, or none (ending the survey). We chose the identification as private investor instead of the term business angel, as the latter is subject to ambiguity, if not thoroughly defined (Avdeitchikova et al., 2008). Both business angels and entrepreneurs were in turn presented with a similar set of questions measuring proximities in relation to a specific investment opportunity. One submitted respondent survey could thus include datasets of one actual investment, one investment opportunity evaluated but not invested, or both. Additionally, the two parties answered questions to qualify for the eligibility for our sample.

Business angels were asked whether they made an investment in a company in the past three years that was at that point in time younger than three years. The investors affirming this question can be classified as active business angels and are therefore eligible for our study sample (Coveney & Moore, 1998; Fiet, 1995; Månsson & Landström, 2006). After they responded to questions regarding the proximity of that investment opportunity, they were asked if they evaluated an investment opportunity in the past three years but ended up not taking it. . If they confirmed this question, they were asked to respond to the same measures of proximity for the investment opportunity not taken. This is in line with previous research that calls for the need to capture both positive and negative investment decision outcomes (Avdeitchikova, 2008b).

Entrepreneurs were similarly asked a set of screening questions to determine whether their venture can be considered as an innovative startup firm. We adopt the argumentation of Söderblom and Samuelsson (2014) who classify ventures as innovative startups with the founders' own perception of innovativeness and growth ambition of their venture. First, we asked the founders whether they consider their venture as being innovative. The growth ambitions were measured with two of the most common metrics of determining venture growth: expected relative revenue and employee growth over the next year (Delmar, Davidsson, & Gartner, 2003; Siegel, Siegel, & Macmillan, 1993). The growth was measured on a slider scale from 0 to 500 % of expected growth for the next year. Additionally we measured industry as a control variable by asking entrepreneurs to indicate the industry their venture was operating in. The question choices were adapted from Shane and Cable (2002) with the most common industries for innovative startup firms (biotech, hardware, internet, medical, software, telecom) and an optional "others" field.

The items for measuring dimensions of proximity were adopted from our qualitative pre-study and research in previous literature (see section 4.1.2). The spatial measures distance, time and cost were measured by adapting the scale of Aguilera (2012) with the categorical items ultra-local, local, regional, and national. The social tie proximity was measured by three categorical items of previously either knowing the other party directly, through contacts or not at all (Granovetter, 1973; Shane & Cable, 2002). The remaining measures of educational, professional, entrepreneurial, organization, membership, cooperation and social closeness were measured using a 6-point Likert scale. Finally, all respondents were asked to provide answers regarding their gender, age and working place (city).

Our survey design was tested for easy understanding and correct interpretation. This part included a pilot test of the survey with a sample of 15 people, consisting of both entrepreneurs and business angels. These were firstly carried out live in a face-to-face meeting to get a direct dialog on how each question was perceived and also anonymously with a feedback feature incorporated. Based on the pilot feedback, iterations on the survey design were incorporated. The inferred items from our distributed survey are summarized in *Appendix 4*.

3.5.3 Population and Sample

Our main survey collection was conducted with entrepreneurs and business angels within Sweden. In order to infer meaningful conclusions from our sample, the total population of these two groups was in a first step estimated.

The latest estimate of the total Swedish visible business angel market stems from quotes from the SVCA in 2010, which identifies 400-600 active business angels that were part of BANs (CSES, 2012). Although our definition of visible business angels includes non-BAN members and the Swedish business angel market is likely to have experienced growth since 2010, this estimate is a for our purpose reasonable and conservative assumption.

To estimate the number of startups in the need for business angel financing (in our definition up to three years after launch), we first determined the number of total founded

ventures in Sweden up to three years of age. Since the latest statistics stem from 2013, we summed the number of total founded ventures from 2011-2013, which amounts to 212,167 companies ("Ekonomifakta.se," 2014). Söderblom and Samuelsson (2014) estimate innovative high-growth startups to be 1-12% of total founded ventures. Thus, we estimate a total eligible startup population between 2,122 and 25,460 in Sweden.

The sample collection of previous research in the business angel field has been criticized as researchers often employed convenience samples that do not necessarily reflect the overall business angel market (Avdeitchikova et al., 2008). However, business angels are difficult to identify and random samples are therefore time-consuming and costly (Månsson & Landström, 2006). Other methods to contact investors are 1) sending questionnaires to individuals believed to be investors, 2) contacting the companies that have received business angel financing, 3) ask business angels to forward the survey to their peers, and 4) distributing the survey through BAN's (Harrison & Mason, 1992; Månsson & Landström, 2006). For our more narrowly scoped group of visible business angels we propose and use a fifth method: the utilization of online career and investment platforms to obtain names and contact details of visible business angels. As all of these alternative methods have drawbacks and bias the obtained sample, the combination of different methods has been proposed to minimize the bias (Månsson & Landström, 2006; Mason & Harrison, 1997; Sorheim & Landstrom, 2001).

Therefore, we chose to utilize several distribution methods to render our sample as minimally biased as possible. Our sampling followed a multistage design, referred to as clustering (Creswell, 2009). This procedure is described as appropriate when it is impossible or impractical to obtain a list of study subjects directly (Babbie, 1990; Creswell, 2009). The first step of clustering is to identify groups or organizations through which the study subjects can be reached. In the second step individuals are both identified and directly contacted, or the organization/group is asked to distribute the survey to its members.

We obtained contact details from 174 individual angels through the online platforms LinkedIn⁴ and Angellist⁵. We distributed the survey either through a direct email or the built-in messaging of LinkedIn. Furthermore, the survey was distributed through the Swedish Venture Capital Association (SVCA). The survey was additionally directly distributed through the following BANs: Stockholms Affärsänglar, Stockholm Innovation and Growth (STING), Connect Ost, Connect Väst, and Coach & Capital. Respondents were also asked to forward the survey to peers that fulfill the definition of a business angel. Moreover contacted startups were asked to forward the survey to their business angel investors. The total number of contacted business angels cannot be determined in the case of multiple distribution channels, since investors have potentially been contacted more than once. Moreover, as the survey link for members of associations and BAN's was distributed by the organizations themselves, we could not track responses back to their source of distribution. The response rate for directly contacted business angels is 32.54 %. This is a

⁴ <https://www.linkedin.com/>

⁵ <https://angel.co/>

comparably high response rate for business angel research (Harrison & Mason, 2008; Månsson & Landström, 2006) that could be explained by personalized messages and reminders. The total estimated response rate lies probably significantly lower since we received few angel responses from indirectly distributed surveys.

With less established networks and associations, the entrepreneurs' survey was mostly distributed through direct contact, such as work email or via LinkedIn messages. A complete list of adequate startups was first compiled, utilizing online sources that list startups (e.g. YoungEntrepreneursOfSweden, StartupSpace, SthlmTech, SUP46, SSE business lab). Moreover, in an attempt to capture less visible startups, an online sign-up form was built and distributed through various social network platforms in the hope of reaching entrepreneurs across the whole of Sweden that wanted to participate in the study. The main selection criteria for these startups was to match the innovation and growth criteria of a startup, hence being more likely to have obtained external finance at some point in time. The list totaled 248 companies in which all were contacted. With 119 entrepreneurs ultimately taking the survey the response rate were equivalent to 47.98%. This can be considered a surprisingly high response rate, which probably occurred due to the personalization of the introduction messages sent to the founders of the startup. Needless to say, respondents could forward the survey to colleagues, making the true response rate difficult to estimate.

In total, 204 complete responses of the survey were recorded (see *Appendix 3* for summary of survey distribution). Of those responses, seven identified himself/herself as neither private investor nor entrepreneur and were excluded from further questions. The split of remaining responses is summarized in *Table 3.2*. Both groups were then filtered according to our identifier questions for business angels and startups. Business angels had to have made an investment in the past three years to be eligible as active business angel. The entrepreneurs were selected based on their venture's eligibility as an innovative high-growth startup. Those startups that replied to the question whether they consider themselves innovative were selected. Of those, all startups that gave estimates for their revenue (expected annual revenue growth > 25%) and employee growth (expected annual employee growth > 15%) that are considered as appropriate growth for startups were extracted (Delmar & Shane, 2003; Siegel et al., 1993). The resulting response sets were then reshaped from a wide to long format to extract the single investment opportunities (UCLA: Statistical Consulting Group, 2014).

	Business Angels	Entrepreneurs	Total
Total responses	78	119	197
Share of total population (in %)	13 - 19.5	.47 - 5.61	.76 - 7.81
Estimated response rate (in %)	32.54	47.98	40.26
Eligible for further analysis	56	87	143
Investment taken	56	55	111
Investment not taken	53	62	115
Total Investment opportunities	109	117	226

Table 3.2: Distribution of Survey Responses

3.5.4 Data Analysis

The analysis of our data was based on three steps. First, the obtained data was examined concerning its completeness, sample size, reliability, and normality in order to ensure the validity of the application of SEM. We excluded the organization item from the following procedures as it lacked the required normality distribution. Furthermore, we combined the social ties and closeness measure into one variable, measuring closeness from no connection whatsoever to strong social closeness. As we are observing the proximity between the actors on a relational and not structural level of analysis, only the actual closeness of actors is of interest in the future investigation and not the type of social tie.⁶ The two samples of business angels and entrepreneurs were tested on their similarity and pooled to the main sample for modeling. Since our survey items measure mostly objective proximities that should be answered equally by both actors involved in a deal, the samples should not differ significantly from a practical perspective, given that our samples are representative. Second, a confirmatory factor analysis (CFA) was conducted to aggregate our observed variables to constructs that resemble the proposed proximity dimensions of our framework (see Definition of Key Concepts for an explanation of CFA). Lastly, we constructed structural models based on the causal relationships proposed by proximity theory, using the Maximum Likelihood Estimation SEM approach. We constructed three structural SEM models to determine isolated effects of functional and relational proximity, as well as the mediation effect of relational proximity on the relationship between functional proximity and the likelihood of investments.

SEM (see *Definition of Key Concepts*) is an appropriate analysis method in our research case for several reasons. The framework of this thesis, based on the proximity theory, includes multiple dependent relationships as well as latent constructs, which are aggregated constructs of other variables (Hair, 2014). Thus, both required concepts can be included in a holistic model rather than taking a two-method approach of a separate CFA and multiple regression. Moreover, SEM is superior to the latter approach in that it accounts for the measurement error of the observed data, and thus should model the observed relationships more accurately (Hair, 2014). Our analysis includes the examination of a mediation relationship, for which SEM has been proposed as advantageous to classical mediation determination using regression analysis (MacKinnon, 2008).

After extraction from the Qualtrics survey software, our data was in a first step stripped of redundant columns and re-saved with SPSS. The following analysis was exclusively carried out in R. R is an open source statistical programming language, which has developed into one of the most widely used statistical software environments, and is supported by institutions such as UC Berkeley, UC Los Angeles, Stockholm University, and Johns Hopkins University (R Project, 2014). It offers packages for SEM that make it a suitable software for our analysis. After further cleaning and transforming the data set, the SEM

⁶ See *Multidimensional Proximity* for the separation of structural and relational proximity.

modeling was conducted with the lavaan (latent variable analysis) package.⁷ Lavaan is one of three packages in R that offer SEM analysis. It was chosen since it offers an intuitive syntax for model specification and a rich set of modifications and options for SEM (Rosseel, 2014).

3.5.5 Methodological Limitations

Despite testing our data for the validity of our statistical analysis, several methodological limitations need to be taken into account when interpreting the results.

As previously pointed out, the sampling of business angel data in our study is not random. This might bias our sample in comparison to the total population and compromise the generalizability of our results. We have, as recommended by previous literature, chosen multiple sample sources to minimize biases in the aggregated data set (Harrison & Mason, 2008; Månsson & Landström, 2006).

Moreover, our questionnaire as such has never been used in previous literature before. Although the theory in itself and different questions and scales are based on past research and have been tested before, the combination of them in this context has to our knowledge never occurred. The only study that tested the multidimensional proximity framework in angel investing was that of Avdeitchikova (2008b). However, she used a different dimension instead of organizational proximity and measured proximity in binary variables. Our study required the extent of proximity to be measured, and we could therefore not rely on past research.

In order to obtain an unbiased sample and increase response rate, our survey was translated into Swedish language. The translation of scales and concepts might potentially lead to measurement errors in certain items (Harkness, Van de Vijver, Mohler, & fur Umfragen, 2003; Lavrakas, 2008). Future studies of our developed questionnaire in a cross-cultural study could test for the robustness of language translations (Harkness et al., 2003).

Another prominent inadequacy was the survey's limit to capture individual relationships, for example, when the business angel had to consider a team of founders instead of individual persons and they in turn were very different in nature. Consequently, we understand that there is a certain risk for subjectivity involved in the answers in such cases.

Although our sample size formally fulfills the requirement for all applied statistical procedures, a larger sample could have improved the reliability of our results. To ensure the validity of our sample we applied normality and reliability measures, in line with the formal requirements of SEM (Hair, 2014).

