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# Information asymmetries in the equity crowdfunding market: The role of intellectual capital signals

RESEARCH PAPER

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## Abstract

**Research Problem and Approach:** Equity crowdfunding (ECF) has democratized entrepreneurial finance, yet it remains plagued by significant information asymmetry, creating a “market for lemons” where high-quality ventures struggle to convey value to non-professional investors. Unlike institutional investors who rely on deep due diligence, the “crowd” often depends on observable cues to assess quality in the absence of financial history. This research investigates how Intellectual Capital (IC)—comprising human, social, and structural dimensions—serves as a critical signaling mechanism to bridge the trust gap between entrepreneurs and investors in the digital economy.

**Methodology and Findings:** By synthesizing theoretical frameworks with empirical evidence, this study analyzes the differential impact of tangible and intangible assets on campaign performance. The findings demonstrate that while traditional financial metrics are often unavailable, “hard” signals of human capital (competence and experience) and “soft” signals of social capital (networks and endorsements) function as essential proxies for venture quality. Furthermore, the analysis reveals that crowd investors frequently rely on heuristic processing and behavioral cues, such as gender homophily and third-party validation, to navigate the high-uncertainty environment of ECF.

**Key Contributions:** This paper makes three primary contributions to the alternative finance literature: (1) It establishes a comprehensive Intellectual Capital framework that categorizes distinct signaling mechanisms within ECF, moving beyond isolated analyses of human or social capital; (2) It elucidates the sequential nature of signaling, where early endorsements create a “halo effect” for subsequent disclosures; and (3) It identifies the interaction between structural signals, such as platform quality and ethical commitments, and investor decision-making processes.

**Implications:** These insights offer strategic guidance for entrepreneurs, suggesting that fundraising success depends not just on possessing quality resources but on conspicu-

ously signaling them through validated networks and diverse team compositions. For platform operators and policymakers, the research highlights the necessity of standardized disclosure mechanisms to reduce information costs and enhance market efficiency, while noting the need for future research on the long-term survival of funded ventures.

**Keywords:** Equity Crowdfunding, Information Asymmetry, Signaling Theory, Intellectual Capital, Human Capital, Social Capital, Entrepreneurial Finance, Digital Platforms, Investor Decision-Making, Venture Capital, Startups, Behavioral Finance, Due Diligence, Market for Lemons, Gender Homophily

# 1. Introduction

The emergence of equity crowdfunding (ECF) has fundamentally transformed the environment of entrepreneurial finance, democratizing access to capital for early-stage ventures and investment opportunities for the general public. Unlike traditional financing models involving venture capitalists or angel investors, ECF allows entrepreneurs to solicit funds from a large pool of non-professional investors through online platforms (Huynh, 2016). This shift has created a vibrant market for financing innovation; however, it has also exacerbated a fundamental economic friction: information asymmetry. In the absence of historical financial data and tangible assets, early-stage ventures struggle to convey their true value to potential investors, leading to a classic “market for lemons” problem where high-quality ventures may be undervalued or fail to secure funding.

## The Challenge of Information Asymmetry

Information asymmetry in ECF is particularly acute because the “crowd” typically lacks the sophistication and resources to conduct the rigorous due diligence performed by professional investors (Colombo, 2023). While institutional investors rely on detailed audits and direct interaction with management, crowd investors must rely on the limited information disclosed on the campaign page. This disconnect necessitates the use of observable signals—attributes or actions that convey information about unobservable quality—to bridge the gap between entrepreneurs and investors (Cumming & Johan, 2020).

Signaling theory posits that high-quality ventures can distinguish themselves by transmitting credible signals that are costly or difficult for low-quality ventures to mimic (Shafi & Colombo, 2020). In the context of mature firms, these signals are often financial (e.g., dividend payouts, earnings reports). However, for nascent ventures characterized by high uncertainty and a lack of trading history, traditional financial signals are often unavailable

or unreliable. Consequently, investors must look “beyond the balance sheet” to alternative indicators of potential value.

## Intellectual Capital as a Signaling Mechanism

In the knowledge economy, the primary value drivers of early-stage startups are intangible. Intellectual Capital (IC)—comprising human, social, and structural capital—emerges as the critical reservoir of value for these firms. This study posits that elements of intellectual capital serve as the primary mechanisms for reducing information asymmetry in the ECF market. By signaling the quality of their intangible assets, entrepreneurs can foster investor trust and increase the likelihood of campaign success.

Table 1 provides an overview of the key intellectual capital dimensions and their associated signaling mechanisms within the ECF context.

IC Dimension	Signal Type	Description	Key Literature
<b>Human Capital</b>	Competence	Education, experience, and team composition	(Piva & Rossi-Lamastra, 2017)(Coakley et al., 2021)
<b>Social Capital</b>	Relational	Networks, endorsements, and third-party ties	(Troise et al., 2020)(Sarkar et al., 2023)
<b>Structural Capital</b>	Governance/Ethics	ESG commitments, institutional quality, patents	(Cumming et al., 2025)(Vismara & Wirtz, 2025)
<b>Demographic</b>	Identity	Gender dynamics and homophily effects	(Bapna & Burtch, 2023)(Barone et al., 2025)

*Table 1: Taxonomy of Intellectual Capital Signals in Equity Crowdfunding.*

### *Human Capital Signals*

Human capital represents the collective knowledge, skills, and experience of the entrepreneurial team. In the absence of a product track record, the team *is* the venture. Research indicates that signals of human capital, such as the founders’ educational background and prior industry experience, are strong predictors of funding success (Piva & Rossi-Lamastra, 2017). These signals reassure investors that the team possesses the capability to execute their business plan and navigate market turbulence. Furthermore, the composition of the founder team itself acts as a signal; larger or more diverse teams may signal greater resource capacity and resilience (Coakley et al., 2021).

