

# **Individual and contextual predictors of the entrepreneurial process**

A multi-level perspective on the behavior of entrepreneurs  
and self-employed

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# Preface

Several years ago, I could not have imagined that I would pursue a doctoral degree in business administration, let alone succeed in the endeavor. In 2021, at the end of my Master studies and still in times of COVID-19, I was not sure if I should take the opportunity to do my PhD at Trier University. Now at the end of my dissertation, I am very happy that I followed through. These three additional years at university were less affected by COVID-19 and were much more enjoyable than my Master studies. When I am now transitioning into a position in the industry, I can be sure that I made the most of my university time.

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# List of abbreviations

Admin.	Administration
AI	Artificial Intelligence
AJG	Academic Journal Guide of the Chartered Association of Business Schools
APS	Adult Population Survey of the Global Entrepreneurship Monitor
Avail.	Availability
Beh.	Behavioral
CABS	Chartered Association of Business Schools
CEO	Chief executive officer
Coeff.	Coefficient
COVID	Coronavirus Disease 2019
DIW	Deutsches Institut für Wirtschaftsforschung, Berlin
E.g.	Exempli gratia (for example)
Et al.	Et alii (and others)
EU	European Union
GEM	Global Entrepreneurship Monitor
GDP	Gross domestic product
GLOBE	Global Leadership and Organizational Behavior Effectiveness (research program)
Gov.	Governmental
H	Hypothesis

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I.e.	Id est (that is)
Intent.	Intention
ISIC Rev. 4	International Standard Industrial Classification, Fourth Revision
IT	Information technology
LASSO	Least absolute selection and shrinkage operator
LLC	Limited liability company
Log	Logarithmised
M	Mean
Max	Maximum
Min	Minimum
N	Number of observations
NES	National Expert Survey of the Global Entrepreneurship Monitor
NGO	Non-governmental organization
OECD	Organization for Economic Cooperation and Development
PCA	Principal component analysis
PR	Public relations
Prob.	Probability
RMSE	Root mean square error
RQ	Research question
SD	Standard deviation
SDG	Sustainable Development Goals
SE	Standard error
SLR	Systematic literature review
SME	Small and medium-sized enterprise
SOEP	German Socio-Economic Panel

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SOEP-CoV	Studie „Sozio-ökonomische Faktoren und Folgen der Verbreitung des Coronavirus in Deutschland“
Subj.	Subjective
SUR	Seemingly unrelated regression
Sust.	Sustainability-focused
TEA	Total early-stage entrepreneurial activity rate
Tech.	Technical
TPB	Theory of planned behavior
UAE	United Arab Emirates
UK	United Kingdom
USA	United States of America
VGSD	Verband der Gründer und Selbstständigen Deutschland
WB	Well-being
ZEW	Zentrum für Europäische Wirtschaftsforschung, Mannheim

# Zusammenfassung

Entrepreneurship ist eine wichtige Möglichkeit, um nachhaltige Entwicklung voranzutreiben und Nachhaltigkeitsziele zu adressieren ohne ökonomische Aspekte aus den Augen zu verlieren. Dennoch sind unternehmerische Tätigkeiten und Gründungen in vielen Industrieländern mit hohem Einkommensniveau eher gering ausgeprägt. In der Forschung wird deutlich, dass es im Gründungsprozess vor allem eine Kluft zwischen unternehmerischen Absichten und darauffolgenden Handlungen gibt. Das heißt, dass bei Weitem nicht alle Gründungsinteressierte ihre Absichten auch in Handlungen umwandeln. Diese Kluft besteht ebenfalls für Aspekte der Nachhaltigkeit. Es resultiert die Notwendigkeit, den Gründungsprozess besser zu verstehen, um unternehmerische Tätigkeiten und nachhaltigkeitsorientierte Handlungen zu steigern. Die vorliegende Dissertation bietet eine solche umfassende Perspektive auf den Gründungsprozess von Unternehmern<sup>1</sup> und Selbstständigen. In vier Studien werden individuelle und kontextuelle Prädiktoren und deren Auswirkungen auf das traditionelle und nachhaltigkeitsorientierte unternehmerische Verhalten untersucht.

Die ersten drei Studien der Dissertation konzentrieren sich auf individuelle Prädiktoren des Gründungsprozesses. Durch eine systematische Literaturanalyse von 107 Artikeln (Kapitel 2) wird die ambivalente Rolle von Religion für den Gründungsprozess hervorgehoben. Basierend auf der Theorie des geplanten Verhaltens wird herausgestellt, dass Religion positive Auswirkungen auf unternehmerische Einstellungen und auf Verhaltenskontrolle haben kann. Gleichzeitig kann Religion aber auch negative Konsequenzen für andere Aspekte der Verhaltenskontrolle und für subjektive Normen aufgrund religiöser Einschränkungen aufweisen.

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<sup>1</sup> Der Begriff Unternehmer wird im Rahmen dieser Dissertation in der deutschsprachigen Zusammenfassung aus Gründen der besseren Lesbarkeit im generischen Maskulinum verwendet. Er schließt sämtliche anderen Geschlechter mit ein.

Die erste quantitativ-empirische Studie in Kapitel 3 stützt sich ebenfalls auf die Theorie des geplanten Verhaltens. Sie beleuchtet individuelle Wahrnehmungsfaktoren, die die Kluft zwischen nachhaltigkeitsorientierten unternehmerischen Absichten und Handlungen beeinflussen. Daten des Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS) von 2021 ergaben 22.008 Beobachtungen in 44 weltweiten Ländern für diese Studie. Die Ergebnisse zeigen Unterstützung für die theoriebasierte Annahme, dass nachhaltigkeitsorientierte Absichten positiv mit sozialen, unternehmerischen Handlungen zusammenhängen. Darüber hinaus lässt sich feststellen, dass positive Wahrnehmungsfaktoren wie Selbstwirksamkeit und Kenntnis anderer Unternehmer als Vorbild diese Beziehung stärken. Im Gegensatz dazu schwächt eine negative Wahrnehmung wie die Angst vorm Scheitern die tatsächliche Umsetzung von sozialen Zielen in Gründungen und neuen Unternehmen.

Die nächste quantitativ-empirische Studie (Kapitel 4) untersucht die unternehmerischen Verhaltensfolgen von verändertem Wohlbefinden anhand einer Stichprobe von 6.955 deutschen Selbstständigen während COVID-19. Diese Studie stützt sich auf zwei komplementäre Verhaltensperspektiven, um vorherzusagen, wie eine Verringerung des finanziellen und nicht-finanziellen Wohlbefindens mit Investitionen in die Unternehmensentwicklung zusammenhängt. Eine Verringerung des finanziellen Wohlbefindens steht in einem positiven Zusammenhang mit Zeitinvestitionen, was die Performance Feedback Perspektive im Hinblick auf höhere unternehmerische Suchanstrengungen bei negativer Leistungsrückmeldung unterstützt. Im Gegensatz dazu steht die Verringerung des nicht-finanziellen Wohlbefindens in einem negativen Zusammenhang mit zeitlichen und monetären Investitionen. Dies untermauert die Broadening-and-build Perspektive, die besagt, dass negative psychologische Erfahrungen das Denkvermögen und das Handlungsrepertoire einer Person beeinträchtigen und den Einsatz von Ressourcen behindern.

Die Erkenntnisse dieser ersten drei Studien über individuelle Prädiktoren deuten darauf hin, dass verschiedene subjektive Überzeugungen, Wahrnehmungen und Emotionen den Gründungsprozess beeinflussen. Dies macht Unternehmertum und Selbstständigkeit zu hochgradig individualisierten Disziplinen. Unternehmer und Selbstständige sollten sich also bewusst sein, dass es für den Gründungsprozess nicht unbedingt eine allgemeingültige Lösung gibt, die befolgt werden sollte. Vielmehr muss jeder Unternehmer und Selbstständige einen individuellen Prozess auf Basis der eigenen Eigenschaften und Werte entwickeln. Ebenso sollte bei politischen Entscheidungen berücksichtigt werden, dass Förderungen und Unterstützungsprogramme nicht für jeden Gründungsprozess gleich gut geeignet sind.

Die letzte quantitativ-empirische Studie bietet eine explorative Sicht auf eine große Anzahl von kontextbezogenen Prädiktoren für die Berücksichtigung sozialer und ökologischer Aspekte in unternehmerischen Handlungen. Als Datenbasis werden die GEM Daten aus dem Jahr 2021 mit weiteren Daten der Weltbank und der OECD kombiniert. Dies ergibt auf Länderebene eine Stichprobe von 84 Ländern weltweit. Anschließend wird ein explorativer Machine Learning Ansatz auf diese Stichprobe angewendet. Die Ergebnisse deuten darauf hin, dass staatliche und regulatorische sowie kulturelle Faktoren für die Vorhersage sozialer und ökologischer Berücksichtigungen in unternehmerischen Handlungen sehr relevant sind. Darüber hinaus sind auch marktbezogene Faktoren von Bedeutung, insbesondere sozioökonomische Prädiktoren für soziale Aspekte und ökonomische Prädiktoren für ökologische Aspekte.

Insgesamt verdeutlichen die vier Studien in dieser Dissertation die Komplexität des Gründungsprozesses, der von vielen verschiedenen individuellen und kontextbezogenen Faktoren bestimmt wird. Aufgrund der Vielzahl potenzieller Prädiktoren kann diese Dissertation nur einen Überblick über eine Auswahl gewisser Aspekte geben. Es verbleiben noch viele weitere Prädiktoren, die durch zukünftige Forschung untersucht werden müssen. Zusätzlich kann es Interdependenzen zwischen den verschiedenen Aspekten geben, die diese Dissertation ebenfalls nicht abbilden kann und die somit weiterer Forschung bedürfen.

# Executive Summary

Entrepreneurship is recognized as an important discipline to achieve sustainable development and to address sustainability goals without losing sight of economic aspects. However, entrepreneurship rates are rather low in many industrialized countries with high income levels. Research clearly shows that there is a gap in the entrepreneurial process between intentions and subsequent actions. This means that not everyone with entrepreneurial ambitions also follows through and implements actions. This gap also exists for aspects of sustainability. As a result, there is a need to better understand the traditional and sustainability-focused entrepreneurial process in order to increase corresponding actions. This dissertation offers such a comprehensive perspective and sheds light on individual and contextual predictors for traditional and sustainability-focused behavior of entrepreneurs and self-employed across four studies.

The first three studies focus on individual predictors. By providing a systematic literature review with 107 articles, Chapter 2 highlights the ambivalent role of religion for the entrepreneurial process. Relying on the theory of planned behavior (TPB) as theoretical basis, religion can have positive effects on entrepreneurial attitudes and behavioral control, but also negative consequences for other aspects of behavioral control and subjective norms due to religious restrictions.

The quantitative empirical study in Chapter 3 similarly relies on the TPB and sheds light on individual perceptual factors influencing the sustainability-related intention-action gap in entrepreneurship. Using data from the 2021 Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS) including 22,008 early-stage entrepreneurs from 44 countries worldwide, the results support our theoretical reasoning that sustainability-focused intentions are positively related to social entrepreneurial actions. In addition, it is demonstrated that positive perceptual moderators such as self-efficacy and knowing other entrepreneurs as role models strengthen this relationship while a negative perception such as fear of failure restricts social actions in early-stage entrepreneurship.

The next quantitative empirical study in Chapter 4 examines the behavioral consequences of well-being at a sample of 6,955 German self-employed during COVID-19. This chapter builds on two complementary behavioral perspectives to predict how reductions in financial and non-financial well-being relate to investments in venture development. In this regard, reductions in financial well-being are positively related to time investments, supporting the performance feedback perspective in terms of higher search efforts under negative performance. In contrast, reductions in non-financial well-being are negatively related to time and monetary investments, yielding support for the broadening-and-build perspective indicating that negative psychological experiences narrow the thought-action repertoire and hinder resource deployment. The insights across these first three studies about individual predictors indicate that many different, subjective beliefs, perceptions and emotional states can influence the entrepreneurial process making entrepreneurship and self-employment highly individualized disciplines.

The last quantitative empirical study provides an explorative view on a large number of contextual predictors for social and ecological considerations in entrepreneurial actions. Combining GEM data from 2021 on country level with further information from the World Bank and the OECD, a machine learning approach is employed on a sample of 84 countries worldwide. The results suggest that governmental and regulatory as well as cultural factors are relevant to predict social and ecological considerations. Moreover, market-related aspects are shown to be relevant predictors, especially socio-economic factors for social considerations and economic factors for ecological considerations. Overall, the four studies in this dissertation highlight the complexity of the entrepreneurial process being determined by many different individual and contextual factors. Due to the multitude of potential predictors, this dissertation can only give an initial overview of a selection of factors with many more aspects and interdependencies still to be examined by future research.



# Chapter 1

## Introduction

*The following introduction lines out the motivation for this dissertation (Section 1.1) and highlights the relevant research questions (Section 1.2). Section 1.3 explains the structure of the dissertation and gives an overview of the four included studies.*

## 1.1 Motivation

*“With the UN Millennium Development Goals, followed by the Agenda 2030 and the Sustainable Development Goals, entrepreneurship emerged as a key factor in generating economic value and making a positive impact both from a social and environmental standpoint.”* (Pedrini, 2018 in The Economist Impact)

As recognized by the British newspaper The Economist Impact, entrepreneurship is an important discipline to achieve sustainable development and to address sustainability goals without losing sight of economic aspects. For instance, entrepreneurship can yield a valuable social impact by reducing poverty and by increasing overall social welfare (Neumann, 2021; Shane, 2009). Also, a positive ecological impact can be achieved, for example when entrepreneurs use and develop innovations and new technologies (Mondal et al., 2023; Schaltegger & Wagner, 2011). At the same time, entrepreneurial ventures with high innovative potential can foster economic growth and improve a country’s job market situation, thus contributing to economic development (Acs, 2006; Baumol & Strom, 2007; Shane, 2009).

However, many well-developed, industrialized countries with high income levels have comparatively low entrepreneurship rates (Sternberg et al., 2024). Especially when looking at Germany, we see that the total early-stage entrepreneurial activity (TEA) rate is lower than the TEA rate in many other countries with similar income levels in the EU and worldwide (Sternberg et al., 2024). The index explaining the percentage of the adult population being either nascent entrepreneur or owner-manager of a new venture (Global Entrepreneurship Research Association, 2023) currently lies at 7.7 percent in Germany (Sternberg et al., 2024). In contrast, other countries such as Great Britain, the Netherlands or the United States show significantly higher TEA rates of over ten percent (Sternberg et al., 2024). Additionally, recent crises such as COVID-19, the Russian war in Ukraine and increasing energy and material prices have contributed to an uncertain environment that might discourage entrepreneurship and self-employment (Belitski et al., 2022; Priyono et al., 2020; Prohorovs, 2022; Zahra, 2021).

In the same line, research emphasizes that not all individuals with entrepreneurial ambitions also take action (Kautonen et al., 2013, 2015; Van Gelderen et al., 2015, 2018). Research lines out multiple reasons that can hinder the translation of intentions into actions (Harima et al., 2021; Shirokova et al., 2016; Van Gelderen et al., 2015) and even after an initial attempt, many venture foundations fail (Devece et al., 2016; Eklund et al., 2020; Khelil, 2016; Kritikos et al., 2021). These risks apply even more to sustainability-focused ventures with high resource

constraints (Austin et al., 2006; Desa & Basu, 2013). Hence, it is extremely important to gain a better understanding of the entrepreneurial process with relevant predictors and outcomes, including sustainability-focused behavior. In this regard, existing literature already sheds light on the relevance of education and contextual support for entrepreneurial intentions and actions (Liñán et al., 2011; Stephan et al., 2015; Yang et al., 2023). However, the majority of this research focuses on few predictors for one specific aspect in the entrepreneurial process, lacking a broader understanding of multiple aspects on different levels.

This dissertation aims to provide such a broader perspective by highlighting various individual and contextual predictors and their outcomes in terms of entrepreneurial intentions and actions. It includes entrepreneurs as well as self-employed in their process of creating and leading a venture. With regard to sustainability-focused behavior, further clarification of the terminology is required. Depending on the impact-related focus of the venture, different types of entrepreneurship can be distinguished (Schaefer et al., 2015; Thompson et al. 2011). When a venture is primarily focused on the creation of economic value, this dissertation refers to it as traditional entrepreneurship. When a venture aims at social or ecological impact, the distinction according to Schaefer et al. (2015) and Thompson et al. (2011) is used. In this context, *social* entrepreneurship describes the creation of social value for people, communities and especially for disadvantaged groups through entrepreneurial actions (Schaefer et al., 2015). For social entrepreneurs, the social agenda is often more important than the economic value of the venture (Thompson et al., 2011). *Ecological* entrepreneurship focuses on the preservation and regeneration of the natural environment while simultaneously striving to create both ecological and economic value (Schaefer et al., 2015; Thompson et al. 2011). Finally, this dissertation uses *sustainability-focused entrepreneurship* as an umbrella term for those types of entrepreneurship that generate social and/or ecological impact.

Overall, the four studies included in this dissertation yield valuable insights for entrepreneurs, self-employed and policy makers about the entrepreneurial process. It is important for entrepreneurs and self-employed to be aware of the influence of individual and contextual factors to make rational decisions and to ensure the success and sustainability of their ventures. Also, policy makers need to understand the individuality and complexity of entrepreneurship and self-employment and specifically of sustainability-focused behavior in these disciplines. Such a holistic understanding can contribute to the adaptation and improvement of regulations and support measures and to increased sustainable development.

## 1.2 Research questions

This dissertation aims to answer several research questions with regard to individual and contextual predictors of the entrepreneurial process. Since each chapter provides a different perspective on the behavior of entrepreneurs and self-employed, the research questions are lined out separately in the following sections.

### 1.2.1 Religion and entrepreneurship

First, the study in Chapter 2 addresses religion as a predictor for the entrepreneurial process. Research on religion and entrepreneurship has gained significant momentum over the past years, highlighting the connection between religious values and beliefs and individual career and business decisions (Dejardin et al., 2024; Orlando et al., 2022; Smith et al., 2019; 2023a). In this regard, religion can shape the entrepreneurial process as well as subsequent actions of entrepreneurs and self-employed (Dodd & Gotsis, 2007; Gursoy et al., 2017; Kojana & Mamabolo, 2020). This leads to an alignment of entrepreneurial decisions with religious principles and to an incorporation of faith in entrepreneurial ventures (Gursoy et al., 2017; Siwale et al., 2023).

However, the field still lacks an overview about the role of religion for the entire entrepreneurial process (Block et al., 2020; Smith et al., 2019, 2021). To provide such a comprehensive overview, we conduct a systematic literature review (SLR) and rely on the theory of planned behavior (TPB) as a theoretical basis (Ajzen, 1991). The objective of Chapter 2 is to categorize empirical studies on religion, entrepreneurship and self-employment within the TPB framework, offering a theoretical overview about religion in the entrepreneurial process. In this context, we aim to answer the following research question:

***RQ 1:** How does religion influence the entrepreneurial process when viewed through the lens of the theory of planned behavior?*

### 1.2.2 Sustainability-related intention-action gap in entrepreneurship

Chapter 3 analyzes the role of perceptual factors for the sustainability-related intention-action gap in entrepreneurship. This area of research is constantly gaining importance to address current challenges such as social injustice and climate change (Muñoz & Cohen, 2018; Schaefer et al., 2015; Veleva, 2021). In this regard, also entrepreneurial actions directed towards sustainability become increasingly relevant. However, not all entrepreneurs with the according attitudes and intentions are able to integrate subsequent actions into their ventures (Grieco,

2018; Shepherd et al., 2013). Especially early-stage entrepreneurs often face resource constraints in the startup phase that can hinder sustainability-focused actions (Austin et al., 2006; Desa & Basu, 2013). This suggests the existence of an intention-action gap not only in traditional entrepreneurship, but also for aspects of sustainability (Grieco, 2018; Kunttu et al., 2017; Shepherd et al., 2013; Thelken & de Jong, 2020).

Even though current literature lines out many antecedents and barriers for sustainability-focused intentions and actions (Lopes et al., 2023; Prabowo et al., 2022; Hoogendoorn et al., 2019), research still lacks a view on the link between these aspects (Lopes et al., 2023; Romero-Colmenares & Reyes-Rodríguez, 2022; Thelken & de Jong, 2020). Therefore, further research is required on the sustainability-related intention-action gap (Kautonen et al., 2013; Lopes et al., 2023; Thelken & de Jong, 2020). To address this need for research, Chapter 3 explores how intentions for sustainability translate into social actions of early-stage entrepreneurs. The focus is on social actions since these entrepreneurs usually have a small and hardly measurable ecological impact at the beginning of their business activities (Fichter et al., 2023). Moreover, the chapter addresses the importance of perceptual factors in this context (Van Gelderen et al., 2015, 2018). The research questions are as follows:

***RQ 2:** How do sustainability-focused intentions translate into social actions of early-stage entrepreneurs? And which perceptual factors moderate this relationship?*

### **1.2.3 Investment decisions by the self-employed**

The next quantitative empirical study in this dissertation focuses on the consequences of well-being at a sample of German self-employed during COVID-19. Individuals in self-employment often face unexpected changes, substantial business risks and uncertainty in their work environment (Belitski et al., 2022; Zahra, 2021). These impairments are likely to affect their personal well-being, since work-related factors and private life are often closely linked in this discipline (Backman et al., 2023; Caliendo et al., 2023a; Torrès et al., 2022).

Current research already highlights the importance of well-being in self-employment and focuses predominantly on its antecedents and on static states of high or low well-being (Stephan, 2018; Wiklund et al., 2019). At the same time, research still lacks insights about the consequences of well-being, in particular, the lasting consequences of short-term fluctuations in well-being (Stephan, 2018; Stephan et al., 2022). This aspect is gaining increasing relevance because, in an uncertain world, well-being is dynamic and fluctuates over time (White & Gupta, 2020). Therefore, the importance of well-being in self-employment can only be fully

understood when recognizing its dynamic nature and the consequences of such fluctuations for venture-related decision making. The following research question is established for Chapter 4:

***RQ 3: How do reductions in well-being influence the subsequent behavior of the self-employed in terms of venture-related investment decisions?***

#### **1.2.4 Contextual predictors of social and ecological considerations in entrepreneurship**

The last quantitative empirical study in Chapter 5 concentrates on the relevance of contextual predictors for sustainability-focused entrepreneurial behavior. The increasing importance of sustainability in entrepreneurship is highlighted by a rise in research over the past years (Greco & de Jong, 2017; Muñoz & Cohen, 2018; Schaefer et al., 2015; Veleva, 2021). In this context, entrepreneurs can be a source of change and can help to create a more equal and environmentally conscious world (Schaefer et al., 2015; Veleva, 2021).

Current research already discusses an array of contextual factors for sustainability-focused entrepreneurship (Gabarett et al., 2017; Hörisch et al., 2017; Kirkwood & Walton, 2010). It agrees that the entrepreneurial context can influence whether and how entrepreneurs in a country incorporate social and ecological considerations in their entrepreneurial actions (Canestrino et al., 2020; Meek et al., 2010; Stephan et al., 2015). In more detail, literature has begun to identify governmental/regulatory, cultural, socio-economic, ecological and economic predictors. However, research so far only concentrates on a limited set of these predictors and specific countries (Moya-Clemente et al., 2020; Spence et al., 2011; Stephan et al., 2015). Moreover, research typically focuses on social or ecological entrepreneurship in isolation without taking into account that contextual factors could impact these types of entrepreneurship differently. In consequence, we know little about the overall level of predictability of sustainability-focused entrepreneurship by contextual factors. Especially the missing comparison of a broad set of factors and of social and ecological aspects leaves potential differences unclear. To address this research gap, we establish the following research question:

***RQ 4: Which contextual factors predict social and ecological entrepreneurial considerations on country-level?***

### **1.3 Structure of the dissertation**

This dissertation comprises six chapters including the introduction, four main studies and a conclusion. The four main studies shed light on the different individual and contextual

predictors of the entrepreneurial process, especially on the final stages in terms of intentions and actions. Figure 1.1 depicts the organizing framework for the dissertation. Chapters 2 to 4 initially focus on individual predictors. Chapter 2 highlights the role of religion for the entrepreneurial process by providing a comprehensive literature review in this field while Chapter 3 concentrates on the quantitative empirical analysis of the sustainability-related intention-action gap in entrepreneurship. Both chapters rely on the theory of planned behavior (TPB) as a framework to describe the entrepreneurial process (Kautonen et al., 2015; Lortie & Castogiovanni, 2015). The next quantitative empirical study in Chapter 4 is still focused on individual predictors and highlights the consequences of well-being in self-employment for venture-related investment decisions. The final quantitative empirical study in Chapter 5 puts emphasis on multiple contextual predictors and how they are associated with social and ecological considerations in entrepreneurial actions.

More specifically, **Chapter 2** highlights the importance of religious values and beliefs for entrepreneurs and self-employed according to the TBP. Understanding religion as a system of meaning that shapes an individual's worldview, life practices and community engagement, we adapt the original model of the TPB to the religious context. Based on this theoretical foundation, the literature review provides a systematic collection and categorization of research articles. After applying specific selection criteria, the chapter provides 107 suitable articles that are considered in detail. The results highlight that most studies focus on the influence of religion-related entrepreneurial attitudes, subjective norms and behavioral control on entrepreneurial actions. However, the role of religion is ambivalent in the entrepreneurial process. It yields positive outcomes such as stronger entrepreneurial attitudes and higher behavioral control due to access to resources and networks. In contrast, we also find negative outcomes such as restrictive norms and lower behavioral control especially due to limited access to financing. A lack of research is identified for the influence of religion on entrepreneurial intentions and its impact on the gap between intentions and actions.

**Chapter 3** is a quantitative empirical study that is once again theoretically based on the TPB. It points out the existence of a sustainability-related intention-action gap in early-stage entrepreneurship and analyzes which perceptual factors can influence this gap. Relying on individual level data from the 2021 Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS), we conduct stepwise logistic regression analyses with interaction effects for the perceptual factors as moderators. In line with our theoretical reasoning, we find that sustainability-focused intentions are positively related to social entrepreneurial actions and that positive perceptions such as self-efficacy and knowing other entrepreneurs strengthen this

relationship. In contrast, the negative perception of fear of failure weakens the implementation of social actions. Thereby, Chapter 3 yields valuable insights for early-stage entrepreneurs and policy makers suggesting that positive perceptions can be crucial for the translation of sustainability-focused intentions into social actions.

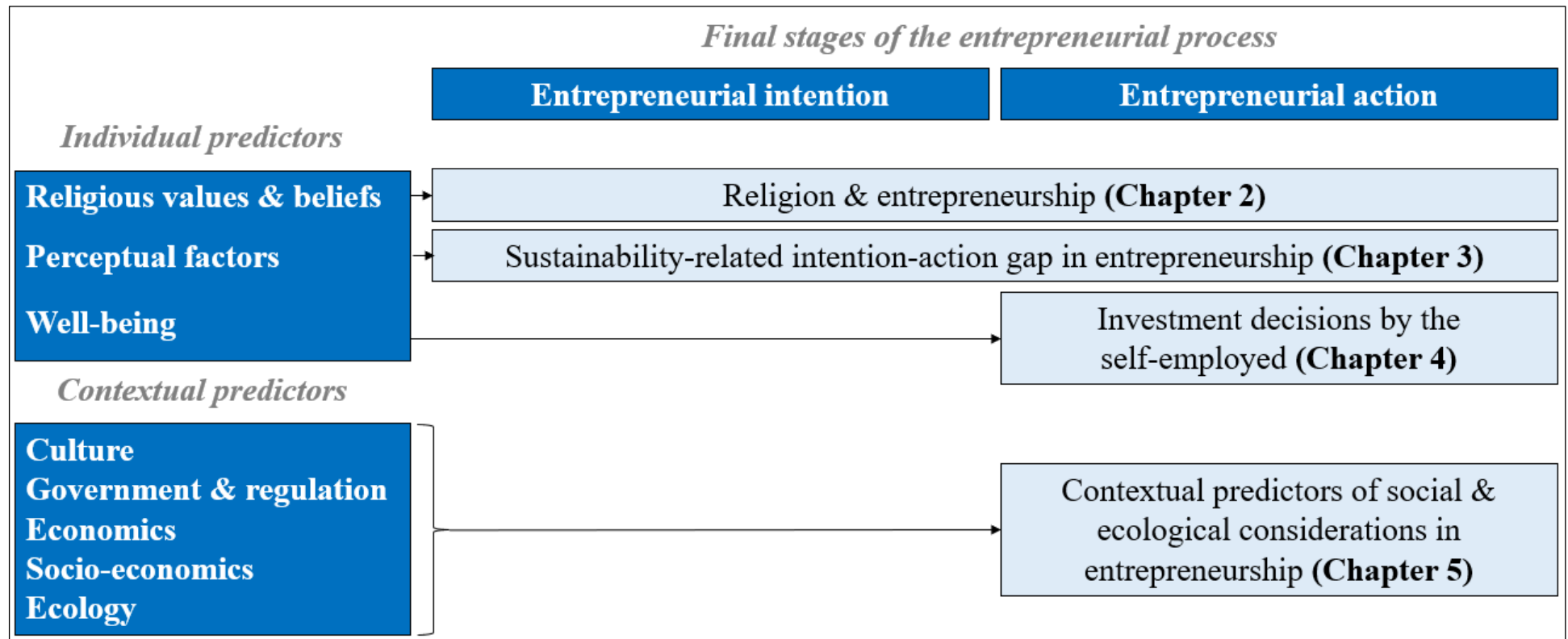
**Chapter 4** still focuses on individual predictors, taking into account the relevance of well-being in self-employment. Specifically, this chapter concentrates on reductions in well-being and the resulting consequences for venture-related investments. Drawing on a sample of German self-employed during COVID-19, we incorporate two behavioral perspectives to predict how reductions in financial and non-financial well-being relate to time and monetary investments in venture development. Our results indicate that decreasing financial well-being is positively related to time investments. This supports the performance feedback perspective indicating that negative performance can induce higher search efforts to improve the business situation. We further find that reductions in non-financial well-being are negatively related to time and monetary investments. This is in line with the opposite interpretation of the broadening-and-build perspective that negative psychological experiences narrow the thought-action repertoire and hinder resource deployment. Thus, Chapter 4 highlights the venture-related consequences that can arise from individual changes in well-being.

In contrast to the previous chapters, the last quantitative study in **Chapter 5** focuses on various contextual predictors and provides an explorative research approach. Precisely, the chapter emphasizes the relevance of country-level contextual predictors such as governmental/regulatory, cultural, socio-economic, ecological and economic factors for social and ecological considerations in entrepreneurial actions. By combining data from different sources such as the Global Entrepreneurship Monitor (GEM), the World Bank and the OECD, we employ explorative machine learning models to analyze this wide array of contextual predictors. Our results suggest that governmental and regulatory as well as cultural factors seem to be important predictors for social and ecological considerations. In addition, socio-economic factors show a high relevance for social considerations while economic factors are relevant for ecological considerations. Thus, Chapter 5 emphasizes that entrepreneurs can be encouraged by government and regulation as well as culture to incorporate social and ecological considerations into their ventures.

Finally, the conclusion in Chapter 6 summarizes the main insights of the four studies presented in this dissertation. It further discusses theoretical and practical implications, limitations and future research opportunities.



Figure 1.1: Structure of the dissertation



Source: Own illustration.

## Chapter 2

# Religion and entrepreneurship:

## A view through the lens of the theory of planned behavior<sup>2</sup>

*Religion, as a system of meaning shaping an individual's worldview, life practices and community engagement, has been shown to influence entrepreneurship. Yet, despite the growing body of research on religion and entrepreneurship, the field still lacks a comprehensive overview of how religion influences the entrepreneurial process. This literature review addresses that gap by systematically collecting and categorizing studies on religion and entrepreneurship through the lens of the theory of planned behavior, one of the leading frameworks for understanding entrepreneurship. Drawing from 107 research articles, we find that most studies focus on the influence of religion-related entrepreneurial attitudes, subjective norms and perceived behavioral control on entrepreneurial activity. Additionally, our findings highlight the ambivalent role of religion in the entrepreneurial process, producing both positive and negative outcomes. On the positive side, religious influences can strengthen entrepreneurial attitudes, such as resilience and altruism and improve behavioral control by providing access to resources and networks, ultimately leading to favorable entrepreneurial outcomes. Negative consequences arise in terms of behavioral control, such as limited access to financing and in subjective norms due to religious restrictions. These restrictive norms tend to disproportionately affect women entrepreneurs. This chapter concludes by recommending further research, particularly on the influence of religion on entrepreneurial intentions and its impact on the gap between intentions and actions.*

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<sup>2</sup> Chapter 2 is based on the article of Block et al. (2025). The article is published in the journal *Foundations and Trends in Entrepreneurship* and was written in joint authorship. AI was used for small linguistic improvements throughout this chapter (ChatGPT). However, all contents were developed without AI and any adjustments were checked for suitability and correctness.

