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# Bridging Asymmetries in Crowdfunding: A Qualitative Review on the Interplay Between Entrepreneurial Signaling and Investor Perception

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**Abstract:** This qualitative literature review explores the dynamic interplay between entrepreneurial signaling and investor perception in crowdfunding. It examines how various types of signals—such as team credibility, product quality, campaign narratives, and social proof—are interpreted by investors to mitigate information asymmetry. Drawing from recent empirical studies and theoretical advancements, this review highlights that investor decision-making is shaped by both rational evaluation and heuristic processing. Moreover, the study emphasizes the contextual influence of platform design, cultural norms, and emotional cues in shaping investment outcomes. By synthesizing diverse research findings, this paper offers a comprehensive understanding of how signaling strategies influence trust, legitimacy, and funding success in digital entrepreneurial finance. The review contributes to signaling theory and crowdfunding literature by clarifying the psychological and contextual mechanisms that bridge the knowledge gap between entrepreneurs and investors.

**Keywords:** Entrepreneurial Signaling, Investor Perception, Crowdfunding, Information Asymmetry, Qualitative Literature Review

## 1. Introduction

Crowdfunding has emerged as a disruptive force in entrepreneurial finance, providing an alternative to traditional funding mechanisms such as venture capital and bank loans (Mochkabadi & Volkmann, 2018). Among the various forms of crowdfunding, equity crowdfunding (ECF) is particularly noteworthy for enabling small firms to raise capital from a large pool of investors through digital platforms. Despite its democratizing potential, ECF remains riddled with challenges—chief among them is information asymmetry, where entrepreneurs possess more information about their ventures than prospective investors (Ahlers et al., 2015; Bafera & Kleinert, 2023).

To mitigate this asymmetry, scholars and practitioners alike have turned to signaling theory (Spence, 1973), where entrepreneurs provide observable cues—such as team credentials, business plans, or product videos—to convince investors of their venture's viability (Courtney et al., 2017; Colombo et al., 2019). However, signaling is only one side of the equation. Equally critical—but less examined—is how investors perceive, interpret, and cognitively process these signals. Recent advances in behavioral science and information processing theories suggest that perception is not merely a passive reception of data but an active, selective, and sometimes biased interpretation (Evans, 2006, 2010; Kahneman, 2011).

This literature review bridges these two perspectives—entrepreneurial signaling and investor perception—to explore their dynamic interplay in shaping crowdfunding outcomes. While the bulk of prior research focuses on signal content and frequency (Butticè & Vismara, 2022; Block et al., 2018),

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a growing body of work highlights the importance of investors' cognitive processing capacities and the heuristics they rely on when evaluating campaigns (Allison et al., 2017; Franzoni & Tenca, 2023). For instance, Yang et al. (2025) used machine learning to reveal that investors are more responsive to structured quantitative data than to ambiguous qualitative narratives or images. This supports earlier findings that reducing cognitive load improves message persuasiveness (Alter et al., 2007; Eppler & Mengis, 2004).

**Entrepreneurial Signaling: Complexity, Cost, and Credibility.** Entrepreneurial signals in crowdfunding can range from hard signals—like financial projections and professional affiliations—to soft signals such as passion, optimism, or personal narratives (Busenitz et al., 2005; Calic & Mosakowski, 2016; Anglin et al., 2018). The efficacy of a signal is typically evaluated based on its costliness, credibility, and observability (Bergh et al., 2014). Costly signals (e.g., patents, third-party certifications) are often more credible because they imply commitment and investment (Danilov & Sliwka, 2017; Colombo et al., 2022).

However, recent research indicates that signal complementarity and configuration matter more than individual signals in isolation. Bapna (2019) and Edelman et al. (2021) argue that it is the combination of different signals—financial, social, and narrative—that creates a compelling campaign. Yet, as campaigns grow richer in content, investors face information overload, leading to selective attention or reliance on heuristics (Gigerenzer & Gaissmaier, 2011; Hirshleifer & Teoh, 2003).

This challenge is particularly acute in ECF, where investors are often non-professional and may lack the resources or expertise to thoroughly vet each project (Chen & Ma, 2023). Consequently, entrepreneurs must not only signal effectively but do so in a way that is easily digestible and cognitively efficient.

**Investor Perception: From Rational Analysis to Heuristic Processing.** Investor behavior in crowdfunding defies classical assumptions of rationality. Research increasingly supports a dual-process model of decision-making—System 1 (fast, intuitive) and System 2 (slow, analytical)—where investors often rely on heuristics due to time constraints or cognitive limitations (Kahneman, 2011; Evans, 2008). This has implications for how signals are perceived and interpreted. For example, visual cues like logos or founder appearance can disproportionately influence perceptions of credibility and trustworthiness (Mahmood et al., 2019; Cook & Mobbs, 2022).

Franzoni and Tenca (2023) adopt this dual-processing perspective to show that entrepreneurial passion, when conveyed clearly, activates intuitive support among backers. Similarly, Allison et al. (2017) apply the Elaboration Likelihood Model (ELM) to demonstrate that argument strength matters only when the investor is motivated and able to process the information deeply. Otherwise, peripheral cues such as tone, aesthetics, or platform design become decisive.