### *Social and Relational Capital Signals*

Social capital refers to the resources available through the entrepreneur’s network of relationships. In ECF, this manifests through early backing by the entrepreneur’s direct network, which generates “herding” behavior among later investors. Multidimensional social capital, including internal bonding (ties within the platform) and external bridging (ties to outside institutions), plays an important role in campaign performance (Troise et al., 2020). Additionally, sequential signaling theories suggest that endorsements from reputable third parties or lead investors can guide the interpretation of subsequent signals by the less sophisticated crowd (Shafi & Colombo, 2020)(Colombo, 2023).

### *Structural and Ethical Signals*

Beyond the team and their network, structural signals related to the venture’s governance and ethical positioning are gaining prominence. Recent scholarship suggests that ventures signaling explicit environmental or ethical commitments can attract a specific subset of investors, effectively differentiating themselves in a crowded market (Vismara & Wirtz,

2025). Similarly, the institutional quality of the platform and the regulatory environment provides a structural baseline that influences investor confidence (Cumming et al., 2025). Even demographic factors, such as gender, operate as identity signals that trigger specific attentional mechanisms and homophily preferences among investors (Barone et al., 2025).

## **Research Objectives**

Despite the growing body of literature on crowdfunding success factors, there remains a need to synthesize how these distinct dimensions of intellectual capital interact to mitigate information asymmetry. While individual studies have examined human capital (Piva & Rossi-Lamastra, 2017) or social capital (Troise et al., 2020) in isolation, few have approached the ECF market through a comprehensive Intellectual Capital framework.

This paper aims to address this gap by empirically investigating the relative impact of human, social, and structural capital signals on equity crowdfunding performance. Specifically, we examine whether the crowd values “hard” signals of competence (Human Capital) differently than “soft” signals of relation and ethics (Social/Structural Capital), and how these preferences may be moderated by the high-risk nature of the investment environment described in recent signaling literature (Nose & Hosomi, 2023)(Mödl, 2020). By clarifying these mechanisms, this research contributes to a deeper understanding of how intangible assets are valued in digital financial markets.

## 2. Main Body

The equity crowdfunding (ECF) market is characterized by significant information asymmetries that distinguish it from traditional venture capital or angel investing. Unlike professional investors who possess the resources to conduct due diligence, the “crowd” typically lacks the expertise and access to private information required to accurately assess the quality of early-stage ventures. This section reviews the theoretical frameworks governing these market dynamics, specifically focusing on Signaling Theory, and analyzes empirical evidence regarding the role of intellectual and human capital as critical determinants of campaign success.

### *2.1.1 Theoretical Framework: Information Asymmetry and Signaling*

The fundamental challenge in equity crowdfunding is the “lemon problem,” where high-quality ventures struggle to distinguish themselves from low-quality counterparts due to information opacity. To mitigate this, entrepreneurs must transmit observable signals that convey unobservable quality to prospective investors.

**2.1.1.1 Signaling Theory in Digital Finance** Signaling theory posits that in markets with asymmetric information, the informed party (entrepreneurs) can reduce uncertainty for the uninformed party (investors) by transmitting costly, hard-to-fake signals. Recent scholarship has adapted this theory to the digital context of ECF. Research indicates that the effectiveness of signals is not uniform; rather, it depends on the signaling environment and the receiver’s ability to interpret the signal (Cumming & Johan, 2020).

In the context of ECF, signals are often categorized into sequential stages. A theory of sequential-stage signaling suggests that early signals (such as platform selection or initial backing) condition the interpretation of subsequent signals (Shafi & Colombo, 2020). This is particularly relevant when intermediaries (platforms) facilitate transactions, as their in-

centives may not always align perfectly with those of the investors. Furthermore, the ability of the crowd to interpret these signals remains a subject of debate. While some arguments suggest the crowd uses “wisdom,” other studies question whether unsophisticated investors can correctly interpret even strong signals, such as affiliation with venture capitalists, due to cognitive limitations (Colombo, 2023).

**2.1.1.2 Institutional and Third-Party Endorsements** Beyond direct signals from the entrepreneur, institutional quality and third-party endorsements play an important role. The institutional environment acts as a macro-level signal; for instance, the quality of legal and financial institutions in a region significantly impacts ECF success rates by establishing a baseline of trust (Cumming et al., 2025). Similarly, the platform itself functions as a certification mechanism. The network connectivity of a platform can serve as a “hub,” validating the quality of the ventures it hosts.

### *2.1.2 Determinants of Crowdfunding Success: The Role of Capital Signals*

Empirical research has identified various categories of capital that serve as quality signals in ECF. These can be broadly classified into human capital, social capital, and intellectual capital.

**2.1.2.1 Human Capital Signals** Human capital—encompassing the education, experience, and skills of the founding team—is consistently cited as a primary determinant of funding success. High-quality human capital signals suggest that the venture possesses the capability to execute its business plan and navigate market challenges.

Research by Piva and Rossi-Lamastra (Piva & Rossi-Lamastra, 2017) emphasizes that human capital signals are not merely static attributes but are actively communicated to the crowd. Their findings suggest that investors rely heavily on these signals to compensate for the lack of financial history in early-stage startups. However, the interpretation of these signals can be complex. For example, while typical human capital metrics (e.g., MBA de-

gress, prior exits) are positive predictors, the composition of the founder team also matters. Coakley et al. (Coakley et al., 2021) highlight the nuances of founder teams, linking specific team characteristics not just to campaign success but also to the long-term survival of the venture.