## 2.1 Introduction

Research on religion and entrepreneurship has gained significant momentum, highlighting the strong connection between religious beliefs and individual career and business decisions (Dejardin et al., 2024; Orlando et al., 2022; Smith et al., 2019; 2023a). Building on the work of Smith et al. (2021, 2023a, 2023b), we define religion as a system of meaning that shapes an individual's worldview of the sacred, life practices and engagement within faith communities (Schmidt et al., 1999). This system influences specific attitudes and behaviors, particularly those related to the pursuit of the sacred (Hill et al., 2000). In this context, religion can shape both the entrepreneurial process and subsequent entrepreneurial behavior (Dodd & Gotsis, 2007; Gursoy et al., 2017; Kojana & Mamabolo, 2020). As a result, many entrepreneurs align their decisions and actions with their religious principles, actively incorporating their faith into their entrepreneurial ventures (Gursoy et al., 2017; Siwale et al., 2023).

However, the field lacks a comprehensive overview of the specific role religion plays in the entrepreneurial process (Block et al., 2020; Smith et al., 2019, 2021). One of the leading theoretical frameworks for understanding behavioral processes is the theory of planned behavior (TPB), which explains how attitudes, subjective norms and perceived behavioral control predict individuals' intentions and subsequent behaviors (Ajzen, 1991; Bosnjak et al., 2020). The TPB has strong ties to entrepreneurship, as it effectively represents the various stages of the entrepreneurial process by linking the three predictive aspects to entrepreneurial intentions and actions (Kautonen et al., 2015; Lortie & Castogiovanni, 2015). Several studies support the suitability of the TPB for understanding the relationship between religion and entrepreneurship (Onjewu et al., 2023; Rehan et al., 2019; Singh et al., 2021).

Beyond using the TPB to explain the entrepreneurial process, we propose that it also serves as an effective framework for organizing existing research on the intersection of entrepreneurship and religion. The objective of this chapter is to categorize empirical studies on religion and entrepreneurship within the TPB framework, offering a comprehensive theoretical overview of religion's role in the entrepreneurial process. In this context, we aim to answer the following research question:

*How does religion influence the entrepreneurial process when viewed through the lens of the theory of planned behavior?*

To address this question, we conduct a systematic literature review (SLR) encompassing 107 articles. Our findings reveal that the majority of these studies focus on how religion influences

entrepreneurial attitudes, subjective norms and perceived behavioral control. We identify several positive effects of religion on entrepreneurial action, including enhanced attitudes such as resilience and altruism, as well as improved behavioral control through better access to resources and networks. However, we also uncover negative consequences, particularly in terms of limited access to financing for entrepreneurs. Additionally, restrictive subjective norms arising from religious beliefs disproportionately affect women entrepreneurs.

Our theoretically grounded review enhances the understanding of the relationship between religion and entrepreneurship - particularly in relation to the entrepreneurial process (Dejardin et al., 2024; Rehan et al., 2019; Smith et al., 2019, 2021). By integrating and summarizing the selected articles through the lens of the TPB, we clarify the role of religion in the entrepreneurial process and highlight existing research gaps that future studies can address. Our findings reveal that numerous facets of the entrepreneurial process in the context of religion have been extensively studied and can be effectively summarized within the framework of the TPB. However, there are ambivalent insights, particularly regarding the impact of religion on entrepreneurial action. We conclude that future research should address these contradictions by adopting a detailed and comparative analysis of the effects of various religions across different countries. Furthermore, we emphasize the necessity for additional research on the role of religion in shaping entrepreneurial intentions, particularly concerning its influence on the gap between intentions and actions. Although this area has been underexplored, it is a crucial component at the core of the entrepreneurial process.

This chapter is structured as follows: Section 2.2 introduces our systematic review methodology in terms of article identification, screening and selection and provides a short introduction to the TPB and its categories. It also provides some descriptive statistics on our sample of articles. Section 2.3 reviews and describes the existing literature for each TPB category. Finally, in Section 2.4, we interpret and discuss our results and highlight theoretical implications, limitations and avenues for future research.

## **2.2 Method and descriptive overview**

### **2.2.1 Article identification, screening and selection**

We conducted our literature search using Web of Science in February 2024. Our query combined several terms about entrepreneurship and religion and we searched titles, abstracts,

as well as keywords of all available articles included in Web of Science<sup>3</sup>. The specific terms included in the query are listed in Table 2.1.

**Table 2.1: Keywords used in search query**

Themes	Keywords
Entrepreneurship	“Entrepr*” OR “Self-employ*” OR “Self employ*”
Religion	“Religi*” OR “Spiritual*” OR “Christian*” OR “Muslim” OR “Judaism” OR “Hinduism” OR “Buddhis*” OR “Atheis*”

Next, we limited the Web of Science output for our query to research articles in English language, yielding an initial sample of 2,595 articles. Due to the large number of articles, we applied further selection criteria. Specifically, we filtered the articles according to the ranking of the Academic Journal Guide (AJG) 2021 of the Chartered Association of Business Schools (CABS)<sup>4</sup>. We included all articles with a ranking of 3 or higher to ensure a high scientific quality of the selected articles (yielding 281 articles). To avoid an exclusion of relevant journals with lower AJG ranking, we additionally relied on the 25 most important journals about religion and entrepreneurship according to Block et al. (2020, p. 598-599). Independently of their ranking, we included all identified articles from these journals (73 additional articles), leading to an initial sample of 354 articles.

Next, we removed all non-empirical articles, so that only articles with quantitative, qualitative, or mixed methods remained. We further excluded articles dealing with small businesses and family firms when they did not contain an additional focus on entrepreneurship. Therefore, our review is restricted to the role of religion in entrepreneurship and insights cannot be transferred to other businesses. Then we screened the titles and abstracts of all articles in detail to determine their thematic fit to the field of religion, entrepreneurship and the TPB. If the articles did not sufficiently address these topics, we removed them. Hence, the article selection is based on our personal evaluation of thematic fit and does not aim for full completeness of all articles in the field. Many articles provided complex and interesting insights on religion and entrepreneurship but could not be suitably included in our framework about the entrepreneurial process and were

<sup>3</sup> The detailed wording of the query was as follows: ((TS=entrepr\*) OR (TS=self-employ\*) OR (TS=self employ\*)) AND ((TS=religi\*) OR (TS=spiritual\*) OR (TS=christian\*) OR (TS=muslim) OR (TS=judaism) OR (TS=hinduism) OR (TS=buddhis\*) OR (TS=atheis\*)).

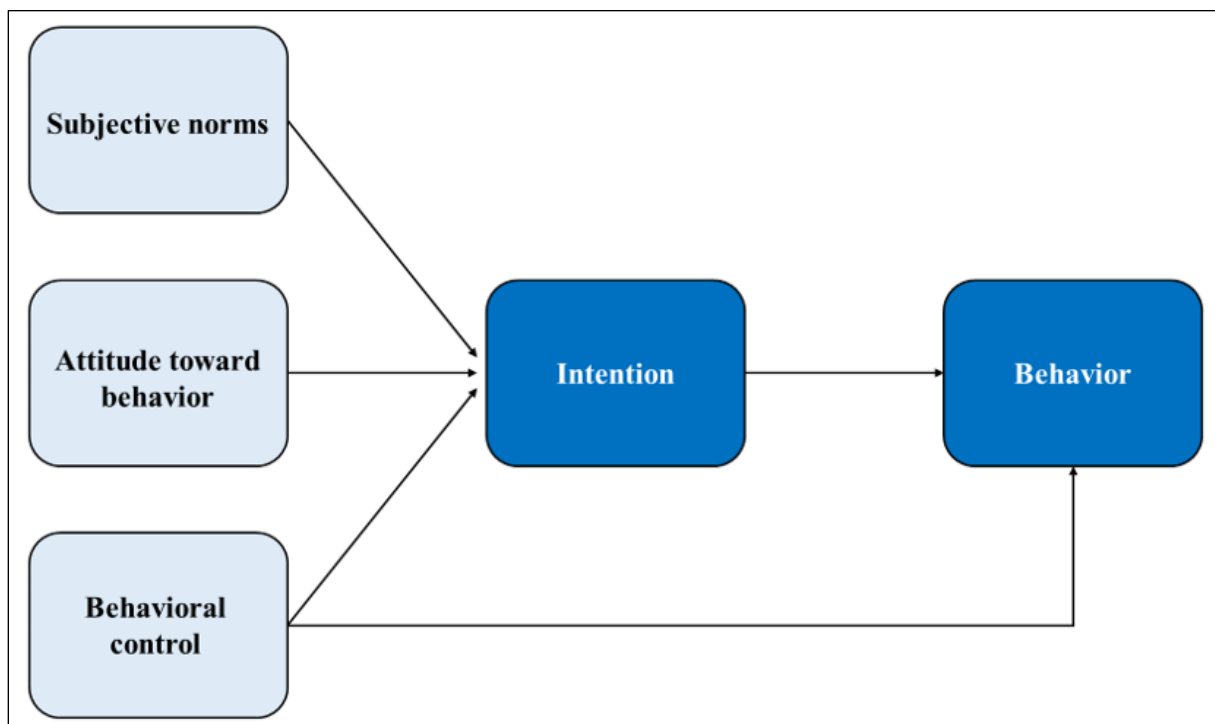
<sup>4</sup> URL: <https://chartereddabs.org/academic-journal-guide/academic-journal-guide-2021> (Accessed 05.09.2024).

thus excluded from our review. In total, our article screening and selection process yields a total number of 107 articles we consider in our literature review.

### 2.2.2 Categorization of articles according to the theory of planned behavior

The TPB outlines three conceptually distinct aspects that can predict individuals' intentions for a certain behavior (Ajzen, 1991; Bosnjak et al., 2020). These aspects are attitude toward behavior, subjective norms and behavioral control. In the original model of Ajzen (1991), depicted in Figure 2.1, the resulting behavior is jointly based on intention and behavioral control. The following subsections provide closer explanations of the different components of this model and apply the theory to the topic of religion and entrepreneurship.

**Figure 2.1: Model of the theory of planned behavior according to Ajzen (1991)**



*Source: Own illustration.*

#### *Religion and attitude toward entrepreneurship*

According to Ajzen (1991), attitude refers to the degree to which an individual has a favorable or unfavorable evaluation of the relevant behavior. In the context of our research, the relevant behavior is entrepreneurship. Thus, in our first category, we examine the link between religion and the attitude towards entrepreneurship. This category contains articles with any kind of information referring to religion and entrepreneurial attitudes, such as articles related to

entrepreneurs' personal evaluations and beliefs, entrepreneurial cognitions, motivations and identities in the context of religion.

#### *Religion and subjective norms for entrepreneurship*

Subjective norms describe the social pressure that individuals perceive when considering performing a certain behavior (Ajzen, 1991). Applied to entrepreneurship, this refers to social pressures that entrepreneurs are confronted with that favor or restrict entrepreneurship. In this category, we summarize articles about entrepreneurs' contextual settings (e.g., religious and cultural norms) as well as topics such as prejudices or the exclusion of entrepreneurs due to their religious background.

#### *Religion and behavioral control in entrepreneurship*

The TPB distinguishes between the two components of perceived and actual behavioral control. While perceived behavioral control refers to individuals' perception about whether it is easy or difficult to perform the relevant behavior, actual behavioral control describes the available resources and opportunities that influence the likelihood of behavioral achievement (Ajzen, 1991). We summarize the perceived and actual aspects of the entrepreneurship environment in one category. This category of religion and behavioral control in entrepreneurship describes individuals' perceived ease of engaging in entrepreneurship and the availability of entrepreneurial resources as well as opportunities in the religious context. Such entrepreneurial resources and opportunities can, for example, refer to education or networks that facilitate or hinder entrepreneurial behavior.

#### *Religion and entrepreneurial intentions*

The TPB states that favorable attitudes and subjective norms as well as higher behavioral control lead to higher intentions for engaging in a certain behavior (Ajzen, 1991; Bosnjak et al., 2020). Here, intention is treated as an immediate antecedent of the respective behavior. For our systematic literature review, we refer to entrepreneurial intention as the effort that an individual invests to engage in entrepreneurship (see also Ajzen, 1991; Liñán & Chen, 2009). Hence, this category includes all articles that examine the link between religion and the plan to carry out entrepreneurial actions in the future.

#### *Religion and entrepreneurial actions*

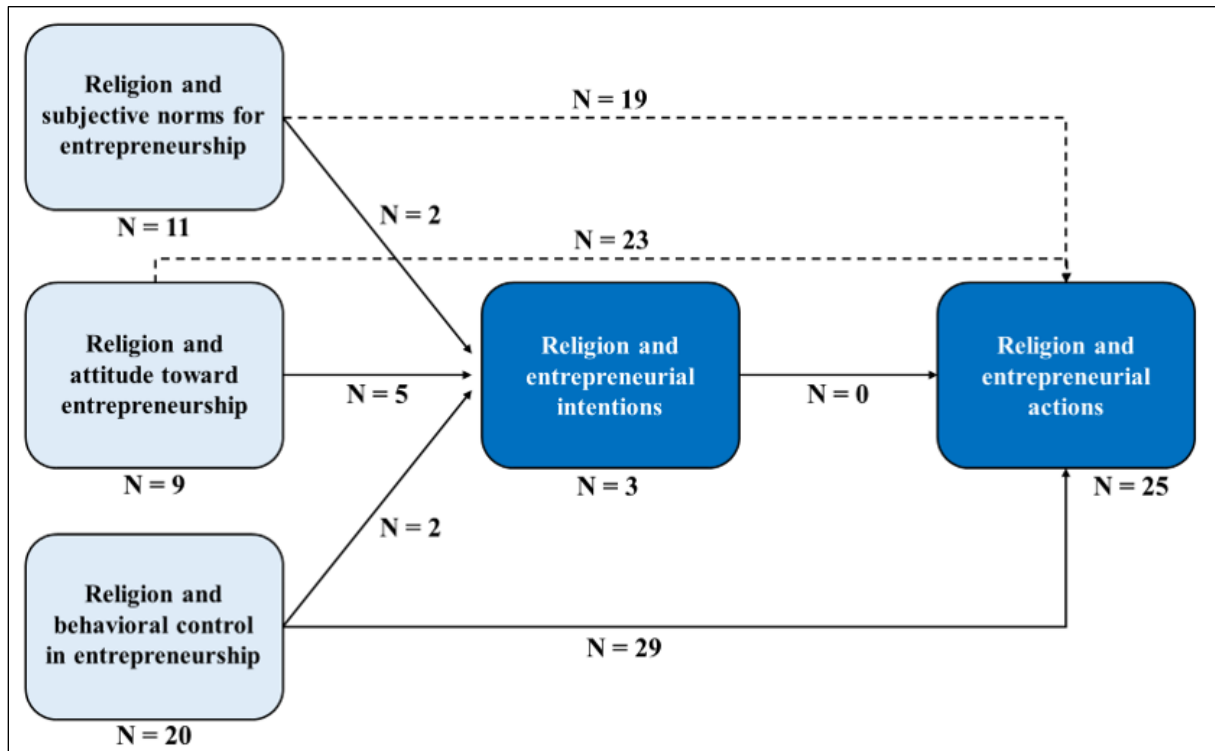
The final component of the TPB is the actual implementation of a certain behavior (Ajzen, 1991; Bosnjak et al., 2020). In the context of our review, the relevant behavior is entrepreneurial

action. Hence, our fifth and last category comprises all articles related to religion and any kind of entrepreneurial activity. This comprises the initial procedure of engaging in entrepreneurship as well as the subsequent decision-making (e.g., behavior related to profitability, growth, or social aspects).

*Adjustments of the categories in the context of religion and entrepreneurship*

According to the original model of Ajzen (1991), entrepreneurial attitudes, subjective norms and behavioral control can predict entrepreneurial intention. The resulting behavior of entrepreneurial action is only based on intention and behavioral control. Thus, the original model does not provide a direct link between entrepreneurial attitude and subjective norms on entrepreneurial action (see Figure 2.1). However, the identified literature provides many insights about these two direct connections. Therefore, we adapt the original model of Ajzen (1991) for this review and add links between entrepreneurial attitudes and subjective norms on entrepreneurial action (dashed arrows, Figure 2.2). Figure 2.2 shows the resulting framework that we use to organize and structure our review.

**Figure 2.2: Framework for our review based on the theory of planned behavior (including the numbers of articles identified)**



Source: Own illustration

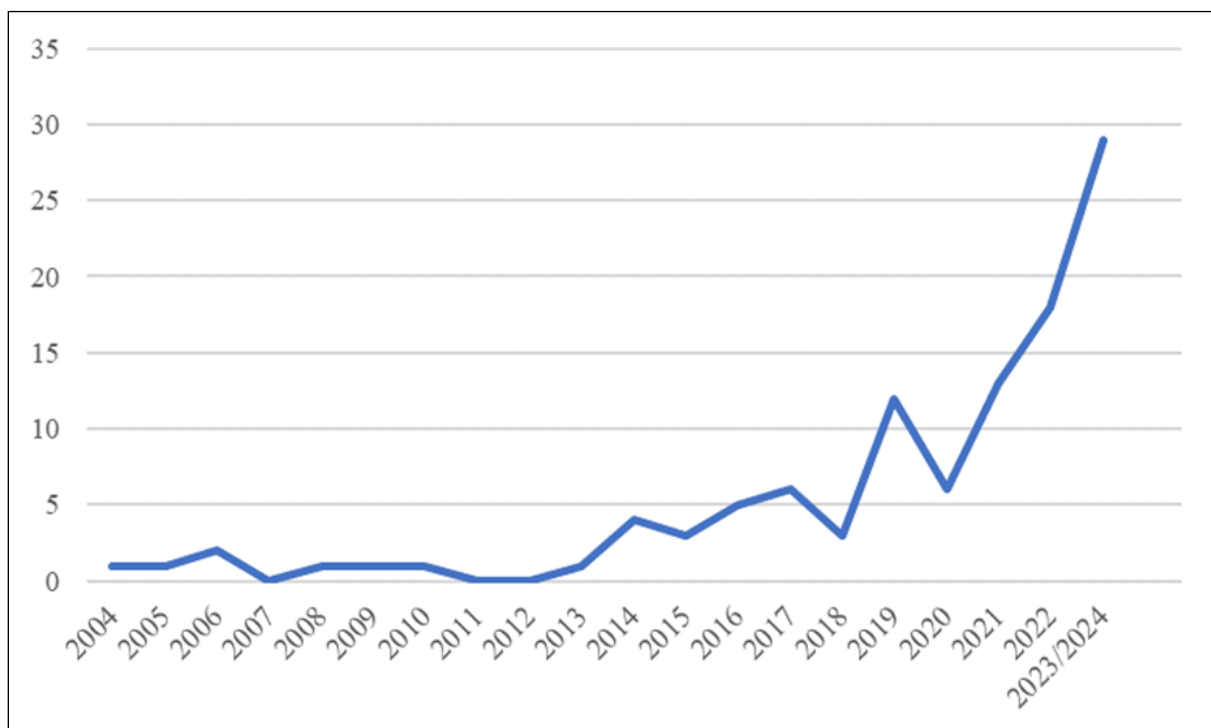


### 2.2.3 Descriptive statistics

Figure 2.2 provides an overview of the number of articles for all categories and their connections in our TPB framework. Most articles explore the direct link between entrepreneurial attitude, subjective norms and behavioral control on entrepreneurial action in the religious context. The smallest number of articles refers to entrepreneurial intentions. Note that the total number of articles in the graphic exceeds 107 because articles can provide insights about multiple categories or connections. We provide more details on the categorization of all 107 articles in our Table A2.1 (appendix).

Figure 2.3 visualizes the temporal distribution of the articles in our sample based on the year of publication. Specifically, Figure 2.3 shows that the number of articles about religion and entrepreneurship related to the TPB is increasing<sup>5</sup>. This corroborates the increasing relevance of religion in entrepreneurship research that previous literature has already identified (Block et al., 2020; Dejardin et al., 2024; Parboteeah et al., 2015).

**Figure 2.3: Number of articles over the years**

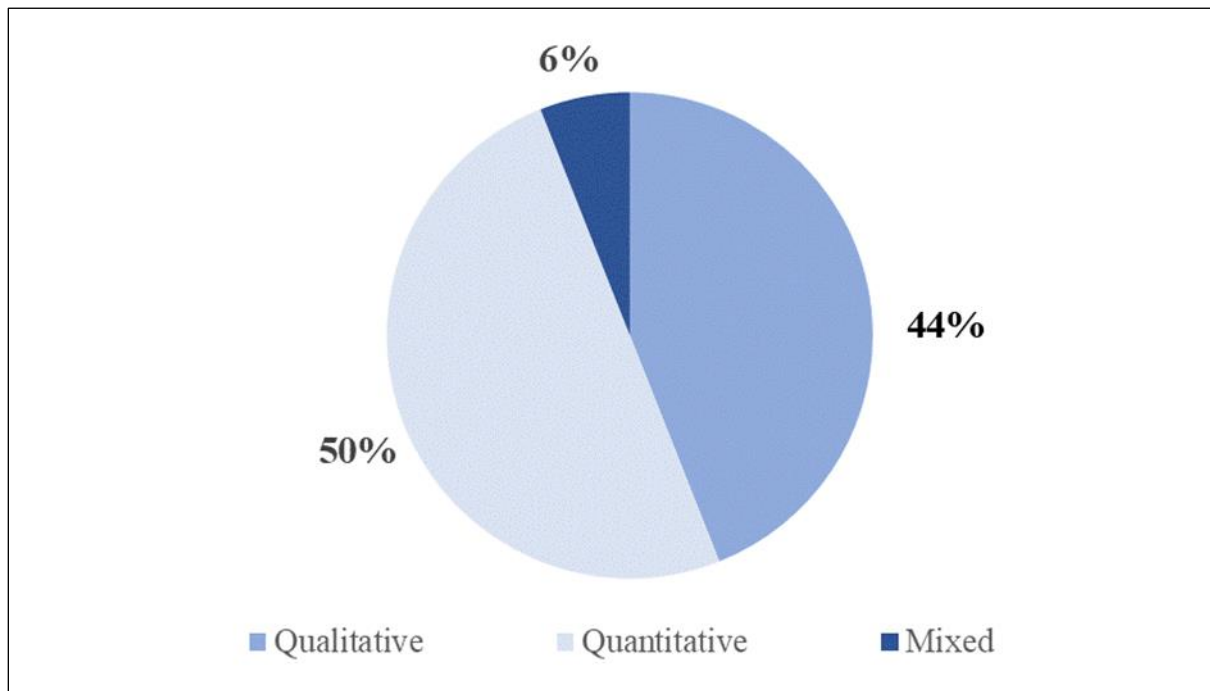


*Source:* Own illustration.

<sup>5</sup> The 29 articles for 2023/2024 consists of 20 articles in 2023 and 9 articles in 2024. This distribution is caused by our literature search that was initially conducted in February of 2024 and revised in August 2024.

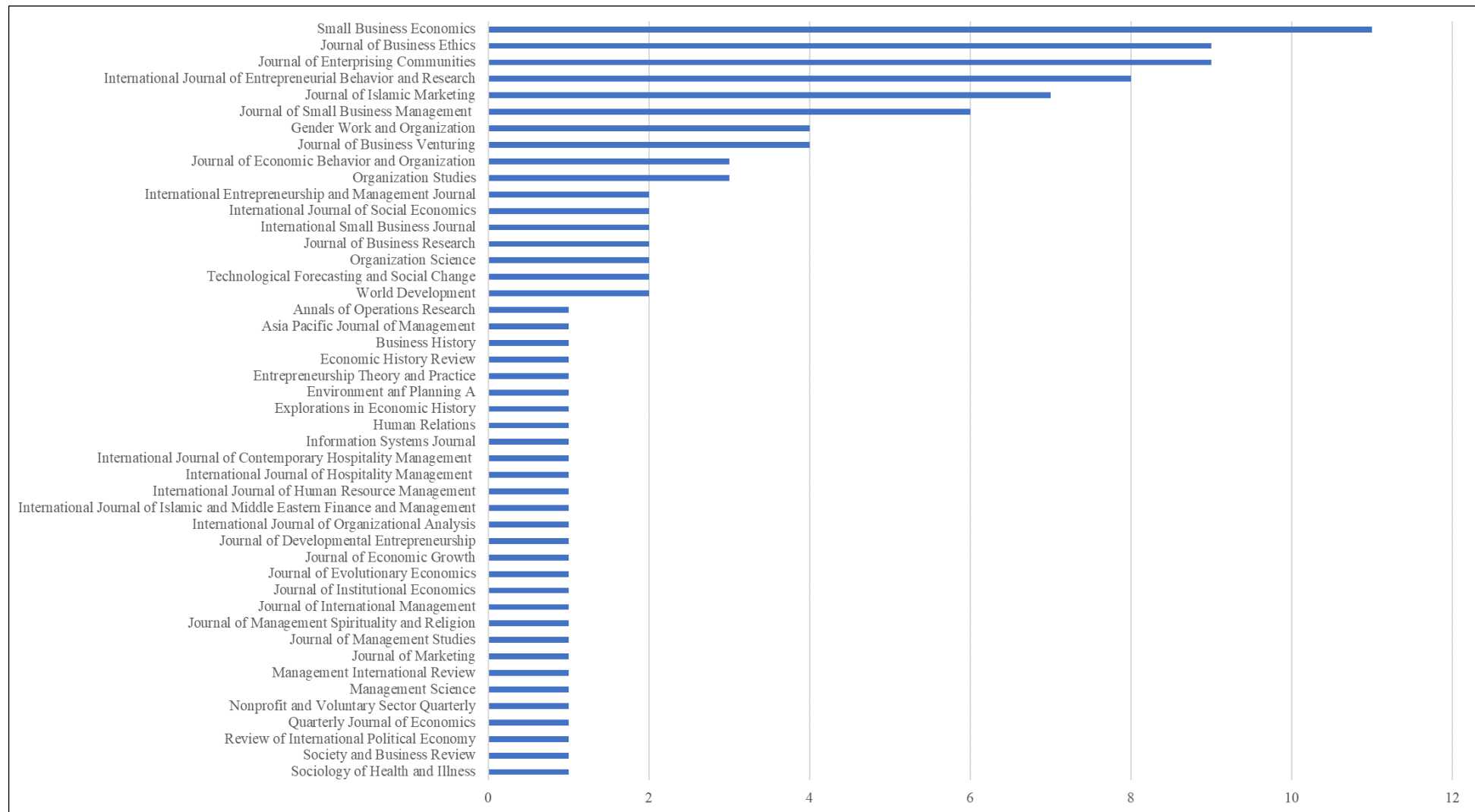
Regarding the research method, we only consider empirical articles. Figure 2.4 shows that both quantitative and qualitative articles are prevalent in our sample. Specifically, half of the articles in our sample use quantitative methods (50%), while 44% use qualitative methods (see Figure 2.4). A minority of articles employ both quantitative and qualitative data, which we refer to as mixed methods (6%).

**Figure 2.4: Empirical methods used in the articles**



*Source:* Own illustration.

Figure 2.5 shows that articles in our sample are spread over many different journals. Our selection of articles encompasses a total of 46 journals. The journals with the largest number of articles are Small Business Economics (11 articles), Journal of Business Ethics (9 articles), Journal of Enterprising Communities (9 articles) and International Journal of Entrepreneurial Behavior and Research (8 articles).

**Figure 2.5: Number of articles per journal***Source: Own illustration.*

## 2.3 Religion and entrepreneurship in the context of the theory of planned behavior

The following sections comprise the categorization of identified articles according to the TPB and represent the core of our systematic literature review. There is one section for each category of the TPB. Since articles can provide insights about multiple categories, the same article may be mentioned more than once throughout the different sections.

### 2.3.1 Religion and attitude toward entrepreneurship

This section provides a summary of all the articles that examine the relationship between religion and entrepreneurial attitudes. It is divided into three subsections, highlighting the direct impact of religion on entrepreneurial attitudes, as well as the resulting influence of these attitudes on entrepreneurial intentions and actions within a religious context. The complete list of articles in this category can be found in Table A2.2 in the appendix.

#### *Attitude towards entrepreneurship as a result of religion*

This subsection explores how religion can shape individuals' attitudes towards entrepreneurship, as highlighted in nine articles. For instance, Corrêa et al. (2022) emphasize that religious entrepreneurs often have unique motivations. Focusing on emerging economies, their study demonstrates how these motivations influence key entrepreneurial traits such as innovativeness, proactivity and risk-taking. Another important entrepreneurial trait examined in relation to religion is resilience. Research suggests that religious beliefs can strengthen resilience, helping entrepreneurs to better overcome challenges (Baikovich et al., 2022; Ganzin et al., 2020). Ganzin et al. (2020) trace this resilience back to higher values in entrepreneurial thinking and a higher cognitive capacity in a spiritual context to counter adverse circumstances and uncertainty in entrepreneurship.

The existing literature also establishes a link between religion and economic preferences, indicating that Protestantism is positively correlated with entrepreneurs' patience (Falk et al., 2018). Research also suggests that religious education can shape entrepreneurial attitudes. For example, Anggadwita et al. (2021) found that Islamic boarding schools, through their spiritually grounded education and Islamic values, foster a stronger entrepreneurial mindset among students. Additionally, religiosity has been linked to a strong work ethic. A study by Aygün et al. (2008), involving American and Turkish students, shows that religious individuals tend to

exhibit a robust work ethic. However, the same study reveals that factors like gender and culture play a more significant role than religiosity in shaping entrepreneurial orientations.

Finally, many articles in this subsection focus on the link between religion and entrepreneurial attitudes among women. For example, research suggests that Muslim women<sup>6</sup> entrepreneurs integrate religious values into their entrepreneurial attitudes and identities (Essers & Benschop, 2009; Essers et al., 2010; Essers & Tedmanson, 2014). These values do not always have to be restrictive but can also provide autonomous agency for Muslim women entrepreneurs (Essers et al., 2010). Based on their religious understanding, such entrepreneurs create their entrepreneurial identity with additional consideration of gender, ethnicity and political aspects (Essers & Benschop, 2009; Essers et al., 2010; Essers & Tedmanson, 2014). Further research by Baikovich et al. (2022) on Jewish women entrepreneurs confirms that women have to cope with gender and religion in entrepreneurship. When belonging to a religious minority, Jewish women entrepreneurs must attain a certain resilience against inequalities in their communities (Baikovich et al., 2022).

#### *Attitude toward entrepreneurship and entrepreneurial intentions in the context of religion*

Articles in this subsection demonstrate how religion can influence the conversion of entrepreneurial attitudes into entrepreneurial intentions (N=5 articles). For instance, Orlando et al. (2022) highlight that religious and cultural factors contribute to gender-related differences in career motivations in emerging economies, with men often having higher career expectations and entrepreneurial intentions than women. Another study on women's entrepreneurial motivations and intentions, focusing on an Islamic context, found that the type of marriage significantly affects Muslim women's entrepreneurial intentions (Muhammad et al., 2019). In forced marriages, these intentions are often driven by insecurity and stress, whereas "love marriages" tend to enhance entrepreneurial intentions, motivated by the desire to build trust and share financial responsibilities with their partner. Similarly, Rehan et al. (2019) explore Islam's influence and demonstrate how religious values and practices can positively shape entrepreneurial attitudes, thereby strengthening the entrepreneurial intentions of students in Pakistan.

McIntyre et al. (2023) identify a positive relationship between entrepreneurial attitudes, such as self-efficacy and entrepreneurial intentions among religious students in Ghana. Their findings suggest that religiosity can boost self-efficacy, which in turn leads to stronger

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<sup>6</sup> This chapter and the remaining dissertation rely on the term “women entrepreneurship” instead of “female entrepreneurship” since the majority of identified articles use on this term.

traditional and social entrepreneurial intentions. Pavlovich and Corner (2014) reinforce this view, specifically regarding social entrepreneurship, arguing that spiritual practices can increase individuals' awareness of social issues, thereby fostering greater social entrepreneurial intentions.

*Attitude toward entrepreneurship and entrepreneurial actions in the context of religion*

Numerous articles examine how entrepreneurial attitudes translate into actions within a religious context (N=23 articles). For instance, religiosity appears to influence nascent entrepreneurship by shaping entrepreneurial attitudes (Onjewu et al., 2023; Sutikno et al., 2023). Specifically, religiosity can enhance these attitudes, leading individuals to perceive starting a business as both worthwhile and rewarding (Onjewu et al., 2023). Additionally, a sense of religious calling—such as that found in the Protestant work ethic—can inspire entrepreneurial pursuits (Hollow, 2022). These religious motivations subsequently increase the likelihood of engaging in entrepreneurial activities (Hollow, 2022; Onjewu et al., 2023). Basir and Musa (2022) further illustrate that Islamic values can motivate individuals to pursue entrepreneurship in the agricultural sector, emphasizing Islam's positive influence on entrepreneurs' mindsets and the growth of their ventures. However, Sutikno et al. (2023) caution that religiosity can also have a negative effect on new venture creation among younger generations. They note that this effect is moderated by entrepreneurial orientation, with a more pronounced negative impact associated with higher levels of entrepreneurial orientation (Sutikno et al., 2023).