The findings by Yang et al. (2025) further emphasize this point. In their study utilizing five machine learning models, they found that investors prefer structured numerical data—like funding goals and equity offered—over qualitative content like team descriptions or images. This suggests that simplification and clarity in presentation enhance perception, a concept supported by research on metacognitive fluency (Alter et al., 2007) and information sufficiency (Griffin et al., 2004). The research results underscore the importance of aligning tax policies with market stability goals to optimize investor confidence and overall market efficiency (Amelia, Y., et al, 2025).

**Machine Learning and the Investor Mindset.** Advancements in artificial intelligence and machine learning (ML) have provided new tools to analyze investor behavior at scale. Studies by Athey and Imbens (2019), Gu et al. (2020), and Meoli and Vismara (2022) demonstrate how ML can uncover nonlinear patterns in investment decisions and predict campaign success with remarkable accuracy. Yang et al. (2025) used ML not only to identify key variables that predict funding outcomes but also to explore how policy interventions affect investor behavior.

Specifically, their study examined the Chinese government's 2016 Interim Measures on Online Lending, which sought to regulate and stabilize the P2P lending sector. Their findings revealed that while regulation improved platform trustworthiness, overly restrictive policies dampened investor participation and harmed entrepreneurial financing, particularly in times of economic strain (Ding et al., 2021; Huang, 2018).

**Bridging the Gap: A Dual Focus on Signaling and Perception.** This review underscores that reducing information asymmetry in crowdfunding is not solely the responsibility of entrepreneurs. Investors play an active role in decoding, filtering, and responding to signals. Thus, successful crowdfunding outcomes emerge from the interaction between effective signaling and efficient perception (Drover et al., 2018; Butticiè et al., 2022). A balanced approach, where entrepreneurs simplify and clarify their message and platforms support investor cognition, appears most effective.

This duality opens new avenues for theory development and practical application. From a theoretical standpoint, integrating signaling theory with cognitive psychology can offer a richer understanding of investor behavior. Practically, platforms might invest in AI-based tools that curate and highlight high-quality signals or offer cognitive aids such as visual dashboards, scoring systems, or explainable AI (Lundberg & Lee, 2017; Hassija et al., 2024).

This review contributes to the growing discourse on equity crowdfunding by emphasizing the interdependent roles of signaling and perceiving. As crowdfunding continues to expand globally, especially amid economic uncertainties, understanding how information is both sent and received will be critical in designing inclusive, efficient, and trustworthy digital financing ecosystems.

## **2. Literature Review**

In the evolving landscape of entrepreneurial finance, equity crowdfunding (ECF) has emerged as a pivotal mechanism for startups to raise capital by circumventing traditional financial intermediaries. However, this democratized form of funding exacerbates information asymmetries between entrepreneurs and investors, making signaling a critical determinant of campaign success (Ahlens et al., 2015; Yang et al., 2025). Signaling theory, rooted in Spence's (1973) framework, posits that entrepreneurs use observable cues—such as education, experience, and business quality indicators—to convey unobservable firm attributes, thus influencing investor perceptions and decision-making (Bafera & Kleinert, 2023; Colombo et al., 2019). Equity volatility and leverage have a strong relationship with a company's investment decisions, both directly and indirectly (Chaidir, M., et al, 2024).

Research by Ahlers et al. (2015) underscored that signals related to human capital (e.g., team education and experience) and firm quality (e.g., financial projections and equity retention) significantly increase funding likelihood. Complementing this, Butticiè et al. (2022) found that investors not only assess individual signals but also form integrated “signal sets” through a multimodal evaluation of human capital and project attributes, as evidenced by eye-tracking experiments. This suggests that investor cognition in ECF operates within a complex signal-processing paradigm. It is proven that in addition to being a precursor to the achievement of innovation performance and corporate sustainable longevity, human capital can also function as a moderator for innovation performance to achieve corporate sustainable longevity (Irawan et al., 2021).

Entrepreneurs' use of persuasive language and emotional tone further enhances signal reception. Allison et al. (2017), applying the Elaboration Likelihood Model (ELM), demonstrated that narrative persuasion—particularly through emotional appeals—heightens investor engagement, especially under low elaboration contexts. Franzoni and Tenca (2023) extended this by incorporating dual-processing models, arguing that entrepreneurial passion, expressed both verbally and nonverbally, activates heuristic and analytic reasoning in investors simultaneously. Similarly, Anglin et al. (2018) reported that entrepreneurs who used optimistic and motivational language experienced higher fundraising outcomes due to the positive psychological capital conveyed.

Beyond language, visual and symbolic cues play an increasing role. Mahmood et al. (2019) showed that complex visual brand signals, such as logos and pitch videos, shape perceived professionalism and legitimacy. Colombo et al. (2022) highlighted the “CEO beauty premium,” wherein facial attractiveness positively correlates with firm valuation in token-based fundraising, revealing subconscious investor biases embedded in visual cues.

While the aforementioned studies emphasize the entrepreneur as an active signaler, recent scholarship stresses the investor's perceptual and interpretive processes. Drover et al. (2018) introduced a cognitive lens into signaling theory by focusing on “signal set interpretation,” arguing that investor decisions are contingent not only on the presence of signals but on how attentively and accurately they are processed. Bapna (2019) confirmed that signal complementarity matters—combining soft and hard signals leads to more robust investor commitment than singular cues.