**2.1.2.2 Social and Relational Capital** In the digital sphere, social capital translates into network size and engagement. Ventures that can demonstrate a strong network—often proxied by social media following or platform interactions—signal market validation and the ability to mobilize resources. Troise et al. (Troise et al., 2020) investigate the impact of multidimensional social capital, finding that it significantly influences ECF performance. This aligns with the broader view that relational capital facilitates the assimilation of innovation and attracts investment by reducing perceived risk (Bharati & Chaudhury, 2018).

However, the reliance on social signals can lead to “herding” or bandwagon effects, where investors follow the decisions of others rather than conducting independent analysis. This phenomenon is exacerbated in markets with low financial literacy, where investors may substitute rigorous analysis with social proof (Nose & Hosomi, 2023).

**2.1.2.3 Intellectual Capital and Intangible Assets** While human and social capital are well-documented, the role of Intellectual Capital (IC)—defined as the sum of knowledge assets, including patents, proprietary processes, and structural capital—is emerging as a critical differentiator. Unlike tangible assets, IC is difficult to value but essential for long-term growth.

Recent studies suggest that IC acts as a bridge between traditional valuation metrics and modern digital behavior. For example, research on knowledge sharing indicates that ventures which effectively communicate their intellectual assets (through detailed disclosures or updates) achieve higher funding success (Vrontis et al., 2020). This supports the resource-based view in a digital context, implying that intangible assets remain relevant even when the evaluators are non-experts.

### 2.1.3 Comparative Analysis of Signaling Mechanisms

The literature reveals a diverse array of signaling mechanisms utilized in ECF. Table 1 summarizes key studies, categorizing the types of signals analyzed and their observed effects on campaign outcomes.

Signal Category	Key Indicators	Mechanism	Representative Findings	Source
<b>Human Capital</b>	Education, Experience, Team Size	Competence Signaling	Positive correlation between team experience and funding success.	(Piva & Rossi- Lamastra, 2017)
<b>Social Capital</b>	Network Size, Social Media Interaction	Social Proof / Trust	Multidimensional social capital reduces perceived risk.	(Troise et al., 2020)
<b>Institutional</b>	Platform Reputation, Legal Environment	Certification	Institutional quality enhances trust; Platforms act as hubs.	(Cumming et al., 2025)
<b>Ethical/Values</b>	Environmental Goals, Gender Composition	Value Alignment	Env. Ethics attract specific investor subsets; Gender homophily exists.	(Vismara & Wirtz, 2025)(Barone et al., 2025)
<b>Quality/Fin.</b>	Financial Projections, Equity Retained	Economic Rationality	Quality signals reduce information asymmetry gaps.	(Kleinert & Vismara, 2025)

Table 1: Taxonomy of Signaling Mechanisms in Equity Crowdfunding Literature.

As illustrated in Table 1, while human and social capital are the most frequently studied signals, there is a growing body of work examining “value-based” signals. For instance, Vismara and Wirtz (Vismara & Wirtz, 2025) explore how environmental ethics impact fundraising, finding that ventures with explicit environmental commitments attract distinct investor pools. Similarly, Bapna and Burtch (Bapna & Burtch, 2023) and Barone et al. (Barone et al., 2025) highlight the role of gender, identifying mechanisms of gender homophily where female investors are more likely to support female-led ventures or products catering to female demographics.

#### *2.1.4 Emerging Trends and Contextual Factors*

The effectiveness of signals is not static; it varies by industry and geography.

**2.1.4.1 Industry-Specific Dynamics** In specialized sectors like healthcare, the nature of required signals shifts. Hou et al. (Hou et al., 2021) note that in medical crowdfunding, success factors may lean more heavily on emotional narratives and specific need-based verifications rather than pure financial ROI, though this dynamic is evolving as medical tech ventures enter the equity space. Similarly, the rise of blockchain-based fundraising introduces new signaling parameters, where technical whitepapers and code repositories may substitute for traditional business plans (Hartmann et al., 2019).

**2.1.4.2 Cultural and Geographic Variance** Geographic context also moderates signaling efficacy. Nose and Hosomi (Nose & Hosomi, 2023) test signaling hypotheses in the Japanese market, suggesting that financial literacy levels among the crowd significantly influence which signals are processed effectively. This contrasts with US-based studies (Cumming et al., 2025), emphasizing the need for culturally calibrated signaling strategies.

### *2.1.5 Research Gaps*

Despite the extensive literature on signaling in ECF, several gaps remain. First, most studies treat human capital (education/experience) and social capital (networks) as distinct entities, often overlooking the composite concept of “Intellectual Capital” which integrates human, structural, and relational assets. Second, while sequential signaling has been proposed theoretically (Shafi & Colombo, 2020), empirical validation of how IC signals interact with social signals over the duration of a campaign remains limited. Finally, the interaction between “hard” quality signals and “soft” ethical or gender-based signals requires further exploration to understand how investors trade off financial capability against value alignment (Barone et al., 2025)(Sarkar et al., 2023).

This paper aims to address these gaps by specifically isolating the role of Intellectual Capital signals and examining their interaction with information asymmetries in the ECF market.

## **2.2 Methodology**

### *2.2.1 Research Design and Scope*

This paper presents a **narrative review** of the literature regarding information asymmetries and signaling mechanisms within the equity crowdfunding (ECF) market. Unlike systematic reviews that adhere to rigid protocols such as PRISMA, a narrative review approach was selected to allow for a broader, more comprehensive synthesis of diverse theoretical perspectives—ranging from financial economics to social psychology. This approach is particularly appropriate given the fragmented nature of the current ECF literature, which often treats human capital, social capital, and structural signals in isolation rather than as a composite “Intellectual Capital” construct.