Religiosity can significantly influence the behaviors and decisions of entrepreneurs. For instance, highly religious entrepreneurs tend to adhere to traditional customs and values, which is reflected in their entrepreneurial practices (Gursoy et al., 2017). Barbosa and Smith (2024) further highlight that religious beliefs can have positive cognitive effects, enabling entrepreneurs to foster optimism in their decision-making and effectively navigate uncertainty. Herteliu et al. (2021) show that religion also shapes individuals' attitudes toward money, impacting their entrepreneurial choices. Additionally, religious beliefs can influence the characteristics of ventures themselves. According to Pavlovich and Corner (2014), individuals' spirituality enhances conscious awareness, which in turn affects supply chain and manufacturing decisions, ultimately generating greater shared value.

Gender is a crucial factor at the intersection of religion and entrepreneurial attitudes and actions. Research in this area emphasizes that women entrepreneurs can enhance their resilience against challenging circumstances by interpreting their religious beliefs in empowering ways. This

resilient mindset enables them to initiate change and achieve successful outcomes in their entrepreneurial endeavors (Baikovich et al., 2022; Tlaiss & McAdam, 2021b). Similarly, Pérez-Nordtvedt and Fallatah (2022) highlight the connection between spirituality and resilience for entrepreneurs of all genders. Their study demonstrates that the interplay between spirituality and resilience can foster greater social innovation, promoting values such as inclusiveness, frugality and flexibility within entrepreneurial ventures.

The significance of religion in shaping social entrepreneurial attitudes and actions is emphasized by Chen et al. (2023), who found that religious values enhance individuals' altruistic principles, thereby increasing their conviction and persistence in social ventures. Altruistic attitudes among entrepreneurs also promote socially responsible behaviors, such as fair-trade practices (Cater et al., 2017). The establishment of fair-trade ventures is often rooted in religious faith, coupled with the entrepreneur's commitment to altruism and shared values. Sharifi-Tehrani (2023) further confirms the positive influence of religion on social entrepreneurial attitudes and actions, specifically within an Islamic context. The study reveals that practicing Muslims exhibit greater social proactiveness, innovativeness, risk-taking and persistence, which enhances the integration of social considerations into their entrepreneurial activities. Similarly, Khurana et al. (2021) highlight the strong link between religion and humane orientation, suggesting that religious entrepreneurs are more likely to consider the broader entrepreneurial ecosystem and create positive externalities for all stakeholders. Finally, research indicates a connection between religion and social entrepreneurial attitudes and actions at the national level. Xu et al. (2022) demonstrate that a higher proportion of Buddhist entrepreneurs in a region fosters social behaviors, such as charitable giving, due to the incorporation of Buddhist values and attitudes in entrepreneurial practices.

In addition to social entrepreneurship, research also establishes a connection between religion and entrepreneurial attitudes and actions across various types of entrepreneurship. For instance, Xiao et al. (2021) highlight the concept of “Qinghuai” as a catalyst for digital entrepreneurship in China. Qinghuai refers to a form of spiritual idealism and continuous personal development that encompasses attitudes such as selflessness and self-cultivation (Xiao et al., 2021). Similarly, spirituality plays a vital role for entrepreneurs in creative industries. Alacovska et al. (2021) illustrate how entrepreneurs in Ghana can cultivate a hopeful entrepreneurial mindset through spiritual practices, thereby enhancing the economic vitality of their ventures in the creative sector.

Research also explores the interplay between entrepreneurial identity and action within a religious context. Smith et al. (2023b) reveal that entrepreneurs often navigate the balance between their entrepreneurial and religious identities when faced with threats and uncertainty. This interaction enables them to achieve greater stability and persistence in their entrepreneurial endeavors. Similarly, Muslim women entrepreneurs frequently have to deal with the integration of their entrepreneurial, religious and gender identities, with their success largely dependent on how effectively they harmonize these different aspects (Tlaiss & McAdam, 2021a). Gunawan et al. (2021) further underscore the importance of gender, religion and ethnicity in shaping entrepreneurial identity, particularly concerning ecological motivations. In the Indonesian craft sector, religious identity can inspire ecological entrepreneurship practices through values of self-enhancement, conservation and self-transcendence (Gunawan et al., 2021). Additionally, personal aspirations play a crucial role in the success of Muslim women entrepreneurs (Rafiki & Nasution, 2019).

While religious aspects often yield positive outcomes, they can also have negative implications for entrepreneurial action. For example, certain religious beliefs may contribute to an overconfidence bias (Barbosa & Smith, 2024). Furthermore, lower levels of religiosity can benefit specific aspects of entrepreneurship. Research shows that less religious entrepreneurs tend to exhibit greater independence in their thoughts and actions when it comes to decision-making, creativity and exploration within their ventures (Gursoy et al., 2017). Additionally, non-religious serial entrepreneurs in developing economies are more likely to overcome business failures by engaging in increased collaboration (Amankwah-Amoah et al., 2022).



**Box 1: Conclusion about religion and attitude toward entrepreneurship**

Research indicates that religion has a largely positive impact on entrepreneurial motivations and attitudes. The existing literature consistently highlights the beneficial effects of religion on key entrepreneurial traits such as innovativeness, proactivity, resilience and patience. Additionally, several studies demonstrate a connection between religion and women's entrepreneurial attitudes, suggesting that religion plays a significant role in women's entrepreneurship. Moreover, we observe a strong positive association between entrepreneurial attitudes and intentions within a religious context. This connection extends beyond traditional entrepreneurial intentions to encompass social intentions as well. Regarding the relationship between entrepreneurial attitudes and actions, current literature shows similarly favorable outcomes associated with religious aspects. Religion can enhance important entrepreneurial attitudes such as resilience, altruism and a willingness to cooperate, ultimately leading to positive results like entrepreneurial success and socially responsible behavior. Religious aspects can also negatively impact entrepreneurial actions. For instance, some religious beliefs may lead to overconfidence. Additionally, lower levels of religiosity can lead to greater independence in decision-making.

**2.3.2 Religion and subjective norms for entrepreneurship**

This section reviews articles related to the intersection of religion and subjective norms in entrepreneurship. It is organized into three subsections. The first subsection examines the direct influence of religion on societal norms and beliefs and their implications for entrepreneurship. The subsequent two subsections explore how subjective norms affect entrepreneurial intentions and actions within a religious context. Table A2.3 (appendix) provides a summary of all articles included in this section.

*Subjective norms for entrepreneurship as a result of religion*

This subsection of the literature examines the direct impact of religion on subjective norms related to entrepreneurship (N=11 articles). The findings suggest a wide range of effects, from significant to negligible and from negative to positive. For instance, Audretsch et al. (2017) conclude that religious values appear to have little influence on local entrepreneurial culture. On the negative side, Rietveld and Hoogendoorn (2022) note that adherence to religious beliefs can reinforce conservative values, which may hinder entrepreneurship that thrives on openness to change.

Furthermore, the literature highlights the religious restrictions that entrepreneurs, particularly women and ethnic minorities, often face. These groups may be marginalized due to prevailing religious norms (Avnimelech & Zelekha, 2023; Essers & Benschop, 2009; Fossati, 2019; Wasserman & Baikovich, 2024). Specifically, research illustrates how such restrictions impact Jewish ultra-Orthodox women entrepreneurs (Wasserman & Baikovich, 2024) and Muslim women entrepreneurs (Essers & Benschop, 2009; Essers et al., 2010; Essers & Tedmanson, 2014). Avnimelech and Zelekha (2023) also connect these challenges to hierarchical religions such as Sunni Islam and Catholicism. However, it is important to mention that Islam can also provide avenues for individualism and entrepreneurship that women entrepreneurs can leverage (Essers & Benschop, 2009).

The connection between religion and individualism in entrepreneurship is assessed by Assmann and Ehrl (2021) and Gantenbein et al. (2019), who indicate that individualism is conducive to entrepreneurship, specifically opportunity entrepreneurship (Assmann & Ehrl, 2021) and to financing possibilities for entrepreneurial endeavors (Gantenbein et al., 2019). Both studies find that religious affiliations (Assmann & Ehrl, 2021) and religious diversity (Gantenbein et al., 2019) cannot significantly reduce the positive influence of individualism on entrepreneurship. Thus, the positive effect of an individualistic culture on entrepreneurship seems to be largely independent of the religious context.

Finally, Rietveld and Hoogendoorn (2022) and Ojo (2019) note that religious values can foster subjective norms that support entrepreneurship. For instance, both religious affiliation and entrepreneurial engagement are associated with higher values of self-transcendence compared to self-enhancement (Rietveld & Hoogendoorn, 2022), which can positively impact entrepreneurial activities. Additionally, immigrant entrepreneurs often draw on their religious beliefs to help them adapt to new socio-cultural environments (Ojo, 2019).

#### *Subjective norms for entrepreneurship and entrepreneurial intentions in the context of religion*

This subsection examines subjective norms related to entrepreneurship within a religious context and their impact on entrepreneurial intentions (N=2 articles). Dissanayake (2022) demonstrates that Buddhist teachings can instill principles and ethical guidelines that subsequently influence entrepreneurial intentions. The second study focuses on women's entrepreneurial intentions in Islam. Muhammad et al. (2019) highlight that Muslim women often face restrictions in their entrepreneurial aspirations due to perceptions that these intentions are disapproved by their families and communities.

*Subjective norms for entrepreneurship and entrepreneurial actions in the context of religion*

Subjective norms related to religion also significantly influence entrepreneurial actions (N=19 articles). Entrepreneurial decision-making often draws upon religious and traditional norms and customs (Gursoy et al., 2017). In this context, Gursoy et al. (2017) emphasize that practicing Muslim entrepreneurs demonstrate a strong commitment to incorporating religious principles into their entrepreneurial ideas and processes.

The articles in this subsection highlight several positive effects of religion-related subjective norms on entrepreneurial action. For example, religiosity can enhance entrepreneurs' perceptions of support for their ventures (Onjewu et al., 2023). This suggests that religious entrepreneurs are more likely to believe that their families and significant others view their decision to start a business positively, thereby increasing nascent entrepreneurship (Onjewu et al., 2023). Similarly, Nunziata and Rocco (2024) demonstrate that a strong attachment to religious ethics among a Protestant minority enhances the likelihood of entrepreneurial activity. Additionally, discrimination against certain religious groups in the job market can lead to higher self-employment rates within these communities due to a lack of alternative options (Walls & Williams, 2004). Moreover, religious inclusion and pluralism can further promote entrepreneurial action. Henley (2017) emphasizes that religious pluralism positively mediates the relationship between religiosity and entrepreneurial activity, suggesting that a society's acceptance of diverse religions can encourage the entrepreneurial efforts of religious individuals.

Other studies emphasize the negative consequences and restrictions on entrepreneurial actions stemming from religion-related subjective norms. For instance, belonging to certain religious groups can create pressures and constraints that influence entrepreneurial decisions (Hollow, 2022). Research particularly underscores the adverse effects of religious norms on women entrepreneurs. They often contend with expectations imposed by their families, communities, or clients, which can hinder their engagement and behavior in entrepreneurship (Baikovich et al., 2022; Essers & Benschop, 2009; Tlaiss, 2015; Tlaiss & McAdam, 2021a, 2021b). This dynamic can contribute to a widening gender gap in entrepreneurship, particularly in countries with hierarchical religions such as Islam and Catholicism (Avnimelech & Zelekha, 2023).

Research highlights possible solutions to overcome religiously related restrictions. Akoh (2020) and Wasserman and Baikovich (2024) use the example of the fashion industry to show that women entrepreneurs can develop disruptive tailoring and clothing practices to cope with religious seclusion and patriarchal rules. Similarly, Muslim women entrepreneurs can stretch

the boundaries of religious rules to overcome traditional and restrictive perspectives (Essers & Benschop, 2009; Essers et al., 2010). Such resistance against gender inequality is especially successful when combined with a certain degree of compliance and community membership (Baikovich et al., 2022; Essers et al., 2021). Thus, the combination of resistance and compliance can stimulate changes in the religious context to facilitate women entrepreneurship (Baikovich et al., 2022). The studies of Tlaiss (2015) and Tlaiss and McAdam (2021a, 2021b) corroborate these insights. Muslim women entrepreneurs can interpret the work values of Islam according to feminist principles and according to their own agency to overcome restrictions (Essers et al., 2010; Tlaiss, 2015; Tlaiss & McAdam, 2021a, 2021b). Hence, the incorporation of religious values from a feminist perspective is an important factor for the legitimization, survival, success and growth of the ventures of Muslim women entrepreneurs (Essers et al., 2021; Tlaiss, 2015; Tlaiss & McAdam, 2021a, 2021b). Additionally, the feminist interpretation of Islam helps women entrepreneurs to develop coping strategies in crises and increases their ability to endure hardships and master difficult business situations (Althalathini et al., 2022; Tlaiss & McAdam, 2023). From an external perspective, local actors such as NGOs can provide support to facilitate women entrepreneurship (Ritchie, 2016).

### **Box 2: Conclusion about religion and subjective norms for entrepreneurship**

Literature suggests a predominantly negative link between religion and subjective norms for entrepreneurship. The articles in this section highlight that religious values and restrictions often oppose entrepreneurial values and hinder entrepreneurial action. The negative and restrictive effect of subjective norms on entrepreneurial action is especially pronounced for women entrepreneurs in the context of religion. However, a few articles also show positive outcomes of religious norms for entrepreneurship, for example, higher perceived support for entrepreneurial endeavors and higher entrepreneurship rates due to job market exclusion.

### **2.3.3 Religion and behavioral control in entrepreneurship**

This section encompasses articles related to the influence of religion on behavioral control in entrepreneurship. As in previous sections, we include a subsection that explores the direct effects of religion on behavioral control, illustrating how religious beliefs can shape the entrepreneurial environment and influence both the perceived and actual control entrepreneurs experience in their ventures. Additionally, the following two subsections examine the impact of behavioral control on entrepreneurial intentions and actions within a religious context. A comprehensive list of the articles is provided in Table A2.4 (appendix).

*Behavioral control in entrepreneurship as a result of religion*

This subsection covers a wide range of themes, examining the impact of religion on various entrepreneurial resources and opportunities (N=20 articles). When it comes to entrepreneurial opportunities, religion can either facilitate or hinder the perception and realization of these opportunities. For instance, Corrêa et al. (2022) highlight that the proactive search for and creation of opportunities are crucial for religious entrepreneurs in emerging economies, contributing to increased innovativeness, proactivity and risk-taking. However, in individualistic cultures, the influence of religious affiliation appears to be moderated by cultural context, resulting in a diminished role in opportunity perception and realization (Assmann & Ehrl, 2021). Additionally, Lelkes (2006) finds that non-religious individuals tend to recognize opportunities more effectively, particularly during periods of economic change and increased economic freedom.

Regarding entrepreneurial resources, religion can significantly enhance entrepreneurial knowledge. For instance, religious organizations often offer entrepreneurship training programs that equip both potential and practicing entrepreneurs with essential management skills (Arthur & Adom, 2019). Additionally, Islamic boarding schools play a vital role in imparting entrepreneurial knowledge by fostering a humane and spiritual approach to entrepreneurship rooted in Islamic values (Anggadwita et al., 2021).

Another important aspect is the level of religious acceptance within a country, which can bolster the entrepreneurial efforts of individuals from diverse ethnic and religious backgrounds while enhancing the nation's international economic integration (Fossati, 2019). Conversely, discrimination and social exclusion faced by entrepreneurs from ethnic and religious minorities can hinder international resource flows due to diminished public support (Fossati, 2019).

Access to financing is a crucial resource for entrepreneurs and religious factors can significantly influence these opportunities, yielding both positive and negative outcomes. For instance, Islamic entrepreneurs benefit from a variety of financial products and markets that complement traditional financing sources (Fathonih et al., 2019; Suci & Hardi, 2020; Utomo et al., 2021; Yan, 2020). However, Suci and Hardi (2020) and Utomo et al. (2021) emphasize that entrepreneurs must possess specific knowledge and awareness to effectively utilize these financial products. Additionally, Fathonih et al. (2019) and Yan (2020) highlight the necessity of adhering to Islamic principles to qualify for Sharia-compliant venture capital. Furthermore, Islamic finance can also be leveraged by entrepreneurs to support charitable initiatives (Hoque, 2023).

Additionally, Jones et al. (2024) demonstrate that an entrepreneur's religiosity can influence angel financing opportunities. When both the investor and entrepreneur share religious beliefs and the entrepreneur is perceived as authentic, the likelihood of securing successful angel financing increases. Furthermore, Di Pietro and Masciarelli (2022) find that crowdfunding campaigns are more successful across regions that share the same predominant religion, as this shared faith fosters enhanced social interactions and trust among participants. Finally, women entrepreneurs also benefit from religion-related financing. According to Ackah et al. (2024), women entrepreneurs in Ghana often prefer informal capital sources, such as those provided by religious organizations, over traditional bank loans.

Conversely, several studies indicate that religion can negatively impact entrepreneurial financing opportunities. For instance, Zhao and Lounsbury (2016) find that religious diversity may hinder the flow of commercial and public capital into social ventures, even in countries with robust market frameworks. This contrasts with the findings of Gantenbein et al. (2019), who report a positive relationship between religious diversity and venture capital investment, while noting that large, dominant religions (such as Christianity, Islam and Buddhism) can have a negative impact on funding levels for entrepreneurs. Artunç (2019) highlights that small ventures within Muslim minority communities in Egypt often encounter significant barriers to accessing capital. Similarly, Jones et al. (2024) note that traditional angel investors tend to evaluate religious ventures negatively, particularly when the investors themselves do not share those religious beliefs. In the crowdfunding landscape, displaying religiosity can adversely affect a campaign's success (Anglin et al., 2023). According to Anglin et al. (2023), this negative impact may arise from the perceived tension between virtuous religious conduct and the typical entrepreneurial persona. However, emphasizing the entrepreneurial orientation within the campaign can help mitigate the adverse effects of religiosity.

Another important aspect is the connection between entrepreneurs and their religious environments. Cucchi et al. (2022) highlight the beneficial impact of spirituality on entrepreneurial communities, noting that it fosters greater group cohesion and enhances coping abilities. Similarly, Mitchell et al. (2022) describe how religious figures can act as institutional intermediaries, providing vital support within their communities. In this way, the backing of a religious community can help fill institutional gaps in rudimentary market economies.

#### *Behavioral control in entrepreneurship and entrepreneurial intentions in the context of religion*

This subsection examines the effect of religious resources on individuals' entrepreneurial intentions (N=2 articles). The first article in this subsection suggests that spiritual capital can

enhance interpersonal competencies, which in turn boosts entrepreneurial intentions. This positive relationship is partly mediated by increased civic and public engagement (Cegarra-Navarro et al., 2024). The second study focuses on Muslim women entrepreneurs, revealing that the challenges posed by forced marriages can paradoxically lead to higher self-efficacy. In this context, the pressures associated with a forced marriage can strengthen women's confidence in their entrepreneurial abilities, ultimately resulting in more robust entrepreneurial intentions (Muhammad et al., 2019).

*Behavioral control in entrepreneurship and entrepreneurial actions in the context of religion*

Religious resources and opportunities can also have an impact on entrepreneurial actions (N=29 articles). Religion can positively influence the assessment of business opportunities (Barbosa & Smith, 2024). Specifically, Christian beliefs enhance the perceived feasibility and desirability of entrepreneurial endeavors, thereby increasing the likelihood of entrepreneurial action (Barbosa & Smith, 2024). The significance of religion in shaping business opportunities is further evident in the contexts of internationalization and digital ventures. Kabbara and Zucchella (2023) note that women entrepreneurs can leverage their religious values to connect with international communities, thereby seizing global business opportunities. This indicates that religious values can play a vital role in facilitating the internationalization efforts of women entrepreneurs. Additionally, the concept of Qinghuai, particularly its aspect of spiritual idealism, influences how digital entrepreneurs in China identify and capitalize on business opportunities (Xiao et al., 2021). In contrast, the Islamic religion is often associated with necessity-driven entrepreneurship rather than opportunity-driven initiatives, which can have negative implications for entrepreneurship rates among Muslims (Ayob & Saiyed, 2020).

Regarding entrepreneurial resources, Onjewu et al. (2023) demonstrate that religiosity can enhance nascent entrepreneurship by boosting self-efficacy. This indicates that individuals' confidence in their abilities is strengthened through their religious beliefs, encouraging greater participation in entrepreneurial ventures. Similar findings are observed among immigrant entrepreneurs and Muslim women entrepreneurs, who frequently draw on religious values and teachings as essential resources for their entrepreneurial decision-making and success (Siwale et al., 2023; Tlaiss & McAdam, 2021a).

Other research focuses on education and knowledge as vital entrepreneurial resources. For instance, Nunziata and Rocco (2024) find that Protestantism, as a minority religion, can enhance entrepreneurship in a region by promoting higher educational attainment compared to Catholic minorities. At the national level, the relationship between religion and investments in

knowledge and technology can significantly influence entrepreneurial activity (Parboteeah et al., 2015). This suggests that investments in knowledge can facilitate the translation of cognitive and normative religious values into entrepreneurial endeavors. The importance of education and knowledge is further supported in the contexts of rural and women entrepreneurship. Romero-Castro et al. (2023) demonstrate that aligning spiritual values with other resources, such as access to technology, positively impacts rural entrepreneurship. Additionally, Ritchie (2016) highlights how education provided by external organizations (e.g., NGOs) can empower women entrepreneurs, even in environments marked by religious oppression. Therefore, recognizing the interdependencies between religion, education and knowledge is crucial for fostering entrepreneurship in specific areas (Romero-Castro et al., 2023).

In addition to education and technological knowledge, specific forms of spiritual, cultural and social capital play a crucial role at the intersection of religion and entrepreneurship. Neubert et al. (2017) define spiritual capital as resources derived from spiritual and religious beliefs, which can enhance entrepreneurial innovation and performance, particularly in contexts with limited institutional support. Similarly, Shinnar and Nayir (2019) emphasize that religious and cultural knowledge aids opportunity recognition and resource acquisition for immigrant entrepreneurs, thereby enriching their entrepreneurial activities with greater economic significance. The importance of cultural capital is further supported by Ertimur and Coskuner-Balli (2015), who find that spirituality enhances cultural capital, which entrepreneurs can leverage to legitimize their businesses. However, Muhammad et al. (2017) highlight that religious influences, combined with socioeconomic and structural barriers, can result in a lack of cultural capital. Their research suggests that insufficient cultural capital may contribute to lower entrepreneurship rates.

Additionally, numerous studies explore the role of social capital and entrepreneurial networks within a religious context. This body of research typically highlights a positive impact of religion on social capital and entrepreneurial networks, which in turn influences entrepreneurial decisions and outcomes (Deller et al., 2018; Kalnins & Chung, 2006; Mitra & Basit, 2021; Siwale et al., 2023). For instance, Deller et al. (2018) and Siwale et al. (2023) demonstrate that a robust religious community can create supportive networks and valuable social capital, leading to increased entrepreneurial activity and enhanced performance. Avnimelech and Zelekha (2023) further emphasize that women entrepreneurs can leverage religion-based social networks to bolster their entrepreneurial efforts, compensating for limited access to traditional networks. Similarly, Xu et al. (2023) find that Buddhism positively correlates with external engagement, facilitating interactions with stakeholders. This increased stakeholder interaction



can enhance the sociopolitical legitimacy of Buddhist entrepreneurs, improving their chances of securing external resources. The advantages of religious networks are also significant for immigrant entrepreneurs, who often rely on ethnic, religious and spiritual connections within their communities to tap into local social capital (Kalnins & Chung, 2006; Verver & Koning, 2024). Such ties help shape entrepreneurial processes and improve the survival rates of their ventures. Moreover, affiliation with religious organizations provides immigrant entrepreneurs with market opportunities and influences their marketing strategies (Ojo & Nwankwo, 2020). Religious communities also foster positive outcomes for social entrepreneurship and women entrepreneurship. They promote fair trade practices (Cater et al., 2017) and contribute to the growth and success of ventures led by Muslim women (Mitra & Basit, 2021; Rafiki & Nasution, 2019).

However, certain religious factors can be unrelated to or even hinder the development of entrepreneurial networks. While Patel and Wolfe (2023) acknowledge the importance of economic connectedness among various socioeconomic groups for fostering entrepreneurial activities, they find no statistically significant impact of country-level religiosity on these connections. Additionally, Sarkar et al. (2018) argue that the presence of multiple religious groups within a region can limit the scope and benefits of social networks, making it more challenging for individuals to overcome barriers to entrepreneurship. Similarly, Muhammad et al. (2017) highlight that stringent religious rules can create obstacles and diminish social capital in rural areas, resulting in lower levels of entrepreneurship.

Finally, religious factors are connected to entrepreneurship through government regulations and policies. Specifically, individuals' levels of religiosity tend to increase the likelihood of entrepreneurial activities in well-developed markets, whereas they can reduce entrepreneurial opportunities in corrupt markets (Zhang et al., 2021). Conversely, secular values and lower levels of religiosity positively moderate the effects of economic decentralization and government effectiveness on entrepreneurship and self-employment (Miao et al., 2022; Patel & Wolfe, 2022).

**Box 3: Conclusion about religion and behavioral control in entrepreneurship**

Research shows that religion can influence many different aspects of behavioral control in entrepreneurship with positive as well as with negative consequences. For instance, many articles highlight the positive effects of religion on entrepreneurial opportunities and resources. Specifically, religious adherence can provide entrepreneurs with valuable knowledge and access to networks that can enhance venture survival, performance and growth. Conversely, negative consequences of religion are mostly reported concerning entrepreneurial financing. Especially in traditional, economic entrepreneurship, religiosity can decrease the chances to obtain funding when the investors are not religious themselves.

**2.3.4 Religion and entrepreneurial intentions**

In this section, we examine articles related to the intersection of religion and entrepreneurial intentions. The first of the two subsections focuses on how religious factors influence entrepreneurial intentions, while the second subsection analyzes how these intentions translate into entrepreneurial actions within a religious context. A comprehensive list of the articles in this category can be found in Table A2.5 (appendix).

*Entrepreneurial intentions as a result of religion*

The articles in this subsection examine how religion impacts entrepreneurial intentions (N=3 articles). Giacomini et al. (2023) find that religious affiliation positively influences the entrepreneurial intentions of students in Belgium, France, Iran and the United States. They also note that the effect of individual religiosity on these intentions varies by religion and is influenced by specific dimensions of religiosity. In contrast, McIntyre et al. (2023) do not identify a direct relationship between individual religiosity and traditional entrepreneurial intentions among university students in Ghana. However, they do find that religiosity is linked to social entrepreneurial intentions. Similarly, Trajano et al. (2023) confirm the positive association between religiosity and social entrepreneurial intentions among a subgroup of volunteers under 20 years old. Yet, when analyzing the overall sample, which includes individuals of all ages, they do not observe a significant effect of religious commitment on social entrepreneurial intentions.

*Entrepreneurial intentions and entrepreneurial actions in the context of religion*

Among the 107 research articles included in our systematic literature review, none specifically examine the translation of entrepreneurial intentions into actions within the context of religion.

This finding highlights a significant gap in the literature, indicating that the relationship between entrepreneurial intentions and actions remains underexplored.

**Box 4: Conclusion on religion and entrepreneurial intentions**

The limited number of articles in this section reflects a significant gap in research on the relationship between religion and entrepreneurial intentions. Additionally, the existing studies present mixed results, underscoring the complexity of this topic. Consequently, the role of religion in translating entrepreneurial intentions into actions emerges as a crucial area for future research, which has thus far received insufficient attention.

### 2.3.5 Religion and entrepreneurial actions

The final section focuses on entrepreneurial action in the context of religion (N=25 articles). Upon closer examination of the literature in this category, we can identify two distinct streams of research. The first one focuses on the initial decision to pursue entrepreneurship, while the second one addresses the behavior of entrepreneurs, encompassing all decisions and situations that arise after their initial engagement. To reflect this differentiation, we have created separate subsections for each aspect. A summary of the insights from all articles in this category is presented in Table A2.6 (appendix).

#### *Engagement in entrepreneurship as a result of religion*

Many articles examining the influence of religion on entrepreneurial action focus on the fundamental aspect of initial engagement in entrepreneurship (N=13 articles). Research at the country level indicates that the distribution of different religions can significantly influence entrepreneurship rates. For instance, Zelekha et al. (2014) find that the presence of Jewish, Hindu, Protestant and Orthodox populations positively correlates with higher entrepreneurship rates. This connection between Protestantism and entrepreneurship is further supported by Henley (2017) and Nunziata and Rocco (2016). In particular, Nunziata and Rocco (2016) highlight that Protestantism in Switzerland is linked to a greater propensity for entrepreneurship when it represents a minority, comprising less than 25% of the region's population.

Buddhism also demonstrates a positive relationship with entrepreneurial activity, as Xu et al. (2022) show that a higher proportion of Buddhists increases the likelihood of entrepreneurship in less developed regions. In terms of religiosity, Hoogendoorn et al. (2016) identify a positive impact of internal aspects of religiosity, such as belief and behavior, on a country's business

ownership rate. However, they note that external aspects of belonging and bonding do not show a significant association with entrepreneurship at the country level.

Supporting these findings, Rietveld and Hoogendoorn (2022) confirm that general religious affiliation is not significantly linked to entrepreneurship, although they find that Judaism positively influences entrepreneurial activity, aligning with Zelekha et al. (2014). Conversely, Rietveld and Hoogendoorn (2022) also observe a decreased likelihood of entrepreneurship associated with Protestantism, which contrasts with the positive relationships reported by other studies (Henley, 2017; Nunziata & Rocco, 2016; Zelekha et al., 2014).

When examining women's entrepreneurship and self-employment, Maniyalath and Narendran (2016) find that a higher proportion of Christians in a country is positively associated with women's entrepreneurial activity, while a larger Muslim population correlates negatively with women's entrepreneurship rates. In terms of self-employment, Ngassa (2024) reveals that both Christian and Muslim religions positively influence self-employment rates among young people in Africa. A Canadian study by Minns and Rizov (2005) highlights a lower likelihood of self-employment for Catholics, in contrast to a higher likelihood for Jews.

Focusing on India, Audretsch et al. (2013) note that Hindus are less likely to engage in self-employment, whereas Muslims show a higher propensity for self-employment compared to individuals of other faiths. Wijaya (2019) further specifies that the level of religiosity in a given area is positively associated with self-employment among Muslims.

However, some research indicates no significant impact of religion on entrepreneurial engagement. Alongside the previously mentioned findings of Rietveld and Hoogendoorn (2022), Parboteeah et al. (2015) also suggest that a country's religious profile does not directly affect individual entrepreneurial action. Furthermore, Patel and Wolfe (2022) argue that secular values can promote self-employment, particularly in decentralized economies.

#### *Entrepreneurial behavior as a result of religion*

The articles in this subsection link religion to the entrepreneurial behavior that occurs after the initial engagement in entrepreneurship (N=12 articles). Religion and spirituality significantly shape the individual journeys and goals of entrepreneurs (Cavalcanti Junqueira et al., 2023; Rashid & Ratten, 2022; Siwale et al., 2023). In the context of Christianity, Siwale et al. (2023) highlight how the relationship immigrant entrepreneurs have with God influences their entrepreneurial choices. Cavalcanti Junqueira et al. (2023) further emphasize that Christian entrepreneurs in rural, religious environments often find their business logic transformed; here,

religious and community considerations take precedence over traditional market factors. Similarly, Tahir (2023) identifies the impact of Islamic principles on entrepreneurial decisions, noting that Muslim entrepreneurs frequently align their work and business strategies with their religious values and beliefs (Tahir, 2023).

Research indicates that Buddhism positively influences venture performance (Liu et al., 2019). The authors attribute this effect to an entrepreneurial risk-taking strategy aligned with Buddhist values, which encourages higher and riskier investments in research, development and debt financing. Additionally, success factors specific to Muslim entrepreneurs in the halal industry have been explored (Salaheldeen & Battour, 2024; Salaheldeen et al., 2022). Salaheldeen et al. (2022) introduce a halal entrepreneurship success scale that encompasses Islamic, economic, social and environmental dimensions. Furthermore, Salaheldeen and Battour (2024) demonstrate that success in halal entrepreneurship can enhance innovation capabilities and foster sustainable practices.

Sharifi-Tehrani (2023) reinforces the positive influence of Islamic religiosity on the social orientation of entrepreneurial ventures. Insights into success factors for Muslim women entrepreneurs are also significant. Rafiki and Nasution (2019) identify trait-related, behavioral and social-psychological factors that contribute to the success of Muslim women in business, while Choudhury-Kaul et al. (2023) emphasize the importance of religious elements, such as Shariah guidance and stress management through prayer, in enhancing the performance of Muslim women entrepreneurs.

Conversely, insufficient family support can hinder the development of ventures for Muslim women entrepreneurs (Muhammad et al., 2019). Similarly, Wiseman and Young (2014) highlight that religiosity does not always foster entrepreneurial productivity. Their research reveals that higher levels of religiosity within a country correlate negatively with productive entrepreneurship, particularly in terms of profit-seeking and innovative activities. In contrast, a greater proportion of non-religious individuals is associated with enhanced levels of productive entrepreneurship.

**Box 5: Conclusion on religion and entrepreneurial action**

Research on the relationship between religion and entrepreneurial action presents mixed findings. The literature reveals ambivalent results concerning engagement, with religious affiliations exhibiting positive, negative and statistically insignificant effects on the likelihood of entering entrepreneurship or self-employment. Similarly, the impact of religion on subsequent entrepreneurial behavior reflects both positive and negative consequences. While studies highlight the positive effects of Buddhism and Islam on venture growth, success and social considerations, they also identify negative influences of religiosity on productivity. Consequently, we are unable to draw a definitive conclusion about the overall effect of religion on entrepreneurial action.

