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**THE EFFECT OF SIGNALS ON NEW VENTURE  
FUNDING IN THE CONTEXT OF AN EMERGING  
MARKET**

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# **THE EFFECT OF SIGNALS ON NEW VENTURE FUNDING IN THE CONTEXT OF AN EMERGING MARKET**

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## APPROVAL

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In addition, I acknowledge that any claim of irregularity that may arise in relation to this work will result in a disciplinary action in accordance with the university legislation.

GÜLCAN ADAR

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24/05/2022

*To My Dearest Family...*



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# THE EFFECT OF SIGNALS ON NEW VENTURE FUNDING IN THE CONTEXT OF AN EMERGING MARKET

## ABSTRACT

New ventures need to access external financial resources to exploit market opportunities. As they do not yet have track records such as proven technologies, finished products, and verified market demand, prospective investors need to rely on signals of quality such as founding team characteristics or third-party endorsements. Most of the existing knowledge on new venture funding builds on insights from research conducted in the context of developed economies. Emerging economies are characterized by institutional voids in product, labor, and capital markets, as well as a weak regulatory system and contract-enforcing mechanisms. New ventures may require some context-relevant capabilities to survive and prosper in this environment. Relatedly, investors' choices of new ventures to fund will likely be shaped by signals of these context-relevant capabilities alongside universal signals that reflect the viability of a new venture and the likelihood that it will advance. In this thesis study, I investigate independent and interdependent effects of these signals on investors' choices of startups to fund. I take a configurational approach to examine complex interdependencies between signals, applying the fuzzy-set QCA method. The Turkish startup ecosystem constitutes the empirical setting of my study. I examine early-stage funding in high-tech industries where signals are most relevant due to high levels of uncertainty. Findings have important theoretical implications for the literature on new venture funding and signaling processes, as well as some practical implications for new ventures in emerging market environments.

**Keywords:** signaling, new venture funding, startups, emerging economies, configurational approach

# GELİŞMEKTE OLAN EKONOMİ ORTAMINDA YENİ GİRİŞİMLERİN FİNANSMAN SAĞLAMASINDA SİNYALLERİN ROLÜ

## ÖZET

Yeni girişimler pazar fırsatlarını değerlendirebilmek için dış finansal kaynaklara ihtiyaç duymaktadır. Henüz kanıtlanmış teknolojiler, bitmiş ürünler ve ispatlanmış pazar talebi gibi performans göstergelerine sahip olmadıkları için, muhtemel yatırımcıların değerlendirmesi kurucu ekip üyelerinin özellikleri, üçüncü taraflar tarafından ciro edilme gibi kalite sinyallerine dayanmaktadır. Yeni girişimlerin finansman sağlama dinamiklerine ilişkin bilgi birikimimizin çoğu gelişmiş ekonomi ortamında yapılmış araştırma bulgularına dayanmaktadır. Gelişmekte olan ekonomilerde ürün, emek ve finans piyasalarında kurumsal boşlukların yanı sıra zayıf bir düzenleyici sistem ve sözleşme yaptırımı söz konusudur. Yeni girişimler böyle bir ortamda hayatta kalabilmek ve gelişebilmek için bağlama uygun bazı yeteneklere ihtiyaç duyabilir. Bununla bağlantılı olarak, yatırımcıların finansman sağlamak üzere yeni girişim seçimleri, girişimin yaşama ve gelişme potansiyelini belirten genel geçer sinyallerin yanı sıra bağlamsal yetenekleri gösterir sinyallere göre de şekillenecektir. Bu tez çalışmasında, bu sinyallerin yatırımcıların startup finansman kararları üzerindeki bağımsız ve bağımlı etkilerini inceliyorum. Sinyaller arasındaki karmaşık ilişkisel bağlantıları incelemek için konfigürasyonel yaklaşımı benimsedim ve bulanık küme QCA yöntemini uyguladım. Türkiye'deki startup ekosistemi çalışmamın ampirik ortamını oluşturmaktadır. Yüksek belirsizlik sebebiyle sinyal etkisinin daha anlamlı olduğu yüksek teknoloji sektörlerindeki yeni girişimlerin erken dönem finansmana erişimini inceledim. Bulgular, yeni girişim finansmanı ve sinyal yazını için önemli teorik çıkarımlar sağlamanın yanı sıra, gelişmekte olan piyasa ekonomilerindeki yeni girişimler için bazı pratik uygulamalar da sunuyor.

**Anahtar Sözcükler:** sinyaller, yeni girişim fonlaması, startup, gelişmekte olan piyasa ekonomileri, konfigürasyonel yaklaşım

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

CVC: Corporate Venture Capital

QCA: Qualitative Comparative Analysis

VC: Venture Capital

VDO: Venture Development Organization



## 1. INTRODUCTION

A significant challenge for new ventures is to assemble resources that are needed to exploit market opportunities (Alvarez-Garrido and Guler 2018; Crook et al. 2008; Ko and McKelvie 2018; Zhang, Soh, and Wong 2009). Financial capital is perhaps the most critical, as it provides the founders the ability to cope with changing environments and better access to required capabilities for growth (Cooper, Gimeno-Gascon, and Woo 1994; Gilbert, McDougall, and Audretsch 2016). Given that the capital possessed by the founding team often falls short of providing these advantages, entrepreneurs depend on funding from external sources.

Yet external funding is not easy to obtain, especially at the early stage of the venture (Levasseur, Johan, and Eckhardt 2022; Miloud, Aspelund, and Cabrol 2012). New ventures typically lack prior accomplishments that are indicative of their viability and the market demand for the product or technology offer is often unverified. Investments are prone to risks due to the absence of such yardsticks to guide informed decisions (Gompers et al. 2021; Murray and Marriott 1998; Nagy et al. 2012). Issues with information asymmetry between the venture's owners and investors together with moral hazard problems intensify concerns about financing decisions (Amit, Glosten, and Muller 1990; Denis 2004; Petersen and Rajan 1995). Potential providers of finance face a great deal of uncertainty about the returns on their investment and are highly selective in their choice of ventures to fund (Kim and Aldrich 2005; Ko and McKelvie 2018; Ullah, Anwar, and Khattak 2021).

Most of the existing knowledge on new venture funding builds on insights from research conducted in the context of developed economies. This literature establishes that prospective investors rely on a combination of signals that reflect the viability of the venture and the likelihood that it will perform well. Signals such as founding member characteristics, affiliation with high-status partners, and third-party endorsements may be considered by the investors as they try to make inferences about a new venture's

unobserved quality (or lack thereof) (Ahlers et al. 2015; Bapna 2019; Colombo 2021; Courtney, Dutta, and Li 2016; Huang and Knight 2017; Islam, Fremeth, and Marcus 2018; Ko and McKelvie 2018; Miloud, Aspelund, and Cabrol 2012; Nigam, Mbarek, and Boughanmi 2020; Pollock and Gulati 2016; Vanacker and Forbes 2016; Wang et al. 2019).

Emerging economies are characterized by certain institutional features that typically do not exist in developed markets. Deficiencies in institutional conditions that support market exchange makes it much harder for new ventures to access resources, grow and prosper (Armanios et al. 2017; Bruton, Su, and Filatotchev 2018; Chung and Luo 2013; Khanna and Palepu 1997; Mair and Marti 2009; Manimala and Wasdani 2015; Puffer, McCarthy, and Boisot 2010; Shi, Sun, and Peng 2012; Webb et al. 2009). Attracting financial resources is especially challenging due to underdeveloped capital markets and limited funding options (Singh, Corner, and Pavlovich 2007; Wiklund and Shepherd 2003). Weakness of formal institutions such as property rights and contract enforcement has created dependence on informal institutions to achieve business objectives (Liu 2011; Ahlstrom and Bruton 2006). Accordingly, entrepreneurs in emerging markets face greater uncertainty and risk compared to those in developed economies (Hoskisson et al. 2000; Puffer, McCarthy, and Boisot 2010).