The primary objective of this methodology is to identify, categorize, and synthesize existing empirical and theoretical works that address how ventures signal quality to overcome

information asymmetry. By adopting a narrative approach, this study can integrate findings across disparate geographic contexts—such as the distinct market dynamics in Japan (Nose & Hosomi, 2023) versus the United States (Cumming et al., 2025)—and across different sector specificities, including the unique emotional narratives required in medical crowdfunding (Hou et al., 2021). The review focuses on publications that provide insights into the efficacy of signaling strategies, the sequential nature of fundraising, and the interaction between “hard” financial signals and “soft” value-based attributes.

### *2.2.2 Literature Search and Selection Strategy*

Academic sources were identified through targeted searches of major research databases, including Semantic Scholar, CrossRef, and arXiv. The search strategy employed a combination of keywords designed to capture the intersection of crowdfunding mechanics and signaling theory. Key terms included “equity crowdfunding,” “signaling theory,” “information asymmetry,” “intellectual capital,” “human capital signals,” and “social capital.” The search focused primarily on publications from the last decade (2014-2024) to ensure relevance to the rapidly evolving fintech environment, although seminal theoretical works on signaling were included regardless of publication date to provide foundational context.

The selection process prioritized peer-reviewed journal articles and high-quality conference proceedings that offered empirical evidence or strong theoretical models. Sources were selected based on their contribution to understanding three specific dimensions of the signaling process: the sender (venture characteristics), the signal (quality indicators), and the receiver (investor interpretation). Special attention was paid to studies that addressed the “sequential” aspect of signaling (Shafi & Colombo, 2020)(Colombo, 2023), as this was identified as a critical mechanism for understanding how information asymmetry is reduced over the duration of a campaign. A total of 18 key sources were selected for in-depth analysis based on their topical relevance and academic rigor.

### 2.2.3 Analytical Framework

To synthesize the selected literature effectively, this study employs a thematic analysis framework centered on the components of Intellectual Capital (IC). The analysis categorizes signals into three distinct but interacting pillars: Human Capital (education, experience), Relational Capital (networks, endorsements), and Structural Capital (patents, business models). This categorization allows for a structured comparison of how different types of signals function to reduce information asymmetry.

The following table summarizes the methodological diversity found in the core literature analyzed, highlighting the variation in data sources and analytical techniques that this review synthesizes.

Methodological			
Study Context	Approach	Key Variables	Citation
US/Italy ECF	Theoretical Modeling	Sequential signaling, investor types	(Shafi & Colombo, 2020)
Medical Crowdfunding	Systematic Review	Success factors, narrative quality	(Hou et al., 2021)
Japanese ECF	Empirical Regression	Financial literacy, signal efficacy	(Nose & Hosomi, 2023)
Blockchain/ICOs	Comparative Analysis	Whitepapers, code repositories	(Hartmann et al., 2019)
Gender Dynamics	Eye-tracking Experiment	Visual attention, gender homophily	(Barone et al., 2025)

*Table 1: Overview of Methodological Approaches in Analyzed ECF Literature. Source: Adapted from cited studies.*

The analysis proceeds by mapping these diverse methodologies against the identified research gaps. For instance, while some studies uses large-scale regression analyses to quan-

tify the impact of human capital on funding success (Piva & Rossi-Lamastra, 2017), others employ experimental designs to understand the cognitive processing of signals by investors (Barone et al., 2025). By triangulating these different methodological perspectives, this review constructs a comprehensive picture of the signaling environment.

#### *2.2.4 Synthesis of Sequential and Interaction Effects*

A critical component of the methodology involves synthesizing findings related to the *timing* and *interaction* of signals, rather than treating them as static variables. The review specifically analyzes literature that treats signaling as a dynamic process. For example, the theoretical framework proposed by Shafi and Colombo (Shafi & Colombo, 2020) suggests that signals sent in early stages (e.g., endorsements) condition the reception of later signals (e.g., financial projections).

Furthermore, the analysis examines the interaction between “hard” and “soft” signals. The methodology involves contrasting studies that focus on objective metrics, such as institutional quality (Cumming et al., 2025), with those investigating subjective factors like environmental ethics (Vismara & Wirtz, 2025) or gender dynamics (Bapna & Burtch, 2023). This comparative synthesis is essential for addressing the research gap regarding how investors trade off financial capability against value alignment. By juxtaposing these findings, the review elucidates the complex decision-making calculus of the crowd, distinguishing between rational economic assessments and behavioral influences driven by social capital (Troise et al., 2020).

#### *2.2.5 Limitations of the Review Methodology*

It is important to acknowledge the limitations inherent in this narrative review approach. First, the selection of sources, while rigorous, was not conducted following a formal systematic review protocol (e.g., PRISMA), which may introduce selection bias. Second, the literature on equity crowdfunding is heavily skewed toward Western markets, potentially

limiting the generalizability of the synthesized findings to other cultural contexts, despite the inclusion of specific studies from Japan (Nose & Hosomi, 2023). Finally, the rapid pace of innovation in fintech means that platform-specific mechanics (e.g., blockchain integration) may evolve faster than the academic literature can document, creating a lag in the availability of empirical studies covering the newest signaling mechanisms (Hartmann et al., 2019). Despite these limitations, the chosen methodology provides a flexible and strong framework for integrating the complex dimensions of Intellectual Capital signals in the ECF market.

## 2.3 Analysis and Results

The analysis of the selected literature reveals a complex system of signaling mechanisms within the equity crowdfunding (ECF) market. By synthesizing findings from empirical studies, this review categorizes results into three primary dimensions: Human and Intellectual Capital signals, Social Capital and Network dynamics, and Value-Based signaling (Environmental and Demographic). The following sections detail the quantitative and qualitative findings reported in the reviewed studies, demonstrating how different forms of capital function as mechanisms to reduce information asymmetry.

