

**CURE OR BLESSING? THE EFFECT OF NON-FINANCIAL SIGNALS ON  
SUSTAINABLE VENTURE'S FUNDING SUCCESS**

**Franziska Maassen**

Innovation and Entrepreneurship Group (WIN) – TIME Research Area, RWTH Aachen University,  
Kackertstr. 7, 52072 Aachen, Germany; E-mail: [maassen@time.rwth-aachen.de](mailto:maassen@time.rwth-aachen.de)

**Constanze Chwallek**

Fachhochschule Aachen – Fachbereich Wirtschaftswissenschaften, Eupener Str. 70, 52066 Aachen,  
Germany; tel: +49 241 6009-51938, fax: +49 241 6009-52280; E-mail: [chwallek@fh-aachen.de](mailto:chwallek@fh-aachen.de)

## PROBLEM DEFINITION

Eight years prior to the deadline of the Sustainable Development Goals (SDGs), the world is far from where it needs to be (Halkos, 2021). Practitioners and academics agree that sustainable entrepreneurship plays a central role in accelerating development of sustainable economies (Cervelló-Royo et al., 2020). Sustainable ventures (SVs) are characterized by a dual mission to generate (measurable) social/environmental value<sup>1</sup> while generating economic returns (Saebi et al., 2019).

This dual mission amplifies legitimization challenges, making them less attractive to traditional investors seeking maximum financial return (Gupta et al., 2020). Impact investors seeking investments with financial and non-financial return are emerging as relevant funding providers. But as SVs often lack resources and standards for reporting and communication (Rawhouser et al., 2019), they struggle to meet demands for impact assessment so that information asymmetries remain (Eva et al., 2013), capturing SVs in a vivacious cycle to acquire funding, scale impact and eventually contribute to the SDGs.

Prior work has largely focused on signals for commercial ventures to resolve information asymmetries, neglecting distinct circumstances of SVs (Moroz & Gamble, 2020; Yang et al., 2020). Initial research started to investigate how the constellation of the founding team can signal hybridity but yields conflicting results regarding the social/business background and gender of the team (Islam, 2021). SDG have been investigated as legitimization strategy for corporates (Silva, 2021). Given their costless nature and wide adoption, they carry potential to strengthen business and performance measurement of SVs (Günzel-Jensen et al., 2020).

Hence by empirically investigating a cross-industry and cross-country sample of 9.214 SVs, this paper addresses the following research questions: 1) How is the share of social background and females in the founder team related to funding success? Is there a tipping point? 2) How does the use of SDGs moderate these relationships?

---

<sup>1</sup> Hereafter social value/impact used as cluttered concept to include social and environmental value in line with previous literature (e.g., Ostertag et al., 2021)

## THEORY

To derive how the investigated criteria can help to reduce information asymmetry and perceived uncertainty, this study draws on signaling theory According to which effective signals must be important to the receiver, visible, credible, and costly/difficult to fake (Spence, 1974). Recent theory advancements include the insights that costless signals (e.g. rhetoric) complement substantive signals (Steigenberger & Wilhelm, 2018) and holistic interpretation of interacting signals driven by cognitive views may alter the signaling effect (Anglin et al., 2018; Yang et al., 2020).

Specifically, previous research found categorical cognition of social organization labels to influence investors' assessment of SVs (Lee et al., 2020).

## METHODOLOGY AND DATA

The sample consists of secondary data of 9.214 SVs across industries and geographies with 23.938 deal observations. Following previous sustainable entrepreneurship studies (Horne et al., 2020; Tiba et al., 2021), SVs have been identified by searching for SDGs-related keywords and reviewing public information on these ventures regarding centrality of impact to the business model via Dealroom. Data on deals, founder characteristics and investor types are extracted and matched from Pitchbook. Missing data points are manually condensed from LinkedIn and Crunchbase. To operationalize team constellation (independent variables), founder names and biographies are reviewed and categorized into male/female and social/business background to calculate the share of founders with social background and female founders (following Mrkajic et al., 2019). For the moderating SDG signal, venture websites are searched for explicit references to the SDGs and coded into qualitative vs. quantitative following the approach of Silva (2021).<sup>2</sup> Funding success (dependent variable) is operationalized as average deal amount following prior entrepreneurship research (e.g., Reese et al., 2020). Given the particularities of SVs and the favorable effect of impact investment counteracting mission drift (Scarlata et al., 2017), we also include share of impact investors to measure funding success.<sup>3</sup>

---

<sup>2</sup> Wayback machine allows to access archived websites and align the occurrence of the SDG signal on the website with deal dates (Arora et al, 2019).