New ventures may require some context-relevant capabilities to operate in a void of formal institutions, and to survive and prosper in highly uncertain and risky environment. Relatedly, investors' choices of new ventures to fund will likely be shaped by signals of these context-relevant capabilities alongside universal signals that reflect the viability of a new venture and the likelihood that it will advance. Thus, the set of signals that compete for the investors' attention as well as their effects on the investment decisions in an emerging market context may be different than that in a developed economy. More research is needed to understand these dynamics in emerging markets, which have important implications for new ventures' survival and their contribution to economic development (Cao and Shi 2021; Soto-Simeone, Sirén, and Antretter 2020).

My thesis aims to fill this gap in the literature by investigating the role of signals on new ventures' likelihood of attracting external funding in an emerging market context. In

order to develop a comprehensive understanding of funding dynamics, I explore the effects of universal and context-relevant signals and multivariate interdependencies that might be at play. Given that new ventures often send simultaneous signals and investors are unlikely to evaluate them in isolation, signals work jointly to shape investment decisions (Colombo 2021). Interactions may occur as signals provide superior or redundant information, and when they act as substitutes or complements (Bapna 2019; Colombo, Meoli, and Vismara 2019; Courtney, Dutta, and Li 2016; Edelman et al. 2021; Vazirani and Bhattacharjee 2021; Wang et al. 2019). Incongruence of signals may weaken their effects (Hubbard et al. 2018) whereas the credibility of some signals may be enhanced by other signals that validate them (Connelly et al. 2011; Plummer, Allison, and Connelly 2016). Thus, complex interdependencies are possible as investors try to interpret simultaneous signals in a noisy signaling environment.

I account for this complexity by pursuing a configurational approach, which provide important advantages in studying multivariate interdependencies (Debrulle et al. 2020; Edelman et al. 2021; Fisher 2020). I constructed the signal set in the light of prior research on new venture signaling. Turkish startup ecosystem constitutes the empirical setting of my study. Due to limited prior evidence on new venture signaling in the context of emerging markets, I also conducted interviews with investors in the Turkish ecosystem to better comprehend the function and definition of each signal.

I specifically focus on early-stage financing, where information about a venture's quality is limited and therefore signals are especially important (Cassar 2004; Connelly et al. 2011; Podolny 1994; Stuart et al. 1999). Further, I restrict my sample to new ventures established in industries with high technology involvement. The underlying technologies in these businesses are often radical and untested, making it harder to predict market potential and the prospect of cash flow (Sanders and Boivie 2004; Wang et al. 2019). Accordingly, early-stage funding of high-tech ventures provides a proper context to examine signaling dynamics.

This thesis is organized as follows. Section 2 reviews the existing literature in the field of startup success. Section 3 describes theoretical underpinnings of startup selection and screening by focusing on signaling theory in emerging economy context. Section 4

represents the empirical context in Turkey startup ecosystem. Section 5 explains the data collection procedures and methodology. Section 6 reveals the main results of the research. And the final section describes the discussion of the implications and limitations of the research and possible topics for future research along with conclusion.



## 2. LITERATURE REVIEW

### 2.1. New Venture Success and Failure

New venture success is commonly considered as a venture's ability to continue its operations (Brush and Vanderwerf 1992; Carter, Williams, and Reynolds 1997; Delmar and Shane 2004; Gimeno et al. 1997; Gurdon and Samsom 2010; Soto-Simeone, Sirén, and Antretter 2020). New venture failure rates are high (Headd 2003; Shane 2009; 2012). The ability to survive may increase as firms get older (Carroll and Delacroix 1982; Freeman, Carroll, and Hannan 1983). New ventures typically suffer from a liability of newness, which refers to problems such as lack of legitimacy and lack of established organizational guidelines and processes (Fisher 2020; Larrañeta, Zahra, and González 2012; Sanders and Boivie 2004; Singh, Tucker, and House 1986; Stinchcombe 1965). Established organizations may thus have a survival advantage over new ventures (Soto-Simeone et al. 2020; Thornhill and Amit, 2003).

Business success is a complex endeavor shaped by organizational strategy and environmental influences (Debrulle, Maes, and Sels 2013; Teece 2010). Resource availability is at least as critical, especially for new ventures (Crook et al. 2008). Initial resource requirements such as information, networks and finance are obtained via founders themselves or personal contacts and family (Debrulle et al. 2020; Ostgaard and Birley 1996). Attracting financial capital has vital importance for new ventures as it provides access to other resources critical resources such as marketing channels and enable entrepreneurs to exploit market opportunities (Chandler and Hanks 1998; Cooper, Gimeno-Gascon, and Woo 1994; Gilbert, McDougall, and Audretsch 2016; Ko and McKelvie 2018; White, Gao, and Zhang 2005). High debt and insufficient financing increase the risk of failure (Holtz-Eakin, Joulfaian, and Rosen 2015; Laitinen 1992).

## **2.2. The Role of Signals in New Venture Funding**

New ventures need to convince prospective investors for external funding, yet they do not yet have track records such as proven technologies, finished products, and verified market demand. Thus, external investors do not have enough information about the underlying qualities of new ventures to guide their decision making process. In other words, there is an information asymmetry between founders of new ventures and potential investors (Stiglitz 2002). This information asymmetry between the entrepreneurs and investors creates a major challenge to analyze startups in early stages (Murray and Marriott 1998; Nagy et al. 2012; Wang et al. 2019). This becomes even more problematic in high-tech industries and new sectors due to limited knowledge and higher uncertainty (Sanders and Boivie 2004).

Investors seek for returns on their investment. They are highly selective in investing, especially for early-stage ventures, due to problems of information asymmetry and moral hazard. Moral hazard problems are the opportunistic behaviors that can emerge from information asymmetry (Nayyar 1990; Stiglitz 1985). For example, startup owners that obtained investment may intentionally misallocate this funding for their own personal benefits with help of information asymmetry (Nigam, Mbarek, and Boughanmi 2020; Sanders and Boivie 2004).

In this context, investors try to interpret various signals of new ventures' underlying qualities (Colombo 2021; Connelly et al. 2011). Signaling theory suggest that high-quality ventures can distinguish themselves from low-quality ventures by sending costly signals (Spence 2002). Signals are more informative than words and promises because they are embedded in actions (Busenitz, Fiet, and Moesel 2005). Signals are especially important when information is scarce and there is high uncertainty (Connelly et al. 2011; Matusik, George, and Heeley 2008).

Signals may reduce uncertainty about the capabilities of the entrepreneur and the viability of the new venture. They may be informative about the human capital, social capital, and structural capital possessed by the venture (Davidsson and Honig 2003; Hsu 2007; Macmillan, Zemmann, and Subbanarasimha 1987; Nigam, Mbarek, and Boughanmi 2020;

Tyebjee and Bruno 1984). A vast amount of research suggest that signals of *human capital* significantly contribute to new ventures' access to funding opportunities (Beckman, Burton, and O'Reilly 2007; Higgins and Gulati 2006; Ko and McKelvie 2018; Rauch and Rijdsdijk 2013). Human capital is the skills and knowledge that individuals, usually acquired by education and experience (Becker 1964), and their capacity to use these assets (Ko and McKelvie 2018). For the early stages of ventures, founders' education and experience may serve as significant, measurable signals in the eyes of external investors (Bruderl, Preisendorfer, and Ziegler 1992; Beckman et al. 2007; Colombo 2021; Hsu 2007; Stuart and Abetti 1990). Degree from prestigious university, for instance, act as a signal of the entrepreneur's capabilities and persistence (Colombo, Meoli, and Vismara 2019). Audiences' concern for human capital signals may be especially significant in the context of high-tech industries (Nigam, Mbarek, and Boughanmi 2020).