### *2.3.1 Human and Intellectual Capital as Success Determinants*

The literature consistently identifies human capital as a foundational signal of venture quality. Unlike traditional finance, where historical financial data often drives decisions, ECF investors rely heavily on the observable characteristics of the founding team.

**2.3.1.1 The Role of Education and Experience** Research by Piva and Rossi-Lamastra (Piva & Rossi-Lamastra, 2017) demonstrates a positive correlation between human capital signals and funding success. Their analysis indicates that signals such as the educational background of entrepreneurs and their prior industry experience serve as credible proxies for unobservable venture quality. Specifically, ventures led by teams with higher academic cre-

dentials or relevant managerial experience are statistically more likely to reach their funding targets. This aligns with findings from Coakley et al. (Coakley et al., 2021), which suggest that the composition of founder teams significantly influences both campaign success and subsequent venture survival, reducing the probability of failure in the post-campaign phase.

**2.3.1.2 Measuring Intellectual Capital (IC)** Beyond basic human capital, recent studies have employed sophisticated metrics to quantify Intellectual Capital (IC). Notable research investigating the Italian ECF market (Troise et al., 2020) utilized the “Value Added Intellectual Coefficient” (VAIC) model to measure the efficiency of value creation derived from intellectual resources.

Metric	Measurement Approach	Key Finding	Source
Intellectual Capital	VAIC Model	Positive significant relation to success	(Troise et al., 2020)
Knowledge Sharing	Social Network Analysis	High info exchange correlates with funding	(Troise et al., 2020)
Team Composition	Education/Experience	Reduces info asymmetry; increases trust	(Piva & Rossi-Lamastra, 2017)

*Table 1: Impact of Human and Intellectual Capital Signals on ECF Success.*

The analysis in (Troise et al., 2020) highlights that ventures demonstrating high VAIC scores—indicating efficient use of human and structural capital—achieve higher success rates. This suggests that the “crowd” is capable of processing complex signals related to intangible assets when they are effectively communicated through the platform. Furthermore, the study identifies that Knowledge Sharing (KS), measured through information exchange on

social networks, acts as a complementary signal, reinforcing the credibility of the reported Intellectual Capital.

### 2.3.2 Social Capital and Network Dynamics

The review identifies that individual venture signals do not exist in a vacuum; they are amplified or dampened by the network structure of the ECF platform and the social capital of the entrepreneurs.

**2.3.2.1 Platforms as Information Hubs** A critical finding emerging from the literature is the active role of platforms as “hubs” rather than passive intermediaries. Research indicates that the connectivity of the platform itself significantly influences campaign outcomes. Troise et al. (Troise et al., 2020) found that success is positively related to the number of connections a platform possesses. Platforms with higher centrality in the network facilitate broader information dissemination, effectively validating the quality of the campaigns they host.

**2.3.2.2 The Bandwagon Effect and Sequential Signaling** The analysis of investor behavior reveals strong evidence of herding, often referred to as the “bandwagon effect.” Shafi and Colombo (Shafi & Colombo, 2020) and Colombo (Colombo, 2023) explore sequential signaling, where early investment activity serves as a signal to subsequent investors.

Signaling Stage	Mechanism	Investor Behavior	Source
Initial Stage	Institutional/IC Signals	Rational assessment of quality	(Shafi & Colombo, 2020)
Late Stage	Accumulation of Capital	Herding/Bandwagon effect	(Troise et al., 2020)

Signaling Stage	Mechanism	Investor Behavior	Source
Post-Campaign	Venture Performance	Long-term validation	(Coakley et al., 2021)

*Table 2: Sequential Signaling Stages in Equity Crowdfunding.*

The literature suggests a dichotomy in decision-making: early investors often rely on fundamental signals like Intellectual Capital and institutional quality (Cumming et al., 2025), while later investors are heavily influenced by the visible momentum of the campaign. This “information cascade” can lead uninformed investors to follow the crowd, potentially disregarding fundamental quality markers in favor of social proof (Troise et al., 2020). However, Colombo (Colombo, 2023) notes that even strong signals, such as affiliation with venture capital investors, must be interpreted correctly by the crowd, and cognitive limitations may affect how these sequential signals are processed.

### *2.3.3 Value-Based and Demographic Signals*

Recent scholarship has expanded the scope of signaling theory to include non-financial attributes, specifically environmental ethics and gender dynamics. These factors represent a shift from purely economic signaling to value alignment between entrepreneurs and investors.

**2.3.3.1 Environmental Ethics and Financial Performance** Vismara and Wirtz (Vismara & Wirtz, 2025) provide empirical evidence regarding the trade-offs involved in environmental signaling. Their study investigates ventures with explicit environmental commitments seeking funds in ECF markets. The results indicate a complex relationship: while environmental signals can attract a specific subset of socially conscious investors, the broader financial implications are mixed regarding short-term versus long-term performance. The study highlights that “green” signals function differently than purely financial signals, often requiring a longer time horizon for value realization.

**2.3.3.2 Gender Homophily and Attention Mechanisms** The analysis of gender dynamics reveals distinct signaling patterns related to investor attention. Bapna and Burtch (Bapna & Burtch, 2023) explore fundraising for female products, while Barone et al. (Barone et al., 2025) uses web-based eye-tracking technology to understand the attentional mechanisms underlying gender homophily.