## **2.4 Discussion**

### **2.4.1 Interpretation and theoretical implications**

Our review highlights that the entrepreneurial process is generally well-researched in terms of religious aspects. The current literature addresses many categories and connections of the TPB, generally highlighting various positive as well as negative consequences of religion. Positive implications are especially shown for the effect of religion on entrepreneurial attitudes and resulting actions. Research agrees that religious values can enhance resilience and altruism and can foster social entrepreneurial actions (Baikovich et al., 2022; Chen et al., 2023; Cater et al., 2017; Sharifi-Tehrani, 2023). Positive outcomes are also identified for the category of behavioral control. Here, certain religious aspects can improve the perception of entrepreneurial opportunities and access to networks with positive consequences for a range of outcomes, such as venture survival, performance and growth (Barbosa & Smith, 2024; Corrêa et al., 2022; Kalnins & Chung, 2006; Mitra & Basit, 2021). We substantiate prior research that religion has an important impact on entrepreneurial networks and that it is a well-researched topic (Kojana & Mamabolo, 2020; Smith et al., 2021).

Potential negative outcomes of religion are highlighted for entrepreneurs' access to financing. Restricted access to financing due to religious reasons can lead to lower behavioral control and impede entrepreneurship (Anglin et al., 2023; Artunç, 2019; Jones et al., 2024; Zhao & Lounsbury, 2016). Further negative outcomes of religion are identified for the category of subjective norms, especially for women entrepreneurship. As already indicated by Block et al. (2020), we find that research on religion and women entrepreneurship predominantly focuses on Islam. The identified articles in our review highlight gender-related, religious restrictions

for Muslim women entrepreneurs, but also potential solutions to overcome these religious norms (Baikovich et al., 2022; Essers et al., 2010, 2021; Tlaiss & McAdam, 2021a, 2021b, 2023).

Despite the emphasis on the negative aspects of religion concerning subjective norms, several studies suggest that the resulting impact on entrepreneurial actions can be more nuanced. For instance, research shows that exclusion and religious discrimination in the job market can actually spur entrepreneurial activity (Walls & Williams, 2004). Additionally, higher levels of religiosity may enhance the perception of support for entrepreneurial engagement (Onjewu et al., 2023). Further complicating the narrative, findings regarding the direct effects of religious affiliations and religiosity on entrepreneurial actions are inconsistent. Depending on the study, the effects of religion on engagement in entrepreneurship, as well as subsequent behaviors like growth and productivity, can be positive, negative, or statistically insignificant. This highlights the complexity of the relationship between religion and entrepreneurial action, suggesting that the effects can vary widely based on context and individual circumstances.

These mixed results are evident throughout the entire entrepreneurial process and across nearly all categories of the TPB. Possible explanations for these inconsistencies may stem from variations in sample sizes and measurement approaches used in the studies reviewed. Consequently, the impact of religion on entrepreneurship can vary significantly based on factors such as religious affiliation, the level of religiosity, the characteristics of the entrepreneur and the specific context of the entrepreneurial endeavor. Consistent with previous research, we conclude that religion cannot wholly account for all entrepreneurial behaviors and decisions (Hollow, 2022). Furthermore, religion is not confined to solely positive or negative effects on entrepreneurship (Jones et al., 2024; Rietveld & Hoogendoorn, 2022; Yan, 2020). Our literature review highlights that religion serves as a double-edged sword, wielding both positive and negative implications for the entrepreneurial process (Jones et al., 2024; Yan, 2020). The varied findings regarding the relationship between religion and entrepreneurship in the current literature may be attributed to a range of contingencies. These include not only the types of religion but also other factors such as gender and education, which frequently emerge as significant influences. Consequently, we concur with Hollow (2022) that the relationship between religion and entrepreneurship is inherently complex and multifaceted.

### **2.4.2 Limitations**

In our review, we applied a standardized and thorough procedure for the identification, screening and selection of articles (see Section 2.2.1). However, we did not conduct systematic coding of the articles to generate our insights. Instead, we relied on a careful personal evaluation of the articles' contents and their thematic fit. We acknowledge that this results in a somewhat limited perspective on our insights into the entrepreneurial process as framed by the TPB.

Additionally, many of the articles we identified explore various categories and connections within the TPB. As a result, categorizing these findings according to the TPB was not always straightforward and necessitated some interpretative flexibility. To better align the TPB with the entrepreneurial process in the context of religion, we made minor adjustments to the model. Specifically, we incorporated two direct connections from entrepreneurial attitudes and subjective norms to entrepreneurial actions (illustrated by the dashed arrows in Figure 2.2) since these topics emerged as some of the most extensively researched in our review. However, we acknowledge that our analysis does not encompass the broader significance of these connections beyond the scope of this review.

Lastly, it is important to acknowledge the significance of contingency factors such as type of religion, gender and education. Our concentrated examination of the entrepreneurial process through the lens of the TPB limits our ability to provide a nuanced analysis of the various religious types. Consequently, we conclude that research on religion and entrepreneurship is often influenced by contextual factors and our theoretically oriented review may not fully capture or account for these contingency effects.

### **2.4.3 Future research**

The findings from our review underscore several areas that warrant further investigation. Notably, there is a lack of empirical research concerning the intersection of religion and entrepreneurial intentions. One possible explanation for this gap is the challenge associated with data collection; in-depth studies on this topic require individual-level data, which cannot be easily inferred from broader country-level religious affiliations and entrepreneurship rates, as is often done in existing literature. As such, there is a pressing need for further exploration of how religion influences the translation of entrepreneurial intentions into actions—a topic that remains underexamined. This gap between intentions and actions is a broader issue within the field of entrepreneurship (Kautonen et al., 2015; Van Gelderen et al., 2015). Therefore,



expanding research in this area, particularly with regard to the religious context, would be highly interesting.

Additionally, our review takes a relatively narrow approach to the entrepreneurial process as framed by the TPB. Future research could benefit from a more detailed examination of specific stages within this process. Given the ambivalent findings related to the influence of religion on entrepreneurial action, this particular stage presents a compelling avenue for further exploration. Moreover, future researchers might consider employing entirely different theoretical frameworks to analyze the entrepreneurial process. Concepts such as effectuation (Read & Sarasvathy, 2005; Sarasvathy, 2001), the process theory of entrepreneurial ecosystems (Spigel & Harrison, 2018), or regulatory focus theory (Brockner et al., 2004) could offer valuable insights. A meta-analysis could be instrumental in determining whether the overall effect of religion on entrepreneurship is predominantly positive or negative.

Future research could benefit from a more nuanced distinction among different types of religions. A detailed breakdown by each religion could facilitate intriguing comparisons of their respective impacts on entrepreneurship. In addition to examining different religious affiliations, it is also essential to consider atheism and agnosticism as significant influence factors. This is particularly relevant given the rising number of individuals in Europe who are distancing themselves from organized religion (Statista, 2024). Such trends could influence the role of religion in the entrepreneurial process and warrant closer examination by researchers in future studies.

Furthermore, we acknowledge that the reverse effect of entrepreneurship on religion remains an underexplored area within the field (Block et al., 2020). Although this reverse relationship is not the primary focus of our review and is excluded from the TPB, we observed a notable gap in the literature in this regard. Out of more than 100 articles, only one investigated how engagement in entrepreneurship can influence religious beliefs (see Chandra, 2017). This chapter suggests that there may indeed be a significant effect in the opposite direction. Consequently, we emphasize the importance of further research on this reverse relationship and encourage scholars to explore this intriguing area.

## 2.5 Conclusion

Our systematic literature review significantly enhances the theoretical understanding of the role of religion in the entrepreneurial process. Analyzing a total of 107 selected empirical articles, we observe a growing body of literature in recent years, underscoring the increasing relevance of research on religion and entrepreneurship (Dejardin et al., 2024; Smith et al., 2019, 2023a). By categorizing existing insights through the lens of TPB, this chapter illustrates how religious factors influence various stages of the entrepreneurial process, from attitudes and subjective norms to behavioral control, entrepreneurial intentions and subsequent actions. Thus, our review emphasizes the significance of this research area while also revealing the many unanswered questions that persist. We hope our findings inspire both the entrepreneurship and religion communities to pursue research that is both practically and theoretically relevant. One particularly underexplored area is how religion influences the development of entrepreneurial intentions.

## Chapter 3

# Sustainability-related intention-action gap in entrepreneurship:

## The moderating role of perceptual factors<sup>7</sup>

*Current research emphasizes the importance of sustainability-focused actions in entrepreneurship. However, not all entrepreneurs with sustainability-focused attitudes and intentions are able to integrate the corresponding actions into their ventures. This raises the question: How large is the sustainability-related intention-action gap, and what factors influence its size? Focusing on the social dimension of sustainability, we hypothesize that sustainability-focused intentions positively predict social actions of early-stage entrepreneurs. Additionally, we examine three perceptual factors as moderators due to their relevance in the entrepreneurial process. Using individual-level data from the 2021 Global Entrepreneurship Monitor, we conduct stepwise logistic regression analyses with interaction effects. Our findings align with our theoretical reasoning from the theory of planned behavior, showing that sustainability-focused intentions are positively linked to social actions. Factors such as perceived self-efficacy and knowing other entrepreneurs are found to strengthen this relationship. Conversely, fear of failure has the expected negative effect, weakening the implementation of social actions. By connecting sustainability-focused intentions with subsequent actions, our study provides valuable insights for early-stage entrepreneurs, as well as policy makers. It suggests that positive perceptions can be crucial in enhancing the social aspects of entrepreneurship.*

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<sup>7</sup> Chapter 3 is based on an article in joint authorship that is planned to be published in similar form in a scientific journal. The article is not submitted yet. In Section 3.5, AI was used to improve the discussion. However, all contents were developed without AI and any adjustments were checked for suitability and correctness.

### 3.1 Introduction

Sustainability-focused entrepreneurship is constantly gaining importance due to its ability to address contemporary challenges such as social injustice and climate change (Muñoz & Cohen 2018; Schaefer et al., 2015; Veleva, 2021). In this regard, it can advance worldwide sustainable development and represent an important pillar for welfare (Muñoz & Cohen, 2018; Schaefer et al., 2015; Veleva, 2021). However, not all entrepreneurs with sustainability-focused attitudes and intentions are able to implement the corresponding actions into their ventures (Grieco, 2018; Shepherd et al., 2013). Entrepreneurship research has outlined an intention-action gap indicating that intentions do not necessarily lead to the foundation of a venture in general (Kautonen et al., 2013, 2015; Van Gelderen et al., 2015, 2018) and to sustainability-focused actions in particular (Grieco, 2018; Kunttu et al., 2017; Shepherd et al., 2013; Thelken & de Jong, 2020). Especially early-stage entrepreneurs often face resource constraints in the startup phase that can hinder these actions (Austin et al., 2006; Desa & Basu, 2013).

To advance sustainable development, it is crucial to gain a better understanding about the factors accelerating sustainability in entrepreneurship. Literature currently focuses on many antecedents and barriers (Lopes et al., 2023; Prabowo et al., 2022; Hoogendoorn et al., 2019) but lacks a specific view on the sustainability-related intention-action gap (Lopes et al., 2023; Romero-Colmenares & Reyes-Rodríguez, 2022; Thelken & de Jong, 2020). Thus, further research is required on this gap and its potential moderators (Van Gelderen et al., 2015, 2018). To address this issue, Chapter 3 aims to explore how sustainability-focused intentions influence social actions of early-stage entrepreneurs. We further concentrate on social actions, because new entrepreneurs usually have a small and hardly measurable ecological impact when their business activities are still in development (Fichter et al., 2023). In this context, it would not be meaningful to analyze ecological actions. In addition, this chapter connects sustainability-focused intentions with subsequent actions to understand which perceptual factors are relevant moderators in this context. Thus, our research questions are as follows:

*How do sustainability-focused intentions translate into social actions of early-stage entrepreneurs? And which perceptual factors moderate this relationship?*

Based on the theory of planned behavior (TPB), we assume that intentions for sustainability are positively linked to social actions (Ajzen, 1991). The TPB further demonstrates the relevance of perceptual factors in predicting and changing behaviors (Ajzen, 1991; Montano & Kasprzyk, 2015). These factors are incorporated in the TPB in terms of perceived behavioral control and

are defined as the perception of opportunities and resources that ensure the translation of intentions into actions (Ajzen, 1991). Since their importance is acknowledged in entrepreneurship (Abbasianchavari & Block, 2022; Arenius & Minniti, 2005; Koellinger et al., 2007), we hypothesize that fear of failure, self-efficacy and knowing other entrepreneurs are also relevant moderators for sustainability-focused aspects.

Drawing on a sample of 22,008 individuals across 44 countries from the 2021 Global Entrepreneurship Monitor, our stepwise logistic regression analyses support our theoretical reasoning. We find that sustainability-focused intentions are positively linked to social actions of early-stage entrepreneurs and that positive perceptions such as self-efficacy and knowing other entrepreneurs further strengthen this relationship. In contrast, the negative perception of high fear of failure can significantly hinder social actions. Thereby, Chapter 3 contributes to increasing research on sustainability in entrepreneurship and to the intention-action gap in this context (Lopes et al., 2023; Romero-Colmenares & Reyes-Rodríguez, 2022; Thelken & de Jong, 2020). It further highlights the relevance of perceptual factors in entrepreneurship (Abbasianchavari & Block, 2022; Arenius & Minniti, 2005; Koellinger et al., 2007) and extends this relevance to the sustainability dimension.

## **3.2 Theoretical background**

### **3.2.1 Entrepreneurial intention-action gap**

The intention-action gap is a well-addressed phenomenon in entrepreneurship research (Van Gelderen et al., 2018). Literature shows that entrepreneurial attitudes and intentions are precedents for actions (Kautonen et al., 2013, 2015; Van Gelderen et al., 2015). However not all individuals take the next step to implementation, leading to an often-observed intention-action gap (Bogatyreva et al., 2019; Shirokova et al., 2016; Van Gelderen et al., 2015).

Van Gelderen et al. (2015, 2018) emphasize that moderating factors can significantly influence this gap. For example, aspects such as gender, education or entrepreneurial family background accelerate the translation of intentions into actions (Ngo et al., 2024; Shirokova et al., 2016; Tran et al., 2024). Also, psychological and behavioral characteristics such as control, optimism and resilience play an important role (Bernardus et al., 2020; Chevalier et al., 2022; Van Gelderen et al., 2015). Similar positive effects are observed for self-efficacy and volition (Chevalier et al., 2022; Hechavarria et al., 2012; Nyock Ilouga et al., 2014). Carruthers et al. (2019) additionally point out the positive impact of competencies such as creative problem solving and opportunity recognition. Another positive factor is related to role models indicating

a positive effect of connections to other entrepreneurs (Abbasianchavari & Moritz, 2021; Kong et al., 2020).

Slightly less research is dedicated to negative factors hindering entrepreneurial actions. Harima et al. (2021) and Shirokova et al. (2016) find that the difficulty of entrepreneurial tasks, missing entrepreneurial passion and societal uncertainty can increase the intention-action gap. Further barriers are perceptual constraints such as fear of failure, doubt and action aversion (Van Gelderen et al., 2015).

Overall, we see that research has identified positive as well as negative influence factors. The relevance of the topic suggests its importance to entrepreneurship in general (Kautonen et al., 2013) and for research on sustainability-focused aspects, in particular.

### **3.2.2 Sustainability-related entrepreneurial intention-action gap**

With regard to sustainability, research observes a relationship between values and attitudes leading to corresponding intentions and actions (Kunttu et al., 2017; Lopes et al., 2023; Tesprasit et al., 2020). In this context, the theory of planned behavior (TPB) is often used as a theoretical framework to describe behavioral processes (Ajzen, 1991, Bosnjak et al., 2020). The TPB shows that attitudes, subjective norms and behavioral control precede intentions. The subsequent behavior is jointly based on these intentions as well as behavioral control (Ajzen, 1991, Bosnjak et al., 2020). The usefulness of the theory has been demonstrated in entrepreneurship research showing that attitudes, subjective norms and behavioral control can explain traditional as well as sustainability-focused entrepreneurial processes (Kautonen et al., 2015; Lopes et al., 2023; Van Gelderen et al., 2008).

#### *Intentions*

In particular, the TPB is often used to investigate intentions for sustainability in entrepreneurship. For example, Prabowo et al. (2022) rely on the TPB to predict green intentions. Further research by Lopes et al. (2023) complements the TPB with risk propensity, perceived creativity and proactiveness as predictors for sustainability-focused intentions. The relevance of creativity and proactiveness is also shown by Agu et al. (2021) and Cunha et al. (2022). In the same line, Romero-Colmenares and Reyes-Rodríguez (2022) focus on altruism, self-efficacy and sustainability-related entrepreneurial education while Thelken and de Jong (2020) emphasize future orientation and self-transcendence values (biospheric, altruistic and hedonic values) as positive predictors in the TPB model. In addition, they highlight the positive impact of education and founding experience. The effect of self-efficacy is corroborated by

Tiwari et al. (2017a, 2017b) and Mair and Noboa (2006). These studies further highlight emotional intelligence, empathy and social support as enablers for social entrepreneurial intentions. Finally, the positive impact of altruism and social reward is supported by Kunttu et al. (2017) and Vuorio et al. (2018).

In contrast, research also lines out barriers such as a lack of competency and a lack of resources that can hinder entrepreneurs from developing intentions for sustainability (Shahverdi et al., 2018; Tan et al., 2020). This emphasizes the important role of education, self-efficacy and social support in this context (Kunttu et al., 2017; Tiwari et al., 2017a, 2017b; Vuorio et al., 2018).

### *Actions*

Gast et al. (2017) identify positive drivers of sustainability-focused entrepreneurial actions at the micro, meso and macro-level. The micro-level describes personal values and characteristics such as gender and family background (Gast et al., 2017). Further aspects on this level are ecological awareness, transformative knowledge, education and other resources (Hinderer & Kuckertz, 2022; Martin et al., 2013; Muñoz & Cohen, 2018). Next, the meso-level refers to market and industry related aspects (Gast et al., 2017). Here, for example, Mondal et al. (2023) point out the importance of technological infrastructure to engage in green entrepreneurship and the circular economy. Finally, the macro-level describes political and institutional factors (Gast et al., 2017) such as regional social capital and institutional support that can enhance entrepreneurial actions focused on sustainability (Weiss et al., 2019; Yi, 2021).

In terms of negative factors, research identifies institutional barriers such as bureaucracy, government regulations and a lack of informational and administrative support (Hoogendoorn et al., 2019; Makki et al., 2020). Other barriers can be financial and knowledge-related constraints (Hoogendoorn et al., 2019; Makki et al., 2020; Purwandani & Michaud, 2021). Also, entrepreneurs with a focus on sustainability often experience higher fear of failure and more complex stakeholder relationships than other entrepreneurs (Hoogendoorn et al., 2019; Makki et al., 2020). In this regard, Bischoff (2021) emphasizes the importance of stakeholders and regional culture to create a strong sustainability-focused entrepreneurial ecosystem.

In this context, social actions refer to the awareness for sustainability leading to various actions that intentionally (or indirectly) contribute to addressing social issues, for example through responsible management practices, inclusion and serving communities (Groot & Dankbaar, 2014; Nsereko et al., 2022). More specifically, GEM refers to social actions as steps related to workforce diversification, inclusion of young and unemployed, the use of social enterprises in

the supply chain, and supporting community development (Global Entrepreneurship Monitor, 2025).

### *Intention-action gap*

When examining the link between intentions and actions, the TPB describes intentions as motivational factors that capture how much effort individuals are willing to exert to perform a certain behavior (Ajzen, 1991). The stronger the intentions the more likely is the implementation of corresponding actions (Ajzen, 1991). Such insights are also presented in entrepreneurship research (Gieure et al., 2020; Shinnar et al., 2018). In addition, the TPB is often used to predict sustainability-focused entrepreneurial attitudes and intentions (Kunttu et al., 2017; Lopes et al., 2023; Romero-Colmenares & Reyes-Rodríguez, 2022). Based on these arguments, we consider the TPB as a privileged theory for the understanding of entrepreneurial actions focused on sustainability. We expect a positive link between sustainability-focused intentions and social actions of early-stage entrepreneurs.

**Hypothesis 1:** *Sustainability-focused intentions increase the likelihood for social actions of early-stage entrepreneurs.*

### **3.2.3 Perceptual moderators**

The TPB suggests that next to the intention, also perceived behavioral control influences the performance of subsequent behavior (Ajzen, 1991). This means that intentions will only lead to actions when an individual perceives to have enough control. When individuals believe in their own capabilities and perceive the actions as easily feasible, the implementation is more likely (Ajzen, 1991). Thereby, the TPB highlights the importance of perceptual factors for predicting actions (Ajzen, 1991; Montano & Kasprzyk, 2015).

Entrepreneurship research underlines the importance of perceptual factors by showing that positive perceptions enhance, and negative perceptions hinder entrepreneurial actions (Abbasianchavari & Block, 2022; Arenius & Minniti, 2005; Koellinger et al., 2007). Following this line of research, fear of failure, self-efficacy and knowing other entrepreneurs as role models are incorporated as perceptual moderators in this chapter. These factors are proven to have significant influence on the performance of entrepreneurial actions in general (Abbasianchavari & Block, 2022; Arenius & Minniti, 2005; Koellinger et al., 2007). Consequently, we conclude on their relevance also for sustainability-focused aspects in entrepreneurship requiring closer observation in this chapter.



### *Fear of failure*

Perceptual constraints such as fear of failure and doubt can increase the entrepreneurial intention-action gap (Thompson et al., 2020; Van Gelderen et al., 2015). In this regard, fear of failure influences the choices of which goals are pursued, and which actions are performed (Thompson et al., 2020). Hoogendorn et al. (2019) further point out that sustainability-focused entrepreneurs often experience higher fear of failure than traditional entrepreneurs due to more complex stakeholder relationships. This might shift the focus to more survival-related actions especially in the critical startup phase (Grieco, 2018; Purwandani & Michaud, 2021; Samujh, 2011). As a result, we expect that high fear of failure weakens the focus on sustainability.

**Hypothesis 2:** *The positive effect of sustainability-focused intentions on social actions of early-stage entrepreneurs is weakened by high fear of failure.*

### *Self-efficacy*

Another perceptual factor with high relevance for the entrepreneurial process according to the TPB is self-efficacy (Ajzen, 2002; Hechavarria et al., 2012; Wilson et al., 2007). In line with previous research, we define self-efficacy as confidence in one's own entrepreneurial skills (Shinnar et al., 2014; Wilson et al., 2007). It is shown to be a useful asset when starting a business and it can enhance the translation of entrepreneurial intentions into actions (Camelo-Ordaz et al., 2016; Hechavarria et al., 2012; Wilson et al., 2007). A similar relevance of self-efficacy is demonstrated for sustainability-focused entrepreneurship. Research shows that it can strengthen social entrepreneurial intentions (Tiwari et al., 2017b) as well as the translation of prosocial motivations into the creation of social ventures (Kim et al., 2020). In addition, the positive impact of self-efficacy on venture performance can yield valuable monetary resources to enable social actions (Grieco, 2018). On this basis, we expect that entrepreneurs' self-efficacy shows a positive moderation effect in our analyses.

**Hypothesis 3:** *The positive effect of sustainability-focused intentions on social actions of early-stage entrepreneurs is strengthened by high self-efficacy.*

### *Knowing other entrepreneurs*

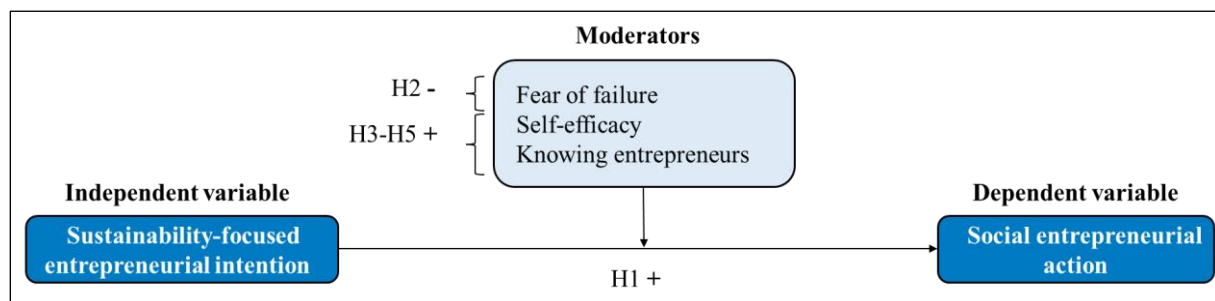
Role models are important enablers for goal-oriented behavior in entrepreneurship due to the wish to imitate them (Abbasiachavari & Moritz, 2021; Fellnhöfer, 2017; Morgenroth et al., 2015; Schmutzler et al., 2019). Role models have a positive impact on entrepreneurial passion and intentions (Fellnhöfer, 2017) as they help individuals to overcome obstacles such as a lack of confidence or a lack of societal support (Schmutzler et al., 2019). Kong et al. (2020) further

emphasize their relevance in reducing the intention-action gap. A similar importance of role models is highlighted for sustainability in entrepreneurship, especially for women entrepreneurs (Ousios & Farooqi, 2017; Vuorio et al., 2018). Thus, we expect that knowing other entrepreneurs provides a valuable orientation for early-stage entrepreneurs in the implementation of social actions.

**Hypothesis 4:** *The positive effect of sustainability-focused intentions on social actions of early-stage entrepreneurs is strengthened by knowing other entrepreneurs as role models.*

The research model is visualized in Figure 3.1.

**Figure 3.1: Research model sustainability-related intention-action gap**



Source: Own illustration.

## 3.3 Data and method

### 3.3.1 Data set

Chapter 3 relies on data from the Global Entrepreneurship Monitor (GEM), specifically from the Adult Population Survey (APS) of 2021. The GEM APS data provides information about entrepreneurial attitudes, perceptions and activities on an individual level across different countries. We restrict the sample to early-stage entrepreneurs and limit the observations with regard to venture size. Based on the definitions of the European Commission, we exclude all ventures with 10 or more employees, thus focusing on micro ventures with up to 9 employees in our sample. Moreover, we restrict the sample with regard to age and include only entrepreneurs between 18 and 64 years. After eliminating missing observations for required variables, the final sample consists of 22,008 entrepreneurs across 44 countries. A detailed overview and description of all variables can be found in Table A3.1 in the appendix. A list of all 44 countries including the respective number of observations is also available in the appendix (Table A3.2).

### 3.3.2 Variable description

#### *Dependent variable*

Since we draw on GEM data, we similarly rely on the GEM definitions for our variables (Global Entrepreneurship Monitor, 2025). Sustainability-focused intentions are defined as the wish to prioritize social and/or ecological impact and social steps as corresponding action. Thus, we use the binary, dependent variable *social entrepreneurial action* to describe if an early-stage entrepreneur has taken steps to maximize the social impact of the venture. Specifically, we use the following item from GEM APS data:

- Social entrepreneurial action as Dummy variable (1=Yes, 0=No): “*Have you taken any steps to maximize the social impact of your business over the past year?*”

Note that the GEM questionnaire includes separate questions about the implementation of social and ecological steps. Our analyses focus on the maximization of social impact and exclude the ecological perspective. The reason is the formulation of the GEM item in terms of taking ecological steps to minimize the ecological impact of the venture. Since early-stage entrepreneurs usually have a small and hardly measurable ecological impact (Fichter et al., 2023), the analyses would not yield meaningful results. Also, our measure for social entrepreneurial action should not be confounded with social entrepreneurship. Our dependent variable does not refer to an all-embracing social venture, but only to the entrepreneurs’ current efforts to integrate social actions.

#### *Independent variable*

As independent variable we use *sustainability-focused entrepreneurial intention*. We approximate this variable by relying on a binary item from the GEM APS data describing if the respondent wishes to prioritize social and/or ecological goals in the venture. Previous research suggests an alignment of goals and intentions in entrepreneurship (Hechavarria et al., 2012; Pham et al., 2021; van Ewijk, 2021) as well as for social aspects (Kunttu et al., 2017). Therefore, sustainability-focused intentions are measured as social and/or ecological goals that outweigh economic profitability and growth. The item is as follows:

- Sustainability-focused entrepreneurial intention as Dummy variable (1=Yes, 0=No): “*You prioritize social and/or environmental impact of your business above profitability or growth.*”

*Control variables*

As control variables, we include several characteristics that are relevant for the entrepreneurial process. For once, we incorporate information on the venture in terms of ownership, export, size and product. Regarding ownership, we measure in two binary variables if the entrepreneur is the *owner of the venture* and if the venture is led by a *team* (Cooper & Dunkelberg, 1986; Harper, 2008). To capture the venture's export activities, we incorporate a binary variable indicating if the venture has *exports* in terms of foreign customers (Hessels & van Stel, 2011). We further include the number of *employees* as a metric variable to account for the size of the venture (Brüderl et al., 1992). As mentioned in Section 3.3.1, we restrict the observations to micro ventures with less than 10 employees according to the definition of the European Commission. With regard to the product, we use an ordinal variable on a scale of zero (0) to three (3) to capture the *newness of the product* (Fiorentino et al., 2021). In addition, we control for the reasons for venture foundation and for demographic aspects. Specifically, we include *family tradition* and *necessity* due to job scarcity as binary variables as potential reasons for venture foundation (Block & Sandner, 2009; Kirkwood, 2012). With regard to demographic aspects, we incorporate the *age* of the respondents as metric variable and *female gender* and *education* as binary variables (Brush et al., 2009; Unger et al., 2011; Zhang & Acs, 2018). The education variable indicates if a respondent has graduate experience, i.e. obtained a university degree (1) and is zero (0) otherwise.

Further, we address opportunity availability and behavioral characteristics in our control variables. *Opportunity availability* is shown to be crucial for the entrepreneurial process and for aspects of sustainability (Arenius & Minniti, 2005; Hanohov & Baldacchino, 2018; Patzelt & Shepherd, 2011; Singh, 2001). It is measured as a binary variable indicating if there are good business opportunities in the respondents' living area in the next six months. Similarly, the behavioral aspects of *proactiveness*, *vision* and *personal innovativeness* can influence entrepreneurial intentions and actions. For instance, proactiveness and creativity can play an important role for entrepreneurial actions as well as for sustainability-focused intentions (Li et al., 2020; Lopes et al., 2023; Tiwari et al., 2017a; Ward, 2004). A similar positive effect is shown for vision which can be understood as long-term career orientation (Frese et al., 2000; Frese & Gielnik, 2023; Waddock & Steckler, 2016). These behavioral characteristics are all measured as binary variables and are captured in GEM data as a self-reported assessment if respondents act on business opportunities when they are spotted (*proactiveness*), if other people would describe the respondent as innovative (*personal innovativeness*) and if all decisions are part of the respondent's long-term career plan (*vision*).

Finally, our regression analyses include binary variables to account for industry and country-related differences. Regarding the *industry*, 21 binary variables are created according to the ISIC Rev. 4 categories. Similarly, binary variables were created for all 44 *countries*. The reference categories are Spain and wholesale/retail trade in all analyses. Compared to the others, these reference categories are the largest in our sample.

### *Moderators*

As moderators we incorporate three perceptual factors of influence for the translation of intentions into actions as outlined in the TPB (Ajzen, 1991). Following previous entrepreneurship research, we rely on the GEM items *fear of failure* (fearfail), *self-efficacy* (suskill) and *knowing other entrepreneurs* (knowent) in our analyses (Abbasianchavari & Block, 2022; Arenius & Minniti, 2005; Koellinger et al., 2007). All perceptual moderators are coded as binary variables indicating if the respondents feel high fear of failure, high confidence in their skills and know at least one other entrepreneur as role model.

## **3.4 Results**

### **3.4.1 Descriptive statistics**

In the first step, we calculated descriptive statistics, correlations and a cross table matching the dependent and independent variable. The correlations are shown in Table A3.3 in the appendix while the results for the descriptive statistics and cross table are presented in Table 3.1 and Table 3.2. The descriptive statistics show that 25 percent (25%) of the entrepreneurs engage in social entrepreneurial actions (Table 3.1). Even more entrepreneurs have sustainability-focused entrepreneurial intentions and would like to prioritize social and/or ecological goals over profitability and growth (36%). The cross table compares these two variables (Table 3.2). We obtained a number of 3,694 respondents with sustainability-focused intentions that have not taken social entrepreneurial actions yet. This confirms previous research and the existence of a sustainability-related intention-action gap (Grieco, 2018; Shepherd et al., 2013).

Further, the descriptive statistics in Table 3.1 show that 43 percent (43%) of the entrepreneurs are female, that ten percent (10%) have obtained graduate experience and that the average age is 37.2 years. Most early-stage ventures in our sample do not have employees (87.45%; not reported in Table 3.1). The industry distribution is highlighted at the bottom of Table 3.1. We see that the majority of entrepreneurs did not state an industry affiliation (47.89%) and that the remaining entrepreneurs mostly operate in wholesale and retail trade (18.06%) followed by

accommodation and food service (6.10%) and manufacturing (5.00%). We further receive insights about our perceptual moderators in Table 3.1. Most entrepreneurs assess their self-efficacy to be high (68%) and know at least one other entrepreneur as role model (67%). Nonetheless, many respondents feel a high fear of failure with regard to their venture (40%).