<sup>3</sup> In line with agreement of signaling effects from previous studies, we control for venture and founder characteristics such as age, stage, # of employees, patents, authenticity, serial founder, and min. financial return

## HYPOTHESIZED RESULTS

On the one hand, a social background can emphasize a venture's social mission and positively contribute to authenticity of the founding team, which has been cited as one of the most important selection criteria for impact investors (Block et al., 2021). On the other hand, given the critical link between financial sustainability and maximizing impact (Smith & Besharov, 2019), impact investors are expected to demand a certain degree of business background. Hence we hypothesize:

*H1: The share of founders with a social/ environmental vs. business background is related to funding success in an inverted U shape.*

Due to gender role congruity, female founders emphasize the social mission of a venture (Yang et al., 2020), which helps impact investors to identify SV. The flipside of the coin would be that investors perceive an overemphasize on social objectives at the expense of financial return. Hence, we hypothesize:

*H2: The share of female founders is related to funding success in an inverted U shape.*

Previous literature has highlighted multiple benefits of the SDG framework, including sustainability communication, managing interrelations of impact areas, reporting/benchmarking, and stakeholder coordination (Günzel-Jensen et al., 2020; Malay & Aubinet, 2021; Morioka et al., 2017). Given the widespread awareness and adoption of the framework by investors (Castellas & Ormiston, 2018), the explicit usage of the SDGs can be regarded as an effective signal in line with signaling theory. The signal may assist investors to categorize the addressed impact areas of SVs and quickly grasp if focus areas are aligned, even across geographies. By providing access to reporting tools and standardized KPIs at no cost, the SDGs ease the possibility of impact assessment and, particularly if used in a quantitative manner, reduce information asymmetries. Thereby strengthening a balanced social-business team constellation/ compensating for an underrepresentation of perceived business criteria.

Thus, we hypothesize:

*H3: The use of a quantitative SDG signal amplifies the relationship between share of founders with social/environmental background and funding success.*

*H4: The use of a quantitative SDG signal amplifies the relationship between share of female founders and funding success.*

### **IMPLICATIONS**

This study contributes to the literature stream of sustainable entrepreneurship and signaling theory, by advancing the role of non-financial and costless signals in a sustainable finance context. Moving literature from more qualitative to empirical research across industries and geographies, it helps resolving previously ambiguous findings on team constellation of SVs. Next to contributing to the debate of categorical cognition, interrelation of signals, and an optimal balance of social vs. business signals, it reveals the role of the SDG framework to function as a costless signal, opening avenues for further research on configuration of this signal.

In practice, many SVs are unaware of signals to overcome their liabilities of newness and hybridity to secure funding. Given their resource scarcity, knowledge of costless signals is particularly important. For investors, this study provides transparency on common venture characteristics in investment portfolio, shining light on unintended biases during selection. Overall, this study contributes to freeing SVs from their vicious cycle of acquiring funding to scale impact and eventually contribute to the SDGs.

## REFERENCES

- 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*, *January 2017*.  
<https://doi.org/10.1016/j.jbusvent.2018.03.003>
- Block, J. H., Hirschmann, M., & Fisch, C. (2021). Which criteria matter when impact investors screen social enterprises? *Journal of Corporate Finance*, *66*(February 2020), 101813.  
<https://doi.org/10.1016/j.jcorpfin.2020.101813>
- Castellas, E. I., & Ormiston, J. (2018). Impact investment and the sustainable development goals: Embedding field-level frames in organisational practice. *Contemporary Issues in Entrepreneurship Research*, *8*, 87–101. <https://doi.org/10.1108/S2040-724620180000008010>
- Cervelló-Royo, R., Moya-Clemente, I., Perelló-Marín, M. R., & Ribes-Giner, G. (2020). Sustainable development, economic and financial factors, that influence the opportunity-driven entrepreneurship. An fsQCA approach. *Journal of Business Research*, *115*(June), 393–402. <https://doi.org/10.1016/j.jbusres.2019.10.031>
- Eva, A. A., Judith, L., & Spiess-knafl, W. (2013). Disentangling Gut Feeling : Assessing the Integrity of Social Entrepreneurs. *Voluntas*, 93–124. <https://doi.org/10.1007/s11266-012-9264-2>
- Günzel-Jensen, F., Siebold, N., Kroeger, A., & Korsgaard, S. (2020). Do the United Nations' Sustainable Development Goals matter for social entrepreneurial ventures? A bottom-up perspective. *Journal of Business Venturing Insights*, *13*(July 2019), e00162.  
<https://doi.org/10.1016/j.jbvi.2020.e00162>
- Gupta, P., Chauhan, S., Paul, J., & Jaiswal, M. P. (2020). Social entrepreneurship research: A review and future research agenda. *Journal of Business Research*, *113*(March), 209–229.  
<https://doi.org/10.1016/j.jbusres.2020.03.032>
- Halkos, G. (2021). Where do we stand on the 17 Sustainable Development Goals ? An overview on progress. *Economic Analysis and Policy*, *70*, 94–122.  
<https://doi.org/10.1016/j.eap.2021.02.001>
- Horne, J., Recker, M., Michelfelder, I., Jay, J., & Kratzer, J. (2020). Exploring entrepreneurship related to the sustainable development goals - mapping new venture activities with semi-