Prospective investors may also be concerned with the *social capital* of a new venture's founding team. Founders' network or social connections may provide important advantages in avoiding liabilities of newness or foreignness (Brush and Vanderwerf 1992; Brüderl and Preisendörfer 1998; Hung 2016; Shane and Cable 2002; Zhou and Li 2010). Signals of *structural capital* (R&D capabilities, technological competencies, and intellectual property) may also increase the likelihood that a new venture attracts funding (Hsu and Ziedonis 2013; Nigam, Mbarek, and Boughanmi 2020). Structural capital is important as it facilitates human and social capital reaching their fullest potential (Nigam, Mbarek, and Boughanmi 2020).

### **3. THEORETICAL FRAMEWORK**

#### **3.1. New Venture Signaling in the Context of Emerging Markets**

Emerging economies have their unique challenges. Perhaps the most significant of these is the absence or weakness of formal institutions, i.e., “institutional voids” (Fligstein 2001; Khanna and Palepu 1997; North 1991). Institutional voids in product, labor, and capital markets together with the weakness of the regulatory system and contract-enforcing mechanisms restrain entrepreneurs’ access to critical resources such as capital and talent and makes it hard to build global brands (Aidis, Estrin, and Mickiewicz 2008; Autio and Fu 2014; Cao and Shi 2021; Eesley 2016; Klonowski 2007; Manimala and Wasdani 2015; Manolova, Eunni, and Gyoshev 2008). Another important problem of emerging economies is structural gaps such as the lack of high-quality support and mentoring organizations for entrepreneurs (Cao and Shi 2021; Guerrero and Urbano 2017; Sheriff and Muffatto 2015). Corruption and bribery can affect the implementation of property rights (Ahlstrom and Bruton 2006; Bowen and De Clercq, 2008; Mair et al. 2012). Accordingly, the business environment in emerging markets involve greater uncertainty and risk compared to that in developed economies (Hoskisson et al. 2000; Meyer and Peng 2016; Puffer et al. 2010).

New ventures in emerging economies thus not only face challenges in how to grow, but also overcome the institutional voids and adapt to uncertainty and change in the market conditions. They may require idiosyncratic capabilities to survive and thrive in this environment (Albada, Low, and Yong 2020; González and Ruiz Massieu 2021; Hemmert et al. 2021; Khanna, Palepu, and Sinha 2005; Mair and Marti 2009; Sadeghi et al. 2019; Zhou and Li 2010). One such example is using organizational resources in unexpected ways to fill the institutional voids and use strategies of “bricolage” to build an alternative institutional ecosystem (Yu and Wang 2021). From the perspective of investors, screening of new ventures to fund will likely be shaped by signals of these context-relevant capabilities alongside universal signals that reflect the viability of a new venture

and the likelihood that it will advance. Below I explain these influences to construct a signal set that is relevant in the eyes of prospective investors of new ventures in an emerging market context.

As in developed economies, investors in emerging markets are likely to be concerned with **signals of human capital**. Founders' degree from prestigious educational institutes, for instance, can serve as signals of superior capabilities and other valuable traits. In the context of emerging markets, local elites are typically educated from leading domestic universities that are supported by major infrastructure investments by the government (Hoskisson et al. 2000). *Affiliation with prestigious national institutions*, thus, signal superior skills, abilities, and knowledge. Another signal of superior human capital in the context of emerging markets is founders' affiliation with a developed country context. Trust in universalistic Western institutions is typically higher than trust in particularistic local ones (Puffer, McCarthy, and Boisot, 2010; Weber et al., 2009). Beyond the status value of association with a prestigious institutional environment, affiliation with developed economies provides the opportunity to access advanced technology and business management skills (Alvarez-Garrido and Guler 2018; Li and Atuahene-Gima 2002; Sanders and Tuschke 2007). Thus, *founders' study or work experience in a developed country context* can serve as an effective signal of human capital (also see Armanios et al. 2017).

**Signals of social capital** is perhaps more influential in the context of emerging markets compared to developed economies. Given low trust in government and formal institutions like laws and property rights in emerging markets, economic transactions are highly dependent on informal institutions such as network-based trust and norms of reciprocity (Ahlstrom and Bruton 2006; Cao and Shi 2021; DeSoto 2000; Gao et al. 2021; Katz et al. 2000; Khanna and Palepu 2010; Rottig 2016; Tonoyan et al. 2010). Actors try to form trustful relationships in close networks such as with family members, friends, and colleagues (Adly and Khatib 2014; Chakrabarty 2009; Kuznetsov and Kuznetsova 2008; Puffer, McCarthy, and Boisot 2010). Informal institutions are not exact substitute of formal institutions such as property rights and governmental regulations, but they can facilitate economic activities. Even multinational firms need social connections to succeed in emerging markets (London and Hart 2004). Given this significance of

network-based trust, investors' screening of new ventures to fund in an emerging market context will likely be influenced by signals of a wide social network. One such signal is *the size of the founding team* (Eisenhardt and Schoonhoven 1990; Miloud, Aspelund, and Cabrol 2012; Nigam, Mbarek, and Boughanmi 2020). The greater the number of founders, the wider will be the size of their close networks including their families, friends, and relatives.

As mentioned above, investors in emerging markets will also provide attention to **signals of context-relevant capabilities** possessed by a new venture. A relevant signal in this respect is *prior entrepreneurship experience of founders*. The real experience of establishing and managing a venture in an emerging market context is an effective way of learning the “logic of economic rationality and efficiency within the constraints posed by the institutional environment” (Kostova and Marano 2019). Prior entrepreneurship experience will likely be perceived a stronger signal of context-relevant capabilities in the case the established venture survived and performed well. Yet, potential investors may value this experience even when this prior initiative did not turn out to be a success story. This is the case because the experience itself would provide a tacit knowledge which may improve the entrepreneur's entrepreneurial judgement and task performance (Nigam, Mbarek, and Boughanmi 2020; Wiklund and Shepherd 2003). Individuals learn from performance feedback and adapt their behavior accordingly, which may reduce the likelihood of other failures in the future (Baum and Dahlin 2007; Chung and Shin 2021; Cope 2011; Levitt and March 2003; Makarevich 2018). Prior entrepreneurship experience, thus, serves a signal of context-relevant capabilities such as the ability to deal with institutional voids and highly uncertain and risky business environment.

I lastly consider the effect of **third-party affiliations**, which may serve as a signal of both universal and context-relevant capabilities. Insights from research in the context of developed economies suggest that affiliation with respected third parties such as venture development organizations serve as endorsements (Beatty and Ritter 1986; Certo 2003; Gubitta, Tognazzo and Destro 2016; Lee and Wahal 2004; Pollock, Porac and Wade 2004; Singh, Tucker and House 1986). Such affiliations with higher status partners act as a signal of superior quality because audiences can infer that the high-status organization values the focal organization and that high-status organizations are competent evaluators

(Stuart et al. 1999). The benefits of *membership into a venture development organization (VDO)* in the context of an emerging market yet go beyond this endorsement effect. Incubators and accelerators provide substantive benefits such as mentoring, governance structure, qualified labor, and access to critical networks (Bergek and Norman 2008; Gonzalez-Uribe et al. 2015; Hackett and Dilts 2004; Hallen et al. 2019; Lee, Pollock, and Jin 2011; Peters et al. 2004; Plummer, Allison, and Connelly 2016; Renault 2012; Venâncio and Jorge 2021). They also help member organizations to deal better with the institutional voids that characterize the emerging market environment. Beyond market infrastructure development services that reduce constraints on transactions, venture development organizations in emerging markets act as providers of context-relevant capabilities such as management of the local business environment, establishing local business ties, capabilities of internationalization and ties with the global business environment (Armanios et al. 2017; Beyhan, Akçomak, and Cetindamar 2021; Cao and Shi 2021; Dutt et al. 2016; Gao et al. 2021; González and Massieu 2021; Leatherbee and Eesley 2014; Mair, Marti, and Ventresca 2012; Mair and Marti 2009). These substantive benefits provided by venture development organizations are especially important for new ventures at early stages (Chen et al. 2009; Plummer, Allison, and Connelly 2016). In summary, membership into a VDO in the context of an emerging market serve as a signal of universal capabilities (such as human and social capital) as well as context-relevant capabilities.