### 3.4.2 Main results

To test our hypotheses, we apply stepwise logistic regression analyses with interaction effects for the perceptual moderators. The stepwise procedure yields six models that are all outlined in Table 3.3. Model 1 investigates the main effect of intentions on actions with relevant controls. As assumed in our first hypothesis, the results show that sustainability-focused intentions are indeed positively and significantly associated with social actions in entrepreneurship (column M1). Model 2 incorporates the perceptual factors as additional controls and obtains similar results (column M2). Thus, we find support for our first hypothesis that sustainability-focused intentions increase the likelihood for social actions. As a first insight on the perceptual factors, model 2 indicates that fear of failure has a direct, negative association with social actions while self-efficacy and knowing other entrepreneurs have a positive association. These effects are significant, but rather small (column M2).

In models 3 to 5, we include our independent variable, the controls and one perceptual factor as moderator in each model. When looking at model 3, we see that fear of failure shows a significant, negative interaction effect with intentions (column M3). As a conclusion, the positive effect of sustainability-focused intentions on social actions is weakened when entrepreneurs have a high fear of failure, supporting hypothesis 2. Model 4 addresses the interaction effect of the perceptual moderator self-efficacy. We find a significant, positive effect indicating that self-efficacy strengthens the translation of sustainability-focused intentions into social actions (column M4). This result supports hypothesis 3. A significant, positive interaction effect can also be observed for knowing other entrepreneurs in Model 5. This model shows the highest coefficient of all interaction terms, indicating that knowing other entrepreneurs is the most relevant of our moderators (column M5). Hence, having other entrepreneurs as role models can significantly enhance social actions, supporting hypothesis 4. All interaction effects for the moderators based on models 3 to 5 are visualized in graphics in the appendix (Figures A3.1 to A3.3). In a last step, model 6 combines all moderators in one model (column M6). Here the coefficients are slightly lower, but their direction and significance remain as described in the previous models.

Finally, with regard to the controls, we see mostly stable effects across all six models. Especially venture characteristics in terms of ownership, export, product, employees and foundation reason seem to have a significant impact.

**Table 3.1: Descriptive statistics**

Sample	Total n=22,008 respondents over 44 countries				
Variable	mean	median	SD	min	max
<b>Dependent variable</b>					
Social entrepreneurial actions	0.25	0	0.43	0	1
<b>Independent variable</b>					
Sustainability-focused intentions	0.36	0	0.48	0	1
<b>Moderators</b>					
Fear of failure	0.40	0	0.49	0	1
Self-efficacy	0.68	1	0.65	0	1
Knowing other entrepreneurs	0.67	1	0.54	0	1
<b>Control variables</b>					
Ownership of venture	0.56	1	0.50	0	1
Team leading the venture	0.28	0	0.45	0	1
Exports (foreign customers)	0.10	0	0.31	0	1
New product	0.29	0	0.67	0	3
Employees	0.40	0	1.25	0	9
Foundation due to family tradition	0.20	0	0.40	0	1
Necessity foundation (scarce jobs)	0.38	0	0.49	0	1
Female gender	0.43	0	0.50	0	1
Age	37.2	36	11.7	18	64
Education (graduate experience)	0.10	0	0.31	0	1
Opportunity availability	0.59	1	0.49	0	1
Proactiveness	0.25	0	0.43	0	1
Vision	0.45	0	0.50	0	1
Personal innovativeness	0.41	0	0.49	0	1
<b>Industry distribution of early-stage entrepreneurs (47.89% did not indicate any industry)</b>					
<b>Industry (Section of ISIC Rev. 4)</b>	<b>%</b>				
Agriculture, forestry and fishing (A)	2.73%	Financial & insurance activities (K)		0.61%	
Mining and quarrying (B)	0.06%	Real estate activities (L)		0.85%	
Manufacturing (C)	5.00%	Prof., scientific, tech. activities (M)		2.89%	
Electricity, gas, steam, air conditioning (D)	0.08%	Administrative & support service (N)		2.34%	
Water, sewerage, waste, remediation (E)	0.16%	Public admin., defense, social security (O)		0.03%	
Construction (F)	2.29%	Education (P)		1.22%	
Wholesale & retail trade, vehicle repair (G)	18.06%	Human health & social work (Q)		1.18%	
Transportation & storage (H)	1.16%	Arts, entertainment, recreation (R)		0.96%	
Accommodation & food service (I)	6.10%	Other service activities (S)		4.61%	
Information & communication (J)	1.76%	Activities of households (T)		0.01%	
		Activities of extraterritorial bodies (U)		0.00%	

**Table 3.2: Cross table sustainability-related intention-action gap**

Sustainability-focused entrepreneurial intention	Social entrepreneurial action	
	Yes	No
<b>Yes</b>	4,264 entrepreneurs	<b>3,694 entrepreneurs</b>
<b>No</b>	1,185 entrepreneurs	12,865 entrepreneurs

Table 3.3: Logistic regressions for social entrepreneurial actions as dependent variable

Model	M1	M2	M3	M4	M5	M6
Statistics	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)
<b>Independent variable</b>						
Sustainability-focused intention ( <b>H1</b> )	.233 (.007)***	.233 (.007)***	.242 (.008)***	.181 (.013)***	.183 (.012)***	.151 (.016)***
<b>Control variables</b>						
Ownership of venture	.149 (.009)***	.145 (.009)***	.148 (.009)***	.150 (.009)***	.150 (.009)***	.150 (.009)***
Team leading the venture	.012 (.006)*	.011 (.006)	.012 (.006)*	.013 (.006)*	.011 (.006)	.012 (.006)
Exports (foreign customers)	.052 (.009)***	.051 (.009)***	.052 (.009)***	.052 (.009)***	.052 (.009)***	.051 (.009)***
New product	.034 (.004)***	.033 (.004)***	.033 (.004)***	.033 (.004)***	.033 (.004)***	.033 (.004)***
Employees	.030 (.002)***	.030 (.002)***	.030 (.002)***	.030 (.002)***	.029 (.002)***	.029 (.002)***
Foundation due to family tradition	.100 (.007)***	.101 (.007)***	.101 (.007)***	.098 (.007)***	.101 (.007)***	.101 (.007)***
Necessity foundation (scarce jobs)	.049 (.007)***	.049 (.007)***	.050 (.007)***	.048 (.007)***	.048 (.007)***	.049 (.007)***
Age	.000 (.000)	.000 (.000)	.000 (.000)*	.000 (.000)	.000 (.000)*	.000 (.000)
Female gender	-.010 (.005)*	-.008 (.005)	-.009 (.005)	-.009 (.005)	-.009 (.005)	-.008 (.005)
Education (graduate experience)	.025 (.008)**	.022 (.008)**	.025 (.008)**	.024 (.008)**	.023 (.008)**	.023 (.008)**
Opportunity availability	.014 (.005)**	.011 (.005)*	.014 (.005)*	.013 (.005)*	.012 (.005)*	.011 (.005)*
Proactiveness	.023 (.006)***	.020 (.006)**	.021 (.006)**	.022 (.006)**	.022 (.006)***	.019 (.006)**
Vision	.016 (.008)*	.015 (.008)	.017 (.008)*	.015 (.008)	.016 (.008)*	.015 (.008)
Personal innovativeness	.005 (.007)	.002 (.007)	.005 (.007)	.002 (.007)	.004 (.007)	.002 (.007)
Industry & country dummies included	Yes	Yes	Yes	Yes	Yes	Yes
<b>Moderators &amp; Interactions</b>						
Fear of failure		-.011 (.005)*	-.003 (.006)			-.003 (.006)
Self-efficacy		.015 (.006)*		.001 (.007)		.001 (.007)
Knowing other entrepreneurs		.021 (.006)***			.005 (.007)	.005 (.007)
Fear of failure X sust. Intention ( <b>H2</b> )			-.026 (.003)*			-.023 (.010)*
Self-efficacy X sust. Intention ( <b>H3</b> )				.062 (.013)***		.054 (.013)***
Knowing entrepr. X sust. Intention ( <b>H4</b> )					.063 (.012)***	.057 (.012)***
<b>N</b>	22,008	22,008	22,008	22,008	22,008	22,008
<b>Chi2</b>	1,389.13	1,392.62	1,390.63	1,392.88	1,394.65	1,392.62
<b>Pseudo-R2</b> (Nagelkerke)	0.36	0.36	0.36	0.36	0.36	0.36

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001; Reference categories for industry and country are wholesale/retail trade and Spain (largest categories).



## 3.5 Discussion

### 3.5.1 Contributions to theory

The sustainability-related intention-action gap is a critical area of inquiry that seeks to understand why entrepreneurs and ventures may express intentions to engage in social and ecological practices but fail to implement concrete actions. This gap can be analyzed through various theoretical frameworks, particularly the theory of planned behavior (TPB), which posits that intentions and behavioral control drive subsequent actions (Ajzen, 1991; Bosnjak et al., 2020). In this context, research has highlighted the important role of personal values, self-efficacy and education to enhance intentions for sustainability (Agu et al., 2021; Gregori et al., 2024; Joensuu-Salo et al., 2022; Romero-Colmenares & Reyes-Rodríguez, 2022). However, research still lacks a specific view on the translation of sustainability-focused intentions into actions (Lopes et al., 2023; Romero-Colmenares & Reyes-Rodríguez, 2022; Thelken & de Jong, 2020).

By leveraging insights from the TPB, Chapter 3 contributes to the understanding of this important research area. Specifically, our descriptive results highlight the existence of an intention-action gap for sustainability in early-stage entrepreneurship (Grieco, 2018; Kunttu et al., 2017; Shepherd et al., 2013) emphasizing the need for research on this gap (Kautonen et al., 2013). Moreover, we extend the use of the TPB to sustainability-focused entrepreneurial actions. Previous research has only applied the TPB to attitudes and intentions for sustainability (Kunttu et al., 2017; Prabowo et al., 2022; Thelken and de Jong, 2020) but has neglected the connection to subsequent actions (Lopes et al., 2023; Romero-Colmenares & Reyes-Rodríguez, 2022; Thelken and de Jong, 2020). This chapter establishes and empirically tests this relationship, thereby demonstrating that sustainability-focused intentions are important precedents to social actions. It contributes to corresponding literature streams and underlines the usefulness of the TPB to predict sustainability in the entrepreneurial process.

Furthermore, we address the relevance of moderators to ensure the translation of intentions into actions (Ajzen, 1991; Arenius & Minniti, 2005; Koellinger et al., 2007; Montano & Kasprzyk, 2015). We find a negative interaction effect for fear of failure and a positive one for positive perceptions such as self-efficacy and knowing other entrepreneurs as role models. This underlines the importance of perceptions for the sustainability-focused entrepreneurial process and emphasizes the need to understand these perceptions to encourage social actions (Hanohov & Baldacchino, 2018; Kim et al., 2020; Van Gelderen et al., 2015). Our findings align with prior research indicating a similar influence of perceptions in different entrepreneurship

disciplines (Ajzen, 1991; Chevalier et al., 2022; Van Gelderen et al., 2015, 2018). In this regard, our study suggests that fostering a strong alignment between personal values, entrepreneurial goals and positive perceptions can help to bridge the sustainability-related intention-action gap in entrepreneurship.

Overall, our study contributes to research at the intersection of sustainability and entrepreneurship by shedding light on how early-stage entrepreneurs integrate sustainability issues in their strategic reflection and decision making.

### **3.5.2 Contributions to practice**

With regard to business practices and public policies, the sustainability-related intention-action gap represents a critical challenge for fostering sustainable development. Based on our results, we can derive several recommendations for entrepreneurs as well as policy makers to address this challenge.

First, it is crucial to consider psychological barriers that might restrict entrepreneurial actions focused on sustainability. In this regard, fear of failure is a first-hand restraining factor that hinders entrepreneurs from acting upon sustainability-focused intentions. Therefore, individuals that recently entered entrepreneurship should carefully assess if they experience any negative perceptions and if these perceptions alter their business decisions, especially regarding social aspects. Similarly, policy makers should ensure that new entrepreneurs are not discouraged from social actions by fear of failure. Such a negative perception can arise from internal and external sources including also the entrepreneurial context as a potential trigger (Cacciotti et al., 2016). A complex institutional environment with high bureaucracy and high regulatory and legal demands might increase entrepreneurs' fear of failure and shift the focus from sustainability to economic actions and survival-focused strategies. Thus, policy makers should try to reduce institutional barriers to avoid negative implications.

Moreover, positive perceptions are crucial for entrepreneurs to incorporate social actions into a venture. To foster these positive perceptions, entrepreneurs can rely on coping strategies as well as external support. For example, target-oriented and practical training is an efficient way to improve self-efficacy (Gielnik et al., 2020; Piperopoulos & Dimov, 2015). Entrepreneurs can further use their social capital to identify useful role models and experts in their network (Bosma et al., 2012; Klyver & Grant, 2010). In this regard, fostering a supportive entrepreneurial environment is vital. Policy makers should rely on initiatives aimed at boosting the entrepreneurs' confidence in their ability to address sustainability-focused aspects. As an

example, access to education and especially to practically oriented training can enhance self-efficacy (Gielnik et al., 2020; Piperopoulos & Dimov, 2015). This means that practical experience could provide entrepreneurs with the confidence and expertise required to act on sustainability-focused intentions. In addition, mentorship programs and networking opportunities can encourage entrepreneurs to implement social actions. In this context, policy makers can promote entrepreneurial associations and related events to facilitate the expansion of networks.

In conclusion, bridging the sustainability-related intention-action gap requires a multifaceted approach including the reduction of psychological barriers as well as the reinforcement of positive perceptions through entrepreneurial education, networks and a supportive institutional environment. By adhering to these recommendations, policy makers and institutions can better adapt to the needs of future entrepreneurs to strengthen the implementation of sustainability-focused actions in the early-stage entrepreneurial process.

### **3.5.3 Limitations and future research**

Since we rely on the 2021 GEM data, our results are broadly applicable to 44 countries worldwide. However, we cannot control for all potential country-related effects in our analyses. Even after including country dummies as controls, there might be further differences related to the institutional or cultural context that we cannot fully address. Future research could replicate our results for specific countries and contextual settings. In addition, our logistic regression analyses do not allow us to draw causal conclusions. In this regard, further research would profit from more sophisticated analytical techniques such as panel data or time series analyses to investigate causality.

Also, this chapter has limitations regarding the incorporated variables. We focus on three perceptual moderators that are shown to be relevant for the entrepreneurial process (Abbasianchavari & Block, 2022; Arenius & Minniti, 2005; Koellinger et al., 2007). Additionally, other perceptions might influence the sustainability-related intention-action gap. Here, future research could shed light on other relevant motivations, beliefs and emotions. Further, note that our dependent variable only describes social entrepreneurial actions in terms of having taken steps to maximize the venture's social impact. We do not speak about social entrepreneurship or social ventures that can be fully characterized as such. Instead, our dependent variable refers to the entrepreneurs' current efforts to integrate social actions in any type of entrepreneurial venture.

We further omit the perspective on ecological aspects because the ventures of new entrepreneurs often only have a small and hardly measurable ecological impact (Fichter et al., 2023) that could be reduced by ecological actions. Future research would therefore benefit from detailed analyses of the intention-action gap for the specific types of sustainable, social and ecological entrepreneurship. In this regard, we agree with Kautonen et al. (2013) on the importance of a differentiated observation of the intention-action gap according to the type of entrepreneurship.

### **3.6 Conclusion**

Chapter 3 highlights the sustainability-related intention-action gap in entrepreneurship and the importance of perceptual factors in this context. In line with our theoretical reasoning from the theory of planned behavior, our analyses point out the positive link between sustainability-focused intentions and social actions. The positive moderation effect of self-efficacy and knowing other entrepreneurs underlines the importance of positive perceptions to enhance sustainability-focused behavior in early-stage entrepreneurship. Since this chapter is one of the first to connect sustainability-focused intentions with subsequent actions, there is still a strong need for future research on this topic. In today's challenging entrepreneurial environment with severe worldwide effects of social injustice and climate change, it becomes even more important that future research enhances our knowledge about the sustainability-related intention-action gap to increase entrepreneurial actions focused on sustainability.

## Chapter 4

# Investment decisions by the self-employed: The influence of decreases in well-being<sup>8</sup>

*Despite substantial research on well-being in self-employment, we know little about the specific consequences for the venture, especially when well-being decreases. Drawing on a sample of 6,955 self-employed individuals living in Germany during the COVID-19 pandemic, this chapter builds on two complementary behavioral perspectives to predict how reductions in financial and non-financial well-being relate to investments in venture development. Our results show that decreasing financial well-being is positively related to time investments. This finding provides support for a performance feedback perspective where negative performance, in terms of reduced financial well-being, might induce higher search efforts to improve the business situation. Moreover, we also observe that reductions in non-financial well-being are negatively related to both time and monetary investments. This supports a broadening-and-build perspective in that negative psychological experiences, in terms of reduced non-financial well-being, can narrow the thought-action repertoire, thus hindering resource deployment. The subsequent policy and managerial implications of reduced well-being on investment behavior are discussed.*

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<sup>8</sup> Chapter 4 is based on an article in joint authorship that is planned to be published. The article is submitted in a similar form to a scientific journal but there is no feedback or decision yet.

## 4.1 Introduction

Self-employed individuals face many unexpected changes alongside substantial business risks and uncertainty in their work environment (Belitski et al., 2022; Zahra, 2021). These impairments can also affect personal well-being, since work-related factors and private life are often closely linked in self-employment (Backman et al., 2023; Caliendo et al., 2023a; Torrès et al., 2022). The importance of well-being in self-employment is widely recognized and its antecedents are extensively studied (Stephan, 2018; Wiklund et al., 2019). Existing literature mainly concentrates on the influence of static states of high or low well-being (Stephan, 2018). In this regard, research lacks insights about the consequences of well-being, in particular, the lasting consequences of short-term fluctuations in well-being for the venture (Stephan, 2018; Stephan et al., 2022). This aspect is gaining increasing relevance because, in an uncertain world, well-being is dynamic and fluctuates over time. The affected self-employed must learn to cope with reductions in well-being (White & Gupta, 2020). Thus, the importance of well-being in self-employment can only be fully understood when recognizing the dynamic nature of well-being and the consequences of fluctuations in well-being for venture-related decision making. Therefore, this chapter investigates the following research question:

*How do reductions in well-being influence the subsequent behavior of the self-employed in terms of venture-related investment decisions?*

For our analyses, we use a dataset of 6,955 self-employed in Germany during the COVID-19 crisis. The economic consequences of COVID-19 negatively affected the well-being of the majority of the self-employed (Caliendo et al., 2023a). We measure the extent of this shock on their well-being and subsequently, its effect on venture-related time and monetary investments (Cassar & Friedman, 2009). Moreover, we differentiate between financial and non-financial well-being since prior research suggests distinct motivational roles of these two aspects of well-being (Croson & Minniti, 2012; Murnieks et al., 2020). Our hypotheses are derived from two complementary behavioral perspectives -- the performance feedback perspective (Alexy et al., 2016; Greve, 2003) and the broadening-and-build perspective (Fredrickson, 1998, 2001, 2004).

In line with the performance feedback perspective, we find that reductions in financial well-being are positively related to time investments. Thus, reductions in financial well-being represent performance feedback leading to increased search efforts and time investments in venture development (Alexy et al., 2016; Greve, 2003). However, this reasoning does not hold for monetary investments, which are not significantly related to reduced financial well-being.

We further find that reductions in non-financial well-being are negatively related to time and monetary investments, supporting our reasoning from the broadening-and-build perspective that reductions in non-financial well-being are a negative psychological experience (Hmieleski & Carr, 2007; Nikolaev et al., 2020; Shepherd et al., 2019), which can narrow the thought-action repertoire of the self-employed. This, in turn, reduces their cognitive abilities (Fredrickson, 1998, 2001, 2004) and their likelihood to commit resources to their venture (Cohn & Fredrickson, 2006).

With our findings, we contribute to research about well-being in self-employment. So far, existing research mainly focuses on the antecedents of well-being (Stephan, 2018). We follow calls in the literature to also investigate the consequences of well-being that may have lasting effects on the further venture development (Shepherd et al., 2019; Stephan, 2018; Wiklund et al., 2019). By using reasonings from two complementary behavioral perspectives, we enhance our understanding of why financial and non-financial reductions in well-being influence time and monetary investments into venture development. Surprisingly, we identify opposing relationships of how reductions in financial and non-financial well-being influence investments in venture development. Moreover, this relationship differs between time and monetary investments. Our research underlines that well-being is a multifaceted construct comprising both financial and non-financial aspects with unique and qualitatively different implications for the self-employed and their ventures. Thereby, we confirm prior research that distinguishes between financial and non-financial utilities and motivations in self-employment (Croson & Minniti, 2012; Dawson, 2017; Murnieks et al., 2020). By using the COVID-19 pandemic as an unexpected external shock, we further contribute to research about well-being during crisis situations (Batjargal et al., 2023; Zahra, 2021). Finally, our analyses yield practical insights for the self-employed and policy makers. We show that reductions in well-being not only have consequences for the self-employed but also for the development of their ventures, with implications for ecosystems and regional innovation.

The following sections start with a view on the relevant literature and the theoretical background. Next, information is provided on data, method and results. The chapter finally terminates with a discussion and conclusion.

## 4.2 Theoretical background

### 4.2.1 Consequences of decreases in well-being of self-employed

Well-being in the context of self-employment refers to the “experience of satisfaction, positive affect, infrequent negative affect and psychological functioning in relation to developing, starting, growing and running an entrepreneurial venture” (Wiklund et al., 2019, p. 579). In our analyses, we focus on the subjective perception of occupational well-being in self-employment, which is based on the job satisfaction of the self-employed and which we decompose into financial and non-financial aspects. Financial motivation plays an important role in the decision to start and to run a venture among the self-employed (Alstete, 2008; Chakraborty et al., 2019; Dawson, 2017; Murnieks et al., 2020). For instance, substantial revenues and earnings (above expectations) can be seen as an appreciation of their work, which contributes to overall well-being (Chakraborty et al., 2019). Non-financial aspects are shown to be of similar importance for self-employment, particularly for intrinsically motivated individuals (Caliendo et al., 2023b), sometimes even outweighing financial aspects (Amit et al., 2001; Croson & Minniti, 2012; Gódány et al., 2021; Murnieks et al., 2020).

These non-financial aspects of self-employment, such as procedural utilities, pursuing innovation, or being independent, regularly lead to increases in well-being (Benz & Frey, 2008a, 2008b; Croson & Minniti, 2012; Nikolova, 2019). Thus, most studies consider self-employment as a source of well-being even though this can also involve stressors such as a high workload and uncertainty (Stephan et al., 2022; Wiklund et al., 2019). In this regard, research already identifies many *antecedents* for well-being in self-employment (Huppert, 2009; Stephan, 2018; Wiklund et al., 2019).

With regard to the *consequences* of well-being in self-employment, research predominantly focuses on positive outcomes such as better opportunity recognition, higher persistence and higher performance for high levels of well-being (Gorgievski et al., 2010, 2014; Marshall et al., 2020; Patel & Thatcher, 2014; Usai et al., 2020). Conversely, low levels of well-being can negatively affect venture performance (Johnson et al., 2015). In this regard, low well-being can reduce cognitive capabilities and resources (Fredrickson, 2004; Fredrickson & Joiner, 2002), leading to a short-term focus on immediate tasks and the neglect of long-term considerations (Cohn & Fredrickson, 2006; Foo et al., 2009; Fredrickson, 2004). It can further hinder goal achievement (Laguna et al., 2016) and impair opportunity recognition (Gielnik et al., 2012; Huppert, 2009). Frustration can further increase the perceived stress level at work (Örtqvist &



Wincent, 2010), supporting the idea that low well-being has a resource-depleting effect (Stephan, 2018).

We identify mostly negative consequences of low well-being for the affected self-employed and their ventures (Stephan, 2018; Stephan et al., 2022). However, these insights from the current literature only focus on the static state of low well-being. We know surprisingly little about the consequences of fluctuations – especially reductions – in well-being on self-employment (see also Stephan, 2018). With our research, we aim to increase the understanding of venture-related consequences of (temporal) reductions in well-being.

As well-being is a multifaceted construct comprising both financial and non-financial aspects, prior research proposes to distinguish between financial and non-financial utilities and motivations in self-employment (Croson & Minniti, 2012). Therefore, we use two established behavioral perspectives to derive hypotheses about the relationship between reductions in well-being in self-employment and venture investments. The two perspectives complement each other: the performance feedback perspective concerns reductions in *financial* well-being, where individuals make subjective evaluations about the extent they will be able to achieve their own aims (possibly set before an external shock) and decide on how to react. The broadening-and-build perspective is about reductions in *non-financial* well-being, arguing that experiences and emotions may influence individual behavior and decision making (Fredrickson, 1998, 2001, 2004).

#### **4.2.2 Performance feedback perspective**

Drawing on the performance feedback perspective, which itself is based on the behavioral theory of the firm, we posit that negative performance feedback has implications for individuals' business decisions and behavior (Argote & Greve, 2007; Cyert & March, 1963; Greve, 2003). Decision makers in (established) firms set aspiration levels that determine their desired or expected returns (Argote & Greve, 2007; Cyert & March, 1963; Greve, 2003). When these aspirations are not met, the negative performance feedback signals that changes are necessary, with the decision makers subsequently initiating additional search efforts and investments to remedy the business situation (Alexy et al., 2016; Argote & Greve, 2007; Greve, 2003). Similar to decision makers in large and established firms, the self-employed also set aspiration levels and rely on performance feedback for their decisions (Hessels et al., 2008; Wennberg & Holmquist, 2008). They specifically set expectations about their financial returns

because their living often crucially depends on their income from self-employment (Gimeno et al., 1997).

Reductions in financial well-being mean that the returns from self-employment are lower than what the individual self-employed had initially aimed for. Thus, as the performance of the venture is below expectations, negative feedback for the individual is created (Argote & Greve, 2007; Greve, 2003). In such a case of financial underperformance, self-employed individuals assess their situation by determining whether expectations can be met again in the future (Hyytinen et al., 2014; Khelil, 2016). This assessment influences the effort and resource expenditure in terms of investments (Hyytinen et al., 2014; Ucbasaran et al., 2010). Ultimately, this determines whether the venture survives or not (Hyytinen et al., 2014; Ucbasaran et al., 2010). If the self-employed expect to be able to realize their aspiration levels due to investments, they will eventually be motivated to make these investments to save or further develop their ventures (Ayala & Manzano, 2014; Koellinger et al., 2007; Li et al., 2021).

In case of an exogenous shock, the negative performance feedback is caused by external conditions. Even if a self-employed individual is neither responsible for nor in control of such negative external shocks, they must become active if they do not expect that the pre-crisis conditions will be externally restored (Ayala & Manzano, 2014; Koellinger et al., 2007; Li et al., 2021). In this regard, affected individuals are likely to react to a crisis by adapting their venture and by pivoting the business model (Nguyen et al., 2024). Hence, we expect the self-employed to react to underperformance and negative performance feedback by initiating higher search efforts and investments to make the necessary adaptations to the venture (Greve, 2003). This leads to the following hypothesis:

**Hypothesis 1a:** *Reductions in financial well-being increase the likelihood that self-employed invest into venture development.*

Regarding the specific investments of time and money, the literature suggests that individuals do not always distribute these different investments in an equal manner (Aeon & Aguinis, 2017; Soman, 2001; Thaler, 1999). In this context, individuals are often willing to invest more time and other non-financial resources to save money, even if the theoretical value of the time and non-financial resource investment exceeds the amount of monetary savings (Thaler, 1999). This can lead to an escalation of time commitment (Aeon & Aguinis, 2017). Therefore, we assume that the self-employed will invest especially high amounts of time into venture development when their financial well-being suffers due to an exogenous shock. We also expect that the self-

employed make certain monetary investments in this situation. However, the higher valuation of monetary resources and possible financial constraints during the crisis point to a higher importance of time investments as compared to monetary investments. The following hypothesis is formulated:

**Hypothesis 1b:** *The increased likelihood to make investments due to reductions in financial well-being is higher for time than for monetary investments.*

### 4.2.3 Broadening-and-build perspective

For our second set of hypotheses, we draw on the broadening-and-build perspective. While positivity broadens an individual's thought-action repertoire, leading to long-term benefits such as physical, intellectual, social and psychological resources, negativity narrows an individual's perspective and diminishes these cognitive resources (Fredrickson, 1998, 2001, 2004). Negativity further enhances an individual's focus on the short-term perspective, hence neglecting long-term goals and resource commitment (Cohn & Fredrickson, 2006).

Reductions in non-financial well-being are psychologically negative experiences that go along with negative feelings. This can make it difficult for individuals to draw on their cognitive resources and make targeted, long-term decisions (Cohn & Fredrickson, 2006). Specifically, in the case of a negative exogenous shock, a narrow cognitive perspective due to reduced non-financial well-being may prevent the self-employed from addressing and improving their situation. For instance, they have lower coping abilities and a lower likelihood to engage in creative innovation (Cohn & Fredrickson, 2006; Grözing et al., 2022). Moreover, the perception of options for action can suffer and the self-employed may risk overlooking important business opportunities (Fredrickson, 2004). In combination with the increasing short-term focus, it becomes less likely that the self-employed take action and commit resources to their venture when their non-financial well-being suffers (Cohn & Fredrickson, 2006). The following hypothesis should hold:

**Hypothesis 2a:** *Reductions in non-financial well-being decrease the likelihood that the self-employed invest in venture development.*

When looking at the distinction between time and monetary investments, existing research once again suggests that individuals often tend to commit rather time instead of money (Aeon & Aguinis, 2017; Soman, 2001; Thaler, 1999). Especially during a crisis, where the outcome of an investment is uncertain, individuals should be even more motivated to draw on non-financial resources and retain their financial ones. Thus, when expecting a negative relationship between

reductions in non-financial well-being and investments into venture development, the self-employed should still be more likely to commit time than money. This means that the negative relationship should be weaker for time than for monetary investments, leading to the following hypothesis:

**Hypothesis 2b:** *The reduced likelihood to make investments due to reductions in non-financial well-being is lower for time than for monetary investments.*

## 4.3 Data

### 4.3.1 Data set

We collected data from 11,937 self-employed individuals in Germany via an online survey in the second year of the COVID-19 pandemic between May and June 2021. Our survey provides information about the ventures of the respondents and about their situation during the pandemic.<sup>9</sup> In line with our broad definition, we obtained data from self-employed individuals with various backgrounds, comprising self-employed with employees as well as solo self-employed in full- and part-time. However, the data does not include gig workers and we focus only on full-time self-employed for our analyses. Part-time self-employed are excluded (N=2,039), since their level of well-being might also depend on their other job(s). We further exclude respondents with missing information on relevant variables (N=2,943), resulting in a final sample of 6,955 full-time self-employed.

### 4.3.2 Variable description

#### *Dependent variable*

Our dependent variable for hypotheses H1a and H2a is *investments into venture development*, calculated as the mean of time and monetary investments into venture development. To further test hypotheses H1b and H2b, we extend the analysis by separately considering *time* and *monetary investments* as dependent variables. To collect this information, the respondents were asked about their agreement with the following two statements:

- a) “During the pandemic I have *invested* a significant amount of *time* in the *further development* of my venture.”

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<sup>9</sup> The Association of Founders and Self-employed in Germany (“Verband der Gründer und Selbstständigen Deutschland”, VDSG) distributed the survey among the self-employed population. The VGSD approached its members with personalized e-mails, included information about the survey in their newsletters and contacted other professional associations for the self-employed in Germany.

- b) “During the pandemic I have *invested* a significant amount of *money* in the *further development* of my venture.”

Possible answers range from -3 (does not apply at all) to +3 (fully applies) on a 7-Point Likert scale. To facilitate the interpretation of the results, we recoded all dependent variables into three categories: Disagreement with values from -3 to -1 is subsumed under one category (-1) indicating no or low investments. Neutral answers with the value 0 remain as such. Agreement with values from 1 to 3 is summarized as the third category (+1).

### *Independent variables*

For the independent variable, we use *reductions in occupational well-being*, which we decompose into *reductions in financial well-being* and *reductions in non-financial well-being*. Occupational well-being is measured by job satisfaction. It combines the feelings and beliefs of individuals towards their current job, which means how well this job provides for things considered important (Akehurst et al., 2009). Job satisfaction is particularly relevant for the measurement of well-being in self-employment because of the close connection between the self-employed and their work (Backman et al., 2023; Caliendo et al., 2023a; Torrès et al., 2022). Therefore, research often relies on job satisfaction as an indicator for well-being (Abreu et al., 2019; Kwon & Sohn, 2017; Lanivich et al., 2021; Stephan, 2018; Stephan et al., 2022). In the survey, respondents were asked how satisfied they are with their self-employment activity before and during COVID-19. Answers range on an 11-Point Likert scale from 0 (very dissatisfied) to 10 (very satisfied).<sup>10</sup>

We further use the self-reported satisfaction of the self-employed with their income as an independent variable, which we denote as financial well-being. Brüggen et al. (2017, p. 229) define financial well-being as an individual’s “perception of being able to sustain the current and anticipated desired living standard and financial freedom.” This emphasizes the importance of using a subjective approach over objective measures. In the questionnaire, respondents were asked how satisfied they are with their income before and during COVID-19 on an 11-Point Likert scale from 0 (very dissatisfied) to 10 (very satisfied).<sup>11</sup>

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<sup>10</sup> The variable job satisfaction is measured with a single item in the questionnaire. The validity and advantages of a single item measure for job satisfaction are demonstrated by both Wanous et al. (1997) and Nagy (2002).