Our sample does not include control variables for other influences on the investment decision. Considering the complexity of the investment decision and the length of the survey, we ignored determinants of the investment decision that are not part of the relationship component of angels and entrepreneurs. Several studies have found effects of

⁷ See the *References* **Error! Reference source not found.** section for additional packages employed during the analysis.

non-relational determinants on the angel investment decision-making (Mason & Landström, 2012). These could have been additionally measured as a control model for the investment decision. In such a scenario, our relational determinants could have been tested on whether they provide further explanation of the funding decision. Potential control variables for our model could be amongst others whether the business angel invests in a syndicate or alone, the size of the investment, the industry of the investment opportunity, the human capital of the entrepreneurs, and the expected return amount and profile (Helle, 2006; Mason & Landström, 2012).

Some of our proximity dimensions might be interpreted differently by angels and entrepreneurs and therefore lead to differences in the two samples. Since both groups share different kinds of uncertainties and motivations involved in the investment decision (Avdeitchikova, 2008b; Sætre, 2003), proximity measures might be interpreted differently. Especially the social dimension is subject of interpretation of the survey respondent. As the sample size of both individual groups is not large enough to compare differences in SEM (Hair, 2014), testing differences between those two groups will have to be investigated by future research. We however could test the reliability of each group, which did not significantly differ and thus hints towards a homogeneous overall sample.

4. Results

This chapter features the empirical results from the main study. First, we address the validity of SEM and test its statistical assumptions. We then construct a CFA model, followed by three structural SEM models that build upon each other and result in our final mediation model. To conclude this results section, the evaluation of the previously generated hypotheses are presented.

4.1 Rendering Validity for SEM

4.1.1 Missing Values and Sample Size

In the first step, the incomplete response cases were removed from the eligible dataset. A case can be considered as complete when the respondent completed all questions regarding one single investment opportunity. From the original 226 investment observations, 225 remained as complete. Thus, the condition of no missing data is fulfilled.

An often discussed limitation of SEM is its relatively large required sample size to return stable results (Hair, 2014; Hoyle, 2012). Hair (2014) recommends sample sizes based on the constructs used in the model and communalities (squared standardized construct loadings). The model, developed in this section, contains five constructs, and shows average item communalities of high to moderate (> 0.5). The recommended minimum sample size of 150 observations is unambiguously exceeded with 225 used observations (Hair, 2014). We can therefore assume our sample to be sufficiently stable and large enough to return valid results.

4.1.2 Group and Total Sample Reliability

As an additional requirement, the data for SEM models needs to be reliable. An accepted measure for determining the reliability of data is to test the observed items with Cronbach's Alpha (CA) (Cronbach, 1951; Lavrakas, 2008). Nunnally (1978) proposes a widely used cutoff criteria of 0.7 for an acceptable study reliability that is also used in reliability evaluations in SEM (Hair, 2014). Thus, all singular items and the overall sample (CA = 0.76) fulfill the reliability requirement for the total sample (see *Table 4.1*).

When examining our singular dimensions we find relatively low alphas for the *cognitive* (CA = 0.65) and *organizational* dimension (CA = 0.68). This is however expected since these dimensions were in this context tested for the first time. The low values can additionally be explained by the small number of items of each dimension, as CA values increase as more items are added to a dimension (Lavrakas, 2008). Shane and Cable (2002) reach comparable CA levels in their measurement of reputation (CA = 0.71). Thus, we retain the dimensions for cognitive and organizational proximity with the reference to improve scale reliability in future studies. The geographical dimension (CA = 0.94) shows high reliability and is recommended as an overall dimension measure for future studies.

Moreover, since our sample consists of two heterogeneous groups, business angels and entrepreneurs, we tested for reliability differences in and between those groups. To compare

the two groups we test for the Null-hypothesis that both groups are equally reliable (Cronbach, 1951; Feldt, Woodruff, & Salih, 1987). The Null-hypothesis can be retained with a p-value of 0.215 (significance level $p = 0.05$), and thus both groups can be pooled in the future analysis (see *Appendix 7*).

N = 225	Total	Business Angel	Entrepreneur
1. Financed	.77	.80	.74
<u>Cognitive</u>	.65	.62	.68
2. Educational	.75	.79	.72
3. Professional	.74	.79	.70
4. Entrepreneurial	.75	.78	.72
<u>Social</u>	.74	.77	.71
5. Closeness	.74	.77	.71
<u>Organizational</u>	.68	.61	.74
7. Organization	.74	.77	.70
8. Membership	.74	.78	.70
9. Cooperation	.74	.78	.71
<u>Geographical</u>	.94	.93	.96
10. Distance	.73	.77	.70
11. Time	.73	.77	.70
12. Cost	.72	.76	.70
Total	.76	.79	.73

Table 4.1: Cronbach's Alpha for Total Sample, Business Angels and Entrepreneurs

4.1.3 Univariate and Multivariate Normality

The SEM assumes normally distributed data (Hair, 2014). This requires the testing for both univariate and multivariate normality of the items used for SEM. The approximation of our ordinal scales as continuous is hereby an accepted procedure in SEM (Hair, 2014; Hoyle, 2012; Kline, 2011).

First, we tested for univariate normality of each item. An accepted value for an SEM parameters is that z-values of skewness and kurtosis should not exceed 3.29 with a sample size N , with $50 < N < 300$ (West, Finch, & Curran, 1995). As seen from the resulting values, the item of *organization* proximity needs to be dropped, since both skewness and kurtosis are significantly higher than the proposed threshold (Table 4.2). The *cost* item exceeds the skewness threshold but keeps a comparably low kurtosis, and is therefore retained.

However, univariate normality is not sufficient since items might not be normally distributed in relation to the whole dataset (Mardia, 1970). Thus, Mardia's test for multivariate kurtosis was conducted. The resulting standardized z-value for kurtosis is 2.80, which approaches but does not exceed the proposed threshold of 3.00 (Ullman, 2006). It can

therefore be concluded that the collected dataset approximately fulfills the conditions of both univariate and multivariate normality.

N = 225	Mean	Std. Deviation	Skewness	Skewness Z-Value	Kurtosis	Kurtosis Z- Value
Financed	1.49	0.50	0.04	0.11	-2.01	-3.11
Education	2.99	1.63	0.27	0.84	-1.17	-1.81
Entrepreneurial	3.38	1.63	0.03	0.09	-1.26	-1.96
Professional	3.21	1.59	0.18	0.54	-1.16	-1.80
Cost	1.53	0.91	1.47	4.53	0.82	1.27
Distance	2.09	1.05	0.68	2.09	-0.72	-1.12
Time	1.92	0.98	0.78	2.40	-0.46	-0.71
Cooperation	2.22	1.63	1.03	3.17	-0.33	-0.51
Membership	2.40	1.63	0.73	2.24	-0.91	-1.41
Organization	1.62	1.27	2.03	6.26	2.93	4.54
Closeness	1.55	1.77	0.62	1.92	-1.00	-1.55

Table 4.2: Univariate Normality Analysis (with Z-Values = Skewness | Kurtosis / Standard Error)

4.2 A Structural Equation Model of Multidimensional Proximity

The correct application of SEM requires the researcher to first construct a CFA model, which does not assume any causal relationships between the included constructs (Hair, 2014). In the following steps we constructed two models to test for the influence of relational and functional proximity individually in SEM Model A and B. In our final SEM Model C we model the hypothesized mediation relationship on the funding decision (see *Figure 4.1*).

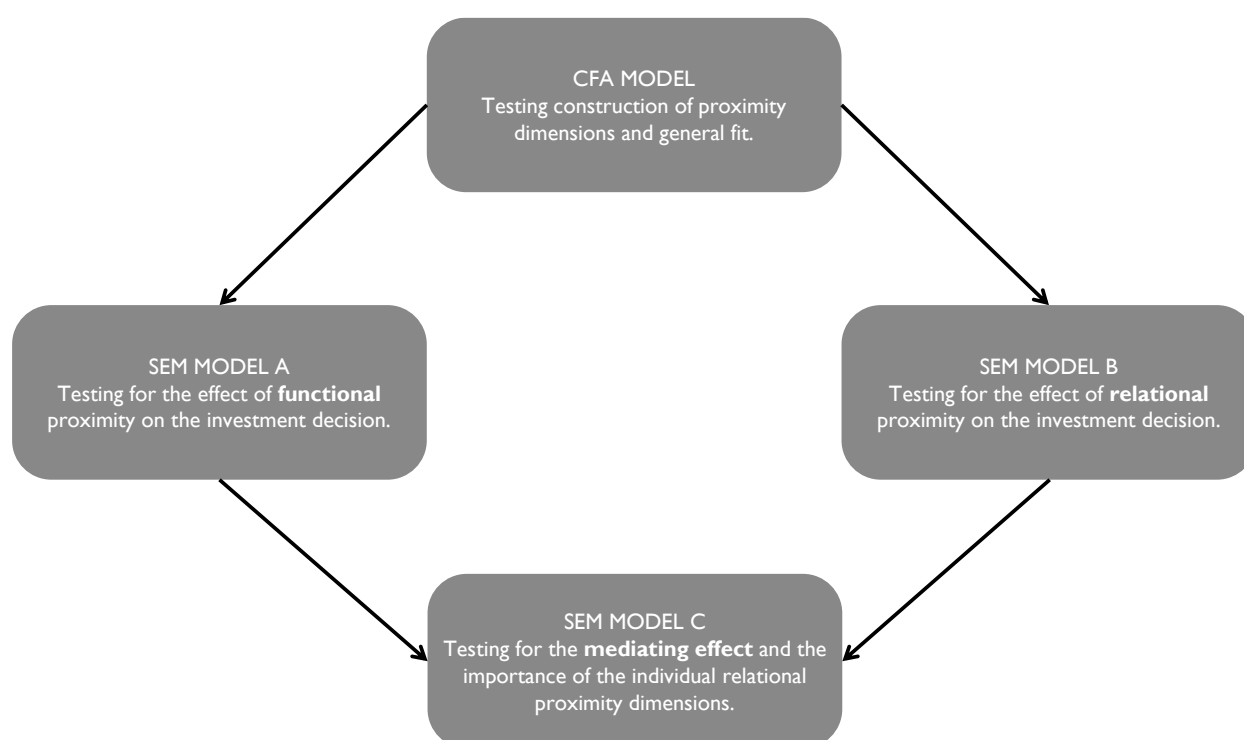


Figure 4.1: Structure of the SEM Analysis

4.2.1 Confirmatory Factor Analysis

As a first step in designing the SEM model, CFA was used to generate higher-level constructs from the observed items. The results of the CFA with applied significance levels can be seen in *Figure 4.2*). We fix the factor loadings of the items *professional*, *membership*, *closeness* and *distance* are fixed to 1.0 (Hair, 2014). All factor loadings are significantly above the proposed cutoff value of 0.5 and thus suggest the validity of the constructed dimensions (Hair, 2014). Further confirming the validity of the model, the standardized residuals of items are all below the recommended value of |2.5| (Hair, 2014).

RESULTS

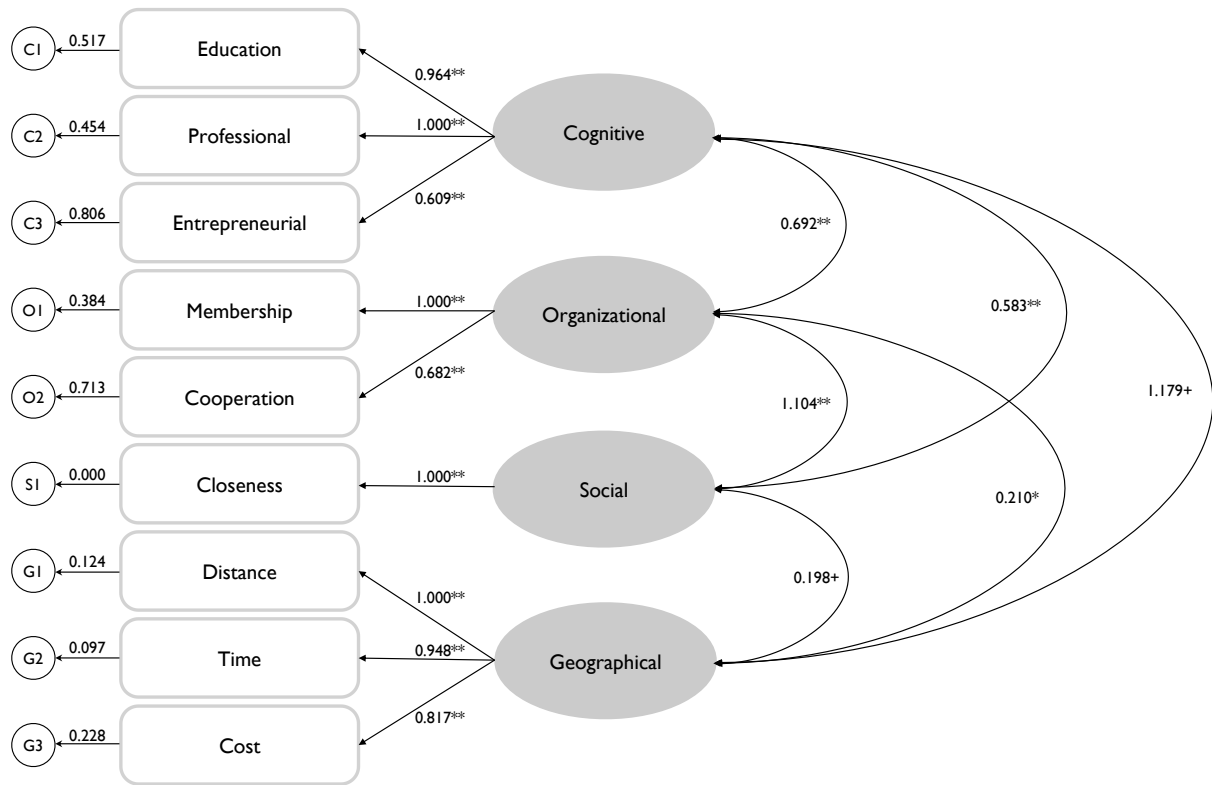


Figure 4.2: The Confirmatory Factor Analysis (** = $p < 0.01$; * = $p < 0.05$; + = $p < 0.1$)

When assessing the overall Goodness-of-Fit (GOF) of the constructed CFA model, all measures suggest an excellent fit. The Chi-Square value (χ^2) is exceeding the significance level of $p < 0.05$ and thus indicates no significant difference between the observed and estimated covariance matrix (Hoyle, 2012). The fit indices report values significantly below the cut-off values for incremental measures (SRMR and RMSEA), and above for the absolute measure (CFI), hereby indicating excellent model fit (Hair, 2014).