Machine learning (ML) has added further depth to understanding these dynamics. Yang et al. (2025) employed ML algorithms to examine over 500,000 investor decisions and revealed that investors do not weigh all signals equally; rather, algorithmic analysis found asymmetries in how perceived credibility, signal cost, and project complexity interact to shape funding outcomes. These findings resonate with Arlot and Celisse's (2010) argument that ML enables more nuanced model selection, revealing patterns otherwise obscured in traditional statistical frameworks.

At the intersection of technology and investor cognition, explainable AI (XAI) models (e.g., SHAP—Lundberg & Lee, 2017) have enabled deeper insights into which factors predict investor behavior and when cognitive overload or bias might distort perception (Hassija et al., 2024; Rai, 2020). Hoegen et al. (2018) noted that decision-making in crowdfunding is increasingly interdisciplinary, blending behavioral finance, psychology, and human-computer interaction.

Investor perception is also influenced by contextual variables, such as the presence of lead investors (Chen & Ma, 2023), gender of founders (Prokop & Wang, 2022), and campaign updates (Block et al., 2018). In investor-led models, the crowd often mimics lead investors' decisions, relying on them as social proof, thereby reinforcing signaling cascades (Courtney et al., 2017).

Ultimately, the interplay between entrepreneurial signaling and investor perception is neither linear nor symmetrical. Entrepreneurs strategically curate signals to reduce uncertainty, while investors heuristically or systematically interpret these cues based on their cognitive styles, prior experience, and information environments (Evans, 2006; Kahneman, 2011). The signal-perception loop is thus dynamic and susceptible to both rational assessment and cognitive biases.

Despite the significant theoretical contributions, gaps remain. Few studies address how conflicting signals are resolved, how cultural contexts shape signal interpretation, or how longitudinal trust evolves in investor networks. As crowdfunding platforms incorporate more intelligent systems (e.g., recommendation algorithms, sentiment analysis), understanding the reciprocal shaping of signals and perception becomes even more critical.

### 3. Proposed Method

This study adopts a qualitative literature review methodology to synthesize and critically analyze the evolving interplay between entrepreneurial signaling and investor perception in the context of equity crowdfunding. A qualitative approach is well-suited to explore complex social phenomena, especially those involving interpretive processes and subjective evaluations such as signal reception and investment decision-making (Snyder, 2019; Baumeister & Leary, 1997).

To ensure methodological rigor, the review follows thematic analysis techniques informed by Braun and Clarke (2006), which allow the identification, analysis, and interpretation of key patterns across diverse scholarly contributions. Unlike systematic reviews that emphasize exhaustiveness, qualitative literature reviews aim to offer conceptual insights and theory development through interpretive synthesis (Tranfield et al., 2003; Paré et al., 2015).

The review was conducted using a multi-database search strategy up to 2025. Academic sources were retrieved, complemented by selective hand-searching of high-impact journals in entrepreneurship, finance, and information systems. Keywords included combinations of: "equity crowdfunding", "entrepreneurial signaling", "investor perception", "information asymmetry", "cognitive bias", and "decision-making". Boolean operators and filters (e.g., peer-reviewed, English, published between 2010 and 2025) were applied to ensure relevance and quality (Boell & Cecez-Kecmanovic, 2015).

An initial pool of sources was identified. After screening titles, abstracts, and full texts for thematic relevance and conceptual richness, peer-reviewed articles were selected for in-depth analysis. Studies that lacked theoretical framing, empirical grounding, or direct relevance to signaling theory and investor perception in crowdfunding were excluded.

To maintain focus and thematic coherence, the following inclusion criteria were used: Peer-reviewed articles published between 2010 and 2025, Studies explicitly discussing entrepreneurial signaling, investor interpretation, or decision-making in crowdfunding, Articles contributing to theory development, particularly those engaging with signaling theory, heuristic processing, or information asymmetry in digital financing contexts. Studies were excluded if they: Focused solely on donation-based or reward-based crowdfunding, Lacked conceptual or methodological clarity, Did not address entrepreneur–investor interactions or interpretive dimensions of signaling.

Data were analyzed using a qualitative coding process conducted in three iterative stages: Open coding to identify key themes such as types of signals (e.g., human capital, social proof), investor cognitive processing, and signaling interpretation frameworks. Axial coding to link themes across theoretical categories (e.g., signaling theory, elaboration likelihood model, dual-process theory). Selective coding to integrate findings into higher-order concepts explaining the dynamics of signal transmission and reception in equity crowdfunding.

This process was informed by guidance from Webster and Watson (2002) and followed the hermeneutic circle to engage in iterative reading, coding, and conceptual synthesis (Boell & Cecez-Kecmanovic, 2010). Software tools such as Zotero (for citation management) and NVivo (for thematic coding) supported the analytic process.

To enhance the trustworthiness and transparency of this qualitative review, several validation steps were taken. First, a PRISMA flow diagram was employed to track the article selection process (Page et al., 2021). Second, triangulation was achieved through the integration of empirical, conceptual, and experimental studies from various disciplines including entrepreneurship, behavioral finance, and communication. Finally, reflexive journaling was used to document analytical decisions and mitigate interpretive bias (Nowell et al., 2017).

#### 4. Results and Discussion

The findings of this qualitative literature review reveal a nuanced and multi-layered understanding of how entrepreneurial signals are constructed, transmitted, and interpreted by investors within the crowdfunding environment. Through thematic synthesis of 82 peer-reviewed studies, three major themes emerge: (1) Multidimensional Nature of Entrepreneurial Signals, (2) Cognitive Heuristics and Investor Interpretation, and (3) Contextual Moderators Influencing Signal Effectiveness.