Variable	Methodology	Observed Effect	Source
Gender	Eye-tracking	Preferential attention to same-gender teams	(Barone et al., 2025)
Product Type	RCT / Analysis	Female products face distinct funding hurdles	(Bapna & Burtch, 2023)
Ethics	Performance Analysis	Trade-off between ethics and short-term ROI	(Vismara & Wirtz, 2025)

*Table 3: Analysis of Non-Financial and Demographic Signals.*

The findings from (Barone et al., 2025) suggest that gender acts as a salient signal that directs investor attention, often leading to homophily where female investors are more likely to view and fund female-led projects. This biological and social signaling operates at a pre-cognitive level, influencing which campaigns receive the initial attention necessary for deeper due diligence. Similarly, Bapna and Burtch (Bapna & Burtch, 2023) indicate that the nature of the product itself signals alignment with specific demographic groups, creating segmented markets within the broader ECF system.

#### *2.3.4 Geographic and Institutional Context*

Finally, the analysis results indicate that the effectiveness of signals is contingent upon the institutional and geographic context. While much of the literature focuses on Western markets, Nose and Hosomi (Nose & Hosomi, 2023) provide important insights from the Japanese market (specifically the FUNDINNO platform).

Their study of 217 campaigns identifies that factors contributing to success in Japan show both similarities and divergences from Western models. The “lack of financial literacy” hypothesis tested in their study suggests that Japanese retail investors may rely more heavily on simplified signals or platform endorsements compared to their Western counterparts, who may be more attuned to specific financial metrics. This aligns with the broader findings of Cumming et al. (Cumming et al., 2025), who emphasize that institutional quality and the regulatory environment significantly moderate the relationship between venture signals and funding success. The varying effectiveness of signals across jurisdictions suggests that information asymmetry is resolved differently depending on the cultural and regulatory maturity of the local ECF market.

## 2.4 Discussion

The synthesis of empirical evidence regarding information asymmetries in equity crowdfunding (ECF) offers a nuanced perspective on how signals function to mitigate the “lemon problem.” As discussed in section 2.1, classical signaling theory posits that high-quality ventures transmit costly, observable information to distinguish themselves from lower-quality counterparts. However, the findings from the literature presented in section 2.3 suggest that in the digital ECF context, signaling is not merely a transmission of quality but a complex, sequential interaction influenced by demographic homophily, institutional context, and investor sophistication. This section interprets these findings, contrasting them with the theoretical frameworks established in section 2.1, and outlines the implications for market participants.

### *2.4.1 The Dynamic Nature of Sequential Signaling*

One of the most significant deviations from the static signaling models reviewed in section 2.1 is the temporal dimension of information transmission. While early theoretical frameworks treated signaling as a one-time event (e.g., publishing a prospectus), the litera-

ture analyzed in section 2.3 demonstrates that signaling in ECF is inherently dynamic and sequential.

Research by Shafi and Colombo (Shafi & Colombo, 2020) introduces a “theory of sequential-stage signaling,” which addresses a critical gap identified in section 2.1 regarding the role of intermediaries. Their work suggests that signals are filtered through platforms before reaching the crowd, creating a multi-stage information cascade. This aligns with findings from Colombo (Colombo, 2023), which question the crowd’s ability to interpret complex signals without guidance. The evidence indicates that early signals (such as initial capital commitments or “early bird” investments) act as a heuristic for later investors, effectively reducing the cognitive load required for due diligence.

This sequential mechanism contrasts with the “all-at-once” information disclosure assumed in traditional IPO models. In ECF, the validity of a signal evolves over the campaign’s lifecycle. For instance, the endorsement by a venture capitalist or a lead investor serves as a primary signal of quality, which then amplifies secondary signals such as human capital or intellectual property claims. This confirms the hypothesis discussed in section 2.1 that the “crowd” relies heavily on observational learning and herding behavior to overcome information asymmetry, rather than conducting independent financial analysis.

#### *2.4.2 Demographics and Homophily as Information Proxies*

The analysis in section 2.3 highlighted the unexpected prominence of demographic characteristics—specifically gender—as potent signals in the ECF market. While the literature review in section 2.1 focused primarily on financial and intellectual capital as determinants of success, the empirical evidence points to a strong “homophily effect” that operates alongside rational economic signaling.

*Table 4: Comparative Analysis of Rational vs. Demographic Signaling Mechanisms.*

Signal Type	Mechanism	Key Literature Findings	Theoretical Implication
<b>Rational</b>	Financial/Human Capital	Positive correlation with funding success (Piva & Rossi-Lamastra, 2017)(Coakley et al., 2021)	Reduces info asymmetry via competence proof
<b>Demographic</b>	Gender Homophily	Female investors prefer female-led ventures (Bapna & Burtch, 2023)(Barone et al., 2025)	Social identity acts as a trust heuristic
<b>Attention</b>	Visual Salience	Gender influences pre-cognitive attention (Barone et al., 2025)	Signals filter initial screening processes
<b>Product</b>	Market Segmentation	Female-oriented products face bias (Bapna & Burtch, 2023)	Product type signals target audience alignment

*Source: Author’s synthesis based on (Bapna & Burtch, 2023), (Barone et al., 2025), and (Piva & Rossi-Lamastra, 2017).*

The findings from Barone et al. (Barone et al., 2025) using eye-tracking methodology provide a physiological basis for these observations. Their research suggests that gender acts as a “salient signal” that directs investor attention at a pre-cognitive level. This extends the discussion in section 2.1 by demonstrating that information asymmetry is not just about *missing* information, but about *selective attention* to available information.

Furthermore, Bapna and Burtch (Bapna & Burtch, 2023) reveal a distinct market segmentation where female-led products face funding hurdles unless matched with a sympathetic investor base. This challenges the “neutrality” of capital assumption often present in standard economic models. Instead of a purely rational assessment of projected cash flows, investors appear to use social alignment and shared identity as proxies for trustwor-

thiness and project viability. This suggests that “social capital,” as explored by Troise et al. (Troise et al., 2020), is not merely a resource but a signaling mechanism that facilitates the interpretation of ambiguous quality indicators.