	Measurement Model	Recommended ⁸
Degrees of freedom	22	-
χ^2	0.065	-
CFI	0.988	> 0.95
SRMR	0.043	< 0.08
RMSEA	0.047	< 0.08

Table 4.3: Goodness-of-Fit Indicators of Confirmatory Factor Analysis

The CFA model shows that while a significant covariance can be measured among the three relational proximity constructs, *cognitive*, *organizational*, and *social*, there is only a weak covariance of each of those constructs with the *geographical* dimension. This suggests a construction of two additional higher-order constructs in the structural model in alignment with the theoretical framework: relational and functional proximity (Boschma, 2005; Hair, 2014). The first step of our SEM suggests a good fit of the overall model and an explanation of the higher proximity constructs through our observed survey items.

⁸ See Hair (2014) for a detailed review to evaluate structural equation modeling fit.

4.2.2 Structural Model and Mediation Estimation

The next step in the construction of a structural equation model of multidimensional proximity is the determination of causal relationships between the latent constructs (Hair, 2014). First, the dimensions of cognitive, organizational, and social proximity were determined as factors of the latent construct of relational proximity. Moreover, the geographic dimension is singlehandedly determining the functional proximity. As both relational and functional proximity have been established, we tested for their relationship with three separate SEM models.

All three models were tested on their reliability and fit. We find for all three models a significant p-value for χ^2 ($p_A = .014$, $p_B = .025$, $p_C = .031$), suggesting a rejection of the models. χ^2 as a sole measure has however two problematic characteristics that make it unsuitable for the sole measure of the model fit (Hair, 2014). The χ^2 increases with sample size and number of indicator variables, and thus can make complex models with large sample sizes significant despite good model fit. Hair et al. (2014) thus indicates that models with over 12 indicator variables (16 in our model) can possess a good fit despite significant p-values for χ^2 . We therefore retain all three SEM models, since all other fit indices confirm excellent fit.⁹

In the first constructed structural model (SEM A), no causal relationship between functional and relational proximity is assumed (see *Figure 4.3*). Functional proximity as an independent variable is modeled to influence whether an investment took place or not (*Financed*). This relationship shows that functional proximity has a moderately positive and significant ($p < 0.01$) influence on the likelihood of financing when observed in isolation. Thus, Hypothesis 2B is supported by our model.

⁹ Find model fit indices for *SEM Model A Summary*, *SEM Model B Summary*, and *SEM Model C Summary* in the Appendix.

RESULTS

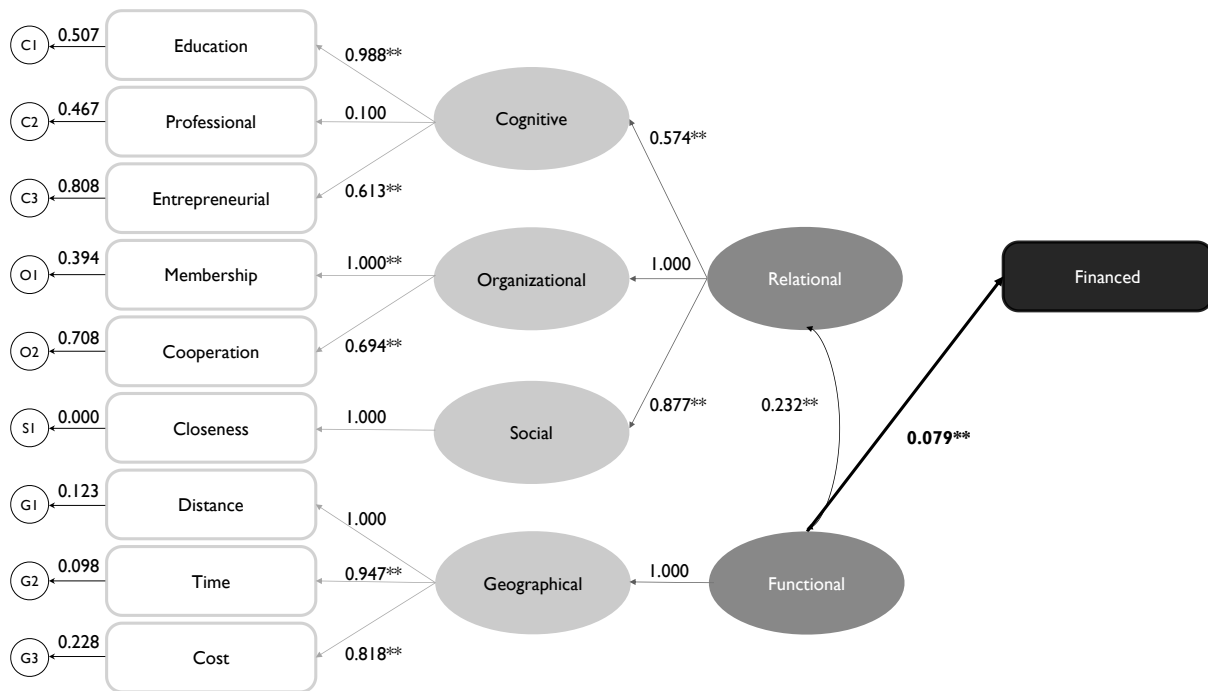


Figure 4.3: Path Diagram of the Direct Effect of Functional Proximity (** = $p < 0.01$; * = $p < 0.05$; + = $p < 0.1$)

In our second constructed model (SEM B) all relationships remain equal, only that relational proximity instead of functional proximity is now modeled as influencer on the financing decision (see *Figure 4.4*). The model shows that relational proximity is positively influencing the financing decision with significance ($p < 0.01$). Therefore, Hypothesis 2C can also be retained. Moreover, since both models show a significant and strong correlation between functional and relational proximity Hypothesis 2A is equally supported by our results.

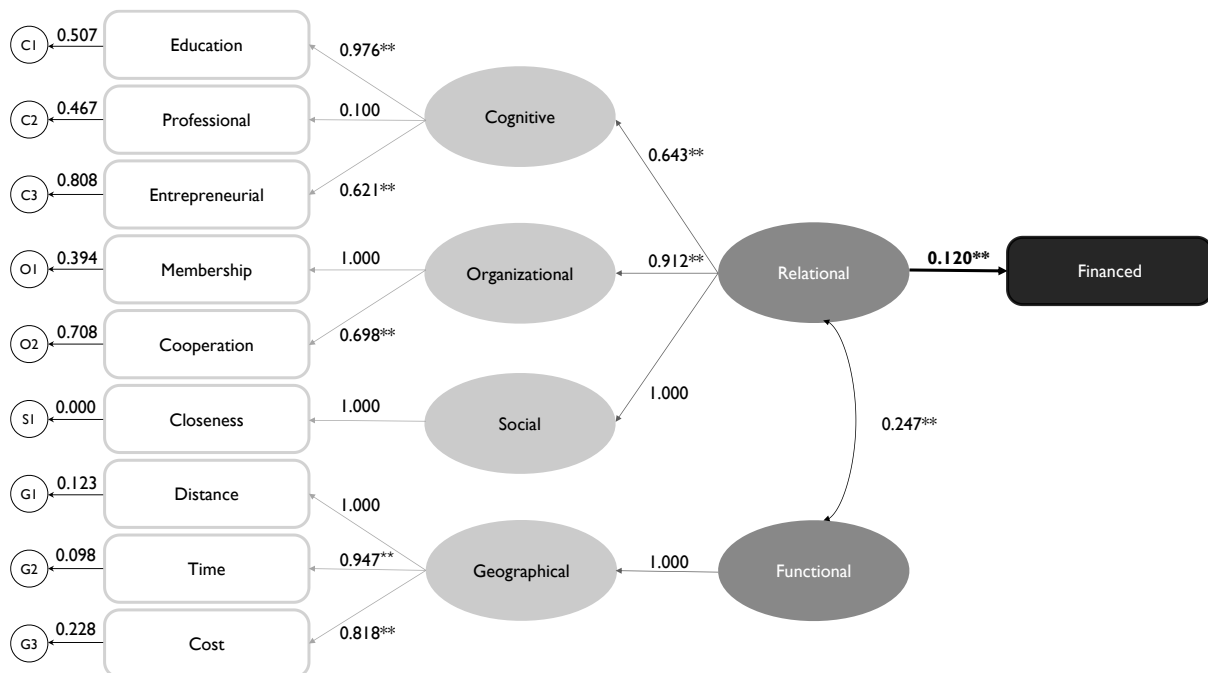


Figure 4.4: Path Diagram of the Direct Effect of Relational Proximity (** = $p < 0.01$; * = $p < 0.05$; † = $p < 0.1$)

In the final structural model (SEM C), relational proximity is introduced as a mediating variable. A simple mediation relationship includes three components: an independent variable, a dependent variable and a mediator, as seen in *Figure 4.5* (Baron & Kenny, 1986; Kline, 2011). The direct effect of functional proximity on the financing decision was determined in the previous model (*Figure 4.3*). If the direct effect of the independent variable becomes insignificant when introducing the mediator variable, the relationship is described as fully mediated (Baron & Kenny, 1986). In our third model, the mediating influence of relational proximity on that relationship was tested. From that, the strength and significance of the mediating effect could be determined.

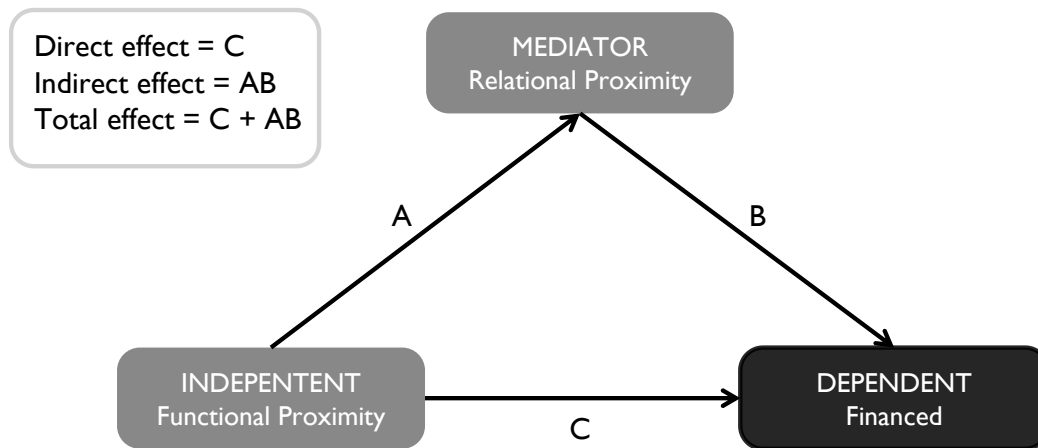


Figure 4.5: Simple Mediating Relationship

In our case, functional proximity takes on the role of a regressor for both the *financed* binary variable and the relational proximity. Additionally the relationship of relational proximity as regressor of the financed variable is measured. The results now show that the relationship between functional proximity and investment decision is insignificant ($p=0.122$). Functional proximity has however a strong significant ($p=0.016$) positive effect on relational proximity. This indicates that geography is a strong facilitator of relational proximity, which in turn moderately positively and significantly ($p=0.022$) effects the investment decision. Thus, it can be assumed that relational proximity fully mediates the relationship between functional proximity and whether an investment is made or not (Baron & Kenny, 1986), which supports Hypothesis 3. To test the significance of the mediating relationship the indirect and total effect were measured. This joint test of significance has been shown to accurately estimate the mediation significance (Fritz & Mackinnon, 2007), and produces equally reliable results compared to more computationally complex procedures, such as bootstrapping (Hayes & Scharkow, 2013). The measured indirect effect is weak (0.023) and significant at $p < 0.1$. The total effect is as strong as the original isolated regression with functional proximity isolated (0.079) and is significant ($p < 0.01$). We conclude that the observed full mediation is statistically significant.

Finally, we turn to the analysis of the individual dimensions of relational proximity. The structural model gives us indications of the importance of those. The social proximity is the strongest explanatory latent construct for relational proximity. This confirms our Hypothesis

1A, which can therefore be retained. However, cognitive proximity displays the weakest explanatory effect. This is contrary to our previously hypothesized ranking of the dimensions. Hence, Hypothesis 1B is not supported by our results.