**Multidimensional Nature of Entrepreneurial Signals.** Entrepreneurs in crowdfunding campaigns employ a wide array of signals to mitigate information asymmetry and reduce investor uncertainty. These signals can be categorized into founder-based signals (e.g., education, experience), venture-based signals (e.g., business model clarity, product readiness), and social proof signals (e.g., endorsements, early backers, media coverage) (Ahlers et al., 2015; Courtney et al., 2017).

For example, Ahlers et al. (2015) found that startups in equity crowdfunding markets that disclose human capital signals—such as prior entrepreneurial experience or higher education—are more likely

to gain investor trust and achieve funding success. Similarly, the presence of third-party validation, including professional endorsements or media mentions, has been shown to serve as a strong signal of venture legitimacy (Block et al., 2018).

**Cognitive Heuristics and Investor Interpretation.** Investor perception is not always rational or linear; instead, it is shaped by bounded rationality and heuristic processing. The Elaboration Likelihood Model (ELM) offers a useful framework to explain how investors process signals differently based on their motivation and ability to evaluate information (Parhankangas & Ehrlich, 2014).

Experienced investors tend to engage in central route processing, systematically evaluating signals such as business plans, financial projections, and market strategies. In contrast, less experienced or time-constrained investors are more likely to rely on peripheral cues such as founder photos, campaign videos, and the number of early backers (Allison et al., 2017; Hornuf & Schwienbacher, 2018). These cognitive shortcuts, while efficient, also open the door for misinterpretation or overvaluation of superficial signals.

Moreover, emotional signals—such as founder passion and storytelling—play a critical role in influencing investor perceptions by appealing to affective judgments (Moss et al., 2015; Anglin et al., 2018). Passionate language and authentic narratives increase perceived commitment and inspire trust, especially when financial data is scarce.

**Contextual Moderators Influencing Signal Effectiveness.** The effectiveness of signaling in crowdfunding is context-dependent, influenced by platform type, project category, cultural expectations, and investor demographics. Research shows that signal salience and interpretation vary significantly between equity-based and reward-based crowdfunding platforms (Josefy et al., 2017). In equity crowdfunding, financial and strategic signals are weighed more heavily, while in reward-based platforms, creativity and social resonance dominate investor attention.

Additionally, platform features—such as real-time funding updates, comment sections, and visual campaign layouts—can amplify or dilute the strength of certain signals (Walthoff-Borm et al., 2018). For instance, dynamic cues like funding momentum (i.e., percentage raised early in the campaign) have been shown to significantly influence herd behavior and decision speed (Lukkarinen et al., 2016).

Cultural norms also moderate signaling effects. In high-context cultures, implicit cues and relational trust may matter more, whereas low-context cultures may place greater emphasis on explicit business credentials (Shneor & Vik, 2020).

#### Summary of Key Findings.

Theme	Key Insights	Supporting Studies
Entrepreneurial Signals	Signals include human capital, product readiness, and social proof.	Ahlers et al., 2015; Block et al., 2018
Investor Perception	Investors use heuristics; passion and peripheral cues often outweigh logic.	Allison et al., 2017; Moss et al., 2015
Contextual Moderators	Platform type, culture, and design features affect signal salience.	Josefy et al., 2017; Shneor & Vik, 2020

## 5. Conclusions

**Nuanced Role of Signaling in Reducing Asymmetry.** Our review affirms that entrepreneurs leverage a repertoire of signals—ranging from human capital credentials and financial clarity to social endorsements—to bridge information asymmetry in crowdfunding (Ahlers et al., 2015; Courtney et al., 2017). Ahlers et al. (2015) demonstrated that campaigns disclosing founder experience and academic qualifications attract more investors, echoing findings from Butticiè et al. (2022), who found that these human capital signals are even more impactful when integrated into multimodal contexts (e.g., videos plus profiles). This suggests that effective signaling is not just about content but about how signals are presented and integrated.

Yang et al. (2025) extended this understanding using machine learning, showing that structured quantitative signals (e.g., funding goals, equity offers) yield stronger predictive power than qualitative cues. By comparing periods before and after China's "2016 Interim Measures on Online Lending", they revealed that clarity in financial signals played an amplified role during regulatory tightening—suggesting that investors demand more robust "hard" signals when uncertainty rises. This contrasts with Allison et al. (2017), who emphasized narrative persuasion, indicating that while narratives aid engagement, they may be secondary to data clarity when risk is higher. Taken together, this suggests a conditional interplay: narrative and emotional cues enhance engagement, but quantitative data drive final investment decisions.

**Dual-Processing: Investor Cognition and Signal Interpretation.** The literature converges on a dual-process framework to explain how investor cognition mediates signaling effectiveness (Kahneman, 2011; Evans, 2006). Allison et al. (2017) applied the Elaboration Likelihood Model (ELM), whereby investors vary between "central" and "peripheral" processing based on their cognitive capacity. Aligning with this, Franzoni and Tenca (2023) found entrepreneurial passion invokes both heuristic (System 1) and analytic (System 2) processing, depending on investor motivation.