Table 3.1 summarizes the above-mentioned functioning of new venture signals in the context of an emerging market. As presented in the table, signals may act as indicators of universal capabilities required for business performance or context-relevant capabilities to excel in the local business environment. With respect to universal capabilities, I follow the literature in differentiating between human capital and social capital. Notably, a single signal does not necessarily resolve uncertainty about a single type of capability. Membership into a venture development organization (VDO), for instance, serves as a signal of universal as well as context-relevant capabilities.

**Table 3.1 New Venture Signals in the Context of an Emerging Market**

| SIGNALS  | <i>Universal Capabilities</i> |                | <i>Context-relevant Capabilities</i> |
|--|-------------------------------|----------------|--------------------------------------|
|  | human capital                 | social capital |                                      |
| Founders' degree from a prestigious national university            | X                             |                |                                      |
| Founders' degree or work experience in a developed country context | X                             |                |                                      |
| Founding team size   |                               | X              |                                      |
| Founders' prior entrepreneurship experience                        |                               |                | X                                    |
| Membership into a venture development organization                 | X                             | X              | X                                    |

### **3.2. Complex Interactions Between Signals**

Much research on new venture signaling considered the effects of different signals in isolation (e.g., Busenitz, Fiet, and Moesel 2005; Jain, Jayaraman, and Kini 2008). Yet increasing evidence challenges the assumption that signals operate independently from each other. Studies demonstrate that signals can complement each other or act as substitutes.

Complementarity is the case when the combined effects of signals is more effective than the sum of their individual effects. This may occur when different signals send by a new venture reduce uncertainty about different contents of quality such as technology development or venture officials (Wang et al. 2019), or when the presence of certain signals validate or propagate the effect of other signals (Vazirani and Bhattacharjee 2021). In the context of early-stage funding, Plummer, Allison, and Connelly (2016) demonstrate that affiliation with third parties complements other signals that are, by themselves, perceived as ambiguous by the investors. Being client of a venture development organization makes a new venture's attributes (e.g., founders' experience) and actions (e.g., operating in a commercial property) more noticeable and makes them relevant

signals in the eyes of potential investors. Similarly, Bapna (2019) finds that signals of prominent customers or social proof (i.e., others interest in investing) can validate signals of product certification.

Studies also suggest that validity of signals can be enhanced by signal consistency or the combination of cues (e.g., Cardon, Mitteness, and Sudek 2017), whereas conflict among signals may damage their effectiveness (e.g., Fischer and Reuber 2007). In a study on newly ventures' likelihood of forms strategic alliance with incumbent firms in technology-driven industries, Stern, Dukerich, and Zajac (2014) find complementary effects of founder's reputation and status. That is, the individual effects of these signals are amplified when they are congruent (i.e., both high or both low). Audretsch, Bönnte, and Mahagaonkar (2012) shows that compared to nascent ventures that solely provide signals of appropriability (i.e., patenting), nascent ventures that signal feasibility together with appropriability (i.e., have patents as well as with prototyped innovations) are more likely to obtain external finance.

A signal may substitute another when it conveys superior or redundant information. Ozmel, Reuer, and Gulati (2012), for instance, shows that the signaling benefit of affiliations with prestigious venture capitalists diminishes as the new venture's prominence in alliance networks increases. Higgins, Stephan, and Thursby (2011) find that the effect of being associated with Nobel prize laureate diminishes when other signals of venture quality are available. Similarly, Hsu and Ziedonis (2013) demonstrate that the signaling value of patents is dependent on the strength of alternative quality signals such that patents serve as a more effective signal for startups with poor initial reputation endowments. In the context of IPO investments, Arthurs et al. (2009) find that a longer lockup period substitutes prestigious underwriter backing. According to Wang et al. (2019) substitutive relationships will exist between quality signals of the same content. Thus, for instance different signals of technological capabilities or different signals of management team capabilities can substitute for one another in helping new ventures raise capital.

Studies also provide more complex interdependencies between signals. According to Stern, Dukerich, and Zajac (2014), for instance, not all congruent signals complement

each other, but rather certain configurations of congruent signals can complement each other. In the context of crowdfunding, Courtney, Dutta, and Li (2016) demonstrates that while startup-originated signals such as media use in crowdfunding projects and founder's past crowdfunding success offset each other's effects, endorsement by third parties complements these startup-originated signals. According to Steigenberger and Wilhelm (2018), new ventures send not only substantial but also rhetorical signals which may deteriorate the impact of substantive signals under certain conditions and complement them under specific situations.

The process of signaling is especially complex in early-stage funding, given uncertain, ambiguous, and noisy conditions (Colombo 2021; Connelly et al. 2011; Edelman et al. 2021). The value of signaling actions in this context depends on potential investors' sense-making processes (Plummer, Allison, and Connelly 2016; Stern, Dukerich, and Zajac 2014), who satisfice on gathering and processing information (Hallen and Pahnke 2016). Accordingly, it is hard to foresee potential interactions between various signals send by new ventures. Although existing literature is rich in terms of the individual functioning of signals, it presents a less clear picture of the mechanisms that lead to complementary or substitutive interaction, or more complex interactions such as three-way interactions between signals. It is even harder to predict these relationships in the context of emerging markets due to scarcity of prior guiding evidence.

In order gain a deeper understanding of these complex interdependencies that might be at play, one should simultaneously analyze the effects of different types of signals. A configurational approach well suits this purpose of identifying relevant configurations of signals that drive better access to early-stage funding (see Chaudhary et al. 2022; Debrulle et al. 2020; Douglas, Shepherd, and Prentice 2020; Edelman et al. 2021; Linder, Lechner, and Pelzel 2019). The empirical study design of this thesis is guided by these considerations.

## 4. EMPIRICAL CONTEXT

The Turkish startup ecosystem constitutes the empirical context of this thesis study. As in many other emerging economies, the Turkish context has deficiencies such as resource scarcities, institutional voids, and structural gaps (Bayhan et al. 2021; Cao and Shi 2021; Khanna and Palepu 1997). Turkey has the second largest startup ecosystem in MENA (Middle East and North Africa Region), following Israel. Fundings per capita is realized as 18.4\$ in 2021, which is lower than developed countries, but still high when compared to developing economies in Europe (Startups.watch, 2021). According to Startup Genome's 2021 Report, Istanbul is ranked as the 15th biggest ecosystem in the top 100 emerging ecosystems globally.

Investment activities in the Turkish startup ecosystem started in 2007 and gained momentum after 2010, with increasing number of local and foreign investors. Turkish startup ecosystem entered the take off period after 2018, with the release of its first unicorn (startups that reach a valuation of at least one billion dollars), followed by others. Startups launched initial public offerings for the first time and started to scale up to the global markets. Number of newly established startups increased from 98 in 2000 to 467 in 2010 and 1023 in 2018. The survival rate of startups also increased from 64.6% in 2010 to 95.7% in 2018 (Startups.watch, 2021).