<sup>11</sup> Previous studies about well-being and satisfaction in self-employment use self-reported single-item measures to capture the overall, subjective feelings of the respondent, demonstrating their effectiveness (Abreu et al., 2019; Brüggen et al., 2017; Kibler et al., 2019; Van der Zwan et al., 2018). Therefore, we similarly rely on self-reported, single-item measures for these variables.

We compute crisis-related changes in occupational and financial well-being by taking the difference between the well-being levels before and during COVID-19. The data shows that a substantial share of the self-employed experienced a reduction in well-being following the outbreak of the pandemic: 71 percent of the surveyed self-employed experienced lower occupational well-being and 73 percent reported lower financial well-being as before the crisis. Therefore, we focus on reductions in well-being and construct a binary variable indicating reductions in occupational well-being (yes/no) and a binary variable for reductions in financial well-being (yes/no). The measure for non-financial well-being is obtained by residualizing occupational well-being from financial well-being. We explain the decomposition approach and how we define non-financial well-being in Section 4.4.1.

#### *Control variables*

We control for several characteristics that are relevant for decision making in self-employment. First, we control for personal factors, including *business experience*, *age*, *gender* and *education*. Existing studies suggest that the time allocated to work can decrease with age (Levesque & Minniti, 2006; Juster & Stafford, 1991) and that women are disproportionately more affected and constrained by the COVID-19 crisis (Adams-Prassel et al., 2020; Graeber et al., 2021; Kalenkoski & Pabilonia, 2022; Yue & Cowling, 2021). Regarding education and business experience, research shows that cognitive abilities matter for adapting to new circumstances in times of crises (Berry et al., 2006; Stasielowicz, 2020). Thus, more educated and experienced self-employed with higher cognitive abilities could find it easier to adjust their business strategies after the outbreak of a crisis, which might also be reflected in their investment behavior (Block et al., 2022a).

We further include business characteristics that are shown to be relevant for decision making in self-employment, such as the *size of the venture*, *the existence of employees*, *liquidity*, *industry*, *exports* and *the venture's digitalization level before the crisis*. Highly digitalized ventures (Bertschek et al., 2024) and ventures that export to foreign markets (Eppinger et al., 2018) prove to be more resilient in times of crisis and therefore, may have less need to invest in venture development. Furthermore, investment opportunities may vary between industries because adjustments of the business according to the COVID-19 restrictions were easier in some industries (e.g., retail, consulting, coaching and training) than in other industries (e.g., personal service activities, accommodation). Thus, we consider 15 different *industries*, taking

the cultural and arts industry as the reference group.<sup>12</sup> *Employees* are measured as dummy variable set to one if the self-employed has employees, the *size of the venture* is measured by operational expenses and *liquidity* denotes the estimated time until insolvency. Our measure for *digitalization* averages over the self-reported digitalization levels in the fields “products and services,” “internal processes,” and “customer relations and distribution,” ranging from 1 (very low) to 7 (very high). *Exporting* is a binary variable (yes/no).

Finally, we include *financial* and *non-financial well-being before COVID* as control variables since variations in well-being might depend on their initial states. Self-employed, who were more satisfied before the pandemic (Nikolova, 2019), are more likely to experience strong reductions in well-being during the pandemic (Caliendo et al., 2023a). In addition, we control for the *level of optimism before the crisis*, the *internal locus of control before the crisis* and the *level of occupational risk tolerance before the crisis*.<sup>13</sup> We incorporate these psychological aspects into our model since research points out their effect on decision making in self-employment, including investment decisions (Brundin & Gustafsson, 2013; Caliendo et al., 2014, 2022; Kihlstrom & Laffont, 1979; Schwenk, 1988; Verheul et al., 2009). A full description of all variables and measurements used in the empirical analysis is provided in Table A4.1 in the appendix; Table A4.2 lists the correlations.

### 4.3.3 Descriptive statistics

Table A4.3 in the appendix summarizes descriptive statistics. After the outbreak of the crisis, the self-employed made certain investments into venture development. The mean of 0.206 and the median of 1 of our dependent variable shows that a higher share of the self-employed made high investments during the crisis as compared to no or low investments. The specific differences between time and monetary investments are shown in more detail in Table A4.4 in the appendix. Concerning the impact of the crisis, more than 70 percent of the self-employed in our sample faced revenue declines of more than 25 percent due to COVID-19 in 2020 or expect a revenue decline of this magnitude in 2021.<sup>14</sup> Further analyses of the data show that 45

<sup>12</sup> Cultural and arts professionals constitute the largest group of self-employed in our sample and were strongly hit by the COVID-19 crisis (see Block et al., 2022b). For these reasons, we consider them a suitable reference group to study the link between reductions in well-being and investments during an economic crisis.

<sup>13</sup> As for the variables for internal locus of control and occupational risk tolerance, we follow Dohmen et al. (2011) and Nieß and Biemann (2014), who test and find support for the behavioral relevance of single item measures; for instance, risk tolerance in a field experiment. See also Goebel et al. (2019), who validated and included further single items to capture behavioral variables in the German Socio-Economic Panel (SOEP).

<sup>14</sup> Representative studies for Germany based on SOEP-CoV show that about 60 percent of the self-employed suffered from income losses during the first wave of the pandemic between April and July 2020 (Kritikos et al., 2020). We obtain slightly higher numbers, which could be due to the fact that our survey oversamples self-

percent of them lost even more than half of their revenue by the end of 2020 as compared to the pre-crisis year 2019 (not displayed).<sup>15</sup>

Comparing the measures before and during the crisis, we find that the levels of optimism and well-being are higher among the self-employed before the crisis with average scores in the upper third of the Likert scale. This is in line with our expectations and the findings from prior literature (Binder & Coad, 2013; Lange, 2012; Blanchflower, 2000; Koudstaal et al., 2015). During the crisis, around 79 percent faced reductions in at least one component of well-being, with an average reduction of 3.2 points in occupational well-being and 3.5 points in financial well-being (not listed). Moreover, the majority of the self-employed had been running their business for more than six years, were older than 45, completed a university degree, had a relatively high risk tolerance and a relatively high internal locus of control before the crisis. About 47 percent of the respondents were female. The distribution of industries is quite diverse, with most of the self-employed coming from the cultural and arts industry (16%), the IT sector (11%) and consulting (10%). About 41 percent of the self-employed come from industries strongly hit by the crisis, such as events, restaurants, traveling, cultural activities, hotels and point-of-sale retail.

## 4.4 Method and results

### 4.4.1 Method

To estimate the relationship between well-being and investments, we proceed in two steps. First, we decompose reductions in occupational well-being into *reductions in financial well-being* and *reductions in non-financial well-being* applying the method of residualization (Bönte et al., 2017; García et al., 2020). Following Bönte et al. (2017), we regress (reductions in) occupational well-being on (reductions in) financial well-being as

$$occupationalWB_i = \alpha + \beta \widetilde{financialWB}_i + \epsilon_i, \quad (1)$$

where both  $occupationalWB_i$  and  $\widetilde{financialWB}_i$  are dummy variables equal to 1 if the individual reports a reduction and 0 otherwise. By construction,  $\widetilde{financialWB}_i$  and the error

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employed from cultural activities and took place in summer 2021, when the pandemic was more advanced and containment measures had become more diverse.

<sup>15</sup> This clarifies that not all self-employed individuals were negatively affected by the pandemic and faced decreases in their well-being. For instance, there were self-employed individuals who were able to gain out of the pandemic or whose well-being might have remained stable or has been improving. In this chapter we will, however, focus only on those who faced decreasing well-being due to this external shock.



term  $\epsilon_i$  are orthogonal to each other. Exploiting this relationship, we define  $nonfinancialWB_i = \hat{a} + \hat{\epsilon}_i$  and rescale  $financialWB_i$  by  $\hat{\beta}$  to obtain the decomposition

$$occupationalWB_i = financialWB_i + nonfinancialWB_i. \quad (2)$$

In a second step, we regress investments into the venture on reductions in well-being using ordered logistic regression analysis (Equations (3), (4) and (5)).

$$Overall\ investments_i = \delta_1 + \gamma_1 financialWB_i + \varphi_1 nonfinancialWB_i + \theta_1 controls_i + u_{1i} \quad (3)$$

$$Time\ investments_i = \delta_2 + \gamma_2 financialWB_i + \varphi_2 nonfinancialWB_i + \theta_2 controls_i + u_{2i} \quad (4)$$

$$Monetary\ investments_i = \delta_3 + \gamma_3 financialWB_i + \varphi_3 nonfinancialWB_i + \theta_3 controls_i + u_{3i} \quad (5)$$

The term  $controls_i$  refers to the set of control variables described in Section 4.3.2 and  $\theta_1$  denotes the corresponding vector of coefficients. As the decision to invest time and money into the ventures might be correlated, we estimate both equations simultaneously in a seemingly unrelated regression (SUR) framework. Furthermore, the SUR framework allows us to explicitly test H1b and H2b about the differences regarding time and monetary investments.

## 4.4.2 Results

### *Overall investments*

We start our analysis by examining the effect of reductions in well-being on overall investments into venture development using a joint variable for investments based on the mean between time and monetary investments (see Section 4.3.2). The first regression provides a baseline model that only includes the controls while the second model adds financial and non-financial well-being (full model). The results of the stepwise ordered logistic regression analyses are displayed in Table 4.1. Our interpretations always refer to the full model (column 2). Regarding reductions in *financial* well-being, Table 4.1 shows a positive, albeit insignificant, association with investments. Thus, we cannot support H1a when time and monetary investments are considered jointly. Reductions in *non-financial* well-being, on the other hand, show a significant negative association with investments, which supports H2a. Since the logistic regression is non-linear, we cannot interpret the coefficients' magnitude as changes in probabilities. To facilitate the understanding of the results, we present the marginal effects in Table 4.2. Reductions in non-financial well-being are associated with a decrease of 6.6 percentage points in the probability that the self-employed invested into venture development.

**Table 4.1: Reductions in well-being and relationship with investments**

Column	(1)	(2)
Statistic	Coeff. (SE)	Coeff. (SE)
Dependent variable	Investments	Investments
<b>Independent variables</b>		
Reductions in financial well-being (H1a)		.122 (.103)
Reductions in non-financial well-being (H2a)		-.291 (.073)***
<b>Control variables</b>		
Optimism before COVID	.129 (.027)***	.128 (.027)***
Risk tolerance before COVID	.173 (.017)***	.174 (.017)***
Internal Locus of control before COVID	.010 (.026)	.008 (.026)
Digitalization before COVID	.018 (.016)	.018 (.016)
Export sales	.204 (.052)***	.205 (.052)***
Female gender	.225 (.053)***	.227 (.053)***
Employees (yes/no)	.246 (.087)**	.246 (.087)**
More than 25 percent revenue decline	.066 (.060)	.047 (.070)
Venture size	.108 (.013)***	.110 (.013)***
Liquidity	-.002 (.008)	-.002 (.008)
Business Experience	-.052 (.018)**	-.052 (.018)**
Age of self-employed	-.131 (.040)**	-.133 (.040)**
Education	.060 (.032)	.062 (.032)
Financial well-being before COVID	-.095 (.023)***	-.099 (.024)***
Non-financial well-being before COVID	.023 (.019)	.032 (.019)
Industry fixed effects	Yes	Yes
<b>Observations</b>	6,955	6,955
<b>Chi<sup>2</sup></b>	695.59	714.47
<b>Pseudo-R<sup>2</sup></b>	0.05	0.05

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. Reference industry: artists and cultural professionals.

**Table 4.2: Marginal effects of reductions in well-being on investments**

Marginal effects (dy/dx)	
	Prob(more investments)
Reductions in financial well-being	.017 (.024)
Reductions in non-financial well-being	-.066*** (.017)

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. Reference industry: artists and cultural professionals.

### *Time versus monetary investments*

We now consider time and monetary investments separately to explore potential heterogeneities between different types of investments. Our interpretations once again refer to the full models (columns 2 and 4). In contrast to overall investments, reductions in *financial* well-being show significant results when time and monetary investments are considered separately. In this regard, reductions in financial well-being are significantly positively associated with *time* investments into venture development (Table 4.3). Table 4.4 lists the marginal effects and shows that reductions in financial well-being are linked to a 6.5 percentage points higher

likelihood that the self-employed invested time into their venture. The regression coefficient is positive for monetary investments as well, but lower and not significant (Table 4.3). Hence, we can derive support for H1a with respect to time investments, but not with respect to monetary investments. These findings highlight the importance of distinguishing between time and monetary investments when analyzing investment decisions of self-employed in times of crisis. The direct comparison of the effects for time and monetary investments shows significant differences (Table 4.4, last column). Thus, the stronger effect of reductions in financial well-being on time than on monetary investments supports our reasoning from H1b.

Regarding reductions in *non-financial* well-being, our analyses show a significantly negative association with time as well as monetary investments, providing further support for hypothesis 2a (Table 4.3). However, the effect does not significantly differ between time and monetary investments (Table 4.4, last column). Thus, H2b is not supported.

Examining the results for the control variables offers us further insights (Table 4.5, Figures A4.1 and A4.2 in the appendix). First, risk tolerance positively correlates with investments. Individuals who were more risk-tolerant prior to the crisis invested more time and money into their ventures during the crisis. So did female and younger self-employed (Table 4.5, Figures A4.1 and A4.2). We further find that the self-employed invested more time, but not more money, (i) if they faced strong revenue declines; (ii) if they were highly educated; and (iii) if their ventures were highly digitalized. Business size also played a substantial role in the decision (Figures A4.1 and A4.2): Larger firms and firms that exported to foreign markets were more likely to invest both time and money (Table 4.5, Figures A4.1 and A4.2). Comparing the effect sizes of the controls with our variables of interest, i.e., reductions in well-being, we find that, next to business size (measured by business expenses and employees) and gender, reductions in well-being show the strongest marginal effect on investments.

**Table 4.3: Reductions in well-being and relationship with time and monetary investment**

Column	(1)	(2)	(3)	(4)
Statistic	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)	Coeff. (SE)
Dependent variable	Time investments		Monetary investments	
Independent variables				
Reductions in financial well-being (H1b)		.353 (.107)**		.087(.099)
Reductions in non-financial well-being (H2b)		-.316 (.077)***		-.209(.070)**
Control variables				
Optimism before COVID	.153 (.027)***	.153 (.027)***	.110(.027)***	.110(.027)***
Risk tolerance before COVID	.162 (.018)***	.163 (.018)***	.162(.017)***	.162(.017)***
Internal Locus of control before COVID	.025 (.028)	.023 (.028)	.029(.026)	.027(.026)
Digitalization before COVID	.057 (.017)**	.058 (.018)**	-.003(.016)	-.003(.016)
Export sales	.143 (.056)*	.144 (.056)*	.112(.051)*	.112(.051)*
Female gender	.200 (.058)**	.204 (.058)***	.193(.052)***	.194(.052)***
Employees (yes/no)	.114 (.091)	.111 (.092)	.210(.081)*	.208(.081)*
More than 25 percent revenue decline	.325 (.061)***	.229 (.073)**	-.077(.057)	-.090(.066)
Venture size	.083 (.014)***	.086 (.014)***	.125(.012)***	.126(.012)***
Liquidity of venture	-.007 (.009)	-.004 (.009)	-.001(.008)	-.001(.008)
Business experience	-.051 (.019)**	-.051 (.019)**	-.027(.017)	-.027(.017)
Age of self-employed	-.132 (.044)**	-.133 (.044)**	-.160(.039)***	-.162(.039)***
Education	.068 (.034)*	.069 (.034)*	.033(.031)	.034(.031)
Financial well-being before COVID	-.164 (.026)***	-.177 (.026)***	-.024(.023)	-.027(.023)
Non-financial well-being before COVID	.060 (.021)**	.071 (.021)**	.002(.019)	.009(.019)
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	6,955	6,955	6,955	6,955
Chi <sup>2</sup>	652.60	683.52	658.38	668.77
Pseudo-R <sup>2</sup>	0.05	0.06	0.05	0.05

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. Reference industry: artists and cultural professionals.

**Table 4.4: Marginal effects of reductions in well-being on time and monetary investment**

	Marginal effects (dy/dx)				Comparison	
	Prob(more time investments)		Prob(more monetary investments)		Chi2	p > Chi2
Reductions in financial well-being	.065**	(.023)	.008	(.022)	6.99	.01
Reductions in non-financial well-being	-.065***	(.016)	-.046**	(.015)	2.19	.14

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. Reference industry: artists and cultural professionals.

Comparison based on Wald test with regression coefficients.

**Table 4.5: Marginal effects of control variables**

Marginal effects (dy/dx)					
	Prob(more time investments)			Prob(more monetary investments)	
Optimism before COVID	.031***	(.006)		.023***	(.006)
Risk tolerance before COVID	.032***	(.004)		.034***	(.004)
Internal Locus of control before COVID	.005	(.006)		.006	(.006)
Digitalization before COVID	.013***	(.004)		.000	(.003)
Financial well-being before COVID	-.036***	(.005)		-.005	(.005)
Non-financial well-being before COVID	.015***	(.004)		.002	(.004)
Export sales	.030*	(.012)		.021	(.011)
Female gender	.045***	(.012)		.050***	(.011)
Employees	.033	(.019)		.064**	(.019)
More than 25 percent revenue decline	.047**	(.016)		-.021	(.015)

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. Reference industry: artists and cultural professionals.

### 4.4.3 Post-hoc analyses

Since prior research substantiates the influence of psychological aspects on the decision making and investment behavior in self-employment (Brundin & Gustafsson, 2013; Caliendo et al., 2014, 2022; Kihlstrom & Laffont, 1979; Schwenk, 1988; Verheul et al., 2009), we consider internal locus of control and occupational risk tolerance in more detail in our post-hoc analyses. We use these two variables as moderators for the relationship between reductions in well-being and overall investments to extend our knowledge about psychological factors in the context of reduced well-being.

#### *Internal locus of control as moderator*

Individuals with a higher internal locus of control are more likely to believe that they can determine the future development of their firms through their own actions (Rotter, 1966). In the context of our analysis, self-employed with a higher locus of control may be more convinced that their actions can improve their situation of reduced financial and non-financial well-being. This points to potentially positive interaction effects. To test our assumption that the reduced likelihood for investments due to reductions in well-being is lower in situations of high control, we construct a dummy variable for high internal locus of control. This dummy variable is set to 1 for individuals reporting high control over their business before the crisis (i.e., a value above 5 on a scale running from 1 to 7) and zero otherwise. Table 4.6 displays the results for the interaction analysis between this dummy and reductions in well-being. We find a positive interaction effect of reductions in non-financial well-being with investments. Self-employed with reductions in non-financial well-being and low locus of control show a 13.1 percentage point decrease in the probability of investments while self-employed with high locus of control only show a 4.8 percentage point decrease. Thus, higher locus of control weakens the negative relationship between reductions in non-financial well-being and investments. Table A4.5 in the appendix shows that this effect further holds for when time and monetary investments are considered separately.

**Table 4.6: Reductions in well-being and investments by locus of control (interaction analysis and marginal effects)**

Statistic	Coeff. (SE)																														
Dependent variable	Investments																														
Independent variables																															
Locus of control before COVID (Dummy for high control)	-.172 (.124)																														
Reductions in financial well-being	-.092 (.193)																														
Reductions in financial well-being X locus of control	.264 (.205)																														
Reductions in non-financial well-being	-.591 (.154)***																														
Reductions in non-financial well-being X locus of control	.380 (.173)*																														
Controls	Yes																														
Industry fixed effects	Yes																														
Observations	6,955																														
Chi²	720.58																														
Pseudo-R²	0.05																														
Marginal effects (dy/dx)																															
	<table><tr><th colspan="4">Locus of control before COVID</th><th colspan="2">Comparison</th></tr><tr><th colspan="2">Low</th><th colspan="2">High</th><th>Chi2</th><th>p &gt; Chi2</th></tr><tr><td colspan="6">Prob(more investments)</td></tr><tr><td>Reductions in financial well-being</td><td>-.019 (.044)</td><td>.026 (.025)</td><td></td><td>.92</td><td>.34</td></tr><tr><td>Reductions in non-financial well-being</td><td>-.130*** (.034)</td><td>-.048* (.019)</td><td></td><td>4.54</td><td>.03</td></tr></table>	Locus of control before COVID				Comparison		Low		High		Chi2	p > Chi2	Prob(more investments)						Reductions in financial well-being	-.019 (.044)	.026 (.025)		.92	.34	Reductions in non-financial well-being	-.130*** (.034)	-.048* (.019)		4.54	.03
Locus of control before COVID				Comparison																											
Low		High		Chi2	p > Chi2																										
Prob(more investments)																															
Reductions in financial well-being	-.019 (.044)	.026 (.025)		.92	.34																										
Reductions in non-financial well-being	-.130*** (.034)	-.048* (.019)		4.54	.03																										

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. Reference industry: artists and cultural professionals.

### *Occupational risk tolerance as moderator*

Individuals evaluate possible actions for improvement based on their risk tolerance (Greve, 2003). Research finds that higher occupational risk tolerance generally points to a higher likelihood to take action and make improvements (Verheul et al., 2009). Thus, we expect positive interaction effects in our context of reductions in well-being and investments. Similar to the previous analysis, we construct a dummy variable for high occupational risk tolerance to test our assumption. This dummy variable is set to 1 if the individual's risk tolerance before the crisis was above 5 (on a scale from 1 to 7) and 0 otherwise. The results of our interaction analysis are shown in Table 4.7. Contrary to our assumption, we do not identify significant interaction effects for reductions in financial and non-financial well-being and risk tolerance on investments. Hence, there is no evidence that a high level of occupational risk tolerance can buffer the negative influence of reductions in well-being on investments in the venture. Table A4.6 in the appendix runs separate regressions for time and monetary investments, confirming this result.

**Table 4.7: Reductions in well-being and investments by risk tolerance (interaction analysis and marginal effects)**

Statistic	Coeff. (SE)																														
Dependent variable	Investments																														
Independent variables																															
Risk tolerance before COVID (Dummy for high risk tolerance)	.393 (.101)***																														
Reductions in financial well-being	.117 (.120)																														
Reductions in financial well-being X risk tolerance	.007 (.162)																														
Reductions in non-financial well-being	-.246 (.093)**																														
Reductions in non-financial well-being X risk tolerance	-.110 (.145)																														
Controls	Yes																														
Industry fixed effects	Yes																														
Observations	6,955																														
Chi²	663.77																														
Pseudo-R²	0.05																														
Marginal effects (dy/dx)																															
	<table><tr><th colspan="4">Risk tolerance before COVID</th><th colspan="2">Comparison</th></tr><tr><th colspan="2">Low</th><th colspan="2">High</th><th>Chi2</th><th>p &gt; Chi2</th></tr><tr><td colspan="6">Prob(more investments)</td></tr><tr><td colspan="2">Reductions in financial well-being</td><td>.021 (.028)</td><td>.010 (.033)</td><td>.08</td><td>.78</td></tr><tr><td colspan="2">Reductions in non-financial well-being</td><td>-.057** (.021)</td><td>-.080** (.026)</td><td>.48</td><td>.49</td></tr></table>	Risk tolerance before COVID				Comparison		Low		High		Chi2	p > Chi2	Prob(more investments)						Reductions in financial well-being		.021 (.028)	.010 (.033)	.08	.78	Reductions in non-financial well-being		-.057** (.021)	-.080** (.026)	.48	.49
Risk tolerance before COVID				Comparison																											
Low		High		Chi2	p > Chi2																										
Prob(more investments)																															
Reductions in financial well-being		.021 (.028)	.010 (.033)	.08	.78																										
Reductions in non-financial well-being		-.057** (.021)	-.080** (.026)	.48	.49																										

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. Reference industry: artists and cultural professionals.

## 4.5 Discussion

### 4.5.1 Interpretation of findings

There is extensive research on the direct effects of crises like the COVID-19 pandemic on self-employment and entrepreneurship (Belitski et al., 2022, Batjargal et al., 2023; Stephan et al., 2023). However, our research is one of the first to examine the crises' subsequent effects with long-term impact on the affected ventures. More specifically, we examine the consequences for self-employed and their ventures when they confront reductions in well-being during a major crisis. By applying the performance feedback literature and the broadening-and-built theory to the context of self-employment, we provide two new behavioral perspectives to explain how the self-employed decide about their investments when they experience a reduction in financial and non-financial well-being. We find that reductions in well-being influence investment behavior during crises and show much larger effects than differences in socio-demographic factors and various venture characteristics that are typically used to explain investment behavior in self-employment. The role of fluctuations in well-being is so far neglected in this context and our research emphasizes the importance of considering further aspects beyond traditional venture or opportunity characteristics when analyzing the behavior and strategies of self-employed in crisis times.

Our results further show significant differences between reductions in financial and non-financial well-being that can be explained by our two different behavioral perspectives. We observe that reductions in financial well-being increase the likelihood of time investments. In line with the performance feedback perspective, financial underperformance can give negative performance feedback to the affected self-employed, leading decision makers to increase search efforts (Alexy et al., 2016; Greve, 2003). When the existence of the venture is specifically threatened, the self-employed might show increased time commitment to improve the venture's resilience and to increase the survival chances. In that sense, we find support for previous literature arguing that individuals are more likely to act when they face a critical business situation (Foo et al., 2009; Giones et al., 2020; Nguyen et al., 2024; Stephan et al., 2021).

In contrast to time investments, reductions in financial well-being are not significantly associated with monetary investments. Possible explanations can be rooted in the lower availability of financial resources during a crisis (Backman et al., 2023; Wolfe & Patel, 2021; Yue & Cowling, 2021). The results are also in line with a mental accounting perspective. With regard to the latter, we demonstrate that self-employed are often willing to commit more time to save financial resources. This corroborates prior research that individuals do not account for time in the same way that they account for money (Aeon & Aguinis, 2017; Soman, 2001; Thaler, 1999). Moreover, the different results of reduced financial well-being for time and monetary investments underscore the importance of considering investments beyond the traditional monetary aspects. We agree with Verheul et al. (2009) that research should not neglect the fundamental role of non-financial resources such as time investments in self-employment.

Regarding our second perspective, the fact that reductions in *non-financial well-being* negatively relate to investments corroborates our theoretical reasoning grounded in the broadening-and-build theory (Fredrickson, 1998, 2001, 2004). It might indicate that the self-employed have a narrower thought-action repertoire and reduced cognitive abilities due to the negativity induced by reductions in non-financial well-being, ultimately leading to a lower probability of time and monetary investments. This is consistent with previous research showing that lower cognitive resources hamper creative coping abilities (Grözinger et al., 2022). It further supports the idea that a restricted cognitive perspective hinders efficient resource deployment. Thus, the self-employed lose the long-term perspective on their venture and accordingly reduce their resource commitment (Cohn & Fredrickson, 2006).



Our insight that non-financial well-being is more influential on investment behavior than financial well-being further emphasizes the importance of emotional decision making in times of a crisis. In this regard, rational considerations tend to play a subordinate role in these times and the emotional state dominates decision making. Thereby, our results confirm previous insights that non-financial aspects are often decisive in the behavior of the self-employed (Croson & Minniti, 2012; Dawson, 2017; Murnieks et al., 2020).

In our post-hoc analyses, we extend our psychological perspective on the topic by including internal locus of control and occupational risk tolerance as moderators for the relationship between reductions in well-being and investments. We observe that the negative impact of reductions in non-financial well-being on investments is lower when the self-employed have a higher internal locus of control. However, we could not identify significant interaction effects for risk tolerance. It seems that facing a situation of reduced non-financial well-being is so severe for the self-employed that the likelihood for investments is not increased even under high levels of risk tolerance.

#### **4.5.2 Theoretical implications**

Our research applies two new behavioral perspectives in the context of well-being in self-employment. The performance feedback literature describes the behavior of decision makers in firms and is predominantly used in this context (Alexy et al., 2016; Argote & Greve, 2007; Greve, 2003). We show that the theory can also predict the (investment) behavior of the self-employed in relation to their ventures. Similar to large and established firms, the self-employed in our sample increase their search efforts with regard to time investments in response to negative performance feedback (Alexy et al., 2016; Greve, 2003).

Moreover, we contribute to the broadening-and-build theory by applying the reverse logic. The theory originally focuses on outcomes of positivity, such as a broader thought-action repertoire and higher cognitive resources (Fredrickson, 1998, 2001, 2004). Although the reverse logic of negativity is briefly mentioned in Fredrickson (2004) and Cohn and Fredrickson (2006), it is otherwise largely neglected in research that predominantly applies the positive perspective (Chadwick & Raver, 2020; Hatak et al., 2021; Kiani et al., 2021). We show that the reverse logic of negativity can be relevant to determine an individual's behavior and decision-making during crisis times. Specifically, in the context of self-employment, reductions in non-financial well-being may induce negativity, altering and restraining individuals' investment behavior.

### 4.5.3 Practical implications

In practice, our insights contribute to the better understanding of factors determining the investment behavior of the self-employed. Our research shows that the self-employed should be aware of the possibility of reductions in well-being in today's fast-changing business environment and the potential consequences for their investment decisions. More specifically, we observe that the self-employed are more likely to invest time into their venture when their financial well-being suffers. Increased time investments can be a suitable step to address critical business situations, when financial resources may be depleted during a crisis. However, it seems to be important for the self-employed to exercise caution when making investment decisions during times of financial hardship. They should strive to maintain a broad perspective and consider investments that have long-term value for the venture. To this end, the self-employed may benefit from affordable external consulting to help them make informed investment decisions that increase the resilience of their ventures in such times of increased business risks and insecurity. Additionally, providing support with time-intensive tasks, such as further education, digitalization, or business model innovation, could be helpful in this context (Audretsch et al., 2023). By taking these steps, the self-employed may be able to make more strategic and sustainable investments, even when their financial well-being is compromised. Moreover, policy makers should consider providing tax incentives or other financial support measures that may induce the self-employed to complement time investments with monetary investments that may help to develop the ventures.

When looking at reductions in non-financial well-being, the induced negativity can be harmful for the investment behavior of the self-employed. A reduction in non-financial well-being is related to lower investments and can ultimately lead to lower commitment or termination of self-employment. In Germany, for instance, a large number of self-employed gave up their ventures during the crisis (Kritikos et al., 2021). A large wave of such crisis-related exits from self-employment could be harmful for society. Therefore, the self-employed and policy makers should try to counteract the negative outcomes of reduced non-financial well-being. Our post-hoc analyses indicate that the negative impact is lower when the self-employed score high in internal locus of control. Thus, policy makers can try to reduce business regulations during a crisis that deprive the self-employed of control over their ventures. Instead, the self-employed would benefit from psychological reassurance that they are still determining the future of their venture. By taking these steps, the self-employed may be able to mitigate the negative impact of reductions in non-financial well-being on their investments.

#### 4.5.4 Limitations and future research

Our research shows that fluctuations in well-being, in our case reductions, can have significant consequences for investments by the self-employed into venture development. However, beyond the impact on time and monetary investments, there are likely other consequences of variations in well-being in self-employment that deserve further examination such as venture internationalization or growth. By exploring these and other dependent variables, future research may gain a more complete understanding of the consequences of variations in well-being in self-employment. It would also be beneficial to examine the consequences of well-being for other decision makers in firms, like CEOs and managers; not just those in self-employment.

With regard to our data, it is important to note that our conclusions are based on a large sample of self-employed individuals living in Germany who were surveyed only once during the COVID-19 crisis. Additional research is required to understand the broader implications of our insights and to verify them for different individuals, businesses, countries and crises. Next to these geographical and crisis-related restrictions, our dataset also includes a limited scope of items for our dependent and independent variables. Due to this lack of closer information, our analyses are restricted to single-item measures for well-being and investments. Although this approach is established in the literature for well-being measurements (Abreu et al., 2019; Brüggem et al., 2017; Kibler et al., 2019; Van der Zwan et al., 2018), further research should consider multi-item approaches to increase measurement validity. By doing so, future research may gain a greater generalizability of the results than our cross-sectional analyses are able to provide.

Another limitation is rooted in our methodological procedure. We draw on a seemingly unrelated regression to separate time and monetary investments. However, this method provides only limited information about causality. Future research could employ more sophisticated analytical techniques, such as panel data and time series analyses, to investigate causality.

Moreover, there are other consequences of reduced well-being that deserve examination. For instance, future research should investigate how variations in well-being affect other behaviors and decisions related to innovation, internationalization and leadership. By exploring these and other dependent variables, future research may gain a more complete understanding of the consequences of variations in well-being. This is an important research area since the fast-changing business environment of self-employed can lead to increased variations in well-being.

Thus, we highlight a need for further research how well-being may fluctuate and how reductions in well-being may affect the subsequent behavior of self-employed. By providing such insights, we can better equip self-employed individuals and entrepreneurs to navigate future crises and make informed investment decisions.