- automated content analysis. *Journal of Cleaner Production*, 242, 118052.  
<https://doi.org/10.1016/j.jclepro.2019.118052>
- Islam, S. M. (2021). Impact investing in social sector organisations: a systematic review and research agenda. *Accounting and Finance*. <https://doi.org/10.1111/acfi.12804>
- Lee, M., Adbi, A., & Singh, J. (2020). Categorical cognition and outcome efficiency in impact investing decisions. *Strategic Management Journal*, 41(1), 86–107.  
<https://doi.org/10.1002/smj.3096>
- Malay, O. E., & Aubinet, S. (2021). Improving government and business coordination through the use of consistent SDGs indicators. A comparative analysis of national (Belgian) and business (pharma and retail) sustainability indicators. *Ecological Economics*, 184(February), 106991.  
<https://doi.org/10.1016/j.ecolecon.2021.106991>
- Morioka, S. N., Bolis, I., & Carvalho, M. (2017). From an ideal dream towards reality analysis: Proposing Sustainable Value Exchange Matrix (SVEM) from systematic literature review on sustainable business models and face validation. *Journal of Cleaner Production*.  
<https://doi.org/10.1016/j.jclepro.2017.12.078>
- Moroz, P. W., & Gamble, E. N. (2020). Business model innovation as a window into adaptive tensions: Five paths on the B Corp journey. *Journal of Business Research*, March 2019, 0–1.  
<https://doi.org/10.1016/j.jbusres.2020.01.046>
- Mrkajic, B., Murtinu, S., & Scalera, V. G. (2019). Is green the new gold? Venture capital and green entrepreneurship. *Small Business Economics*, 929–950.  
<https://doi.org/10.1007/s11187-017-9943-x>
- Ostertag, F., Hahn, R., & Ince, I. (2021). Blended value co-creation: A qualitative investigation of relationship designs of social enterprises. *Journal of Business Research*, 129(November 2019), 428–445. <https://doi.org/10.1016/j.jbusres.2021.02.006>
- Rawhouser, H., Cummings, M., & Newbert, S. L. (2019). Social Impact Measurement: Current Approaches and Future Directions for Social Entrepreneurship Research. *Entrepreneurship: Theory and Practice*, 43(1), 82–115. <https://doi.org/10.1177/1042258717727718>
- Reese, D., Rieger, V., & Engelen, A. (2020). Should competencies be broadly shared in new ventures' founding teams? *Strategic Entrepreneurship Journal*, April, 1–22.  
<https://doi.org/10.1002/sej.1356>

- Saebi, T., Foss, N. J., & Linder, S. (2019). Social Entrepreneurship Research: Past Achievements and Future Promises. *Journal of Management*, 45(1), 70–95.  
<https://doi.org/10.1177/0149206318793196>
- Scarlata, M., Walske, J., & Zacharakis, A. (2017). Ingredients Matter: How the Human Capital of Philanthropic and Traditional Venture Capital Differs. *Journal of Business Ethics*, 145(3), 623–635. <https://doi.org/10.1007/s10551-015-2901-0>
- Silva, S. (2021). Corporate contributions to the Sustainable Development Goals: An empirical analysis informed by legitimacy theory. *Journal of Cleaner Production*, 292, 125962.  
<https://doi.org/10.1016/j.jclepro.2021.125962>
- Smith, W. K., & Besharov, M. L. (2019). Bowing before Dual Gods: How Structured Flexibility Sustains Organizational Hybridity\*. *Administrative Science Quarterly*, 64(1), 1–44.  
<https://doi.org/10.1177/0001839217750826>
- Spence, M. (1974). Competitive and Optimal Responses to Signals: An Analysis of Efficiency and Distribution. *Journal of Economic Theory*, 332, 296–332.
- Steigenberger, N., & Wilhelm, H. (2018). Extending signaling theory to rhetorical signals: Evidence from crowdfunding. *Organization Science*, 29(3), 529–546.  
<https://doi.org/10.1287/orsc.2017.1195>
- Tiba, S., van Rijnsouwer, F. J., & Hekkert, M. P. (2021). Sustainability startups and where to find them: Investigating the share of sustainability startups across entrepreneurial ecosystems and the causal drivers of differences. *Journal of Cleaner Production*, 306, 127054.  
<https://doi.org/10.1016/j.jclepro.2021.127054>
- Yang, S., Kher, R., & Newbert, S. L. (2020). What signals matter for social startups? It depends: The influence of gender role congruity on social impact accelerator selection decisions. *Journal of Business Venturing*, 35(2), 105932. <https://doi.org/10.1016/j.jbusvent.2019.03.001>