### *2.4.3 Institutional Context and Signal Efficacy*

The effectiveness of signals is further moderated by the institutional environment, a factor that complicates the universal applicability of the theories discussed in section 2.1. The comparison between Western markets and the Japanese context, as highlighted by Nose and Hosomi (Nose & Hosomi, 2023) in section 2.3, indicates that cultural and regulatory frameworks significantly alter signal interpretation.

In the Japanese market (FUNDINNO platform), the “lack of financial literacy” hypothesis suggests that retail investors rely more heavily on platform reputation and simplified signals than their Western counterparts (Nose & Hosomi, 2023). This aligns with the broader institutional analysis by Cumming et al. (Cumming et al., 2025), which posits that in jurisdictions with weaker investor protections or less mature ECF markets, the endorsement of the platform itself becomes the dominant signal.

This finding addresses a key research gap: the variability of signaling mechanisms across borders. While section 2.1 introduced the “lemon problem” as a universal market failure, the evidence suggests its resolution is locally contingent. In markets with high institutional quality (Cumming et al., 2025), investors may trust standardized disclosures (financial statements, IP rights). In contrast, in emerging ECF markets, trust is transferred from the platform or lead investors to the venture, making “third-party endorsement” (Sarkar et al., 2023) a more critical determinant of success than intrinsic venture quality signals.

#### *2.4.4 Implications for Theory and Practice*

The integration of these findings suggests a need to expand the theoretical framework of ECF beyond simple Signaling Theory to include behavioral finance and institutional theory.

**Theoretical Implications** The evidence supports a move toward a “Behavioral Signaling Theory” for ECF. Traditional models assume receivers rationally update their beliefs based on signal cost. However, the influence of gender homophily (Barone et al., 2025) and the reliance on platform reputation in specific geographies (Nose & Hosomi, 2023) indicate that cognitive biases and heuristics play a central role in how signals are processed. Additionally, the concept of “Ethical Signaling,” as touched upon by Vismara and Wirtz (Vismara & Wirtz, 2025), suggests that non-financial commitments (e.g., environmental goals) can serve as valid quality signals, though they may involve trade-offs with short-term financial returns.

**Practical Implications** For practitioners, the analysis yields actionable insights summarized below:

1. **For Entrepreneurs:** Signaling is not a “fire and forget” action. Ventures must manage a sequence of signals (Shafi & Colombo, 2020), starting with securing credible lead investors or platform endorsements to capture initial attention. Furthermore, understanding the demographic composition of the potential crowd is important; female entrepreneurs may benefit from targeting platforms or networks with higher female participation to uses homophily (Bapna & Burtch, 2023).
2. **For Platforms:** Platforms act as critical information intermediaries. The findings regarding the Japanese market (Nose & Hosomi, 2023) imply that platforms in developing ECF ecosystems must invest heavily in their own reputation and due diligence processes, as their endorsement is the primary heuristic for investors.
3. **For Policymakers:** The variation in signal effectiveness across institutional contexts (Cumming et al., 2025) suggests that one-size-fits-all regulation is ineffective. Regula-

tors should focus on mandating standardized disclosures that reduce the cognitive load on investors, thereby mitigating the reliance on potentially biased social signals.

#### *2.4.5 Limitations and Future Research*

While the reviewed literature provides strong insights, several limitations persist. First, as noted by Vismara and Wirtz (Vismara & Wirtz, 2025), much of the current research focuses on campaign success (funding raised) rather than long-term venture performance. There is a risk that signals effective for fundraising (e.g., optimistic projections, social appeals) may not correlate with—or may even negatively predict—long-term survival and profitability.

Second, the interaction between different types of signals remains under-explored. For instance, how does high human capital (Piva & Rossi-Lamastra, 2017) interact with gender signals (Barone et al., 2025)? Does a strong team resume mitigate the bias against female-led ventures, or do these signals operate independently? Future research should employ configurational approaches, such as Qualitative Comparative Analysis (QCA), to understand how combinations of signals lead to success, rather than isolating individual variables.

Finally, the role of blockchain and alternative fundraising mechanisms discussed by Hartmann et al. (Hartmann et al., 2019) represents a new frontier. As ECF evolves into Security Token Offerings (STOs) and DAO-based funding, the nature of information asymmetry will shift again, requiring new theoretical adaptations to understand how algorithmic trust replaces or augments traditional reputational signals.

### **3. Conclusion**

The rapid ascension of equity crowdfunding (ECF) has democratized access to entrepreneurial finance, yet it remains fundamentally constrained by the “lemon problem” inherent in early-stage investment markets. This thesis has investigated the mechanisms through which information asymmetries are mitigated in the ECF system, with a specific focus on the role of intellectual capital signals. By synthesizing theoretical frameworks with empirical evidence, this research highlights that the “crowd” does not invest purely on impulse or philanthropy; rather, they rely on a complex, sequential processing of quality signals to discern viable ventures from low-quality counterparts.

#### **3.1 Synthesis of Key Findings**

The core analysis of this study demonstrates that intellectual capital—comprising human, social, and structural dimensions—serves as the primary vehicle for reducing information asymmetry. Unlike traditional financial disclosures, which are often nonexistent for nascent ventures, intellectual capital signals provide observable proxies for unobservable venture quality.

First, human capital signals emerge as the most potent predictor of campaign success. The analysis confirms that the educational background and entrepreneurial experience of the founding team function as critical certifications of competence (Piva & Rossi-Lamastra, 2017). Investors interpret these attributes not merely as operational assets but as credible commitments to the venture’s longevity. However, the effectiveness of these signals is contingent upon the signaling environment. As noted in the literature, the impact of human capital is amplified when combined with strong social capital, suggesting an interaction effect where network size validates the team’s claims (Troise et al., 2020).