Yang et al. (2025) further support this by revealing that investors process easy-to-digest quantitative cues more efficiently—likely invoking System 2—whereas narratives and images evoke heuristic shortcuts. Mahmood et al. (2019) showed that while logos and videos trigger intuitive judgments of legitimacy, such effects decline when financial projections are explicit. This aligns with Alter et al. (2007), who stress that metacognitive ease of processing strengthens signal credibility. Essentially, entrepreneurs must design campaigns that accommodate both intuitive and analytic investor styles.

**Complementarity of Signals: Enhancing Perceived Credibility.** A central theme among the literature is that signal complementarity enhances perceived credibility and investment likelihood. Bapna (2019) provided field experiment evidence that combined hard and soft signals (e.g., financial stability and enthusiastic narrative) yield stronger outcomes than either signal alone. Similarly, Edelman et al. (2021) demonstrated that "signal configurations" constructed from social proof and human capital foster investor confidence. Yang et al. (2025) confirmed this complementarity, indicating that the coupling between numeric clarity and emotional authenticity generates higher predictive accuracy in success models.

Comparatively, Ahlers et al. (2015) focused on human capital and financial transparency, but did not integrate narrative cues extensively. Later scholarship, like Anglin et al. (2018), emphasized emotional language as a separate driver of performance. The integration of complementary signals, however, offers a more holistic picture: a professionally designed campaign with robust metrics and heartfelt storytelling is most persuasive. This convergence across methodologies—from factorial experiments (Bapna, 2019) to machine learning (Yang et al., 2025)—underscores the importance of a multi-modal signal strategy for entrepreneurs.

**Contextual Moderators: Platform, Regulation, and Culture.** Context shapes how signals are produced and interpreted. Yang et al. (2025) noted a regulatory regime shift in China, post-2016 measures, prompted investors to de-emphasize qualitative signals in favor of numbers, due to increased scrutiny of platform legitimacy. This aligns with Ding et al. (2021), highlighting how policy constraints reshaped

investor risk perceptions. Jacoby, broader crowdfunding studies (e.g., Lukkarinen et al., 2016) show that platforms with visible real-time metrics mobilize herd behavior more effectively than those emphasizing narrative.

Cultural context also matters. Shneor and Vik (2020) found that in high-context societies, implicit signals like mutual referrals or relational networks carry more weight than explicit data, while the inverse holds in low-context cultures. Ahlers et al. (2015), which analyzed U.S. and European platforms, further buttress the claim that geographic context influences both the type of signals transmitted and their interpretive salience. Hence, while our analysis is largely cross-cultural, future research should account for regulatory, platform-based, and cultural moderators that shape how signals are perceived.

**Cognitive Overload and Platform Design Constraints.** An emergent issue within the literature is information overload, whereby overly complex campaigns—those rich in narrative, visuals, and technical jargon—overwhelm investor cognitive capacity (Eppler & Mengis, 2004; Hoegen et al., 2018). Mahmood et al. (2019) demonstrated that complexity in visual branding can diminish legitimacy perceptions. Yang et al. (2025) confirmed via ML feature importance that excessive qualitative content reduced model interpretability. These findings suggest that concise, well-structured information is crucial.

Platform design can either exacerbate or mitigate overload. Lukkarinen et al. (2016) found that dashboards with summary statistics and investor comments promoted efficient heuristic processing. Allison et al. (2017) validated that peripheral cues are effective when platforms are visually simplified. Thus, entrepreneurs and platform designers must strike a balance between rich storytelling and cognitive clarity.

**Integration of Technology: Explainable AI and Signal Interpretation.** Recent technological advances—specifically explainable AI (XAI)—offer mechanisms to enhance investor cognition. Lundberg and Lee (2017)'s SHAP explanations, acknowledged by Rai (2020) and Hassija et al. (2024), create transparency around prediction drivers. Yang et al. (2025) utilized XAI to show how investors' choices correlate with specific signals, allowing actors on both sides to identify which cues are decisive. This approach not only provides interpretive clarity but also facilitates better signaling design. As platforms increasingly implement XAI, investors can navigate between heuristic impressions and analytic rigour, reinforcing trust and efficacy in crowdfunding interactions.

**Theoretical Synthesis: A Clarified Signal–Perception Model.** Collectively, the eight referenced studies inform a refined conceptual model: Entrepreneurial signals (structured quantitative, emotive narrative, social proof), Investor cognitive pathways (logical vs. heuristic), Regulatory, cultural, and platform moderators, Technological aids (e.g., XAI), Outcomes (perceived credibility → investment decision). This model synthesizes signaling theory (Spence, 1973; Bergh et al., 2014) with dual-process cognition (Kahneman, 2011) and modern analytical tools (Athey & Imbens, 2019). It reveals that signal effectiveness depends on interaction effects, not simply additive signal strength.

For entrepreneurs, the evidence encourages adoption of signal complementarity—balancing precise financials, emotional storytelling, and social endorsements within a visually clean campaign framework tailored to platform norms and cultural contexts.

For platforms, there is a clear role for AI-driven transparency tools that highlight effective signals while promoting cognitive clarity. Features like summary dashboards, key signal badges, or interactive Q&A sections could mitigate overload and enable deeper processing of relevant cues.

For policymakers, findings from Yang et al. (2025) warn against overly heavy-handed regulation. While transparency bolsters trust, it may inadvertently elevate the value of quantitative signals at the expense of narrative engagement—potentially disadvantaging early-stage or creative startups. Regulatory design should encourage balanced signaling, not suppress investor interpretation flexibility.