## **4.6 Conclusion**

Well-being in self-employment is becoming an increasingly important concept for both theory and practice. By showing that reductions in financial and non-financial well-being are closely linked to the investment behavior of the self-employed, this chapter highlights that well-being does not just affect the self-employed themselves but also has implications for their ventures. With this finding, our research connects to a growing literature on the consequences of well-being in the field of self-employment. We explain our findings with two behavioral perspectives, using arguments from the performance feedback literature and the broadening-and-build theory. Thereby, we bring new behavioral and psychological insights into the discussion on well-being and its consequences in this field. Future research could use these perspectives to explain venture-related consequences of fluctuations in mental health and well-being in self-employment.

## Chapter 5

# Contextual predictors of social & ecological considerations in entrepreneurship:

## A country-level explorative machine learning approach<sup>16</sup>

*The potential of entrepreneurship in addressing social and ecological challenges requires a deeper understanding of the contextual predictors for sustainability-focused entrepreneurship. This understanding is needed, as not all contextual factors are likely to hold the same relevance and impact on the importance of social and ecological aspects in entrepreneurship. Therefore, this chapter explores a wide array of country-level contextual predictors such as governmental/regulatory, cultural, socio-economic, ecological and economic factors. By combining different data sources (e.g., the Global Entrepreneurship Monitor, the World Bank and the OECD) and by employing an explorative machine learning approach, we investigate the predictive value of a large array of contextual factors for the overall, country-level considerations of social and ecological issues in a sample of 84 countries. Our findings suggest that governmental and regulatory as well as cultural factors seem to be important predictors for social and ecological considerations in entrepreneurship. Moreover, socio-economic factors show a high relevance for social considerations while especially economic factors are relevant for ecological considerations. Considering the limitations of our machine learning approach for drawing causal conclusions, our results suggest that entrepreneurs can be encouraged by government and regulation as well as culture to incorporate social and ecological considerations in their ventures.*

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<sup>16</sup> Chapter 5 is based on the article of Gnad et al. (2024). The article is published in the journal *Betriebswirtschaftliche Forschung und Praxis* and was written in joint authorship.

## 5.1 Introduction

Besides the importance of entrepreneurship as a driver of a country's economic development and innovation, the last decade has experienced a rise in research on the role of entrepreneurship to address social and ecological challenges (Greco & de Jong, 2017; Muñoz & Cohen, 2018; Schaefer et al., 2015; Veleva, 2021). Evidently, entrepreneurs today are placing a growing emphasis on sustainability goals as an integral part of their business practices. Entrepreneurs are not only a source of change but can also help to create a more equal and environmentally conscious world (Schaefer et al., 2015; Veleva, 2021). Acknowledging entrepreneurship as a possible solution for social and ecological challenges, sustainability-focused entrepreneurship plays an important role in enhancing a country's development and welfare. Consequently, it is essential for societies and policy makers to advocate for and empower entrepreneurship that is committed to promoting sustainability.

Prior research already discusses an array of contextual factors for sustainability-focused entrepreneurship (Gabarett et al., 2017; Hörisch et al., 2017; Kirkwood & Walton, 2010). Research agrees that contextual factors can influence whether and how entrepreneurs in a country incorporate social and ecological considerations in their entrepreneurial activities (Canestrino et al., 2020; Chu et al., 2021; Meek et al., 2010; Stephan et al., 2015). More specifically, current literature has begun to identify governmental/regulatory, cultural, socio-economic, ecological and economic predictors of sustainability-focused entrepreneurship. However, research so far has concentrated on a limited set of these contextual factors and specific countries (Moya-Clemente et al., 2020; Spence et al., 2011; Stephan et al., 2015). The existing literature typically focuses on social or ecological entrepreneurship in isolation, failing to acknowledge potential variations in the potency of contextual factors to predict these two types of sustainability-focused entrepreneurship. Consequently, we know little about the overall level of predictability of sustainability-focused entrepreneurship by contextual factors. The missing comparison of predictive values of a broad set of contextual factors across social and ecological entrepreneurship leaves potential differences between these two types of entrepreneurship unclear. To tackle this research gap, we aim to answer the following research question:

*Which contextual factors predict social and ecological entrepreneurial considerations on country-level?*

To answer this question, we use a machine learning approach to explore the predictive value of a broad set of country-level contextual factors. This approach further allows us to investigate predictors with potential complex (i.e., nonlinear and interactive) relationships without increasing the risk of fitting idiosyncrasies of a sample. By doing so, we follow the recent call to use predictive approaches to create foundations for further, theoretically oriented research (Hofman et al., 2017). Our approach is also a response to the research calls of Moya-Clemente et al. (2020) and Stephan et al. (2015) demanding research on a broader range of contextual predictors for sustainability-focused entrepreneurship across a large number of countries. Such an understanding is needed from a theoretical and practical perspective. Theoretically, understanding the impact of different contextual factors on social and ecological considerations informs the field about the underlying conditions fostering these considerations on the country-level. With our machine learning approach, we extend previous research in this field by demonstrating certain similarities and differences between the different predictors as well as the specific types of sustainability-focused entrepreneurship. Practically, this knowledge can help to gain a better understanding of the potential (policy) measures to motivate entrepreneurs to consider social and ecological goals in their business decisions.

The chapter is further structured to provide an initial overview about the theoretical background. Afterwards, data, method and results are lined out. Finally, the results are discussed and a comprehensive conclusion is provided.

## **5.2 Theoretical background**

### **5.2.1 Different types of sustainability-focused entrepreneurship**

Currently, there is a lack of consensus in both theory and practice regarding which term best conveys sustainability in entrepreneurship or which specific term should be used (Bacq & Janssen, 2011; Greco & de Jong, 2017; Schaefer et al., 2015; Thompson et al., 2011). In the literature, different terms such as social, ecological and sustainable entrepreneurship with multiple inconsistent definitions in different contexts exist (Greco & de Jong, 2017; Schaefer et al., 2015; Thompson et al., 2011). Even though all these types of entrepreneurship strive to create both economic and impact-related value, they can be distinguished by the specific context-related impact they aim to achieve (Schaefer et al., 2015; Thompson et al., 2011).

For this reason, clarification regarding the usage of the terms in this chapter is necessary. We refer to *social* entrepreneurship when the goal of the venture is the creation of social value for

people, communities and especially for disadvantaged groups (Schaefer et al., 2015). For social entrepreneurs, the social agenda is often more important than the economic value of the venture (Thompson et al., 2011). *Ecological* entrepreneurship focuses on the preservation and regeneration of the natural environment while simultaneously striving to create both ecological and economic value (Schaefer et al., 2015; Thompson et al., 2011). We use the term *sustainability-focused* entrepreneurship as an umbrella term for all types of impact-driven entrepreneurship that generate social and/or ecological impact. However, we will adhere to the differentiation between social and ecological entrepreneurship when examining our country-level, contextual predictors. This is important because although these two types share many similarities in their characteristics, they may diverge in their objectives (Thompson et al., 2011). This could affect the relevance of different predictors for social and ecological considerations in entrepreneurship.

### **5.2.2 Country-level contextual predictors of sustainability-focused entrepreneurship**

The understanding and exploration of country-level factors enhancing sustainable goals in entrepreneurship has been of interest to both theory and practice (Pankov et al., 2021; Solórzano-García et al., 2022). Initial studies exploring these contextual predictors indicate two main perspectives (Dhahri et al., 2021; Gabarett et al., 2017; Kirkwood & Walton, 2010; Ye et al., 2020). For once, it has been shown that sustainability-focused entrepreneurship in a country can be pushed to a certain extent by governmental measures, regulations and cultural norms (Dhahri et al., 2021; Kirkwood & Walton, 2010; Ye et al., 2020). Second, existing literature highlights that the socio-economic and economic environment as well as ecological challenges in a country are relevant contextual factors that increase sustainable entrepreneurial activities in a country (Dean & McMullen, 2007; Dhahri et al., 2021; Kirkwood & Walton, 2010; Ye et al., 2020). These market- and opportunity-related factors are shown to have a more prevalent role in motivating country-level sustainability-focused entrepreneurship by pulling entrepreneurs into the market (Dean & McMullen, 2007; Dhahri et al., 2021; Kirkwood & Walton, 2010; Ye et al., 2020). Based on prior research and these preliminary results, we investigate five categories to describe the country-level environment (Dean & McMullen, 2007; Dhahri et al., 2021; Kirkwood & Walton, 2010; Ye et al., 2020). These categories encompass *governmental/regulatory*, *cultural*, *socio-economic*, *ecological* and *economic* factors. They will be explained in detail in the following subsections (please also refer to Table 5.1 for an overview).



*Governmental and regulatory contextual factors*

Prior research by Youssef et al. (2018) has shown that institutional quality can ensure the positive impact of entrepreneurship on a country's sustainable development. Especially governmental and regulatory factors enforce and enhance sustainable entrepreneurial activities in a country (Hoogendoorn, 2016; Meek et al., 2010; Mondal et al., 2023; Stephan et al., 2015; Triguero et al., 2013). In the context of social entrepreneurship, research found a positive effect of governmental measures such as higher public sector expenditure, better regulatory quality, strong property rights and government activism on social entrepreneurship (Gholamrezai et al., 2021; Hoogendoorn, 2016; Mondal et al., 2023; Stephan et al., 2015). In the context of ecological entrepreneurship, governmental activities such as environmental regulations, support of scientific research and international cooperations have been shown to motivate entrepreneurs to engage in 'green' ventures (Gholamrezai et al., 2021; Meek et al., 2010; Mondal et al., 2023; Triguero et al., 2013). Especially governmental support for entrepreneurial, sustainability-focused education and collaborations with research institutes, agencies and universities are important to increase eco-innovations in a country (Gast et al., 2017; Sáez-Martínez et al., 2014; Triguero et al., 2013). Moreover, governmental support, including state incentives, efficacy and ensuring market functionality, plays a crucial role in promoting ecological entrepreneurship (Meek et al., 2010; Savastano et al., 2022). However, Chu et al. (2021) highlight that the perceptions of country-level policies are crucial to enhance engagement in ecological entrepreneurship. This means that policies must be comprehensible and adapted to the entrepreneurs' needs in their specific country and operating environment (Chu et al., 2021; Hörisch et al., 2017).

Besides these positive effects of governmental and regulatory interventions, other studies show that some of these external factors have no effect (Bernardino et al., 2016; Puumalainen et al., 2015) or might even hinder social entrepreneurial activities (Estrin et al., 2013; Ferri & Urbano, 2011). In this context, Ferri and Urbano (2011) as well as Estrin et al. (2013) find that government activism and the resulting public spending can negatively impact social entrepreneurial activities, thereby contradicting the identified positive effect of Stephan et al. (2015).

*Cultural contextual factors*

Prior research highlights that cultural values and practices can also be predictors of sustainable considerations of entrepreneurs in a country (Koe & Majid, 2014; Meek et al., 2010; Saleem et

al., 2018; Stephan et al., 2015; Ye et al., 2020). More specifically, a country's general level of social support, environmental consciousness and sustainability orientation can foster sustainability-focused entrepreneurship (Koe & Majid, 2014; Meek et al., 2010; Stephan et al., 2015). In addition, altruistic, other-regarding values of a society can drive pro-social and pro-environmental behavior of entrepreneurs in society (Jahanshahi et al., 2017; Ye et al., 2020). These findings are corroborated by Saleem et al. (2018) indicating that altruism can enhance ecological entrepreneurship. The authors additionally analyze the moderating role of country-level collectivism and find that sustainability-focused values of ecopreneurs are only significant in a country-level context with collectivism and altruism.

Using measures of the GLOBE cultural dimensions (Stephan et al., 2015; Stephan & Uhlaner, 2010), Stephan et al. (2015) indicate that country-level post materialistic values and socially supportive cultural norms enhance the likelihood of social entrepreneurship. This finding is supported by Canestrino et al. (2020), who show that countries with higher in-group collectivism, higher gender egalitarianism, higher future orientation and higher tolerance for uncertainty have higher rates of social entrepreneurial activities. Further positive effects are confirmed for ecological and sustainable entrepreneurship when cultures have a strong time and future orientation (Jahanshahi et al., 2017; Koe & Majid, 2014). Finally, Puumalainen et al. (2015) concentrate on the Hofstede cultural dimensions and find power distance to be a negative predictor for social entrepreneurship.

#### *Socio-economic contextual factors*

A country's socio-economic environment can further predict social and ecological considerations in entrepreneurship. In this regard, gender equality, education and social inclusion can be relevant contextual factors in a country. Even though it could be assumed that more social challenges resulting from an unfavorable socio-economic environment enhance social entrepreneurial activities to overcome these challenges (Austin et al., 2006; Kimmitt et al., 2022), prior research by Kimmitt et al. (2022) found the opposite effect. Regarding the influence of gender on social entrepreneurial activities, Griffiths et al. (2013) indicate that a higher degree of female participation in the labor force positively affects a country's social entrepreneurial activities. In line with this finding, gender equality, social inclusion and local coexistence of people with different ethnicities can motivate ecological considerations in entrepreneurship (Gunawan et al., 2021; Prasetyo et al., 2023). Moreover, the level of education in a country can play an important role in fostering sustainability-focused entrepreneurship. Educational drivers promoting social and ecological entrepreneurship are especially

sustainability-focused schooling and entrepreneurship education (Famiola & Wulansari, 2020; Gast et al., 2017; Nicolás et al., 2018; Tunio et al., 2021). However, the multilevel study of Hörisch et al. (2017) concludes that higher education in a country in general, which is not directly linked to entrepreneurship or sustainability-focused knowledge, can lead to lower degrees of environmental orientation. These contrasting results show that predominantly sustainability- and entrepreneurship-focused education, but not necessarily general education, fosters sustainability-focused entrepreneurship.

#### *Ecological contextual factors*

Ecological factors such as environmental degradation and resource depletion can be important predictors for ecological entrepreneurship. Dean and McMullen (2007) highlight that market failures provide opportunities that can be addressed by entrepreneurs. In line with this, Bell and Stellingwerf (2012) argue that sustainable entrepreneurs often encounter ecological market failures in their countries which enhance the overall number of sustainable entrepreneurial initiatives. However, Middermann et al. (2020) show that environmental risk exposure in a specific country or region limits sustainable entrepreneurial intentions due to an increased fear of failure. This negative effect can be weakened when the specific area provides good business opportunities (Middermann et al., 2020). Finally, ecologically relevant market developments such as renewable energy, fuel cells, green building, natural foods and carbon emissions can present opportunities for entrepreneurs to achieve profitability while simultaneously enhancing ecologically friendly economic behaviors (Dean & McMullen, 2007).

#### *Economic contextual factors*

Economic market failures are typically associated with lower economic development of a country. However, such failures can create business opportunities for all types of entrepreneurs, including sustainability-focused ventures (Lepoutre et al., 2013). Specifically, market imperfections lead to opportunities which serve as a foundation for social and ecological aspects in entrepreneurship (Cohen & Winn, 2007; Dean & McMullen, 2007). However, the literature also offers an opposing perspective regarding the economic development of a country. Lepoutre et al. (2013) show that the rate of social entrepreneurial activity in a country increases with its level of economic development from a factor-driven, via an efficiency-driven to an innovation-driven economy. The authors argue that the opportunity costs of social entrepreneurship might be higher in developing countries because more fundamental needs must be addressed first. In developed countries with a stronger emphasis on post-materialistic values, the focus can shift

towards the pursuit of self-interests (Lepoutre et al., 2013). In line with this argument, a country's infrastructure, including transportation, technology and financial structure, plays a crucial role to support sustainability-focused entrepreneurship (Mondal et al., 2023; Savastano et al., 2022). Studies agree that the effectiveness of the infrastructure is a necessary economic enabler of sustainability-focused entrepreneurship (Mondal et al., 2023; Savastano et al., 2022).

#### *Overview about all previous contextual factors*

The research on different predictors of sustainability-focused entrepreneurship is briefly summarized in Table 5.1. Overall, we see that predictors from all categories can significantly influence sustainability-focused entrepreneurship. Even though research about governmental and regulatory factors is inconclusive, most studies indicate positive effects of regulations and policies on all types of sustainability-focused entrepreneurship. Moreover, prior research on cultural aspects shows that altruistic, post materialistic and collectivistic values of a society seem to enhance this form of entrepreneurship. With regard to socio-economic factors, it has been found that a higher degree of social development in a country in terms of equality and inclusion can also enhance sustainability-focused entrepreneurship. However, a specific educational focus on sustainability and entrepreneurship seems to be required. Looking at ecological factors, prior research shows that ecological market failures present challenges that can be addressed by entrepreneurs. However, the entrepreneurial perception of such market failures as business opportunity is important to enhance sustainability-focused entrepreneurship. This argumentation holds also true with regard to economic factors. Yet again, there is the opposing perspective that higher economic development can enhance sustainability-focused entrepreneurship due to lower opportunity costs. Overall, our literature review highlights that the predictors of sustainability-focused entrepreneurship, particularly comparing social and ecological entrepreneurship, are not yet fully understood and necessitate further investigation.

**Table 5.1: Overview about contextual factors**

<b>Category</b>	<b>Key findings with regard to sustainability-focused entrepreneurs</b>
Governmental and regulatory factors	Research is still inconclusive; Most studies show positive effects of regulations and policies
Cultural factors	Positive effect of altruistic, post materialistic and collectivistic values of a society
Socio-economic factors	Positive effect of higher equality, inclusion and educational focus on sustainability and entrepreneurship
Ecological factors	Opportunities presented by ecological market failures and market developments
Economic factors	Effect of economic factors is still unclear; Higher economic development can enhance sustainability-focused entrepreneurship due to lower opportunity costs; Economic market failures in low developed contexts present sustainable business opportunities as well.

## 5.3 Data and method

### 5.3.1 Data set

To answer our research question how contextual factors can predict social and ecological entrepreneurial considerations on country-level, we combined data from five different data sources: the Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS), the GEM National Expert Survey (NES), the GLOBE study on cultural practices (House et al., 2004) and data gained from the OECD and the World Bank. Specifically, we used the GEM Adult Population Survey (APS) of 2021 as the source for the key target variables (i.e., the average degree of social and environmental considerations of nascent entrepreneurs and business owners of a country). Given the focus of our analyses on national-level relationships between contextual, country-level factors and the average degree of social and environmental considerations, we used the individual-level data portion of nascent entrepreneurs and owner-managers in the GEM survey to create country-level averages. The GEM APS individual-level data consists of  $N = 27,991$  respondents between 18 and 64 years reflecting the underlying national population of each country in terms of age, gender and location (Global Entrepreneurship Research Association, 2023). This individual-level data was reduced to nascent entrepreneurs and owner-managers per country to calculate the country-level averages for social and ecological considerations of entrepreneurs. This means that individuals without entrepreneurial background were not included in the sample and consequently not considered in the calculation of country-level averages, leading to different sample sizes per country

depending on the number of nascent entrepreneurs and owner-managers in this country. We further supplemented the GEM APS data with contextual information about the countries' governmental/regulatory, cultural, socio-economic, ecological and economic status. These predictive factors for the different types of sustainable entrepreneurship were drawn from the GEM National Expert Survey (NES) 2021, the GLOBE website<sup>17</sup>, the World Bank and the OECD. The OCED data, in turn, consisted of four subsets that substantially differed in the number of participating countries ranging from N = 33 (i.e., environmental policy stringency) to N = 231 (i.e., exposure to pollution).

Combining the five data sets resulted in a substantial non-overlap with regard to participating countries. Hence, the goal was to implement a matching strategy that implied a degree of missing data that could be successfully addressed by multiple imputation. This was achieved by first matching the GEM APS, GEM NES and the smaller OCED data set in a full-join fashion that created a data set with a sample size of N = 84 countries. A subsequent analysis of missing data occurrence and patterns revealed many small-sized (N = 1 to 5) samples of countries with specific combinations of missing values and hence, a substantial number of existing countries that served as sources of information. The World Bank and the two larger OECD data sets were then matched in a partial fashion with the result that only the variables of those countries were included that were part of the initial data set.

All five data sources including the GEM APS, GEM NES, GLOBE, World Bank and OECD data are subject to regular quality controls regarding the reported data. With regard to the GLOBE project, the development of the questionnaire was based on a clear theory-based construct specification and the items were constructed in a long process of item development and refinement, especially regarding issues of cross-cultural equivalence (i.e., measurement invariance). With regard to the data provided by the World Bank, the World Bank undertakes tremendous efforts to ensure that the data is accurate, reliable and up to date. This includes cross-checking data from different sources, conducting field surveys and collaborating with national statistical agencies to reconcile discrepancies. The same is true for the data provided by the OECD. Additional information about all quality control procedures of the different data sources can be found on their respective websites.

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<sup>17</sup> URL: <https://www.globeproject.com> (Accessed 31.08.2023).

### 5.3.2 Variable description

#### *Target variables*

We draw on two items from the GEM APS individual-level data to calculate our country-level target variables that will be predicted by our machine learning models. The two items represent founders' *considerations of social and ecological implications* in their planned or actual business activities. They are both measured with one item, respectively, on a 5-point rating scale ranging from 1 (strongly disagree) to 5 (strongly agree). The exact wording for both items can be found below in Table 5.2. Based on these two individual-level items, we computed country-level averages as our target variables.

**Table 5.2: Variable descriptions of target variables**

Target variable	Data source	Variable description
Social considerations	GEM APS	When making decisions about the future of your business, you always consider social implications such as access to education, health, safety, inclusive work, housing, transportation, quality of life at work, etc.?
Ecological considerations	GEM APS	When making decisions about the future of your business, you always consider environmental implications such as preservation of green areas, reduction of the emission of pollutants and toxic gases, selective garbage collection, conscious consumption of water, electricity and fuels, etc.?

#### *Predictive variables*

As predictive variables, we use a total of 35 contextual indicators from the five different categories of governmental, cultural, socio-economic, ecological and economic factors per country. The goal was to create a broad set of variables representing each of the categories. Please refer to Tables A5.1 and A5.2 in the appendix for an overview of all predictors and further information about their data source and measurement.

To predict the influence of governmental and regulatory factors, we used variables from the GEM NES, OECD and World Bank data which include *governmental expenditure on education, competency of government agencies, difficulty of government bureaucracy, government policies favoring new firms, government subsidies for new firms, efficiency of government programs for new firms, government support for sustainability-focused startups, the environmental policy stringency index, the legal rights index and social expenditure in percent of GDP*.

As cultural factors, we used the variables measured by the GLOBE project and considered the degree of *institutional* and *ingroup collectivism* (vs. individualism), *power distance*, *uncertainty avoidance*, *assertiveness*, *gender egalitarianism*, *performance orientation*, *humane orientation* and *future orientation*. Moreover, we incorporated a measure for sustainability-related role models as a cultural indicator by including the variable *examples of entrepreneurship related to SDGs*.

Socio-economic, ecological and economic factors are considered as market-related factors that pull sustainability-focused entrepreneurs into the market. The variables accounting for these factors are once again taken from the GEM NES, OECD and World Bank data. In this context, socio-economic factors comprise a country's status on education, unemployment and health and were operationalized by the country's *unemployment rate*, *literacy rate*, *enrollment rate of school children*, *poverty headcount ratio*, *access to physicians*, *gender discrimination* and *percentage share of income*. It was challenging to obtain data about ecological factors across multiple countries. Therefore, ecological factors are only measured by the two variables *exposure to pollution* and *carbon dioxide emissions*. Economic factors are assessed by incorporating the variables *GDP per capita*, *exports*, *inflation*, *lending rate*, *infrastructure* and *access of rural population to electricity*.

### 5.3.3 Analytical procedure

#### *Preprocessing*

A first explorative analysis of the data showed that especially the World Bank data had a substantial number of outliers. As a remedy, we winsorized extreme values to the 95th percentile (Erceg-Hurn & Miroseovich, 2008). For some variables, the distribution was severely skewed. This was addressed by using their logarithm.

#### *Machine learning models*

To explore the role of the five different categories for social and ecological considerations, we applied two machine learning models that complement each other by leveraging their unique strengths and weaknesses. It should be stressed that this approach deviates from classical hypothesis-based testing to understand the role of distinct predictors and use statistical significance tests as an evaluative criterion. We decided to use machine learning as it has the advantage that a larger number of predictors can be explored that may have complex (nonlinear and interactive) relationships with the outcome variable of interest. However, we emphasize that this approach has its limitations when it comes to understanding individual predictors, that



is, knowledge of their specific role, statistical significance and generalizability beyond the analyzed sample. To account for the latter, we analyzed the stability of the predictions as part of the overall cross-validation workflow.

First, we applied a LASSO (least absolute selection and shrinkage operator) model. It belongs to the class of regularized linear machine learning models (James et al., 2011), which can handle high dimensional data, as in the case of many predictors in relation to the sample size. A LASSO model is a traditional linear least squares regression model that uses a penalty for unnecessary predictors and selects predictive ones without capitalization on chance (i.e., overfitting). In addition, as a linear model, it allows the interpretation of predictors. For this purpose, variable importance plots can rank the predictors regarding their predictive values. As aforementioned, the focus is on the set of predictive variables subsumed under the five categories of governmental/regulatory, cultural, socio-economic, ecological and economic indicators. A disadvantage is that the LASSO model is not able to reflect nonlinear or interactive relationships beyond specific hypotheses and model specifications (i.e., product terms and polynomials).

Second, we applied a random forest model (James et al., 2011; Strobl et al., 2009), is a powerful machine learning model that allows to explore any pattern of linear, nonlinear, or interactive relationships. This analytical power comes with the disadvantage of being a typical “black box” method. As such, variable importance plots do not represent any meaningful, interpretable size (in contrast to LASSO model) but rank the predictors according to their effect on the model’s overall predictive value (e.g., the R-square). Technically, a random forest model combines roughly a thousand regression tree models that differ regarding the subset of the data (gained via bootstrapping) and a randomly selected number of predictors. Each tree uses this set of predictors to split the data into more homogeneous partitions which represent the predicted value for the target variable (given set of predictors and fitted splitting rule). To get an overall predictive value (basis for evaluating the model), all predictions of all trees are averaged.

#### *Analytical workflow*

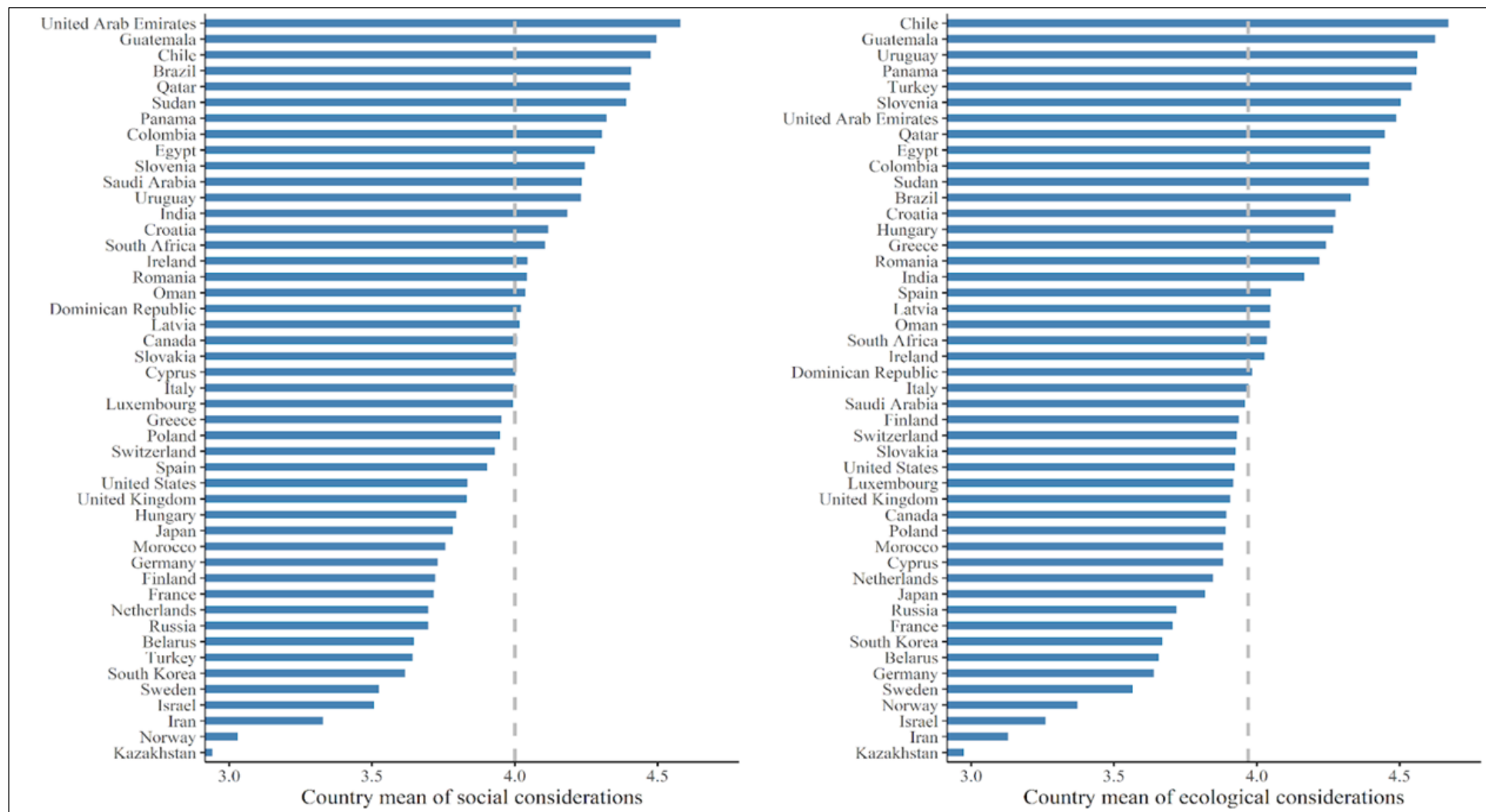
As flexible models (such as a the random forest model) tend to overfit the noise in the data (i.e., the nonsystematic idiosyncrasies of a sample), we followed best practice (James et al., 2011) and applied cross validation to a) generate a performance metric (i.e., R-square) in a part of the sample that was not used for training the model (i.e., the classical training vs. test differentiation) and b) to estimate a performance metric that counterbalances the effect of randomness when splitting the data into training and test data by averaging the metric across

different versions of the split. Due to the sample size of 84 countries, we applied bootstrapping for this purpose. Hence, we drew 20 bootstrap samples from our sample, each resulting in a so-called remainder set of countries that were not part of the respective bootstrap ( $N \sim 25$ ). The models were then trained on the bootstrap sample and evaluated on the remainder. This was repeated 20 times and the R-square was finally averaged. Each of these loops involved three data preprocessing steps: these were a) taking the log of severely skewed variables, b) imputing missing values with a k-nearest neighbor algorithm and c) standardizing the variables. For the k-nearest neighbor algorithm, we tuned models with  $k = 1, 2$  or  $5$  neighbors with the model with  $k=1$  outperforming the rest. That means that a missing value of a country was replaced with the value of the most similar country on all other available predictor variables. For the LASSO model, we tuned the weight for the penalty ( $\lambda$ ; ranging from  $.001$  to  $1$ ) and for the random forest model, we varied the number of randomly selected predictors per tree (ranging from  $1$  to  $10$ ). For the LASSO, the optimal  $\lambda$  value was  $.11$  (*social considerations*) and  $.16$  (*ecological considerations*) resulting in a substantial shrinkage to zero for most predictors, in particular for the ecological considerations model. For the random forest, the optimal number of selected predictors per tree was  $2$  (*social considerations*) and  $8$  (*ecological considerations*).

## 5.4 Results

### 5.4.1 Descriptive statistics

The initial explorative analysis showed that the overall averages in social and ecological considerations were quite high ( $M = 3.95$ ,  $SD = .35$ ,  $M = 4.01$ ,  $SD = .39$ , for social and ecological considerations, respectively). Figure 5.1 shows the country differences in these means. Depicted are the country means of the  $N = 47$  countries in the GEM APS dataset. It should be noted that both target variables on country-level are strongly correlated ( $r = .84$ ,  $p < .001$ ,  $N = 47$ ), which is considerably stronger than on the individual level ( $r = .52$ ,  $p < .001$ ,  $N = 27,991$ ). Figure 5.1 illustrates these relations, as countries considering social considerations generally also consider ecological issues. This was most pronounced for entrepreneurs in the United Arab Emirates, Guatemala, Chile and Egypt. In contrast, Western countries show rather low degrees of social and ecological considerations on average. Only a few countries show a diverging pattern of social versus ecological considerations such as Turkey and Hungary, showing low social but high ecological considerations and Saudi Arabia showing high social but low ecological considerations.