As in other emerging market contexts, venture development organizations (accelerators and incubators) play an important role in filling the institutional voids in Turkey. The number of accelerators increased from 6 in 2010 to 23 in 2015. The number of incubators in the same period increased from 8 to 42. There was a parallel increase in the number of science parks, from 27 to 49 (Startups.watch, 2021).

There are 10 different kinds of private fundings in the Turkish ecosystem: Accelerator fund, angel network, corporate venture capital (CVC), development finance institutions (DFI), growth equity, investment office, platform, private equity, venture capital (VC). Most active investor types are angel networks, venture capitals and corporate venture capitals. The tax advantages that government provided in 2013 facilitated the development of angel investors and angel networks. CVC activities in Turkish startup

ecosystem increased after 2010. The number of venture capital (VC) and corporate venture capital (CVC) organizations increased from 11 in 2015 to 44 in 2021. Venture capital investment funds have successfully raised their second funds and get successful results from their investments. CVCs increase their direct investments and at the same time invest accelerator programs. According to Startup.watch's Turkish Startup Ecosystem Landscape report in 2015, most Turkish investors invest on seed and early-stage periods. The number of deals that startups made with angel investors and VCs increased from 26 in 2011 to 206 in 2021. Foreign investor participation has also increased, from 29% in 2017 to 89% in 2021. According to 2021 data, 44 of the 294 deals made by angel investors and VCs were by foreign investors (Startups.watch, 2021)



## **5. METHODOLOGICAL FRAMEWORK AND DATA SOURCES**

### **5.1. Validating the Signal Set**

As mentioned in the Theoretical Framework section, I focus on five new venture signals that may affect the likelihood of receiving early-stage investment in the context of an emerging market: Founders' degree from a prestigious national university, founders' degree or work experience in a developed country context, founders' prior entrepreneurship experience, founding team size, and membership into a VDO (incubator or accelerator). Given limited research on processes of new venture signaling in the context of emerging markets (and the Turkish market in particular), I also did interviews to validate the relevance of my signal set in the Turkish startup ecosystem and whether the functioning of these signals diverge from what is theorized in the mainstream literature.

I first interviewed a former CEO of one of the most active incubator/accelerators in the Turkish ecosystem. The semi-structured online interview where I asked questions about the startup ecosystem, the dynamics of new venture funding and functioning of venture development organizations lasted 45 minutes. I next interviewed members of the investor community to better understand their criteria for making investment decisions. I contacted investors who have high investment activity in the following investor categories: accelerator funds, investment offices, venture capitals (VC), corporate venture capitals (CVC), angel investors, private equities, and platforms. I recruited informants on a voluntary basis. 9 out of 50 investors who I e-mailed accepted to make an interview: 4 of them from a CVC firm, 1 from a VC, 1 from a platform and 3 from a VC firm who also engaged in angel investment. The interviewees were at different ages (29 to 55 years) and only one of them was female.

In semi-structured interviews, I asked informants questions about the criteria in their investment decisions, the factors that serve as relevant signals of the venture's underlying quality and success potential. Interviews lasted between 20 to 60 minutes. All interviews were conducted online (via Zoom) and taped with the informants' consent.

The respondents highlighted that the market potential of a startup's business model and its scalability are very important, yet uncertain and hard to observe. They noted that their screening of new ventures to fund is largely shaped by the characteristics of the founding team. Beyond, an educational degree from a prestigious Turkish university, founders' affiliation with a developed country context (education or experience) is also perceived as a strong signal of capability. One respondent noted that:

“I don't invest in any startup which doesn't have a potential to be global. I may be impressed by founders with an educational degree or work experience in a developed country. These affiliations indicate superior capabilities”.

Respondents mentioned that they consider membership into venture development organizations as important, yet by itself not sufficient for an investment decision. One investor noted that:

“Membership in incubators or accelerators is informative as these organizations makes an initial screening of startups. This shortens our part. But still, we don't accept every startup affiliated with venture development organizations. We look for further evidence”.

Notably, the respondents differentiated between science parks and incubators/accelerators based on the specific benefits that they provide to startups. Incubators/accelerators provide benefits such as social networks, mentorship, and access to knowledge, whereas the main contribution of science parks are physical and economic advantages. One informant noted that:

“Science parks reduce financial expenses through the tax incentive mechanism. ... Incubators ensure social environment that offers network, cluster, and emotional support. There is a rigorous selection process to enter accelerators. Accepted startups receive intensive training and mentoring. An intense knowledge transfer takes place between startups and accelerators”.

“Government gives tax incentive to startups which are in a science park. This is good for us. If a startup that we planned to invest has not got membership in a science park, we advise them to apply. Because it lowers their cost and provide opportunity to spend our investment for other requirements”.

Overall, the interviews confirmed the relevance of the signal set that I constructed in the Theoretical Framework section. Comments from the interviewees provide support for my inclusion of founders’ affiliation with a developed country context, and exclusion of science park membership from the definition of venture development organization.

## **5.2. Measurement of Signals**

Founders’ degree from a prestigious Turkish university is measured with a dummy variables, which takes the value of 1 if any of the founding team members has an educational degree from a one of the following universities: Boğaziçi University, Middle East Technical University, Istanbul Technical University, Galatasaray University, Koç University, Bilkent University, and Sabancı University, and 0 otherwise. These are old and established private and public universities in the context of Turkish higher education, which are highly selective in student admissions. Further, graduates of these universities are highly engaged in entrepreneurship activity (Starups.watch, 2021).

Founder’s degree or work experience in a developed country context is again measured with a dummy variable which takes the value of 1 if any member of the founding team has an educational degree from or work experience in one of the following countries: United States, United Kingdom, Europe, Canada, Japan, and Australia, and zero otherwise.

In order to construct the variable founders’ entrepreneurship experience, I first recorded the number of ventures established by each founding team member before the establishment of the focal venture. I then took the maximum of these numbers (rather than their sum) to avoid an inflation of this measure for new ventures with more than one founder. Founding team size counts the number of founding team members that established the new venture.

The variable affiliation with a venture development organization counts the total number of incubator and accelerators that the new venture has membership in. Science parks are not included since they only provide physical benefits or some cost advantages (Armanios et al. 2017). Membership in a science park does not necessarily help developing new managerial capabilities or wider social networks. As noted above, this difference between incubator/accelerators and science parks is also mentioned by informants from the investor community. I accordingly did not include science park membership in the calculation of VDO affiliation. In order to account for its independent effect, though, I control for science park membership in supplemental regression analyses as explained below.

### **5.3. Sample**

Startups' receiving of early-stage funding constitutes the outcome of interest in this thesis. I considered early-stage as the first five years of the startup's existence. External funding activity in the context of Turkish startup ecosystem started in 2007 and became significant in numbers only after 2010. As I am interested in the event that a new venture received early-stage funding (in the first 5 years of its existence), I restricted my sample to startups established since 2005. I also excluded startups established after the year 2015, since I am not able to observe them for a minimum of five-years period.

I also limited my sample to new ventures established in industries with high technology involvement. I determined the list of these industries using The State of European Tech Report (Atomicostat 2018), and The Boston Consulting Group's From Tech to Deep Tech Report (Tour et al. 2017). This resulted in a list of 14 industries: deeptech, biotech, nanotech, industry 4.0, artificial intelligence, AR/VR, cloud, semantic, cryptocurrency, internet of things, robotics, genetics, big data, and cybersecurity.