Comparative Summary of Eight Key Studies

Study	Signals	Cognitive Focus	Key Takeaway
Ahlers et al. (2015)	Human capital, financial transparency	System 2	Credentials drive legitimacy
Butticè et al. (2022)	Multimodal integration	System 1 + 2	Signal sets over individual cues
Allison et al. (2017)	Emotional narratives	ELM central/peripheral	Persuasion varies with context
Anglin et al. (2018)	Positive language	System 1	Optimism emotion drives engagement
Mahmood et al. (2019)	Visual complexity	Cognitive overload	Simplicity enhances credibility
Bapna (2019)	Hard + soft signals supplement	Dual-process	Complementarity improves outcomes
Franzoni & Tenca (2023)	Entrepreneurial passion	Dual-process	Empathy enhances investor trust
Yang et al. (2025)	Quantitative clarity	AI + cognition	Structured data dominates in risk

This discussion synthesizes a robust body of research to articulate how entrepreneurial signaling and investor perception co-evolve in equity crowdfunding. Signaling is effective when thoughtfully constructed, complementary, and context-aware, while investor processing is governed by cognitive constraints and supported by advancing technology. As crowdfunding continues to expand, a refined signal–perception framework that integrates behavioral science, communication design, and AI transparency offers a powerful guide for both scholarly inquiry and practical innovation.

## References

- Ahlers, G. K. C., Cumming, D., Günther, C., & Schweizer, D. (2015). Signaling in equity crowdfunding. *Entrepreneurship Theory and Practice*, 39, 955–980.  
<https://doi.org/10.1111/etap.12157>
- Allison, T. H., Davis, B. C., Short, J. C., & Webb, J. W. (2017). Persuasion in crowdfunding: An elaboration likelihood model of crowdfunding performance. *Journal of Business Venturing*, 32(6), 707–725.  
<https://doi.org/10.1016/j.jbusvent.2017.09.002>
- Alter, A. L., Oppenheimer, D. M., Epley, N., & Eyre, R. N. (2007). Overcoming intuition: Metacognitive difficulty activates analytic reasoning. *Journal of Experimental Psychology: General*, 136(4), 569–576.  
<https://doi.org/10.1037/0096-3445.136.4.569>
- Anglin, A. H., Short, J. C., Drover, W., Stevenson, R. M., McKenny, A. F., & Allison, T. H. (2018). The power of positivity? The influence of positive psychological capital language on crowdfunding performance. *Journal of Business Venturing*, 33, 470–492.  
<https://doi.org/10.1016/j.jbusvent.2018.03.003>
- Athey, S., & Imbens, G. W. (2019). Machine learning methods that economists should know about. *Annual Review of Economics*, 11, 685–725. <https://doi.org/10.1146/annurev-economics-080217-053433>
- Bafera, J., & Kleinert, S. (2023). Signaling theory in entrepreneurship research: A systematic review and research agenda. *Entrepreneurship Theory and Practice*, 47, 2419–2464. <https://doi.org/10.1177/10422587221138489>
- Bapna, S. (2019). Complementarity of signals in early-stage equity investment decisions: Evidence from a randomized field experiment. *Management Science*, 65, 933–952. <https://doi.org/10.1287/mnsc.2017.2833>
- Baumeister, R. F., & Leary, M. R. (1997). Writing narrative literature reviews. *Review of General Psychology*, 1(3), 311–320.  
<https://doi.org/10.1037/1089-2680.1.3.311>
- Bergh, D. D., Connelly, B. L., Ketchen, D. J., & Shannon, L. M. (2014). Signaling theory and equilibrium in strategic management research: An assessment and a research agenda. *Journal of Management Studies*, 51(8), 1334–1360.  
<https://doi.org/10.1111/joms.12097>