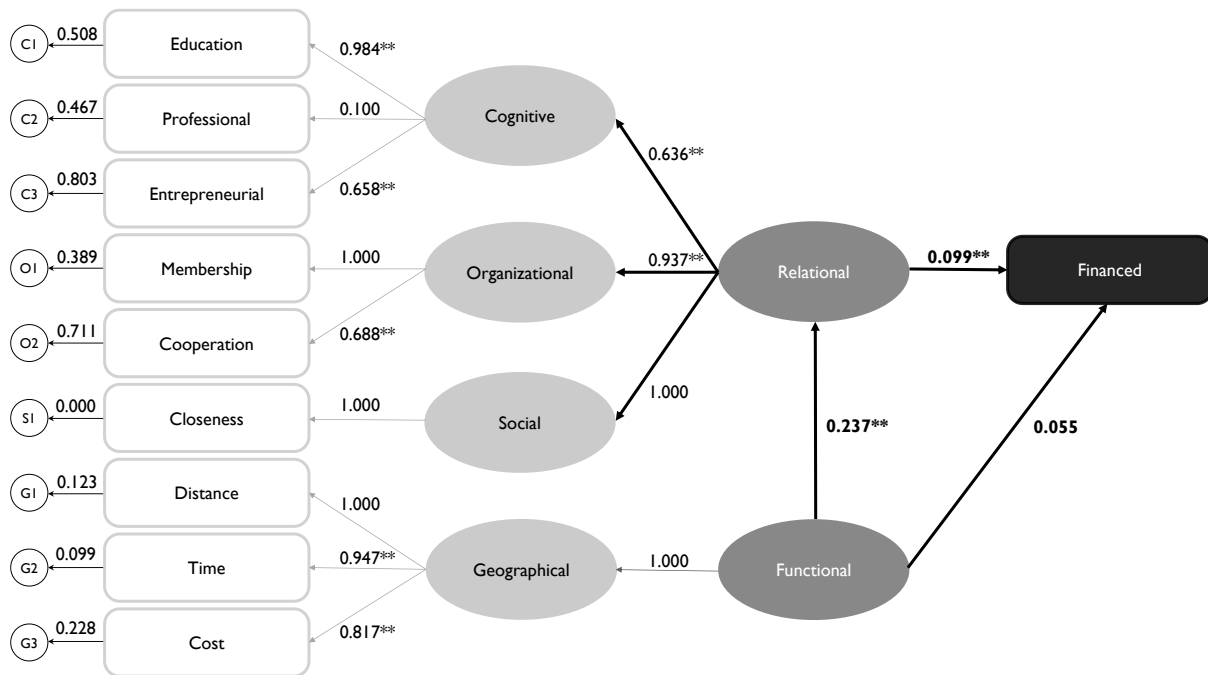


Figure 4.6: Path Diagram of the Structural Mediation Model (** = $p < 0.01$; * = $p < 0.05$; † = $p < 0.1$)

The findings regarding our hypotheses are summarized in Table 4.4.

HYPOTHESIS 1A	Social proximity is expected to be the strongest determinant of relational proximity.	Retained
HYPOTHESIS 1B	Organizational proximity is expected to be the weakest determinant of relational proximity.	Rejected
HYPOTHESIS 2A	Functional proximity is expected to be significantly correlated with relational proximity.	Retained
HYPOTHESIS 2B	Functional proximity is expected to significantly influence the likelihood of funding.	Retained
HYPOTHESIS 2C	Relational proximity is expected to significantly influence the likelihood of funding.	Retained
HYPOTHESIS 3	Functional proximity is expected to affect the likelihood of funding through its effect on relational proximity.	Retained

Table 4.4: Results of Hypotheses Testing

5. Discussion

This chapter analyzes the empirical findings and their respective implications. The findings from the dimensions of proximity are discussed in relation to the literature review and hypotheses. Furthermore, the relationship between the different constructs of proximity is analyzed, synthesized and debated in regards to the various findings – that is, how the proximity relationship influences an investment decision. As the relational construct of proximity proves to fully mediate the effect of the functional construct of proximity on the investment decision, an extensive discussion is stressed to shed some light on this significant finding. Lastly, theoretical and empirical contributions, as well as the study's limitations and recommendations for future research are presented.

5.1 Analysis and Implications

5.1.1 The Dimensions of Relational Proximity

In our examination of the three determinants of relational proximity, we find as hypothesized a strong impact of social proximity. Surprisingly, the cognitive component is in our results of relatively low importance while organizational factors seem to play a stronger role in relational proximity than anticipated (see *Figure 5.1*).

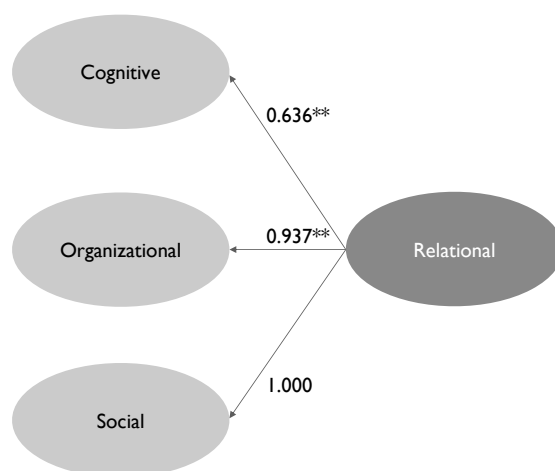


Figure 5.1: Relative Importance of Relational Proximity Dimensions (** = $p < 0.01$; * = $p < 0.05$; † = $p < 0.1$)

Social Proximity

Social proximity as a key determinant of the relationship between angel investor and entrepreneur has been exhaustively discussed in previous social capital literature (Shane & Cable, 2002; Sørheim, 2003). Angels employ social proximity as effective screening mechanisms for deal opportunities, and in turn leverage it to reduce the uncertainties in those investment opportunities deemed worthy of funding (Sørheim, 2003).¹⁰ Since the beginnings of business angel research, the investor's social connections have been judged as major determinant in the funding decision (Wetzel, 1983). The influence of social capital is

¹⁰ This strategy was also confirmed in several of our pre-study interviews with angel investors.

even stronger for the in this study investigated active and visible business angels (Avdeitchikova, 2008b; Politis & Landström, 2002). Social capital increases the trust in the relationship, which is considered one of the main mechanism angels base their investment decision on (Avdeitchikova, 2008b; Mason & Stark, 2004; Nahapiet & Ghoshal, 1998).

This strategy of leveraging social proximity in investment decision-making is not only a strong differentiator of business angels compared to other external financiers (Mason & Stark, 2004; Maxwell et al., 2011; Van Osnabrugge, 2000), it also seems to be effective in reducing uncertainty and selecting successful ventures. Wiltbank et al. (2009) find that angel investors who invest in their immediate social surroundings experience less investment failures compared to their peers that rely on predictive tools, such as financial analysis and business plans.

Cognitive Proximity

Cognitive proximity seems to have the weakest importance in the relational proximity. Research however suggests an importance of cognitive characteristics on both investors' and entrepreneurs' side. Angels seem to choose their investments partly based on certain characteristics of founders, such as previous entrepreneurial experience (Gimeno et al., 1997), or professional and educational background (Landström, 2007; Wetzel, 1983). The entrepreneur on the other hand applies similar measures to judge whether an angel investors is a good fit beyond the financial contribution (Eckhardt et al., 2006; Sætre, 2003; Zhang & Wong, 2008).

Paradoxically, these studies do not necessarily contradict our findings. Sharing a similar cognitive background should enhance understanding and help investors and entrepreneurs find common ground easier as it indicates an increased willingness to cooperate (Avdeitchikova, 2008b; Boschma & Frenken, 2011), while cognitive proximity of angels and founders do not necessarily have to match to equal extent for a positive investment evaluation. Angel investors are likely to invest in experienced founders independent of their own entrepreneurial experience (Feeney et al., 1999; Landström, 1995; Mason & Stark, 2004; Tashiro, 1999).

Moreover, in terms of profession and education, founders and angels might be very likely to display differences. Many industries and educational programs may not even have existed when angels were in the entrepreneur's age. Additionally, the number of industries angels invest in is usually limited, since growth rates and profitability need to reflect the investor's expected return (Shane & Cable, 2002; Wetzel, 1983).

In this way, we conclude that cognitive proximity per se plays a less significant role than what was hypothesized. However, aligned with previous literature one can assume that the cognitive skills and experience are still important elements in an investment decision.

Organizational Proximity

Organizational proximity is proves to be the second strongest determinant of the overall relational construct in our model. These findings might reflect what current literature points

out as upcoming empirical trends about intermediaries in the angel investment market. The number of investment opportunities presented to angel investors has steadily been increasing (Månsson & Landström, 2006). Since angel investors have resource restraints in terms of capital and time, they develop strategies to effectively screen opportunities (Maxwell et al., 2011; Wiltbank, 2009).

One effective approach has been to collectively invest in ventures in various forms, such as angel groups or networks, and consequentially diversify time and capital over different ventures (Mason & Botelho, 2014). Accelerators intensify this function in that they pre-select and coach aspiring startups and in turn connect them with business angels in a more credible fashion (Cohen, 2013). Thus, these organizations can, not unlike social connections, effectively increase trust in the other party and reduce uncertainties about the opportunity (Mason & Botelho, 2014). As this development has matured, successful organizations have gained credibility and further increased trust in them (Cohen, 2013). The startups of Y Combinator, a renowned accelerator in the US, for example, receive automatically \$150,000 in funding upon acceptance (Arrington, 2011). The reputation of this selective accelerator is strong enough to gain the trust of business angels in all its accepted ventures without further screening. To conclude, our results indicate that organizational proximity has an ability to instill trust by adding credibility to the actors involved in an investment decision.

A final reflection on the dimensional construct to relational proximity is that these dimensions – social, cognitive, and organizational – overlap to some extent and are interrelated, even if our results demonstrate a ranking. This means, that social proximity often strengthens cognitive proximity, as people in one's surrounding tend to be cognitively. Thus, the effect on the relationship between business angels and entrepreneurs is often achieved through a combination of these proximity dimensions (Avdeitchikova, 2008b), which is why the results of the constructs paint a more relevant picture to the investment decision.

5.1.2 The Mediating Relationship of Proximity

Our results support previous research in displaying a positive effect of functional proximity on the likelihood of funding, when observed in isolation. From the advent of business angel research, scholars have found a link between angel investments and locality (Avdeitchikova, 2008b; Mason, 2007; Wetzel, 1983). This phenomenon has endured globalization and international markets, and led to concentration of business angels in vicinity to startup-rich clusters, but also structural problems in regional areas (Berggren & Silver, 2010; Delgado, Porter, & Stern, 2010; Harrison, Don, Glancey Johnston, & Greig, 2010). Despite this significance of geography, long-distance angel investments are frequently made and may account to 25-45% of the total investment market (Avdeitchikova, 2008b). How can these seemingly opposing empirical findings be explained?

Since angel investors frequently take an active role in their invested firms (Landström, 1992), scholars have argued that physical closeness is mandatory to minimize the time and cost spent on travel and communication (Avdeitchikova, 2008b; Mason, 2007). The concept of

“local buzz”, simply being present locally has been proposed to promote opportunities and thus be advantageous for the involved actor (Bathelt, Malmberg, & Maskell, 2004). Lastly, the geographical distance between actors in itself has been found to increase uncertainty (Venables, 2005). This argumentation suggests a direct relationship between the physical distance of the actors and the likelihood of funding (Avdeitchikova, 2008b).

The significance of geographical closeness can additionally be explained by indirect effects on the investment decision (Avdeitchikova, 2008b). For example, past literature in informal investing points out that geographical closeness is often an enabler of social embeddedness (Mason, 2007; Shane, 2005), which in turn influences the investment decision (Shane & Cable, 2002). A similar argumentation can be applied to cognitive and organizational proximities. In our findings geography is also found to be a strong facilitator of relational proximity. Moreover, our results confirm the notion in that we find that relational proximity mediates the relationship between functional proximity and the likelihood of funding when observed holistically. This confirms Avdeitchikova’s (2008b) suggested mediating effect of relational proximity in angel investing.

Conversely, we find no evidence of a direct effect of geography on the investment decision. By introducing relational proximity in our model, the causal relationship between functional proximity and investment decision becomes insignificant (see *Figure 5.2*). Our findings suggest that geographical distance by itself cannot explain the funding decision. This contradicts the previously discussed research view of a direct effect of geography. This surprising finding can partly be explained by the following reasons.

First, our results stem from a selected segment of the heterogeneous business angel market, namely visible business angels. These investors typically invest in a more professional manner and geographically more diverse (Avdeitchikova et al., 2008; Mason & Landström, 2012). Thus, our findings are not directly comparable with studies covering the whole informal venture capital market.