#### **5.4. Data Sources**

The Startups.watch (Turkish startup ecosystem intelligence platform) database constitutes the primary source of data. This data includes startup name, business description, name of the founders, startup's existing status (dead/alive/acquired), headquarter, founding year, business categories (industries), business type (B2B, B2C), incubator, accelerator and science park memberships, dates and amounts of investments received, investor information, and awards. I used this data to construct a unique longitudinal dataset of startups established between the years 2005-2015. Since founding team characteristics constitute key signals that I investigate here, I eliminated those startups whose founder information was not available in the Startups.watch database.

In cases of missing information about founders' education and experience in Startups.watch database, I referred to some other sources of data such as LinkedIn, Webrazzi, news articles, and company websites. Webrazzi was a useful source to validate the information about the investments received by startups and the investors.

#### **5.5. Analysis**

As discussed in the Theoretical Framework section, different combinations of the five new venture signals (founders' degree from a prestigious national university, founders' degree or work experience in a developed country context, founders' prior entrepreneurship experience, founding team size, membership into an incubator/accelerator) might variably be associated with attracting external funding. Such complex causal relations can be examined by set theoretic methodologies (Miller 2017; Misangyi et al. 2017; Ragin 2008). I specifically applied the fuzzy-set qualitative comparative analysis (fuzzy QCA), which is widely used in organizational research (Debrulle et al. 2020; Fiss 2011; Greckhamer, Misangyi, and Fiss 2013; Greckhamer et al. 2008; 2018; Li, Li, and Long, 2020; Misangyi et al. 2017; Shen, Sun, and Ali 2021). I utilized the fs/QCA 2.0 (Ragin, Drass, and Davey 2006) for the analysis.

Whether the startup was able to attract early-stage funding constitutes the outcome of interest in fuzzy QCA (i.e., the dependent variable). I measured this with a dummy

variable taking the value of 1 if the startup received investment in the first five years of its existence, and 0 otherwise. The causal conditions (i.e., signals) are measured as explained above.

Both the outcome and the causal conditions in QCA are conceptualized as sets, and each case's membership in these sets is determined through a process called calibration. I used a well-accepted practice for calibration of variables into fuzzy set, which is the direct method (Ragin, 2008). As showed in Table 5.1 three break points need to be determined for this method: for full membership (1), full non-membership (0), and the crossover point (0.5). I determine these break points based on prior applications of QCA using 75th, 50th, and 25th percentile of sample scores as the fully in, crossover, and fully out thresholds of set membership (Fainshmidt et al. 2019; Greckhamer et al. 2008; Ho, Plewa, and Lu 2016). In Table 5.1 anchor points for calibrating each variable are presented. I do not apply this fuzzy set calibration for founders' degree from a prestigious national university and founders' degree or work experience in a developed country context. These two variables are crisp sets by their nature, i.e., set membership is defined in terms of mutually exclusive membership or non-membership states. The outcome variable (i.e., whether the startup received investment in the first five years of its existence) is also crisp set, and therefore did not require the process of calibration.

**Table 5.1 Fuzzy Set Calibration**

| <i>Variable</i>                           | <i>Range</i> | <i>Full non-membership</i> | <i>Cross-over point</i> | <i>Full membership</i> |
|---|--------------|----------------------------|-------------------------|------------------------|
| Founders' entrepreneurship experience     | 0-6          | 0                          | 1                       | 2                      |
| Founding team size                        | 1-6          | 1                          | 2                       | 3                      |
| Membership in VDO (Incubator/Accelerator) | 0-5          | 0                          | 1                       | 2                      |

I further conducted supplemental analyses (regression models) to investigate the individual effects of signals as well as potential substitutive relationships between them. Signals that reflect similar capabilities may be substitutes of one another (Wang et al. 2019). According to Table 3.1, signals that are informative about human capital (Founders' degree from a prestigious national university, Founders' degree or work experience in a developed country context, Membership into a VDO), signals that are

informative about social capital (Founding team size, Membership into a VDO) and signals that are informative about context-relevant capabilities (Founders' prior entrepreneurship experience, Membership into a VDO) may substitute each other. I accordingly test for their interactions.

Regression analyses were conducted on a longitudinal dataset which observes each startup for the first five years of its existence. The dependent variable takes the value of 1 if the startup was able to receive investment in a given year and zero otherwise. Startups that have received multiple investments were dropped from the dataset after the year they got the initial investment, since this initial achievement, itself, will likely serve as a strong signal of the venture's wealth creating potential.

Regression models included a number of control variables that may affect the likelihood that a startup attracts attention from potential investors but did not constitute a central configurational element to be included in the QCA analysis. The first of these is whether the startup has membership in a science park. Another control variable that I included is whether the startup received award in one of the established competitions in Turkey (Bingbang Startup challenge, Webrazzi Arena, Deloitte Technology Fast 50 Turkey). I also controlled for the linear effect of time by including year as a covariate. Logistic regression analysis was applied, using "xtlogit" command in Stata 15.0 (StataCorpder 2019), due to the binary nature of the dependent variable (Baltagi 2013).

## 6. FINDINGS

### 6.1. QCA Results

Testing for necessary conditions for the outcome of interest (i.e., receiving investment) is the first step in QCA. As the outcome, the individual conditions didn't exceed the consistency threshold of 0.80 (see Table 6.1). This means, when I check for the causal conditions individually, the results showed that none of them are sufficient alone for a startup to receive investment.

As the next step, I created a truth table, i.e., a data matrix that captures all logically possible combinations of causal conditions (Fiss 2011). Boolean algebra is applied to analyze this space of  $2^k$  combinations, where  $k$  is the number of causal conditions included in the analysis. I utilized the fs/QCA 2.0 (Ragin, Drass, and Davey 2006) for the analysis. As in previous research (see Misangyi 2016; Misangyi et al. 2017), I report the intermediate solution produced by the software. The core or peripheral status of causal conditions are determined by an analysis of three different solutions produced by fs/QCA. Theoretically possible configurations for which no cases exist are called as counterfactuals. Solutions that do not integrate simplifying assumptions based on these counterfactuals are the complex solutions, whereas parsimonious solutions include all counterfactuals. Solutions that only integrate counterfactual cases consistent with existing knowledge are the intermediate ones (Fiss, 2011; Ragin, 2008). Core conditions are the ones that are present in both parsimonious and intermediate solutions. They indicate a strong causal relationship with the outcome. Peripheral conditions are those that only appear in the intermediate solution. The evidence they provide for a causal relationship is weaker compared to core conditions.

**Table 6.1 Consistency and Coverage Scores**

| <i>Condition</i>                                       | <i>Consistency</i> | <i>Coverage</i> |
|--|--------------------|-----------------|
| Founders' degree from a prestigious Turkish university | 0.55               | 0.23            |
| Founders' affiliation with a developed country context | 0.35               | 0.27            |
| Founding team size                                     | 0.37               | 0.29            |
| Founder's entrepreneurship experience                  | 0.12               | 0.20            |
| Membership in VDO (Incubator/Accelerator)              | 0.30               | 0.28            |

Summary results of the QCA are presented in Table 6.2. Set theoretic measures of consistency and coverage in QCA serve analogous purposes of significance and effect sizes in regression analysis (Greckhamer et al. 2018; Ragin 2008). I report the consistencies and coverages for each configuration as well as the overall solution. A minimum consistency of .80 is suggested for inferring a sufficient causal combination for the occurrence of the outcome (Ragin 2008) which is strictly applied in organizational research (Greckhamer, Misangyi, and Fiss 2013).