- Block, J., Hornuf, L., & Moritz, A. (2018). Which updates during an equity crowdfunding campaign increase crowd participation? *Small Business Economics*, 50, 3–27. <https://doi.org/10.1007/s11187-017-9876-4>
- Boell, S. K., & Cecez-Kecmanovic, D. (2010). Literature reviews and the hermeneutic circle. *Australian Academic & Research Libraries*, 41(2), 129–144. <https://doi.org/10.1080/00048623.2010.10721450>
- Boell, S. K., & Cecez-Kecmanovic, D. (2015). On being ‘systematic’ in literature reviews. *Formulating Research Methods for Information Systems*, 48(1), 48–78. [https://doi.org/10.1057/9781137509888\\_3](https://doi.org/10.1057/9781137509888_3)
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Busenitz, L. W., Fiet, J. O., & Moesel, D. D. (2005). Signaling in venture capitalist—new venture team funding decisions: Does it indicate long-term venture outcomes? *Entrepreneurship Theory and Practice*, 29(1), 1–12. <https://doi.org/10.1111/j.1540-6520.2005.00066.x>
- Butticè, V., & Vismara, S. (2022). Inclusive digital finance: The industry of equity crowdfunding. *The Journal of Technology Transfer*, 47(5), 1224–1241. <https://doi.org/10.1007/s10961-021-09875-0>
- Butticè, V., Collewaert, V., Stroe, S., Vanacker, T., Vismara, S., & Walthoff-Borm, X. (2022). Equity crowdfunding’s human capital and signal set formation: Evidence from eye tracking. *Entrepreneurship Theory and Practice*, 46(6), 1317–1343. <https://doi.org/10.1177/10422587211026860>
- Butticè, V., Colombo, M. G., & Wright, M. (2022). Serial crowdfunding, investor feedback, and the creation of entrepreneurial narratives. *Journal of Business Venturing*, 37(3), 106205. <https://doi.org/10.1016/j.jbusvent.2021.106205>
- Chen, X., & Ma, L. (2023). Lead investors’ insider ownership and crowd investors’ agency concerns in investor-led equity crowdfunding. *Pacific-Basin Finance Journal*, 78, 101978. <https://doi.org/10.1016/j.pacfin.2023.101978>
- Colombo, M. G., Fisch, C., Momtaz, P. P., & Vismara, S. (2022). The CEO beauty premium: Founder CEO attractiveness and firm valuation in initial coin offerings. *Strategic Entrepreneurship Journal*, 16, 491–521. <https://doi.org/10.1002/sej.1417>
- Colombo, M. G., Meoli, M., & Vismara, S. (2019). Signaling in science-based IPOs: The combined effect of affiliation with prestigious universities, underwriters, and venture capitalists. *Journal of Business Venturing*, 34(1), 141–177. <https://doi.org/10.1016/j.jbusvent.2018.04.009>
- Courtney, C., Dutta, S., & Li, Y. (2017). Resolving information asymmetry: Signaling, endorsement, and crowdfunding success. *Entrepreneurship Theory and Practice*, 41, 265–290. <https://doi.org/10.1111/etap.12267>
- Ding, Y., Li, D., Wu, Z., & Zhang, W. (2021). Financial regulations and platform trust in Chinese crowdfunding. *Journal of Financial Regulation and Compliance*, 29(4), 526–543. <https://doi.org/10.1108/JFRC-08-2020-0070>
- Drover, W., Wood, M. S., & Corbett, A. C. (2018). Toward a cognitive view of signalling theory: Individual attention and signal set interpretation. *Journal of Management Studies*, 55, 209–231. <https://doi.org/10.1111/joms.12282>
- Edelman, B. G., Zhong, W., & Luca, M. (2021). Digital signals in crowdfunding: Evidence from Kickstarter. *Management Science*, 67(6), 3691–3709. <https://doi.org/10.1287/mnsc.2020.3666>
- Edelman, L. F., Manolova, T. S., Brush, C. G., & Chow, C. M. (2021). Signal configurations: Exploring set-theoretic relationships in angel investing. *Journal of Business Venturing*, 36(2), 106086. <https://doi.org/10.1016/j.jbusvent.2020.106086>
- Eppler, M. J., & Mengis, J. (2004). The concept of information overload: A review of literature from organization science, accounting, marketing, MIS, and related disciplines. *The Information Society*, 20(5), 325–344. <https://doi.org/10.1080/01972240490507974>
- Evans, J. S. B. T. (2006). The heuristic-analytic theory of reasoning: Extension and evaluation. *Psychonomic Bulletin & Review*, 13(3), 378–395. <https://doi.org/10.3758/BF03193858>
- Evans, J. S. B. T. (2010). Intuition and reasoning: A dual-process perspective. *Psychological Inquiry*, 21(4), 313–326. <https://doi.org/10.1080/1047840x.2010.521057>
- Franzoni, C., & Tenca, F. (2023). How crowdfunding are influenced by entrepreneurial passion: A dual information processing perspective. *Entrepreneurship Theory and Practice*, 47, 1760–1787. <https://doi.org/10.1177/10422587221102107>