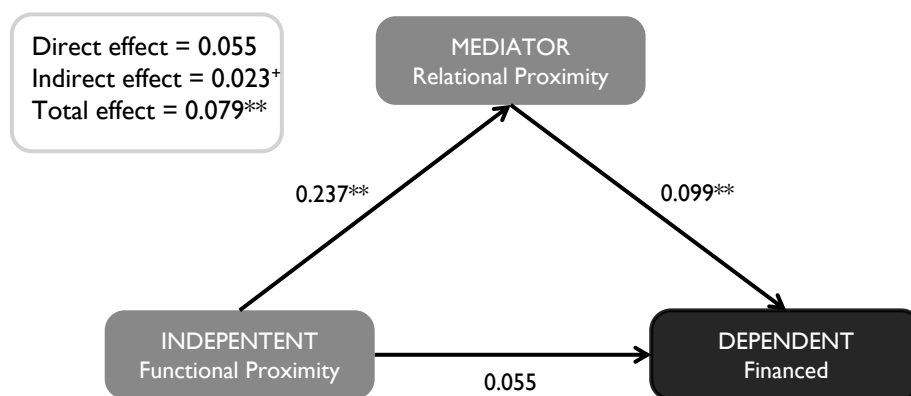


Figure 5.2: Findings of the Mediation Analysis (** = $p < 0.01$; * = $p < 0.05$; † = $p < 0.1$)

Second, the mediational effect of relational proximity in the business angel context has thus far not been tested. Avdeitchikova (2008b) was the first to promote and test proximity theory in this field. Her analysis observes isolated aspects of proximity, but does not draw conclusions about the general relationship between relational and functional proximity.

Third, the business angel market is being institutionalized and thereby changes its characteristics (Månsson & Landström, 2006; Mason & Botelho, 2014). For instance, BANs have evolved from a regional focus to national and international organizations, thereby broadening the investor's geographical investment horizon (Mason & Landström, 2012). Investors may therefore have to rely less on their immediate geographical surroundings when being part of nation or even worldwide operating organization.

Lastly, the maturation of virtual communication channels (e.g. LinkedIn, Angellist) has changed our perception of proximity and its resulting consequences (Ibert, 2010; Wilson, Crisp, & Mortensen, 2013; Wilson et al., 2008). Wilson et al. (2006) find that virtual interaction can lead to similar trust levels as face-to-face. In informal VC, digital channels could facilitate the deal flow of angels and the communication with entrepreneurs, two topics that are often stated as explanations for physical presence.

Today business angels have the opportunity to access online portals that present them with detailed information about potential startup investments (Rose, 2014). Professional networks allow angel investors to identify social connections to entrepreneurs or examine their educational and professional background. Various forms of communication services can facilitate the future relationship between angel and entrepreneur.

Our preceding argument of digitalization could not only explain the retreating importance of functional proximity in angel investing, but be applied to other fields of the social sciences where multidimensional proximity as a concept is eligible. Innovation studies have shown that virtual clusters can, amongst others, translate the previously discussed local buzz to "virtual global buzz", thereby closely resembling their physical counterparts (Tamoschus, 2012). Indeed, the dimension of virtual proximity has been introduced in innovation research as an additional explanatory construct of the relationship between two actors (Coughlan, 2014).

These findings provide us with a more sophisticated understanding of what the relationship is between the proximity and the likelihood of funding. It is however necessary to speculate about the forces that interact between proximity and the funding decision. An argument proposed in this paper is that proximity is able to reduce information asymmetry, uncertainty and risk associated with the investment decision. The relational aspect of proximity, we argue, has the ability to enable business angels and entrepreneurs to easier find common ground due to being socially, cognitively, or organizationally proximate to each other. In turn, this can facilitate communication and understanding which instill trust between the parties. With trust being proposed as a fundamental element in any investment decision, and provided that proximity generates trust, the link to why proximity increases the likelihood to funding becomes clear. Thus, the more proximate the business angel and the entrepreneurs are, or in more general terms the better they match – being socially close, cognitive similar or sharing affinity to an organization – despite any geographical vicinity, the greater is the chance of a deal to take place.

To conclude, our findings regarding the effect of multidimensional proximity largely confirm prior research from both tangent fields. We find an unexpected full mediation of the

effect of functional proximity on the investment decision by relational proximity. The reliability of this finding needs to be further investigated in the context of business angel investing before drawing conclusions about the diminishing importance of geographical distance. However, we point out possible explanations for our finding in the light of angel investing, and possible applications in other fields of social science.

5.2 Empirical and Theoretical Contribution

The purpose of this thesis has been to investigate the concept of in the context of investment decision-making (Avdeitchikova, 2008b).

Looking at the theoretical contribution this study provides, the findings in this paper add to the current literature and research on business angel investments by stipulating how proximity influences a deal decision. Light is shed on what affects a deal to take place by analyzing and synthesizing multiple dimensions of proximity, something that has been hypothesized in previous research but not systematically tested. In addition to this, another gap in the academic field was addressed, namely that of the methodological nature of studies. As with any intermediate research field, a significant share of studies has explored phenomena with a more descriptive approach. This study contributes with a solid framework and computable results on both decision-making and proximity, which recent scholar have been calling for (Avdeitchikova, 2008b; Mason & Landström, 2012).

From an empirical point of view, the angel market is becoming ever more important to the funding environment for startups, where still many startups fail due to financial constraints. In addition, most of startups that business angels assess are rejected in the screening phase. While there are many probable explanations to this, scholars argue that a mismatch exists between angels and entrepreneurs, driven by the lack of understanding of what influences the relationship between one another. By providing evidence of the importance proximity plays in the relationship, and more precisely by what dimensions it is driven, this study contributes to both investor and entrepreneurs with an understanding of what affects the relationship between the two, and why mismatches might decrease the likelihood of funding. One could speculate that this in turn could reduce the high rejection rate we see on the market today. Furthermore, the angel market is undergoing significant changes with the industry becoming more professionalized through institutionalized. With a movement towards a globalized economy as well as a more digitally connected world, the understanding of the effects of proximity becomes increasingly relevant to understand and study.

By bringing attention to this central and rather poorly understood issue, this thesis paves the way for further theoretical and empirical work in the area of proximity and business angel investing.

5.3 Limitations

There are a number of limitations to this study that we would like to bring attention to in order to interpret our result correctly.

To begin with, this study had the ambition of investigating two separate streams of research and combining them in a so far not established framework. As pointed out, the methodological approach has tried to accommodate for this risk by adopting intermediate theory, using a hybrid of qualitative and quantitative data. For example, the measures derived from both theory and the pre-study have only partly been tested, and not taken together in a full framework before. Despite this precaution, as any burgeoning research, we acknowledge this limitation.

As highlighted along the paper, the investment decision-making process has been one of the most studied areas within informal venture capital and business angel research. While many studies have provided a rich knowledgebase on this topic, it is very complex in nature with numerous evaluation criteria proposed. This study has assumed the importance of the people, and more specifically the relational criteria, based on prior work (Bachher & Guild, 1996; Hall & Hofer, 1993; Macmillan et al., 1985). Again, while we are convinced by the importance of the people-aspect, we recognize that other criteria, such as business opportunity and market-size, have a heavy impact on the funding decision, too.

Another limitation worth mentioning is the assumption made about the link between information asymmetry, risk and uncertainty, and the influence on a higher likelihood of investment decision. Our study tests the relationship and the underlying impact each proximity dimension has on the ability to impact funding. However, we do not test for how this directly affects information asymmetry, uncertainty and other risk factors. Collectively, we have assumed that proximity directly increases the likelihood of funding. While this is a common view among researchers (Maxwell, 2011), we admit that measuring these forces that lie in between proximity and funding decisions would have improved the results further.

By confining our research to visible business angels, we ignore a large portion of the informal venture capital market, as these invisible micro-investors make up for a weighty amount of investments. We therefore need to illuminate that the relationship in multidimensional proximity and its influence on financing may vary depending on what type of investor-entrepreneur relationship we study.

As previously mentioned, the methodology and data sampling is bound to have limitations. An additionally important aspect to mention here is the sampling of the data, which is geographically limited to Sweden and furthermore mostly generated from metropolitan cities. Given the proximity topic of this paper, this by nature is a shortcoming, and a clear explanation to why the institutional dimension is left out in the framework.

Thus, more studies on the topic of this thesis are needed to strengthen the academic relevance of the findings of this study that is expected to intensify as the area of

entrepreneurial finance becomes a key part of innovation and ultimately economic welfare (Kelly, 2007; Mason & Harrison, 2006).

5.4 Future Research

As outlined above, there is great potential for future research, and a wide range of areas could be explored and tested within both business angel investment decision-making and proximity theory.

This study has proven that proximity is indeed a strong influencer of funding decisions. However, the results are restricted in explaining how the dimensions individually affect the likelihood of investment. Therefore, we encourage scholars to continue investigating the complex field of how proximity impacts investment decision-making, and specifically measuring the direct importance of singular dimensions. We therefore propose that further measures are developed to assess this.

Another recommended topic for future studies is, in addition to measuring the impact of proximity, to stress the elements in between proximity and financing, concepts such as information asymmetry, trust, uncertainty and risk (Maxwell, 2011). By quantifying the relationship between proximity and these aspects, and in turn their relationship to funding, would enrich the complete picture of investment decision-making.

Furthermore, as noted in the limitations, the effect of proximity on funding decisions may differ depending on the context and actors. It would hence be interesting to study different types of actors (e.g. institutional VC investors, Micro-investors) to investigate potential differences in the relationship between proximity and the investment. Moreover, from a methodological point of view, an interesting aspect would be to include more control variables, setting the importance of proximity in relation to other evaluation criteria, such as market size, expected return, or product characteristics.

Besides this, another research route that could be interesting to study in the light of proximity would be the post-investment stage. Maxwell (2011) suggest that the ongoing relationship and the development between the business partners could be studied. It could therefore be noteworthy to investigate the effect of proximity on startup performance. Are proximate business angels and entrepreneurs more likely to perform better?

Another contemporary research field is related to the virtualization of the business angel market place. Our guess is that digitalization may have a great impact on how the proximity element is assessed in the future. Therefore, an additional research area that would be both highly interesting and relevant is to investigate the effect of proximity in decision-making by looking at deals occurring only online. This could shed light on the importance of the respective relational dimensions in an investment decision in complete isolation to a spatial context.

Placing the topic in an even broader perspective, this paper can be extended in a cross-border setting. Is proximity as important in other parts of the world? Are there significant differences between countries?

As a final denotation, looking back, considerable progress has been made mapping the business angel terrain, but much work remains to be done. The good news is, business angel research have exciting times ahead according to the 'Handbook of Research on Venture Capital' (Landström, 2007):

"We have reached what Malcolm Gladwell has termed a 'tipping point' where both the volume and sophistication of business angel research is set to explode. I appeal to the public sector to continue to fund business angel research as we are only now beginning to attack this challenging field of study in the sophisticated manner in which research has been undertaken in the venture capital field over the past 30 years. (...) Our journey has just begun". – (Kelly, 2007: p.328–329)

6. Concluding Remarks

This final chapter summarized the thesis, concludes the purpose and presents the answer to the overall research question.

The objective of this thesis was to answer the research questions:

What is the relationship between multidimensional proximity and the likelihood of business angel funding for innovative startups?

By assessing this question the aim of this study was to close the identified gap between current knowledge on angel investment decision-making and the impact of proximity in this equation.

By firstly examining academic literature, complemented by a qualitative pre-study to ensure contemporary and real world applicability, we extracted variables used for measuring the impact of proximity on the likelihood of financing. These variables were further tested in a quantitative survey and analyzed through the lens of a multidimensional framework, to gain a deeper understanding of the interrelationship between proximity dimensions and its impact on the relationship and funding decision. As seen throughout the thesis, to understand the concept of proximity one needs to break down the collective name of 'proximity' into different dimensions. The framework further grouped these dimensions into a relational as well as a functional construct.

The results from the study demonstrated that both these constructs of proximity indeed significantly influence a funding decision. Remarkably, the functional relationship to funding was in fact fully mediated by the relational aspect of proximity. Evidently, the functional proximity is not sufficient to explain investment behavior on its own, which is a rather controversial finding to what previous literature has proposed. Relational proximity proves to be consequentially a better explanation as to why business angels and entrepreneurs engage in business activities together. On a dimensional level, social proximity proved to be the strongest driver of the relational construct, followed by organizational and finally cognitive proximity.

To conclude, the relationship between proximity and the investment decision can best be explained by the mediating interaction of the functional and relational constructs. Functional proximity is thereby only an indirect influence on the funding decision, as it is fully mediated by relational proximity. In this way, the investment decision can partly be explained by how proximate the relationship between business angel and entrepreneur is.