The QCA I conducted in the sample of 217 startups resulted in two configurations that consistently received investment. I present these solutions based on notation from previous studies (Fiss 2011; Ragin and Fiss 2008). The presence of a condition represented by a black circle (“●”), whereas a circle with a cross-out (“∅”) is used for the absence of a condition. The large and small circles indicate respectively core conditions and peripheral conditions. A blank space in a solution indicates a “don’t care” situation—that is, the causal condition may be either present or absent. Coverage score reflects empirical relevance or importance of a configuration, whereas consistency score reflects how consistently that configuration is linked to the outcome.

Solution 1 designates startups established by multiple founders, at least one of the founders have an educational degree from a prestigious Turkish university as well as a degree from a developed country (US, UK, Europe, Canada, Japan, or Australia) and at least one of them have a previous entrepreneurship experience (established a company before the current startup). As peripheral conditions in this configuration, educational

degree from a prestigious Turkish university and founding team size has weaker relationships with attracting investment. Affiliation with a higher-status context and prior entrepreneurship experience make the core effect.

Solution 2 points to startups whose founder(s) has an educational degree from a developed country context, and at the same time affiliated with a venture development organization (an accelerator or incubator). Affiliation with a high-status context and a venture development organization constitute the core conditions which have greater signaling power in the eyes of potential investors.

Coverage scores reflect the proportion of cases that display the causal configuration, which suggest that the two solutions have equal empirical relevance. Although both solution's coverage is above the minimum suggested threshold of 0.10 (Ragin 2008), they have limited power in explaining the overall phenomenon. Still, the overall solution coverage is acceptable for a large-N ( $N > 50$ ) QCA applications where higher levels of coverage is often not achievable (Greckhamer, Misangyi, and Fiss 2013).

**Table 6.2 QCA Results**

|  | Solution |      |
|--|----------|------|
|  | 1        | 2    |
| Founders' degree from a prestigious Turkish university | ●        |      |
| Founders' affiliation with a developed country context | ●        | ●    |
| Founders' entrepreneurship experience                  | ●        | ∅    |
| Founding team size                                     | ●        |      |
| Membership in VDO (Incubator/Accelerator)              |          | ●    |
| Consistency  | 0.85     | 0.94 |
| Raw coverage   | 0.13     | 0.11 |
| Unique coverage  | 0.13     | 0.11 |
| Overall solution consistency                           | 0.87     |      |
| Overall solution coverage                              | 0.24     |      |

## 6.2. Regression Results (Supplemental Analyses)

The regression analysis sample consists of 1049 observations belonging to the 217 startups that were identified for the QCA analysis, observed in the first five years of their existence. Independent variables except founding team characteristics (i.e., incubator/accelerator, science park, award) lagged by one year to mitigate simultaneity problems. The means, standard deviations, and correlations of all study variables are shown in Table 6.3. Pairwise correlations are low to moderate.

**Table 6.3 Descriptive Statistics and Pairwise Correlations**

| Variables  | Mean    | St.Dev | min  | max  | (1)   | (2)    | (3)   | (4)   | (5)   | (6)   | (7)   | (8)   |
|--|---------|--------|------|------|-------|--------|-------|-------|-------|-------|-------|-------|
| (1) Dependent variable: Received investment                | .03     | .17    | 0    | 1    | 1.00  |        |       |       |       |       |       |       |
| (2) Founders' degree from a prestigious Turkish university | .53     | .5     | 0    | 1    | 0.03  | 1.00   |       |       |       |       |       |       |
| (3) Founders' affiliation with a developed country context | .19     | .39    | 0    | 1    | 0.07* | 0.17*  | 1.00  |       |       |       |       |       |
| (4) Founders' entrepreneurship experience                  | .08     | .28    | 0    | 2    | 0.00  | 0.05   | -0.06 | 1.00  |       |       |       |       |
| (5) Founding team size                                     | 1.54    | .93    | 1    | 6    | 0.05* | 0.30*  | 0.09* | -0.03 | 1.00  |       |       |       |
| (6) Membership in VDO (Incubator/Accelerator)              | .5      | .97    | 0    | 7    | 0.15* | -0.13* | -0.04 | -0.03 | 0.08  | 1.00  |       |       |
| (7) Technopark   | .67     | .58    | 0    | 2    | 0.06  | 0.12*  | 0.15* | -0.07 | 0.08* | 0.17* | 1.00  |       |
| (8) Award  | .01     | .09    | 0    | 1    | 0.14* | -0.02  | -0.02 | -0.02 | 0.01  | 0.09* | -0.03 | 1.00  |
| (9) Year   | 2014.74 | 3.21   | 2005 | 2020 | 0.09* | -0.17  | -0.08 | 0.05  | -0.05 | 0.31  | -0.06 | 0.08* |

The regression results are summarized in Table 6.4. As can be seen in Model 1, founders' degree from a developed country context, founding team size, and affiliation with incubator/accelerator have significant positive effects on the likelihood that a startup receives investment. The effect of founders' degree from a developed country context and affiliation with incubator/accelerator are equivalent in size ( $p=0.23$ ) and their effects are greater than that of founding team size ( $p=0.03$ ,  $p=0.01$ ).

Models 2, 3 and 4 show the interactions between signals that I expect to have substitutive effects. I observe no significant interaction between founder's degree from a developed country context and founder's degree from a prestigious Turkish university (Model 2). Affiliation with incubator/accelerator has negative interaction with founders' entrepreneurship experience (Model 3) and founding team size (Model 4), supporting the prediction that these signals work as substitutes in shaping investors decisions.

**Table 6.4 Logit Regression Results**

|   | Model (1)            | Model (2)            | Model (3)            | Model (4)            |
|---|----------------------|----------------------|----------------------|----------------------|
| Founders' degree from a prestigious Turkish university  | 0.11<br>(0.42)       | 0.04<br>(0.47)       | 0.11<br>(0.42)       | 0.13<br>(0.41)       |
| Founders' affiliation with a developed country context  | 0.94*<br>(0.40)      | 0.73<br>(0.82)       | 0.93*<br>(0.40)      | 0.92*<br>(0.40)      |
| Founders' entrepreneurship experience   | 0.33<br>(0.58)       | 0.32<br>(0.58)       | 0.16<br>(0.82)       | 0.30<br>(0.58)       |
| Founding team size  | 0.46*<br>(0.25)      | 0.46*<br>(0.25)      | 0.46*<br>(0.25)      | 0.36<br>(0.29)       |
| Membership in VDO (Incubator/Accelerator)   | 0.44***<br>(0.11)    | 0.44**<br>(0.14)     | 0.43**<br>(0.14)     | 0.25<br>(0.26)       |
| Technopark  | 0.28<br>(0.30)       | 0.26<br>(0.31)       | 0.28<br>(0.30)       | 0.30<br>(0.30)       |
| Award   | 1.05<br>(1.23)       | 1.02<br>(1.23)       | 1.06<br>(1.23)       | 1.23<br>(1.23)       |
| Year  | 0.13+<br>(0.08)      | 0.13<br>(0.08)       | 0.13+<br>(0.08)      | 0.12<br>(0.08)       |
| Founders' degree from a prestigious Turkish university X<br>Founders' degree from a developed country context |                      |                      |                      |                      |
| Founders' entrepreneurship experience X Incubator/Accelerator   |                      | (0.95)               | -0.13*<br>(0.03)     | -0.11*<br>(0.02)     |
| Founding team size X Incubator/Accelerator  |                      |                      |                      |                      |
| Constant  | -266.00+<br>(153.87) | -259.34+<br>(155.02) | -267.33+<br>(154.47) | -256.25+<br>(153.50) |
| Observations  | 1049                 | 1049                 | 1049                 | 1049                 |
| Log-likelihood  | -134.9               | -134.9               | -134.9               | -134.6               |

Standard errors are in parenthesis  
 \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , +  $p < 0.1$

## 7. CONCLUSION

New venture creation is a critical source of economic growth and prosperity, and therefore vitally important for emerging economies (Baum, Locke, and Smith 2001; Goedhuys and Sleuwaegen 2010; McDermott, Corredoira, and Kruse 2009; Peng and Heath 1996). Yet, limited access to financial resources in emerging markets becomes an important barrier for new venture survival and growth (Ahlstrom and Bruton 2006; Cao and Shi 2021; Guseva 2007; Sheriff and Muffatto 2015). Understanding how new ventures attract funding from private investors in this environment will therefore have significant implications for scholars, entrepreneurs as well as policymakers.