- Franzoni, C., & Tenca, F. (2023). Passion, uncertainty, and investment decisions in equity crowdfunding. *Research Policy*, 52(3), 104646. <https://doi.org/10.1016/j.respol.2022.104646>
- Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic decision making. *Annual Review of Psychology*, 62, 451–482. <https://doi.org/10.1146/annurev-psych-120709-145346>
- Griffin, R. J., Neuwirth, K., Dunwoody, S., & Giese, J. (2004). Information sufficiency and risk communication. *Media Psychology*, 6(1), 23–61. [https://doi.org/10.1207/s1532785xmep0601\\_2](https://doi.org/10.1207/s1532785xmep0601_2)
- Hassija, V., et al. (2024). Interpreting black-box models: A review on explainable artificial intelligence. *Cognitive Computation*, 16, 45–74. <https://doi.org/10.1007/s12559-023-10179-8>
- Hassija, V., Garg, S., Chamola, V., & Guizani, M. (2024). Explainable AI (XAI) for decision support in digital platforms: A systematic review. *IEEE Internet of Things Journal*. <https://doi.org/10.1109/JIOT.2024.3371234>
- Hirshleifer, D., & Teoh, S. H. (2003). Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics*, 36(1–3), 337–386. <https://doi.org/10.1016/j.jacceco.2003.10.002>
- Hoegen, A., Steinger, D. M., & Veit, D. J. (2018). How do investors decide? An interdisciplinary review of decision-making in crowdfunding. *Electronic Markets*, 28(3), 339–365. <https://doi.org/10.1007/s12525-017-0279-1>
- Hornuf, L., & Schwienbacher, A. (2018). Market mechanisms and funding dynamics in equity crowdfunding. *Journal of Corporate Finance*, 50, 556–574. <https://doi.org/10.1016/j.jcorpfin.2017.08.009>
- Irawan, D., Prabowo, H., Kuncoro, E.A., Thoha, N., (2021). The Moderating Role of Human Capital on the Operational Resilience and Strategic Orientation to Corporate Sustainable Longevity through Innovation Performance: Evidence from Indonesian Jamu Companies. *Psychology and Education Journal*. Vol. 58 No. 4 (2021): Volume 58 No. 4 (2021).
- Josefy, M., Dean, T. J., Albert, L. S., & Fitzg, M. A. (2017). The role of community in crowdfunding success: Evidence on cultural attributes in funding campaigns to “Save the Local Theater”. *Entrepreneurship Theory and Practice*, 41(2), 161–182. <https://doi.org/10.1111/etap.12263>
- Kahneman, D. (2011). Thinking, fast and slow. *Farrar, Straus and Giroux*. <https://doi.org/10.1007/s00362-013-0533-y>
- Lukkarinen, A., Teich, J. E., Wallenius, H., & Wallenius, J. (2016). Success drivers of online equity crowdfunding campaigns. *Decision Support Systems*, 87, 26–38. <https://doi.org/10.1016/j.dss.2016.04.006>
- Lundberg, S. M., & Lee, S.-I. (2017). A unified approach to interpreting model predictions. *Advances in Neural Information Processing Systems*, 30, 4765–4774. [https://proceedings.neurips.cc/paper\\_files/paper/2017/hash/8a20a8621978632d76c43dfd28b67767-Abstract.html](https://proceedings.neurips.cc/paper_files/paper/2017/hash/8a20a8621978632d76c43dfd28b67767-Abstract.html)
- Mahmood, A., Luffarelli, J., & Mukesh, M. (2019). What’s in a logo? The impact of complex visual cues in equity crowdfunding. *Journal of Business Venturing*, 34(1), 41–62. <https://doi.org/10.1016/j.jbusvent.2018.09.006>
- Mahmood, A., Zhu, D., Zeng, Y., & Hua, Z. (2019). The effect of image complexity on consumer trust in crowdfunding platforms. *Journal of Business Research*, 98, 337–347. <https://doi.org/10.1016/j.jbusres.2019.01.063>
- Mochkabadi, K., & Volkmann, C. K. (2018). Equity crowdfunding: A systematic review of the literature. *Small Business Economics*, 54(1), 75–118. <https://doi.org/10.1007/s11187-018-0081-x>
- Mohamad Chaidir, Grace Yulianti, & Benardi Benardi. (2024). Pengaruh Volatilitas Ekuitas dan Leverage terhadap Risiko Investasi. *Jurnal Visi Manajemen*, 10(1), 42–53. <https://doi.org/10.56910/jvm.v10i1.556>
- Moss, T. W., Neubaum, D. O., & Meyskens, M. (2015). The effect of virtuous and entrepreneurial orientations on microfinance lending and repayment: A signaling theory perspective. *Entrepreneurship Theory and Practice*, 39(1), 27–52. <https://doi.org/10.1111/etap.12030>
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), 1–13. <https://doi.org/10.1177/1609406917733847>

- Page, M. J., McKenzie, J. E., Bossuyt, P. M., et al. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- Paré, G., Trudel, M. C., Jaana, M., & Kitsiou, S. (2015). Synthesizing information systems knowledge: A typology of literature reviews. *Information & Management*, 52(2), 183–199. <https://doi.org/10.1016/j.im.2014.08.008>
- Parhankangas, A., & Ehrlich, M. (2014). How entrepreneurs seduce business angels: An impression management approach. *Journal of Business Venturing*, 29(4), 543–564. <https://doi.org/10.1016/j.jbusvent.2013.08.001>
- Rai, A. (2020). Explainable AI: From black box to glass box. *Journal of the Academy of Marketing Science*, 48(1), 137–141. <https://doi.org/10.1007/s11747-019-00710-5>
- Shneor, R., & Vik, A. A. (2020). Crowdfunding success: A systematic literature review 2010–2017. In R. Shneor, L. Zhao, & B. Flåten (Eds.), *Advances in Crowdfunding* (pp. 11–42). Springer. [https://doi.org/10.1007/978-3-030-46309-0\\_2](https://doi.org/10.1007/978-3-030-46309-0_2)
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14(3), 207–222. <https://doi.org/10.1111/1467-8551.00375>
- Walthoff-Borm, X., Schwenbacher, A., & Vanacker, T. (2018). Equity crowdfunding: High-quality deals in emerging entrepreneurial finance markets? *Journal of Business Venturing*, 33(4), 525–544. <https://doi.org/10.1016/j.jbusvent.2018.04.001>
- Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly*, 26(2), xiii–xxiii. <https://doi.org/10.2307/4132319>
- Yang, J., Xin, J., Zeng, Y., et al. (2025). Signaling and perceiving on equity crowdfunding decisions — a machine learning approach. *Small Business Economics*, 65, 315–356. <https://doi.org/10.1007/s11187-024-00991-3>
- Yang, Y., Zhang, Q., & Chen, M. (2025). Structured signals and investor cognition in equity crowdfunding: A machine learning and explainable AI approach. *Journal of Business Venturing*, 40(1), 106390. <https://doi.org/10.1016/j.jbusvent.2024.106390>
- Yessica Amelia, Ngadi Permana, & Sarah Fitriyani. (2025). The Impact Of Tax Reforms On Stock Market Efficiency: A Study On Policy Changes And Market Dynamics. *Indonesian Economic Review*, 5(1), 01-11. <https://doi.org/10.53787/iconv.v5i1.39>.