7. References

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Appendix

Appendix I. Pre-Study Sample

Name	Role	Position	Organization / company	Date	Type of interview	Length
Maria Nilsson	Expert	Director of Financing and Recruitment	STING	26.09.2014	Face-to-face	60 min
Sofia Avdeitchikova	Expert	Advisor on economic growth policy, Research Fellow	Swedish Agency for Growth Policy Analysis, RATIO	01.10.2014	Face-to-face	120 min
Mattia Tosti	Entrepreneur	CEO	Qasa	01.10.2014	Face-to-face	60 min
Fredrik Hamilton	Entrepreneur	CEO	Sendus (Budbee)	01.10.2014	Face-to-face	60 min
Joakim Eklund	Entrepreneur	Founder	Moggles	01.10.2014	Skype	45 min
Jan-Eric Ramberg	Business Angel	Chairman of the board	Propel Capital, Scribe, Greenhat people, Easit	02.10.2014	Face-to-face	60 min
Rasmus Fahlander	Entrepreneur	CEO and co-founder	Freebee	02.10.2014	Face-to-face	60 min
Hans Landstrom	Expert	Professor (in entrepreneurship and venture finance)	Lund University	02.10.2014	Phone	30 min
Colin Mason	Expert	Professor (in entrepreneurship and management)	University of Glasgow (Adam Smith Business School)	02.10.2014	Skype	45 min
Fredrik Posse	Business Angel	Founder and Chairman of the board	Soundtrap/ Playwerk, Magazinet Neo, Edio Healthcare, Stryngford Management	5.10.2014	Skype	45 min
Erik Byrenius	Business Angel	Founder and Chairman of the board	Delivery Hero Holding, Rivalfox, Vaulted, Lingoda	09.10.2014	Face-to-face	60 min
Jonas Larsson	Business Angel	Founder and Chairman of the board	Touch QGEI MOM Investment	10.10.2014	Face-to-face	45 min

Table A.1: Pre-Study Interviews Overview

Appendix 2. Pre-study Interview Questions

Category	Sub-category	Question	Follow-up question
Background	History	What is your background?	Education? Work? Entrepreneur?
	Activity	Tell us about your time as a business angel or entrepreneur?	What was your motivation? When? How did you hear about it?
			How do you work? Active vs. passive
Pre-investment	Opportunity finding		Do you work full time or is this a side passion
		How do you do when you want to find ventures?	Wait to be contacted or do you proactively look?
		In what countries do you look for ventures?	Or is it very regional?
		Do you find it easy or difficult to find interesting opportunities?	Why? In what ways?
		What criteria do you use when searching for them?	Industry, experience etc. What is important for you?
Investment decision	Assessment	Do you have sufficient investment opportunities to choose from?	
		How do you conduct your selection process?	Please describe the full process and all investment criteria used
		Where do you look for investments?	What aspects of geography is important to you?
		What do you look for?	Describe the key investment criteria
		What do you look for in people?	Is being close, proximate, an important factor for a potential investment?
	Other experiences	What is important in the relationship?	What criteria do you consider most important for building trust?
		Additionally, what do you value most in building a relationship with the opposing party?	
Post-investment		How is the relationship typically changing post investment?	What relational factors are most important in a daily work cooperation?

Table A.2: Pre-Study Interview Questionnaire Guideline

Appendix 3. Main-Study: Survey Distribution

Status	Entrepreneurs	Entrepreneurial networks	Business angels	Business angel networks (BAN)	Total
Leads (#)	248	1	174	16	438
Contacted (#)	248	1	169	15	432
Completed (#)	95	N/A	55	N/A	202
Contact ratio	100.00%	100.00%	97.13%	100.00%	98.63%
Response Rate	38.31%	N/A	32.54%	N/A	46.76%
Channels	Email Facebook LinkedIn	Email	Email LinkedIn	Email	
Source	Personal contacts Custice Yeos FoundersAlliance Startuplocation SwedishStartupSpace StockholmFest SSE Business Lab Signup-form	SUP46		CONNECT Sweden ALMI BAN CONNEC Coach & Capital Spintop Ventures Framtidslyftet Stockholms affärsänglar EKap East Kapital Core Competence The Scandinavian Angel Investment Network	

Table A.3: Survey Distribution Overview

Appendix 4. Survey Items Overview

Function	Construct	Item	Measurement Level	Scale
Proximity Model	Dependent Variable	Financed	Binary	1 = Yes, 2 = No
Proximity Model	Cognitive	Education	Ordinal	Likert Scale
Proximity Model	Cognitive	Professional	Ordinal	Likert Scale
Proximity Model	Cognitive	Entrepreneurial	Ordinal	Likert Scale
Proximity Model	Organizational	Organization	Ordinal	Likert Scale
Proximity Model	Organizational	Membership	Ordinal	Likert Scale
Proximity Model	Organizational	Cooperation	Ordinal	Likert Scale
Proximity Model	Social	Ties	Nominal	0 = No tie, 1 = Indirect tie, 2 = Direct tie
Proximity Model	Social	Closeness	Ordinal	Likert
Proximity Model	Geographic	Distance	Ordinal	Categorical 1- 4
Proximity Model	Geographic	Time	Ordinal	Categorical 1- 4
Proximity Model	Geographic	Cost	Ordinal	Categorical 1- 4
Control Variable	Type	Type	Binary	0 = Angel, 1 = Entrepreneur
Control Variable	Demographics	Gender	Binary	0 = Male, 1 = Female
Control Variable	Demographics	Age	Ratio	Year of Birth
Control Variable	Demographics	City	Nominal	Categorical (largest cities)
Control Variable	Startup Eligibility	Innovative	Binary	0 = No, 1 = Yes
Control Variable	Startup Eligibility	Revenue Goal	Ratio	0 – 5000 %
Control Variable	Startup Eligibility	Employee Goal	Ratio	0 – 5000 %
Control Variable	Startup Eligibility	Industry	Nominal	Categorical

Table A.4: Summary Survey Items and Scales

Appendix 5. Survey (in Swedish)

Investeringar i innovationsföretag

Hej,

Tack för att du medverkar i denna enkätundersökning som är en del av vår masteruppsats på Handelshögskolan i Stockholm. Vi uppskattar att den kommer ta ca 6-10min att genomföra. Studien syftar till att utforska den informella riskkapitalmarknaden för småbolag i Sverige och specifikt relationen mellan privata investerare (affärsänglar) och entreprenörer. Alla svar behandlas anonymt.

Med Vänlig Hälsning,
Alexander Hjertström & Johannes Herrmann

SEKTION: GENERELL

Anser du att din profil passar någon av de följande rollerna? (Om du anser dig vara både en privat investerare och entreprenör så ber vi dig välja den roll som du spenderar mest tid på)

Definitioner:

* Investerare (t.ex. affärsängel) = privatperson som investerar sitt eget kapital i snabbväxande småbolag (utan familjeanknytning)

*Entreprenör = grundare eller medgrundare till ett nystartat bolag

- ☐ Privat investerare
 - ☐ Entreprenör
 - ☐ Inget av ovanstående (avsluta enkäten)
-

SEKTION: INVESTERARE

Har du under de tre senaste åren investerat i minst ett bolag, som vid tidpunkten för investeringen var yngre än tre år?

- ☐ Ja
☐ Nej

Tänk på en specifik situation där du övervägde en investeringsmöjlighet vilket ledde till en investering i bolaget. Vänligen besvara följande påståenden gällande er relation till minst en av företagsgrundarna:

Skalan: 1=Stämmer inte alls, 2=Stämmer inte, 3=Stämmer någorlunda, 4=Stämmer, 5=Stämmer bra, 6=Stämmer mycket bra

Arbets- och utbildningsbakgrund

	1	2	3	4	5	6
Grundarna och jag har samma typ av utbildning vad gäller ämnesområde. (t.ex. ekonomi, juridik etc.)	☐	☐	☐	☐	☐	☐
Jag har arbetslivserfarenhet från samma typ av position och/eller branch som grundarna har. (t.ex. position som säljare, utvecklare etc. eller t.ex. konsumentvaror & detaljhandel etc.)	☐	☐	☐	☐	☐	☐
Jag har en motsvarande entreprenöriell erfarenhet som grundarna. (t.ex. startat bolag)	☐	☐	☐	☐	☐	☐

Sociala relationer

Min relation till grundarna stämmer bäst överrens med:

- ☐ Jag kände inte grundarna.
☐ Jag kände grundarna via gemensamma kontakter.
☐ Jag kände grundarna personligen.

Hur väl anser du att ni kände varandra?

	1	2	3	4	5	6
Närhet i relationen	☐	☐	☐	☐	☐	☐

Koppling till organisation

	1	2	3	4	5	6
Jag hade tidigare jobbat nära någon av grundarna på samma företag. (t.ex. i samma team eller avdelning)	☐	☐	☐	☐	☐	☐
Jag hade vid tidigare tillfälle varit engagerad i samma nätverk/förening som någon av grundarna. (t.ex. inkubatorer, föreningar etc.)	☐	☐	☐	☐	☐	☐
En eller flera av de organisationer jag har varit verksam inom har haft ett samarbete där någon av grundarna varit anknuten till. (t.ex. Venture cup eller Swedish Venture Capital Association)	☐	☐	☐	☐	☐	☐

Geografisk närhet

Ungefär hur långt var det till grundarna? (enkelväg)

- ☐ under 5 km
- ☐ 5 - 50 km
- ☐ 50 - 250 km
- ☐ mer än 250 km

Ungefär hur lång var restiden till grundarna? (enkelväg)

- ☐ under 20 min
- ☐ 20 - 60 min
- ☐ 1-3 timmar
- ☐ mer än 3 timmar

Ungefär hur mycket kostade en resa för att få träffa grundarna? (enkelväg)

- ☐ under 200 SEK
- ☐ 200 - 800 SEK
- ☐ 800 - 3000 SEK
- ☐ mer än 3000 SEK

Har du vid något annat tillfälle inom de senaste tre åren även övervägt minst en investering i ett bolag som är yngre än tre år men som inte blev av?

- ☐ Ja
☐ Nej

Vänligen besvara samma frågor igen men där du tänker på den nya situationen.

Skalan: 1=Stämmer inte alls, 2=Stämmer inte, 3=Stämmer någorlunda, 4=Stämmer, 5=Stämmer bra, 6=Stämmer mycket bra

Arbets- och utbildningsbakgrund

	1	2	3	4	5	6
Grundarna och jag har samma typ av utbildning vad gäller ämnesområde. (t.ex. ekonomi, juridik etc.)	☐	☐	☐	☐	☐	☐
Jag har arbetslivserfarenhet från samma typ av position och/eller branch som grundarna har. (t.ex. position som säljare, utvecklare etc. eller t.ex. konsumentvaror & detaljhandel etc.)	☐	☐	☐	☐	☐	☐
Jag har en motsvarande entreprenöriell erfarenhet som grundarna. (t.ex. startat bolag)	☐	☐	☐	☐	☐	☐

Sociala relationer

Min relation till grundarna stämmer bäst överrens med:

- ☐ Jag kände inte grundarna.
☐ Jag kände grundarna via gemensamma kontakter.
☐ Jag kände grundarna personligen.

Hur väl anser du att ni kände varandra?

	1	2	3	4	5	6
Närhet i relationen	☐	☐	☐	☐	☐	☐

Koppling till organisation

	1	2	3	4	5	6
Jag hade tidigare jobbat nära någon av grundarna på samma företag. (t.ex. i samma team eller avdelning)	☐	☐	☐	☐	☐	☐
Jag hade vid tidigare tillfälle varit engagerad i samma nätverk/förening som någon av grundarna. (t.ex. inkubatorer, föreningar etc.)	☐	☐	☐	☐	☐	☐
En eller flera av de organisationer jag har varit verksam inom har haft ett samarbete där någon av grundarna varit anknuten till. (t.ex. Venture cup eller Swedish Venture Capital Association)	☐	☐	☐	☐	☐	☐

Geografisk närhet

Ungefär hur långt var det till grundarna? (enkelväg)

- ☐ under 5 km
- ☐ 5 - 50 km
- ☐ 50 - 250 km
- ☐ mer än 250 km

Ungefär hur lång var restiden till grundarna? (enkelväg)

- ☐ under 20 min
- ☐ 20 - 60 min
- ☐ 1-3 timmar
- ☐ mer än 3 timmar

Ungefär hur mycket kostade en resa för att få träffa grundarna? (enkelväg)

- ☐ under 200 SEK
- ☐ 200 - 800 SEK
- ☐ 800 - 3000 SEK
- ☐ mer än 3000 SEK

SEKTION: ENTREPRENÖR

Har du någonsin funderat på eller varit i en dialog med en privat investerare för att skaffa kapital till ert företag?

- ☐ Ja
- ☐ Nej, det har aldrig varit aktuellt (avsluta enkät)

Anser du att ert företag är ett innovationsföretag? (dvs. anser ni er vara nytänkande i någon mån eller aspekt)

- ☐ Ja
- ☐ Nej

Inom vilken branch är ert företag verksamt?

- ☐ Bioteknik
- ☐ Hårdvara
- ☐ Internet
- ☐ Medicin/hälsovård
- ☐ Mjukvara
- ☐ Telekom
- ☐ Annan: _____

Ungefär hur mycket uppskattar ni er genomsnittliga omsättningstillväxt till för de kommande åren?

_____ genomsnittlig omsättningstillväxt i procent

Ungefär vad har ni för tillväxtmål gällande antalet anställda för företaget inom de kommande åren?

_____ tillväxtmål gällande antalet anställda i procent

Har ert företag erhållit kapital från en privat investerare/affärsängel?

- ☐ Ja
- ☐ Nej

Som entreprenör ber vi dig nu att tänka på en situation där ni övervägde att skaffa kapital och fick finansiering från en investerare. Vänligen besvara följande påståenden.