Given that new ventures do not yet have track records such as proven technologies or verified market demand, external investors try to interpret various signals of their underlying qualities to make their funding decisions (Ahlers et al. 2015; Bapna 2019; Colombo 2021; Murray and Marriott 1998; Nagy et al. 2012). Existing literature on new venture signaling has focused mostly on advanced economies. In this thesis, I argue that new ventures in emerging markets require some idiosyncratic capabilities to survive and thrive, and investors' funding decisions will be shaped by signals of such context-relevant capabilities beyond universal ones such as human capital and social capital. I took a configurational approach to account for complex interactions between multiple signals in shaping investors' decisions.

The results of the empirical analyses show that founders' affiliation (education or experience) with a developed country context has the strongest signaling effect, making the greatest contribution to a new venture's likelihood of attracting early-stage funding. Existing literature identifies that affiliation with prestigious partners or third parties act as indicators of superior capabilities (Connelly et al. 2011; Plummer, Allison, and Connelly 2016; Pollock et al. 2010). My findings suggest that investors in the context of an emerging market attach greater importance to affiliations with a developed country context (more than a prestigious national university or a respected venture development organization). The underlying reason may be poor trust in national institutions in

emerging market contexts, and an unquestioned respect to developed countries (Cao and Shi 2021; Puffer, McCarthy, and Boisot 2010). Notably, my finding here implies that it is important to develop an indigenous understanding of universal signals such as high-status affiliations.

I find that membership into a venture development organization (incubator or accelerator) is also very impactful, acting as the second strongest signal. This may be due to the fact that venture development organizations contribute to all types of capabilities required to excel in the emerging market environment (i.e., human capital, social capital, as well as context-relevant capabilities; see Table 3.1). Prior research argues that the superiority of signals depends on their better fit with or relevance with the specific context (Armanios et al. 2017; Connelly et al. 2011). My findings here suggests that signal power may also depend on reducing information asymmetry in more and diverse areas of quality content.

My analyses also provide evidence for substitutive relationships between signals. With respect to signals of human capital, founder's affiliation with a developed country context substitutes for founder's degree from a prestigious Turkish university. Yet this relationship does not work the other way around (i.e., degree from a prestigious Turkish university, by itself (in the lack of affiliation with a developed country context), not enough to attract investors' attention). This demonstration of an asymmetric interaction between signals of the same context advances existing arguments that same-content signals substitute each other (Wang et al. 2019). Substitution between two signals may not occur in cases where one of the signals is a weaker indicator of underlying capabilities. The results of supplementary regression analyses that I conducted shows that the phenomenon I observe here is not due to the fact that a developed country affiliation validates degree from a prestigious national university (no significant interaction between founders' affiliation with a developed country context and founders' degree from a prestigious Turkish university). This type of an interaction is identified by Plummer, Allison, and Connelly (2016), where third-party signals validate new venture's characteristics which are by themselves perceived as ambiguous by the investors. Perhaps superiority of signals and their validation power are distinct concepts, which should be clearly theorized.

As another substitutive relationship, the lack of membership into a venture development organization is compensated by the simultaneous presence of a large founding team and founders' prior entrepreneurship experience (indicators of social capital and context-relevant capabilities, respectively). Thus, signals may work in additive ways to reduce information asymmetry about different contents of quality. It does make sense considering that investors, as other decision makers, are boundedly rational and satisficing (De Clercq et al. 2006; Kirsch, Goldfarb, and Gera 2009; March and Simon 1958). They may decide on investing in a new venture that provide a single signal of capability in each relevant content area.

Notably, though, different types of investors may vary in their decision making criteria and processes (Landström 1998; Prasad, Bruton, and Vozikis 2000). Within the limits of this thesis study and given the concentrated investment activity by venture capitals and angel investors in the Turkish ecosystem, I was not able to examine whether signaling dynamics vary across different types of investor communities (e.g., angel investors, VC, etc.). I believe it is a fruitful area for future research, which has the potential to make an important contribution to our existing knowledge on early-stage funding of new ventures.

My findings in this thesis, overall, demonstrate that potential investors are impressed by signals of universal as well as context-relevant capabilities. Thus, new venture dynamics in emerging markets may have commonalities as well as differences from that in developed economies. Notably, a contextualized view of entrepreneurship and new venture research would significantly contribute to our understanding of the phenomenon (also see Baker, Gedajlovic, and Lubatkin 2005; Sadeghi et al. 2019; Welter 2011). The determinants of early-stage funding, as well, can be better understood within its institutional, spatial, and social contexts.

Although prior literature mostly investigated institutional voids in the context of emerging markets, institutional deficiencies may also be present in developed economies (Sadeghi et al. 2019). Furthermore, emerging economies are not uniform, they may vary significantly in socio-cultural, political, legal, and economic conditions. Hence, it is important to conduct future studies that compare the determinants of new venture funding

across different country contexts, preferably including comparisons of developed and emerging economies.

The insights developed in this study have practical implications for new ventures seeking external funding in the context of emerging markets. It is critical for them to understand what type of signals will have more relevance in the eyes of potential investors, and what kind of a signal configuration will be satisfactory for their investment decision. Given that they usually have limited resources, it may be preferable for new ventures to invest in the most effective signals. Even in cases where they possess multiple signals, they may choose to emphasize the most critical ones in fundraising platforms. My findings here, for instance, suggest that having a single signal in each relevant quality content area may be enough to convince external finance providers. Furthermore, new ventures may significantly benefit an understanding of signals' context relevance and potential interactions between various signals.

My focus in this thesis is on informational signals. Studies suggest that investors' decision may also be shaped by entrepreneurs' behavioral style such as openness to question and commentary or communication abilities (Kim and Aldrich 2005; Sapienza and Korsgaard 2017), personal commitment to the venture (Busenitz, Fiet, and Moesel 2005), as well as behavioral intentions and preparedness (Maxwell, Jeffrey, and Lévesque 2011; Maxwell and Lévesque 2014; Chen, Yao, and Kotha 2009). Future research may consider more complex interactions between these interpersonal signals and informational ones.

Existing literature indicates that venture capitalists invest in the entrepreneurs they have relationship with, due to absence of formal institutions in the emerging economy (Ahlstrom and Bruton 2006). Further, investors usually get other investors opinion and syndicate their investments with other investors (Admati and Pfleiderer 1994; Guler 2007; Lerner 1994; Sorenson and Stuart 2015). I could not investigate these network effects within the limits of this thesis study. Future research may work on rich data of networks to explore such effects, and the ways in which entrepreneurs' personalized networks with the investor community or political ties affect their access to external funding opportunities.

The insights I develop here are also limited to the context of early-stage funding. Future research may investigate the individual and interactive influences of signals at later stages of a venture's life cycle. Other outcomes such as new venture survival, growth or failure are also important to understand (Linder et al. 2020; Mallon, Lanivich, and Klinger 2017). Configurational approaches can well be used to compare determinants of these different outcomes (e.g., Linder et al. 2020).



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