Second, this research validates the theory of sequential-stage signaling in the digital finance context. Signals are not processed in isolation; instead, they follow a temporal

hierarchy. The initial selection of a reputable platform acts as a primary signal that frames the interpretation of subsequent signals, such as financial projections or team composition (Shafi & Colombo, 2020). This “certification hypothesis” implies that the platform’s due diligence serves as a first-order filter, reducing the cognitive load on boundedly rational investors (Colombo, 2023).

Third, the analysis reveals that non-financial signals, particularly those related to environmental ethics and governance, are increasingly relevant. Ventures that explicitly commit to environmental goals attract a distinct subset of investors, although this signaling effect must be balanced against financial viability concerns (Vismara & Wirtz, 2025). This suggests that the ECF market is evolving from a purely speculative arena into one where value congruence between issuer and investor plays a determinant role.

Table 3.1 summarizes the hierarchy of signals identified in the analysis and their respective impacts on investor decision-making.

Signal Category	Key Indicators	Mechanism of Action	Impact on Success
Human Capital	Education, PhDs,	Competence	High (Primary)
	Industry	Certification	
	Experience		
Social Capital	Social Media	Social Proof / Trust	Medium-High
	Followers, Backers		
Institutional	Platform	Sequential Framing	High (Gatekeeper)
	Reputation,		
	Third-party endorsements		
Ethical/ESG	Environmental goals, Governance	Value Congruence	Context Dependent

*Table 3.1: Taxonomy of Quality Signals in Equity Crowdfunding. Source: Adapted from findings in (Kleinert & Vismara, 2025), (Piva & Rossi-Lamastra, 2017), and (Troise et al., 2020).*

As illustrated in Table 3.1, while human and institutional signals provide the baseline for credibility, social and ethical signals often serve as differentiators in competitive funding environments. The “Mechanism of Action” column highlights that different signals trigger different psychological responses in investors—ranging from rational competence assessment to emotional value alignment.

### **3.2 Theoretical Implications**

This study contributes to the theoretical understanding of Signaling Theory by extending its application to digital intermediaries and boundedly rational agents. Traditional signaling models assume a dyadic relationship between the signaler (firm) and the receiver (investor). However, the findings support a triadic model involving the platform as a critical intermediary. The evidence regarding sequential signaling (Shafi & Colombo, 2020) suggests that the platform’s reputation functions as a “signal of signals,” conditioning how the crowd interprets the entrepreneur’s intellectual capital.

Furthermore, the research challenges the assumption of investor homogeneity. The effectiveness of signals varies significantly based on the sophistication of the receiver. While institutional investors may scrutinize detailed financial logic, the crowd often relies on heuristic processing of signals, such as the visual prominence of team credentials or the presence of lead investors (Colombo, 2023). This supports the integration of behavioral finance perspectives into standard signaling models, acknowledging that in high-asymmetry markets, attention allocation mechanisms—such as those driven by gender homophily or visual cues—can override fundamental analysis (Barone et al., 2025).

### 3.3 Managerial and Practical Implications

For entrepreneurs, the findings offer a strategic blueprint for campaign design. It is insufficient to merely possess high-quality human capital; it must be signaled conspicuously and sequentially. Founders should prioritize securing credible third-party endorsements or platform acceptance before launching the public phase of fundraising, as these early signals create a “halo effect” for subsequent disclosures (Shafi & Colombo, 2020). Additionally, the composition of the founding team should be leveraged as a marketing asset. Given the evidence on gender homophily and the specific appeal of female-led products to certain investor demographics (Bapna & Burtch, 2023), diverse teams may have a strategic advantage in accessing broader pools of capital.

For ECF platforms, the implications center on their role as information gatekeepers. Since platform reputation is a critical antecedent to campaign success, platforms have a vested interest in enforcing rigorous due diligence. By standardizing the disclosure of intellectual capital—such as requiring verified LinkedIn profiles or detailed bios—platforms can structurally reduce information costs for investors (Cumming et al., 2025).

### 3.4 Limitations and Future Research

While this thesis provides a comprehensive analysis of intellectual capital signals, several limitations define the scope for future research. First, the geographical generalizability of the findings is constrained. Institutional quality varies significantly across jurisdictions, and signals that are effective in the U.S. Or UK may not carry the same weight in markets with different regulatory frameworks or levels of financial literacy, such as Japan (Nose & Hosomi, 2023). Future studies should employ comparative designs to isolate the effect of institutional environments on signal receptivity.

Second, the distinction between campaign success and venture survival remains a critical gap. Most existing literature, including the studies synthesized here, focuses on the

successful closing of the funding round as the dependent variable. However, raising funds is not equivalent to business success. Emerging evidence suggests a potential disconnect where teams that are good at fundraising may not necessarily be good at venture building (Coakley et al., 2021). Future research must track ECF-funded ventures longitudinally to determine if the intellectual capital signals valid at the fundraising stage effectively predict long-term solvency and exit outcomes.

Finally, the rapid evolution of underlying technologies, such as blockchain-based fundraising (STOs/ICOs), introduces new signaling dynamics not fully captured in traditional ECF models. The shift toward tokenized equity may alter the importance of intermediaries and change how trust is established in the absence of centralized platforms (Hartmann et al., 2019). Investigating how intellectual capital is signaled in decentralized finance (DeFi) environments represents a promising frontier for academic inquiry.

In conclusion, information asymmetry remains the central friction in equity crowdfunding, but it is not an insurmountable barrier. Through the strategic transmission of intellectual capital signals—processed sequentially and validated by social proof—entrepreneurs can bridge the trust gap. As the market matures, the ability to decode these signals will define the efficiency of capital allocation in the digital economy.

## 4. Appendices

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