Skalan: 1=Stämmer inte alls, 2=Stämmer inte, 3=Stämmer någorlunda, 4=Stämmer, 5=Stämmer bra, 6=Stämmer mycket bra

Arbets- och utbildningsbakgrund

	1	2	3	4	5	6
Investeraren och jag har samma typ av utbildning vad gäller ämnesområde. (t.ex. ekonomi, juridik etc.)	☐	☐	☐	☐	☐	☐
Jag har arbetslivserfarenhet från samma typ av position och/eller branch som investeraren har. (t.ex. position som säljare, utvecklare etc. eller t.ex. konsumentvaror & detaljhandel etc.)	☐	☐	☐	☐	☐	☐
Jag har en motsvarande entreprenöriell erfarenhet som investeraren. (t.ex. startat bolag)	☐	☐	☐	☐	☐	☐

Sociala relationer

Min relation till investeraren stämmer bäst överrens med:

- ☐ Jag kände inte investeraren.
- ☐ Jag kände investeraren via gemensamma kontakter.
- ☐ Jag kände investeraren personligen.

Hur väl anser du att ni kände varandra?

	1	2	3	4	5	6
Närhet i relationen	☐	☐	☐	☐	☐	☐

Koppling till organisation

	1	2	3	4	5	6
Jag hade tidigare jobbat nära investeraren på samma företag. (t.ex. i samma team eller avdelning)	☐	☐	☐	☐	☐	☐
Jag hade vid tidigare tillfälle varit engagerad i samma nätverk/förening som investeraren. (t.ex. inkubatorer, föreningar etc.)	☐	☐	☐	☐	☐	☐
En eller flera av de organisationer jag har varit verksam inom har haft ett samarbete där investeraren varit anknuten till. (t.ex. Venture cup eller Swedish Venture Capital Association)	☐	☐	☐	☐	☐	☐

Geografisk närhet

Ungefär hur långt var det till investeraren? (enkelväg)

- ☐ under 5 km
- ☐ 5 - 50 km
- ☐ 50 - 250 km
- ☐ mer än 250 km

Ungefär hur lång var restiden till investeraren? (enkelväg)

- ☐ under 20 min
- ☐ 20 - 60 min
- ☐ 1-3 timmar
- ☐ mer än 3 timmar

Ungefär hur mycket kostade en resa för att få träffa investeraren? (enkelväg)

- ☐ under 200 SEK
- ☐ 200 - 800 SEK
- ☐ 800 - 3000 SEK
- ☐ mer än 3000 SEK

Har du även varit med om en situation där ni övervägt att ta in kapital men där finansieringen från affärsängeln uteblev?

- ☐ Ja
☐ Nej, aldrig

Vänligen besvara nedanstående frågor gällande er koppling till affärsängeln vid ett tillfälle då ni inte fick finansiering.

Skalan: 1=Stämmer inte alls, 2=Stämmer inte, 3=Stämmer någorlunda, 4=Stämmer, 5=Stämmer bra, 6=Stämmer mycket bra

Arbets- och utbildningsbakgrund

	1	2	3	4	5	6
Investeraren och jag har samma typ av utbildning vad gäller ämnesområde. (t.ex. ekonomi, juridik etc.)	☐	☐	☐	☐	☐	☐
Jag har arbetslivserfarenhet från samma typ av position och/eller branch som investeraren har. (t.ex. position som säljare, utvecklare etc. eller t.ex. konsumentvaror & detaljhandel etc.)	☐	☐	☐	☐	☐	☐
Jag har en motsvarande entreprenöriell erfarenhet som investeraren. (t.ex. startat bolag)	☐	☐	☐	☐	☐	☐

Sociala relationer

Min relation till investeraren stämmer bäst överrens med:

- ☐ Jag kände inte investeraren.
☐ Jag kände investeraren via gemensamma kontakter.
☐ Jag kände investeraren personligen.

Hur väl anser du att ni kände varandra?

	1	2	3	4	5	6
Närhet i relationen	☐	☐	☐	☐	☐	☐

Koppling till organisation

	1	2	3	4	5	6
Jag hade tidigare jobbat nära investeraren på samma företag. (t.ex. i samma team eller avdelning)	☐	☐	☐	☐	☐	☐
Jag hade vid tidigare tillfälle varit engagerad i samma nätverk/förening som investeraren. (t.ex. inkubatorer, föreningar etc.)	☐	☐	☐	☐	☐	☐
En eller flera av de organisationer jag har varit verksam inom har haft ett samarbete där investeraren varit anknuten till. (t.ex. Venture cup eller Swedish Venture Capital Association)	☐	☐	☐	☐	☐	☐

Geografisk närhet

Ungefär hur långt var det till investeraren? (enkelväg)

- ☐ under 5 km
- ☐ 5 - 50 km
- ☐ 50 - 250 km
- ☐ mer än 250 km

Ungefär hur lång var restiden till investeraren? (enkelväg)

- ☐ under 20 min
- ☐ 20 - 60 min
- ☐ 1-3 timmar
- ☐ mer än 3 timmar

Ungefär hur mycket kostade en resa för att få träffa investeraren? (enkelväg)

- ☐ under 200 SEK
- ☐ 200 - 800 SEK
- ☐ 800 - 3000 SEK
- ☐ mer än 3000 SEK

SEKTION: GENERELL

Är du man eller kvinna?

- ☐ Man
- ☐ Kvinna

Vilket år är du född? (exempel: år 1973)

Vilken är din arbetsort?

- ☐ Stockholm
- ☐ Göteborg
- ☐ Malmö
- ☐ Uppsala
- ☐ Västerås
- ☐ Hälsingborg
- ☐ Örebro
- ☐ Linköping
- ☐ Other

Tack, du är nu färdig med enkäten! Om du är intresserad att ta del av våra resultat och slutsatser så skriv bara in dina kontaktuppgifter nedan. Den här informationen är separerad från enkätundersökningen.

Namn

Email

Organisation/företag

Appendix 6. Descriptive Statistics

N=225	Min	Max	Median	Mean	Std. Error	Variance	Std. Deviation
Financed	1	2	1	1.49	0.03	0.25	0.50
Education	1	6	3	2.98	0.11	2.66	1.63
Entrepreneurial	1	6	3	3.38	0.11	2.65	1.63
Professional	1	6	3	3.20	0.11	2.54	1.59
Cost	1	4	1	1.53	0.06	0.83	0.91
Distance	1	4	2	2.09	0.07	1.09	1.05
Time	1	4	2	1.92	0.07	0.95	0.98
Cooperation	1	6	1	2.22	0.11	2.67	1.63
Membership	1	6	2	2.40	0.11	2.67	1.63
Organization	1	6	1	1.62	0.08	1.62	1.27
Closeness	0	6	0	1.56	0.12	3.13	1.77

Table A.5: Descriptive Statistics Survey Items

Appendix 7. Group-Level Comparison of Cronbach's Alpha

p = 0.05	Business Angel	Entrepreneur
N	119	118
Item Count	11	11
Cronbach's Alpha	0.79	0.73
Null Hypothesis	$CA_{BA} = CA_E$	
Alternative Hypothesis	$CA_{BA} \neq CA_E$	

Table A.6: Cronbach's Alpha Group Significance Testing

The null hypothesis can be retained since the p-value of Chi Square ($X^2=1.5395$) is not significant ($p = 0.215$).

Appendix 8. CFA Model Summary

N = 225		Estimate	Std. Error	Z-Value	P(> Z)
Latent Variables	Cognitive				
	Professional	1.000			
	Educational	0.964	0.157	6.140	0.000
	Entrepreneurial	0.609	0.120	5.091	0.000
	Organizational				
	Membership	1.000			
	Cooperation	0.682	0.140	4.875	0.000
	Social				
	Closeness	1.000			
	Geographical				
	Distance	1.000			
	Time	0.948	0.036	26.426	0.000
	Cost	0.817	0.038	21.553	0.000
Covariances	Cognitive				
	Organizational	0.718	0.166	4.335	0.000
	Geographic	0.186	0.095	1.947	0.052
	Social	0.605	0.176	3.444	0.001
	Organizational				
	Geographic	0.210	0.106	1.978	0.048
	Social	1.104	0.204	5.421	0.000
	Geographic				
	Social	0.198	0.119	1.666	0.096

Table A.7: Parameter Estimates CFA Model

N = 225		Estimate	Std. Error	R ²
Variances	Professional	1.147	0.230	0.546
	Educational	1.371	0.230	0.483
	Entrepreneurial	2.123	0.221	0.194
	Membership	1.019	0.322	0.616
	Cooperation	1.897	0.229	0.287
	Closeness	0.000		1.000
	Distance	0.135	0.023	0.876
	Time	0.093	0.019	0.903
	Cost	0.189	0.022	0.772
	Cognitive	1.380	0.294	
	Organizational	1.638	0.384	
	Geographical	0.954	0.104	
	Social	3.118	0.294	

Table A.8: Variances and R² CFA Model

Appendix 9. SEM Model A Summary

N = 225	Measurement Model	Recommended
Degrees of freedom	32	-
χ^2	0.014	-
CFI	0.977	> 0.95
SRMR	0.060	< 0.08
RMSEA	0.053	< 0.08

Table A.9: Model Fit Statistics SEM Model A

N = 225		Estimate	Std. Error	Z-Value	P(> Z)
Latent Variables	Cognitive				
	Professional	1.000			
	Educational	0.988	0.161	6.136	0.000
	Entrepreneurial	0.613	0.121	5.078	0.000
	Organizational				
	Membership	1.000			
	Cooperation	0.694	0.121	5.078	0.000
	Social				
	Closeness	1.000			
	Geographical				
	Distance	1.000			
	Time	0.947	0.036	26.433	0.000
	Cost	0.818	0.038	21.582	0.000
	Relational				
	Organizational	1.000			
Regressions	Social	0.877	0.217	4.049	0.000
	Cognitive	0.574	0.151	3.795	0.000
	Functional				
	Geographical	1.000			
Covariances	Financed				
	Functional	0.079	0.035	2.292	0.022
Covariances	Relational				
	Functional	0.232	0.097	2.380	0.017

Table A.10: Parameter Estimates SEM Model A

APPENDIX

N = 225		Estimate	Std. Error	R ²
Variances	Professional	1.179	0.228	0.533
	Educational	1.337	0.233	0.496
	Entrepreneurial	2.128	0.222	0.192
	Membership	1.048	0.315	0.606
	Cooperation	1.884	0.229	0.292
	Closeness	0.000		1.000
	Distance	0.134	0.023	0.877
	Time	0.093	0.019	0.902
	Cost	0.188	0.022	0.772
	Financed	0.244	0.023	0.024
	Cognitive	0.939	0.239	0.303
	Organizational	0.370	0.374	0.770
	Geographical	0.000		1.000
	Social	2.165	0.303	0.306
	Relational	1.239	0.365	
	Functional	0.955	0.104	

Table A.11: Variances and R² SEM Model A

Appendix 10. SEM Model B Summary

N = 225	Measurement Model	Recommended
Degrees of freedom	32	-
χ^2	0.025	-
CFI	0.980	> 0.95
SRMR	0.053	< 0.08
RMSEA	0.049	< 0.08

Table A.12: Model Fit Statistics SEM Model B

N = 225		Estimate	Std. Error	Z-Value	P(> Z)
Latent Variables	Cognitive				
	Professional	1.000			
	Educational	0.976	0.157	6.230	0.000
	Entrepreneurial	0.621	0.120	5.155	0.000
	Organizational				
	Membership	1.000			
	Cooperation	0.698	0.150	4.658	0.000
	Social				
	Closeness	1.000			
	Geographical				
	Distance	1.000			
	Time	0.947	0.036	26.422	0.000
	Cost	0.818	0.038	21.570	0.000
	Relational				
	Organizational	0.912	0.204	4.463	0.000
Regressions	Social	1.000			
	Cognitive	0.643	0.152	4.243	0.000
	Functional				
Covariances	Geographical	1.000			
	Financed				
	Relational	0.120	0.043	2.799	0.005
	Functional	0.247	0.097	2.548	0.011

Table A.13: Parameter Estimates SEM Model B

N = 225		Estimate	Std. Error	R ²
Variances	Professional	1.170	0.225	0.537
	Educational	1.361	0.228	0.487
	Entrepreneurial	2.112	0.221	0.198
	Membership	1.056	0.334	0.603
	Cooperation	1.880	0.235	0.293
	Closeness	0.000		1.000
	Distance	0.134	0.023	0.877
	Time	0.093	0.019	0.902
	Cost	0.189	0.022	0.772
	Financed	0.234	0.023	0.065
	Cognitive	0.889	0.233	0.345
	Organizational	0.661	0.344	0.587
	Geographical	0.000		1.000
	Social	1.986	0.304	0.363
	Relational	1.132	0.330	
	Functional	0.955	0.104	

Table A.14: Variances and R² SEM Model B

Appendix II. SEM Model C Summary

N = 225	Measurement Model	Recommended
Degrees of freedom	31	-
χ^2	0.031	-
CFI	0.982	> 0.95
SRMR	0.050	< 0.08
RMSEA	0.048	< 0.08

Table A.15: Model Fit Statistics SEM Model C

N = 225		Estimate	Std. Error	Z-Value	P(> Z)
Latent Variables	Cognitive				
	Professional	1.000			
	Educational	0.984	0.158	6.213	0.000
	Entrepreneurial	0.620	0.121	5.138	0.000
	Organizational				
	Membership	1.000			
	Cooperation	0.688	0.147	4.679	0.000
	Social				
	Closeness	1.000			
	Geographical				
	Distance	1.000			
	Time	0.947	0.036	26.431	0.000
	Cost	0.817	0.038	21.590	0.000
	Relational				
	Organizational	0.937	0.213	4.405	0.000
Regressions	Social	1.000			
	Cognitive	0.636	0.151	4.226	0.000
	Functional				
	Geographical	1.000			
	Financed				
Regressions	Geographical	0.055	0.036	1.545	0.122
	Relational				
	Geographical	0.237	0.099	2.409	0.016
	Financed				
Regressions	Relational	0.099	0.043	2.292	0.022
	Indirect Effect	0.023	0.013	1.738	0.082
	Total Effect	0.079	0.035	2.275	0.023

Table A.16: Parameter Estimates SEM Model C

N = 225		Estimate	Std. Error	R ²
Variances	Professional	1.179	0.225	0.533
	Educational	1.349	0.229	0.492
	Entrepreneurial	2.116	0.221	0.197
	Membership	1.035	0.335	0.611
	Cooperation	1.890	0.234	0.289
	Closeness	0.000		1.000
	Distance	0.134	0.023	0.877
	Time	0.094	0.019	0.901
	Cost	0.188	0.022	0.772
	Financed	0.234	0.023	0.066
	Cognitive	0.891	0.233	0.339
	Organizational	0.632	0.352	0.610
	Geographical	0.000		1.000
	Social	1.990	0.307	0.362
	Relational			0.048
	Functional			

Table A.17: Variances and R² SEM Model C

Appendix 12. R Coding Print

```

library(foreign)
library(lavaan)
library(xtable)
library(pastecs)
library(reshape2)
library(stringr)
library(plyr)
library(gmodels)
library(sjPlot)
library(semTools)
library(coefficientsalpha)
library(psych)
alpha <- psych::alpha
library(R2HTML)
library(nortest)
library(fBasics)
library(Hmisc)
library(cocron)
library(normtest)
library(MVN)

setwd("~/RHome/MasterThesis")
data <- read.spss("~/RHome/MasterThesis/2014_11_19_204_Responses.sav",
  to.data.frame = TRUE,
  use.value.labels = FALSE)

## RENAMING COLUMNS AND SELECTION NECESSARY DATA

# 1. Removing Unused columns

# -> Unused columns are removed with SPSS

# 2. Add and id renaming to data set

sample_clean <- data
sample_clean$id <- 1:NROW(sample_clean)
sample_clean <- rename(sample_clean, c(F3 = "BA_Invested", F15 = "BA_Opportunity",
  F32 = "EN_Invested", F44 = "EN_Opportunity", V10 = "Complete", F2 = "Entrepreneur",
  F56 = "Female", F57 = "Age", Q60.0 = "City", F28 = "Innovative", F29 = "Industry",
  F30_3 = "RevenueGoal", F31_2 = "EmployeeGoal", F6_1 = "BA_C_E_IN", F18_1 = "BA_C_E_NIN",
  F35_1 = "EN_C_E_IN", F47_1 = "EN_C_E_NIN", F6_2 = "BA_C_P_IN", F18_2 = "BA_C_P_NIN",
  F35_2 = "EN_C_P_IN", F47_2 = "EN_C_P_NIN", F6_3 = "BA_C_F_IN", F18_3 = "BA_C_F_NIN",

```

```

F35_3 = "EN_C_F_IN", F47_3 = "EN_C_F_NIN", F10_1 = "BA_O_O_IN", F22
_1 = "BA_O_O_NIN",
F39_1 = "EN_O_O_IN", F51_1 = "EN_O_O_NIN", F10_2 = "BA_O_N_IN", F22
_2 = "BA_O_N_NIN",
F39_2 = "EN_O_N_IN", F51_2 = "EN_O_N_NIN", F10_3 = "BA_O_I_IN", F22
_3 = "BA_O_I_NIN",
F39_3 = "EN_O_I_IN", F51_3 = "EN_O_I_NIN", F8 = "BA_S_T_IN", Q71 =
"BA_S_T_NIN",
Q66 = "EN_S_T_IN", Q75 = "EN_S_T_NIN", F9_1 = "BA_S_C_IN", Q72_1 =
"BA_S_C_NIN",
Q74_1 = "EN_S_C_IN", Q76_1 = "EN_S_C_NIN", F12 = "BA_G_D_IN", F24 =
"BA_G_D_NIN",
F41 = "EN_G_D_IN", F53 = "EN_G_D_NIN", F13 = "BA_G_T_IN", F25 = "BA
_G_T_NIN",
F42 = "EN_G_T_IN", F54 = "EN_G_T_NIN", F14 = "BA_G_C_IN", F26 = "BA
_G_C_NIN",
F43 = "EN_G_C_IN", F55 = "EN_G_C_NIN"))

```

Description of Sample in Terms of Respondents

```

sample_desc <- data.frame(row.names = c("Responses Total", "Eligible",
"Completed",
"Invested", "Not Invested"))
sample_desc$BA <- c(NROW(sample_clean[sample_clean$Entrepreneur == 0, ]
), NROW(sample_clean[sample_clean$BA_Invested ==
1 & sample_clean$Entrepreneur == 0, ]), NROW(sample_clean[sample_cl
ean$BA_Invested ==
1 & sample_clean$Entrepreneur == 0, ]), NROW(sample_clean[sample_cl
ean$Entrepreneur ==
0 & sample_clean$BA_Invested == 1, ]), NROW(sample_clean[sample_cle
an$BA_Invested ==
1 & sample_clean$Entrepreneur == 0 & sample_clean$BA_Opportunity ==
1, ]))

sample_desc$EN <- c(NROW(sample_clean[sample_clean$Entrepreneur == 1, ]
), NROW(sample_clean[sample_clean$Entrepreneur ==
1 & sample_clean$Innovative == 1 & (sample_clean$Revenue > 25 | sam
ple_clean$Employee >
15), ]), NROW(sample_clean[sample_clean$Entrepreneur == 1 & sample_
clean$Innovative ==
1 & (sample_clean$Revenue > 25 | sample_clean$Employee > 15) & samp
le_clean$Completed ==
1, ]), NROW(sample_clean[sample_clean$Entrepreneur == 1 & sample_cl
ean$Innovative ==
1 & (sample_clean$Revenue > 25 | sample_clean$Employee > 15) & samp
le_clean$EN_Invested ==
1, ]), NROW(sample_clean[sample_clean$Entrepreneur == 1 & sample_cl
ean$Innovative ==
1 & (sample_clean$Revenue > 25 | sample_clean$Employee > 15) & samp

```

```

le_clean$EN_Opportunity ==
  1, ]))
sample_desc$Total <- sample_desc$BA + sample_desc$EN

# PREPERATION FOR SEM ANALYSIS

# 1. Exclude non-eligible cases

angel <- subset(sample_clean, BA_Invested == 1)
entrepreneur <- subset(sample_clean, Innovative == 1)

entrepreneur <- subset(entrepreneur, RevenueGoal > 25 | EmployeeGoal >
15)

sample_filtered <- rbind(entrepreneur, angel)

sample_melting <- sample_filtered[, c("id", "Complete", "Entrepreneur",
"Female",
  "Age", "City", "Innovative", "Industry", "RevenueGoal", "EmployeeGo
al",
  "BA_C_E_IN", "BA_C_E_NIN", "EN_C_E_IN", "EN_C_E_NIN", "BA_C_P_IN",
"BA_C_P_NIN",
  "EN_C_P_IN", "EN_C_P_NIN", "BA_C_F_IN", "BA_C_F_NIN", "EN_C_F_IN",
"EN_C_F_NIN",
  "BA_O_O_IN", "BA_O_O_NIN", "EN_O_O_IN", "EN_O_O_NIN", "BA_O_N_IN",
"BA_O_N_NIN",
  "EN_O_N_IN", "EN_O_N_NIN", "BA_O_I_IN", "BA_O_I_NIN", "EN_O_I_IN",
"EN_O_I_NIN",
  "BA_S_T_IN", "BA_S_T_NIN", "EN_S_T_IN", "EN_S_T_NIN", "BA_S_C_IN",
"BA_S_C_NIN",
  "EN_S_C_IN", "EN_S_C_NIN", "BA_G_D_IN", "BA_G_D_NIN", "EN_G_D_IN",
"EN_G_D_NIN",
  "BA_G_T_IN", "BA_G_T_NIN", "EN_G_T_IN", "EN_G_T_NIN", "BA_G_C_IN",
"BA_G_C_NIN",
  "EN_G_C_IN", "EN_G_C_NIN")]

# Wide to Long Transformation

cases <- melt(sample_melting, id.var = 1:10, value.name = "Value", vari
able.name = "Type",
  na.rm = TRUE)
cases$Financed <- 0
cases <- within(cases, {
  Financed = ifelse(str_sub(cases$Type, -3, -1) == "NIN", 1, 2)
})
cases$Type <- str_sub(cases$Type, 4, 6)

```

```

cases <- dcast(cases, id + Complete + Entrepreneur + Female + Age + Cit
y + Innovative +
  Industry + RevenueGoal + EmployeeGoal + Financed ~ Type, value.var
= "Value")
cases <- rename(cases, c(C_E = "Education", C_P = "Professional", C_F =
"Entrepreneurial",
  O_O = "Organization", O_N = "Membership", O_I = "Cooperation", S_T
= "Ties",
  S_C = "Closeness", G_D = "Distance", G_T = "Time", G_C = "Cost"))
cases$Closeness[is.na(cases$Closeness)] <- 0

# Only Complete Cases and Remove Social ties

cases_complete <- cases[cases$Complete == 1, ]
cases_complete <- cases_complete[, c(11, 12, 13, 14, 15, 16, 17, 18, 19
, 20,
  21, 3)]

cases_complete$Financed <- as.numeric(cases_complete$Financed)

# Data Reliability || Cronbach's Alpha

case_ba <- cases_complete[cases_complete$Entrepreneur == 0, 1:11]
case_en <- cases_complete[cases_complete$Entrepreneur == 1, 1:11]
alpha_ba <- alpha(case_ba)
alpha_ba_cognitive <- alpha(case_ba[, 2:4])
alpha_ba_organizational <- alpha(case_ba[, 8:10])
alpha_ba_geographical <- alpha(case_ba[, 5:7])

alpha_en <- alpha(case_en)
alpha_en_cognitive <- alpha(case_en[, 2:4])
alpha_en_organizational <- alpha(case_en[, 8:10])
alpha_en_geographical <- alpha(case_en[, 5:7])

alpha_total <- alpha(cases_complete[, 1:11])
alpha_cognitive <- alpha(cases_complete[, 2:4])
alpha_organizational <- alpha(cases_complete[, 8:10])
alpha_geographical <- alpha(cases_complete[, 5:7])

cocron.n.coefficients(alpha = c(0.79, 0.73), n = c(119, 118), items = c
(11,
  11), dep = FALSE, los = 0.05, conf.level = 0.95)

# Testing for Normality

# Individual Normality for Items
desc <- as.data.frame(t(stat.desc(cases_complete, basic = FALSE, norm =
TRUE)))
desc_out <- desc[, c(2, 6, 8, 9, 10, 11)]
desc_out <- rename(desc_out, c(mean = "Mean", std.dev = "Std. Deviation

```

```

", skewness = "Skewness",
  kurtosis = "Kurtosis"))

mardiaKurtosis(na.omit(cases_complete))

# SEM

# Measurement Model

CFA.Model <- " # Measurement Model\nCognitive =~ Professional + Education + Entrepreneurial\nOrganizational =~ Membership + Cooperation\nGeographic =~ Distance + Time + Cost\nSocial =~ Closeness\n"
cfa_fit <- cfa(CFA.Model, data = cases_complete)
summary(cfa_fit, fit.measures = TRUE, standardize = TRUE, rsq = TRUE)

# Structural Model

## SEM Model A (Geographical Predictor)

SEM.Model_A <- " # Measurement Model\nCognitive =~ Professional + Education + Entrepreneurial\nOrganizational =~ Membership + Cooperation\nGeographic =~ Distance + Time + Cost\nRelational =~ Organizational + Social + Cognitive\nFunctional =~ Geographic\nSocial =~ Closeness\n# Regressions\nFinanced ~ Functional\n\n"
fit_A <- sem(SEM.Model_A, data = cases_complete)

## SEM Model B (Relational is Predictor)

SEM.Model_B <- " # Measurement Model\nCognitive =~ Professional + Education + Entrepreneurial\nOrganizational =~ Membership + Cooperation\nGeographic =~ Distance + Time + Cost\nRelational =~ Social + Organizational + Cognitive\nFunctional =~ Geographic\nSocial =~ Closeness\n# Regressions\nFinanced ~ Relational\n\n"
fit_B <- sem(SEM.Model_B, data = cases_complete)

## SEM Model C (Mediation)

SEM.Model_C <- " # Measurement Model\nCognitive =~ Professional + Education + Entrepreneurial\nOrganizational =~ Membership + Cooperation\nGeographic =~ Distance + Time + Cost\nRelational =~ Social + Cognitive + Organizational\nSpatial =~ Geographic\nSocial =~ Closeness\n# Regressions\nFinanced ~ c*Geographic\nRelational ~ a*Geographic\nFinanced ~ b*Relational\nab := a*b\ntotal := c + (a*b)\n"
fit_C <- sem(SEM.Model_C, data = cases_complete)
summary(fit_C, fit.measures = TRUE, rsq = TRUE)

```