**Figure 5.1: Country means of nascent entrepreneurs' and business owners' social and ecological considerations***Source: Own illustration.*

### 5.4.2 Main analysis

#### *Social considerations as target variable*

The first trained model applied to predict social considerations in entrepreneurship was the LASSO model, which resulted in an R-square of .14 and an RMSE (root mean square error) of 1.25. Figure 5.2 shows the variable importance plots. As the predictors were standardized, the plot can directly be interpreted in terms of linear standardized regression coefficients. To ease interpretation, we color-coded the class of predictors according to the five categories governmental/regulatory, cultural, socio-economic, ecological and economic factors. As the plot highlights, the majority of predictors turned out to have only little predictive value. This is remarkable in particular for certain cultural variables such as *humane* and *future orientation* and for socio-economic and economic indicators such as *unemployment*, *inflation*, or *access to electricity*. The variable with the highest predictive value is the cultural variable *in-group collectivism*. Here we find that higher in-group collectivism enhances social considerations in entrepreneurship in a country. This is also reflected by our descriptive results showing that non-Western countries score higher in their average social considerations. Another important predictor is the socio-economic variable *national poverty headcount ratio* predicting that higher poverty in a country is associated with higher social considerations in entrepreneurship. Moreover, the variables *government expenditure on education* and *government policies favoring new firms* are significant predictors in the LASSO model. The results indicate a negative relationship between the government's spending on education and a positive relationship between government policies in favor of new firms with regard to social entrepreneurial considerations. In total, the LASSO model indicates that governmental, cultural and socio-economic factors seem to have a higher relevance than economic and ecological factors.

The linear model was extended to a more flexible model (i.e., the random forest model) which increased the model performance tremendously (r-square = .25, RMSE = .91) indicating the existence of substantial nonlinear and interactive relationships. Similar to the LASSO model, governmental, cultural and socio-economic factors turned out to be the most relevant predictors in the random forest model in Figure 5.3. Once again, the factor *government expenditure on education* plays a large role, representing the most important factor in the random forest model. Moreover, socio-economic factors such as *literacy rate* and *access to physicians* are relevant predictors. In the specific case of the literacy rate, it should be noted that this predictor was not salient in the LASSO model, indicating a more complex, nonlinear relationship. Finally, also

the cultural indicators *examples for entrepreneurship related to the SDGs* as well as *in-group collectivism* seem to play a large role for incorporating social considerations in entrepreneurship. While the importance of in-group collectivism was already highlighted in the LASSO model, the variable indicating the existence of many examples for sustainability-focused entrepreneurship was not relevant in the LASSO model, once again pointing to a more complex, nonlinear relationship. Overall, for social considerations, variables from all categories showed a mix of predictive complex relationships with governmental/regulatory, cultural and socio-economic factors being most prevalent. The overall percentage of explained variance highlights the strength of such models to predict our social considerations on the aggregate level while still leaving two thirds of the differences in social considerations unexplained.

#### *Ecological considerations as target variable*

Looking at the ecological considerations in entrepreneurship, the model performance is similar to the model for social considerations ( $r\text{-square} = .13$ ,  $\text{RMSE} = .97$ ). However, the model shows an even lower number of salient linear predictors. Figure 5.4 highlights that the most important positively related predictor of ecological considerations is the cultural factor *in-group collectivism*. Other relevant predictors are *government expenditure on education* and *social expenditure*, both indicating a negative relationship with ecological considerations in entrepreneurship. Interestingly, governmental variables related to sustainability such as the *environmental policy stringency* or *government support for sustainability-focused startups* do not seem to have a relevant predictive value for ecological considerations in the linear LASSO model. Likewise, ecological factors such as *carbon dioxide emissions* or *exposure to pollution* are also irrelevant in this LASSO model. Overall, we see in the LASSO model that especially governmental and cultural factors predict ecological considerations in entrepreneurship.

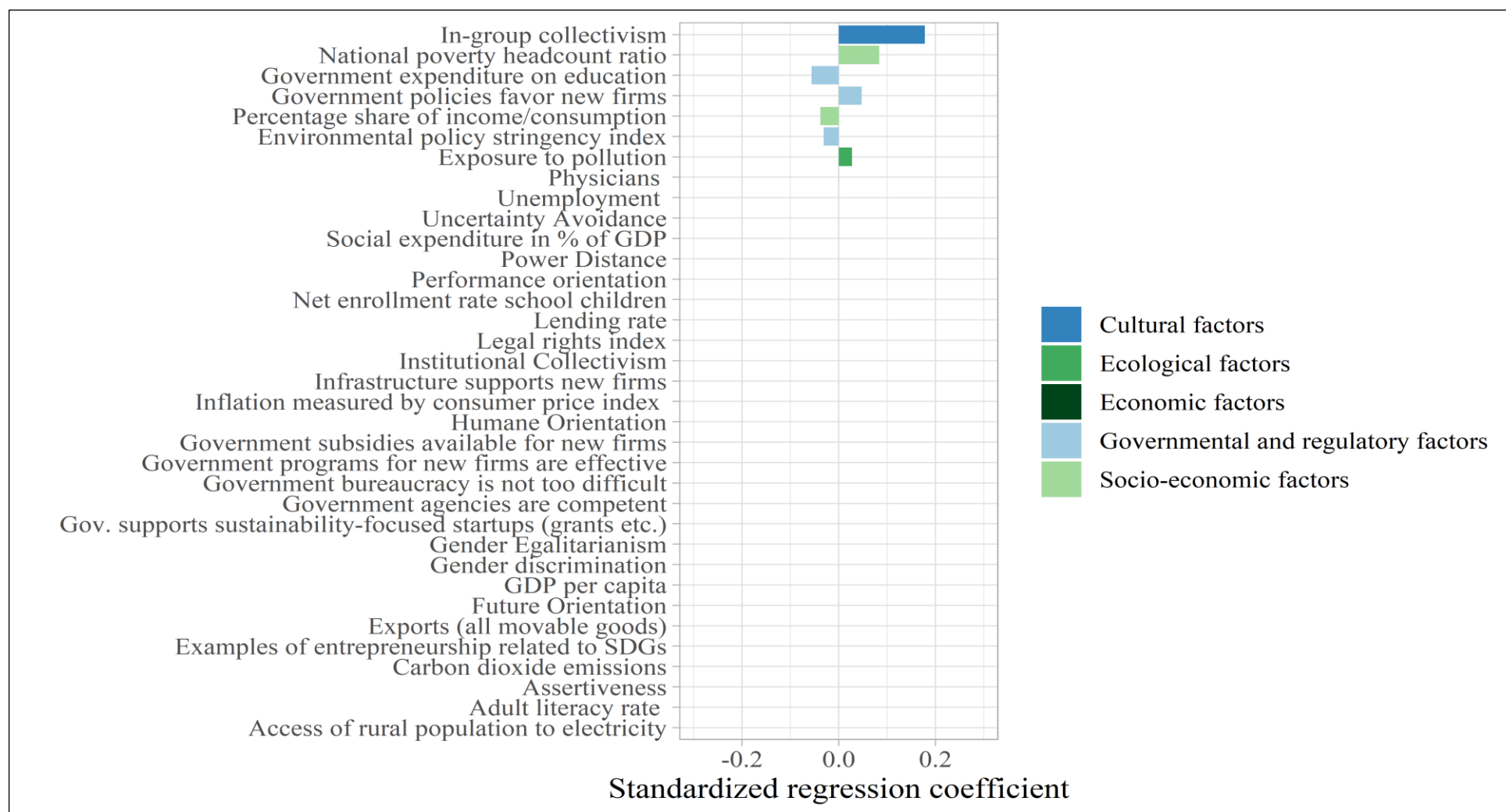
While the random forest model was able to increase the explained variance for predicting social considerations, the improvement was slightly more modest in the case of ecological considerations ( $R\text{-square} = .22$ ,  $\text{RMSE} = .91$ ). Figure 5.5 highlights that the socio-economic factor *adult literacy rate* holds the highest predictive value, followed by the governmental factor *government expenditure on education*. Especially remarkable is the high importance of the three economic factors *lending rate*, *inflation* and *GDP per capita*. Similar to social considerations, the cultural indicators *in-group collectivism* and *examples for entrepreneurship related to the SDGs* are also important predictors. Interestingly, in the random forest model for ecological considerations, the ecological factors *carbon dioxide emissions* and *exposure to pollution* seem to have at least a small predictive value, which they did not have in the previous LASSO model.

This result indicates a more complex, non-linear relationship between these factors and ecological considerations in entrepreneurship. In total, variables from all categories demonstrate a mix of predictive complex relationships in the random forest model, especially with some cultural and economic factors among the most prevalent predictors.

An overview about the relevance of all contextual predictors for social as well as ecological considerations is given in Tables A5.3 and A5.4 in the appendix. The relevance of the predictor is judged based on the random forest model. A predictor has a very low relevance when the importance measure of the predictor explains less than 30% of the maximum variable importance (i.e., the variable importance of the most relevant factor which is for example *government expenditure on education* for social considerations). Likewise, a low relevance describes a variable importance between 30% and 50% while a medium relevance describes a variable importance between 50% and 70% of the maximum variable importance. A high relevance indicates that a predictor explains more than 70% of the maximum variable importance. Finally, Tables A5.3 and A5.4 in the appendix also highlight if a linear relationship exists for the predictor in the LASSO model. If yes, the direction (positive/negative) and the strength of the relationship are listed in brackets. The strength of the relationship is determined by the standardized regression coefficient. In this regard, a regression coefficient below 0.1 indicates a weak linear relationship. A regression coefficient between 0.1 and 0.2 represents a medium strong relationship while a regression coefficient over 0.2 shows a strong relationship.

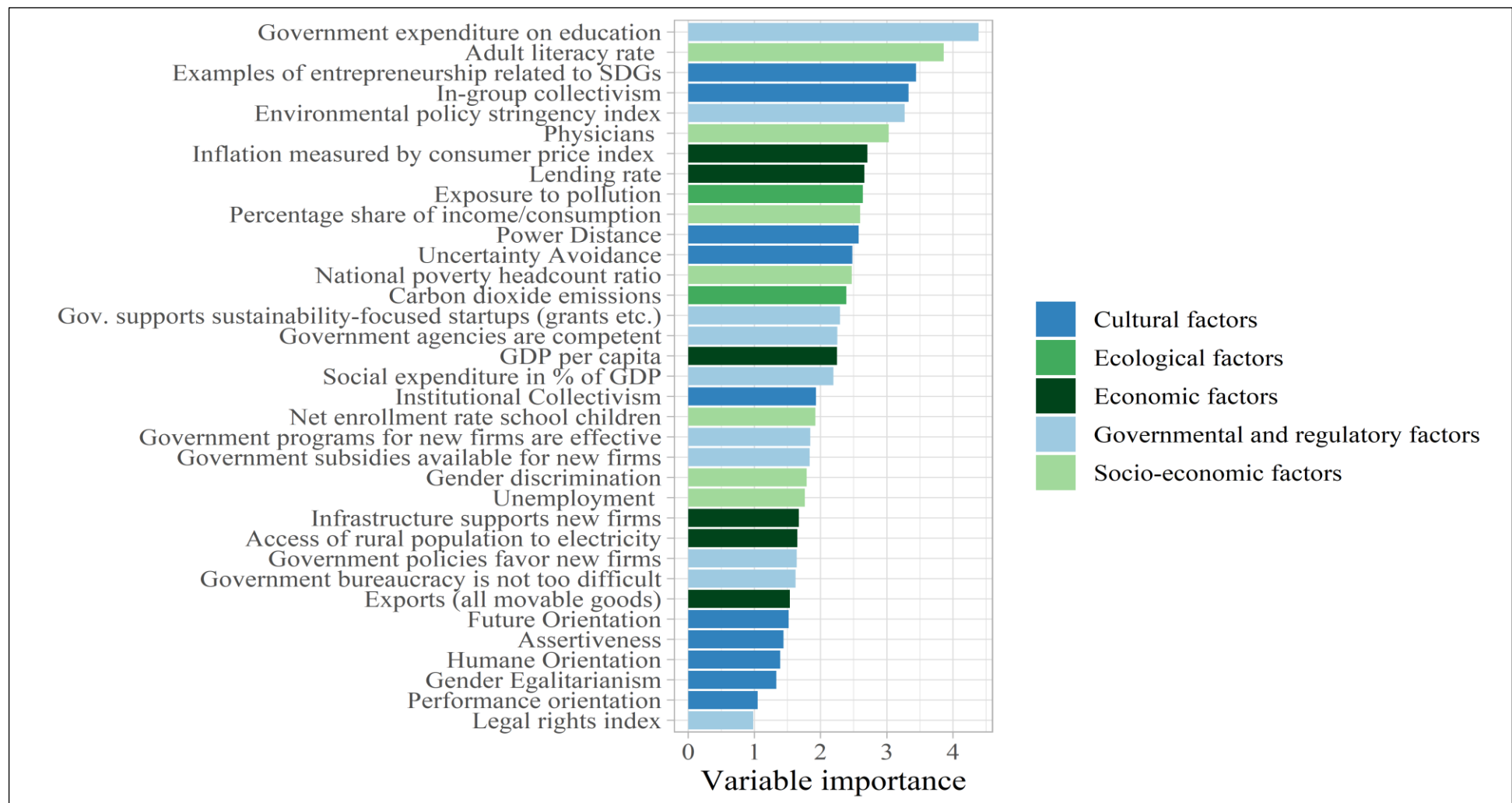
### 5.4.3 Post-hoc analysis

We added a post-hoc analysis that investigated whether the large number of predictors could be reflecting a set of more fundamental societal latent factors. For this purpose, we conducted an exploratory factor analysis. The scree plot of eigenvalues revealed the presence of two prominent factors, with four additional factors showing only marginal deviations from what would be expected due to random variation. Further, the variable-to-factor assignment did not indicate any interpretable or reasonable pattern. To investigate whether these factors predict the social and ecological consideration variable, we extracted principal components matching the factors from the factor analysis (PCA). Then we included these components as predictors in the random forest models. The results for the PCA approach indicated a similar explained variance in the case of social considerations (R-square = .24 vs. .25) and a slightly higher explained variance for ecological considerations (R-square=.26 vs. 21) as compared to the approach with single variables. However, due to the lack of interpretability of the factors in the PCA approach, we decided to maintain the initial approach with single variables.

**Figure 5.2: Variable importance plot for the LASSO model (social considerations)**

Notes: The bars in the plot indicate a linear relationship between country-level factors and social considerations in entrepreneurship.

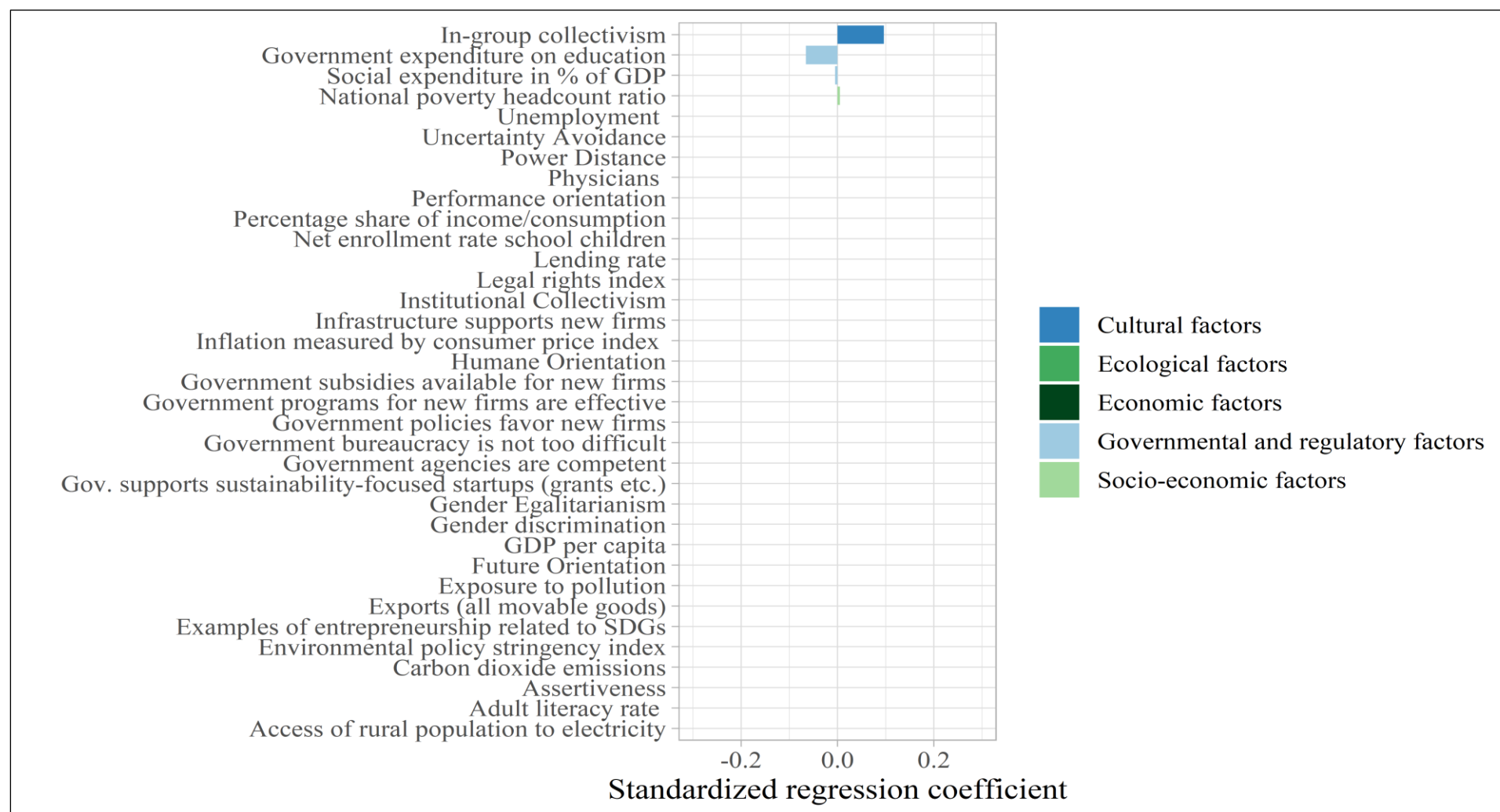
Source: Own illustration.

**Figure 5.3: Variable importance plot for the random forest model (social considerations)**

Notes: Bars in plot indicate relative importance (ranking) of country-level factors in terms of predictive performance for social considerations.

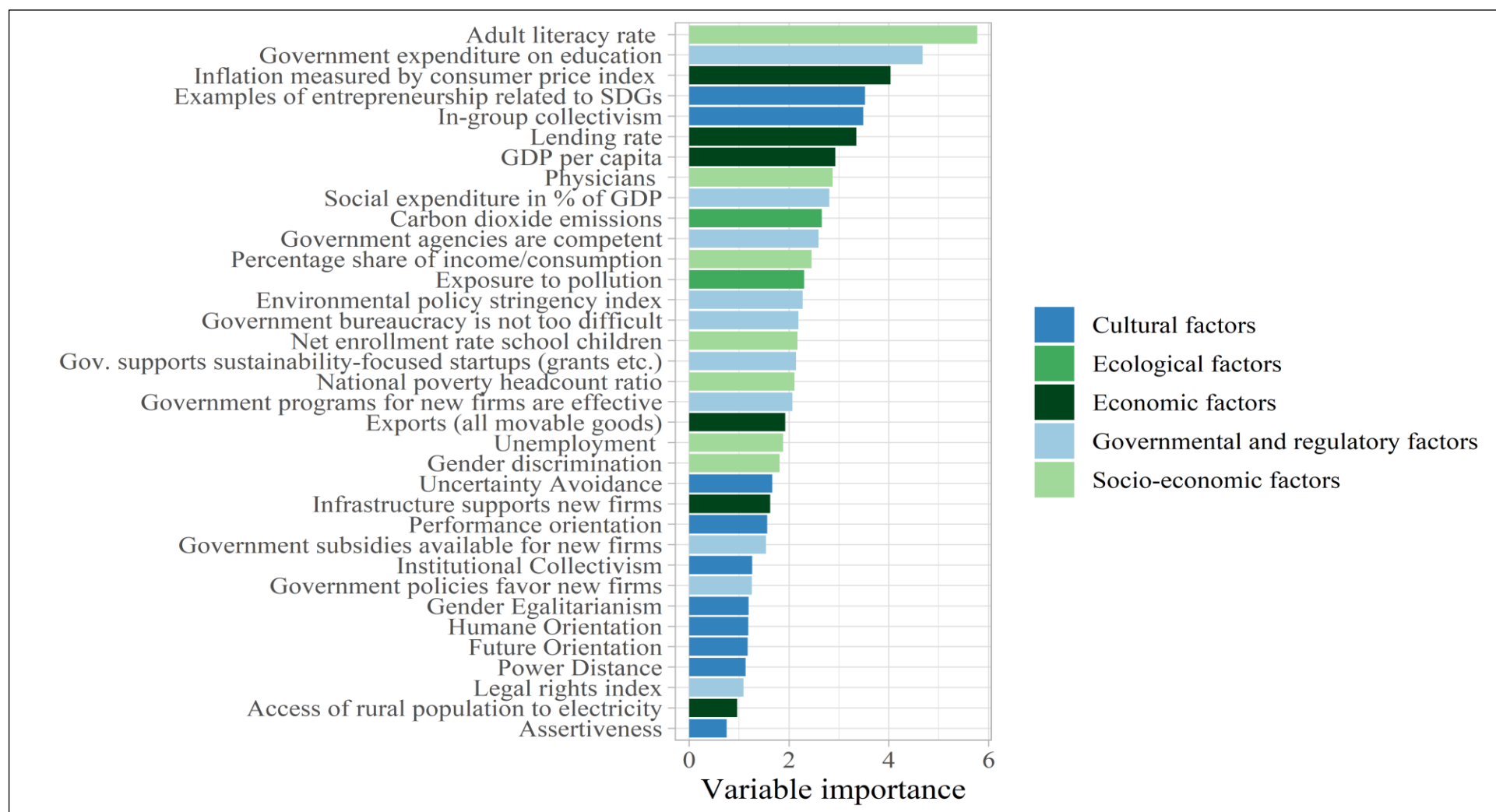
Source: Own illustration.



**Figure 5.4: Variable importance plot for the LASSO model (ecological considerations)**

Notes: The bars in the plot indicate a linear relationship between country-level factors and social considerations in entrepreneurship.

Source: Own illustration.

**Figure 5.5: Variable importance plot for the random forest model (ecological considerations)**

Notes: Bars in plot indicate relative importance (ranking) of country-level factors in terms of predictive performance for ecological considerations.

Source: Own illustration.

## 5.5 Discussion

### 5.5.1 Interpretation of results

Our analyses rely on an explorative machine learning approach to investigate a large number of governmental, cultural, socio-economic, ecological and economic factors and their influence on social and ecological entrepreneurial considerations on country-level. Regarding *social considerations* in entrepreneurship, our results demonstrate that certain governmental, cultural and socio-economic factors seem to be the most prevalent predictors. Our mixed findings with regard to governmental factors are in line with prior research. More specifically, while government support for education and new ventures exhibits a positive impact on social considerations (Hoogendoorn, 2016; Stephan et al., 2015; Tunio et al., 2021; Yi, 2021), other government-related variables, particularly support for sustainability-focused ventures, did not demonstrate any significant predictive value (Bernardino et al., 2016). Hence, our results support the previous insights of Hoogendoorn et al. (2019) that sustainability-focused entrepreneurs still face institutional barriers. However, our findings suggest that reducing these barriers may be more effectively achieved through improved access to general entrepreneurial support, rather than by specific sustainability-focused programs (Hoogendoorn et al., 2019).

Moreover, we highlight the relevance of *in-group collectivism* in the respective culture which supports previous findings in the literature (Canestrino et al., 2020; Saleem et al., 2018). In contrast and surprisingly, neither *humane orientation* nor *future orientation* displayed any predictive value. This indicates that sustainability-focused entrepreneurship may be established as a means to stabilize the social and collective structure in societies and local subsystems (e.g., the community) and as an expression of norms to support the social and environmental system. In contrast, a lack of predictive utility of *humane and future orientation* may indicate that social entrepreneurship in particular is not a direct result of a country's overall level of empathy nor its rational strategy to solve future ecological problems. It should be emphasized that this argumentation should not be transferred to the individual level since individual entrepreneurs may indeed be motivated to start a business out of empathy.

Interestingly, the predicted positive association between *national poverty headcount ratio* and social considerations in our LASSO model contradicts prior research indicating that lower social problems enhance social entrepreneurship (Kimmitt et al., 2022; Griffiths et al., 2013; Gunawan et al., 2021; Prasetyo et al., 2023). Our results rather suggest the opposite. More social problems in a country seem to increase social considerations in entrepreneurship, supporting

the perspective of Austin et al. (2006) that a higher extent of problems in a country generally fosters entrepreneurial opportunities. This is also reflected in our descriptive results indicating that socially advanced Western countries score lower in their average degrees of social considerations in entrepreneurship. Hence, we can conclude that entrepreneurs are less likely to address social problems themselves when the country that they are operating in is already providing a certain spectrum of social security and social welfare. However, our results also highlight that not all social problems and socio-economic predictors seem to have the same relevance and effect on social considerations and thus should be distinguished. This finding is supported by further socio-economic factors such as *literacy rate* and *access to physicians*. According to the random forest model these factors seem to be relevant, but not in terms of a linear relationship as indicated by the LASSO model but rather seem to have a more complex (i.e., non-linear and/or interactive) relationship. The exact nature of these relationships should be investigated in future research.

In terms of *ecological considerations*, we find a substantially lower level of predictability compared to social considerations. Nevertheless, we find that specific governmental, cultural and economic indicators appear to be the most prevalent predictors for ecological considerations of entrepreneurs. The importance of our economic indicators is in line with previous research arguing that economic and ecological market failures and more importantly the perception of these market failures as business opportunities, can draw entrepreneurs with ecological considerations into the market (Dean & McMullen, 2007; Kirkwood & Walton, 2010; Mondal et al., 2023; Ye et al., 2020). Our descriptive results support this argumentation by indicating higher average degrees of ecological considerations in entrepreneurship in non-Western countries. These countries typically have more unaddressed economic and ecological problems which increases the likelihood of entrepreneurs to address these issues themselves and to incorporate ecological considerations in their ventures. Similar to the results for social considerations, we find that governmental and cultural factors seem to matter for ecological considerations. Again, it is particularly intriguing that the cultural dimension *future orientation* did not demonstrate any significant predictive value in our sample, which contradicts previous research on cultural dimensions and their influence on ecological and sustainable entrepreneurship (Canestrino et al., 2020; Koe & Majid, 2014). This result highlights that entrepreneurs are more inclined to integrate ecological considerations into their entrepreneurial activities when their primary concern is the well-being of others in the present, as opposed to being primarily focused on future concerns.

In summary, our analysis reveals that certain contextual factors are predictive of both social and ecological considerations, whereas other factors exhibit significant distinctions between these two types of sustainability-focused entrepreneurship. More specifically, our results demonstrate that very similar governmental and cultural indicators such as *governmental expenditure on education* and *in-group collectivism* predict social as well as ecological considerations of entrepreneurs. In contrast, regarding market-related contextual factors such as socio-economic, ecological and economic predictors, our results highlight important differences for social and ecological considerations. While socio-economic predictors are particularly relevant for social considerations, ecological considerations are more affected by economic predictors. One possible explanation for this difference could be the high dependence of ecological innovations on technology and financing. Hence, ecological considerations could be more difficult to implement in comparison to social considerations as they often require investments in research and development (Lee & Min, 2015) to provide technology-based enablers (Mondal et al., 2023). In other words, ecological considerations are more costly and riskier to implement and therefore depend more on the economic factors in a country.

### 5.5.2 Theoretical and practical implications

#### *Theoretical implications*

Our insights contribute to the research stream on sustainability-focused entrepreneurship by highlighting how country-level, contextual factors predict social and ecological considerations in entrepreneurship. We answer the research calls of Moya-Clemente et al. (2020) and Stephan et al. (2015) by including a large number of contextual predictors (structured into the five categories *governmental*, *cultural*, *socio-economic*, *ecological* and *economic* factors) and a large sample of 84 different countries. Our results highlight that social and ecological entrepreneurial considerations are predicted by similar governmental and cultural, but by different market-related, contextual factors. More specifically, we show that governmental factors such as *government support for education* and *for new ventures* as well as cultural factors such as *in-group collectivism* affect both social and ecological considerations. In contrast, socio-economic factors are most prevalent for social considerations in entrepreneurship while ecological considerations seem to be predicted by economic factors. Hence, we contribute to prior research by demonstrating certain similarities but also differences between the predictors on the different types of sustainability-focused entrepreneurship. This suggests that a distinction is necessary between the different predictors as well as the different types of sustainability-focused entrepreneurship.

Overall, our findings aim to guide future research by identifying potential variables and categories of contextual factors that merit closer examination. However, due to the black box nature of our analyses, the precise roles of these predictors remain inconclusive and should be investigated in future research. This may be specifically relevant for the socio-economic, ecological and economic variables that turned out to be relevant in the random forest model and thus, may display more complex relationships with sustainability-focused entrepreneurship.

### *Practical implications*

Since our research focuses on country-level, external predictors of sustainability-focused entrepreneurship, our results provide important insights for governments and policy makers around the world. For once, it is important for policy makers to note that social and ecological considerations might be affected by similar governmental and cultural factors. With regard to governmental factors, social and ecological considerations can be pushed to some extent by general government support for new ventures (Hoogendoorn, 2016; Stephan et al., 2015; Tunio et al., 2021; Yi, 2021). As specific government support for sustainability-focused ventures does not seem to yield any positive effect on social and ecological considerations in our analysis, it might be more important for governments to focus on improving their general support for entrepreneurs instead of introducing too specific, topic-related programs (Hoogendoorn, 2016; Tunio et al., 2021; Yi, 2021). However, this result should be confirmed through further research.

Moreover, the high relevance of the cultural factor *in-group collectivism* throughout all our models for social as well as ecological considerations has important implications for policy makers. This result shows that a society's higher focus on people as a collective can significantly enhance sustainability-focused entrepreneurship. Hence, to foster social and ecological considerations in entrepreneurial activities, policy makers should try to promote and encourage other-regarding values in their society.

Finally, policy makers should be aware that social and ecological considerations are affected by different market-related, contextual factors. Specifically, social considerations seem to be enhanced when entrepreneurs operate in a socio-economic environment that provides challenges that can be addressed by an entrepreneurial venture. Hence, policy makers should ensure that existing social challenges are visible for entrepreneurs so that they can address these challenges and enhance their social entrepreneurial considerations. On the other hand, ecological considerations are largely predicted by economic factors that enable entrepreneurs to address certain business opportunities. Accordingly, policy makers could try to increase the

entrepreneurial perception of economic opportunities to enhance ecological considerations in new ventures.

### **5.5.3 Limitations and future research**

Our research relies on a relatively new machine learning approach to investigate a large number of contextual predictors of social and ecological considerations in entrepreneurship. Even though this approach allows us to include a plethora of contextual predictors which would not be possible in conventional methodological approaches such as regression analyses, it comes at the cost of limitations regarding the evaluation and interpretation of the specific role of individual predictors. This implies that our results should serve as a starting point for further, hypothesis-based research, focusing on the predictors we identified as being most relevant (Hofman et al., 2017).

In addition, the marginal influence of ecological factors for ecological considerations in our analyses warrants further investigation and examination. Within the scope of our analysis, limited to World Bank and OECD data, only two variables were available with sufficient country coverage to be included in our analysis. Future research might try to access additional data on ecological factors to better determine the relation between ecological factors and sustainability-focused entrepreneurial activities.

Finally, our analyses and interpretations rely on the assumption of validity of the GEM items for nascent entrepreneurs' and business owners' social and ecological considerations. We assume that these items correctly measure sustainability-focused entrepreneurship. Even though there are regular quality controls regarding the reported data, there are no formal investigations such as methods of cognitive pretesting (Scott et al., 2021) that can validate this assumption. This issue becomes even more prevalent in cross-cultural projects as items might be understood differently due to language or cultural differences. Hence, the GEM data would profit from investigations of cross-cultural measurement invariance to ensure that respondents from different cultures understand measures in a similar way (Hult et al., 2008). From this perspective, the predictive value of collectivism could either be regarded as a sign of validity (i.e., collectivist cultures have a higher tendency to value social goals) or, in contrast, as a sign of response bias (i.e., respondents from collectivist cultures show a higher tendency to report sustainability-focused considerations). Consequently, we recommend adding analyses and considerations of measurement validity and cross-cultural invariance in future rounds of the GEM annual surveys.

## **5.6 Conclusion**

In summary, this chapter highlights that the social and ecological considerations of entrepreneurs are affected by a variety of contextual predictors on country-level. These insights can be instrumental for governments and policy makers in fostering an enabling environment for sustainability-focused entrepreneurial action and promoting its diverse types within their respective countries. Ultimately, these efforts can contribute to enhancing overall development and welfare at the national level.



## Chapter 6

### Conclusion

*The last chapter of this dissertation provides a comprehensive conclusion by summarizing the main findings of each chapter and by answering the related research questions (Section 6.1). In addition, Section 6.2 lines out the subsequent implications for theory and practice. Finally, this dissertation concludes with a discussion of limitations and possible avenues for future research (Section 6.3).*

## 6.1 Summary of main findings

This section summarizes the main findings of the previous chapters and answers the related research questions. An overview of these questions and results is provided in Table 6.1. A more detailed explanation of the findings per chapter is given subsequently.

**Table 6.1: Overview of main findings**

Chapter	RQ	Findings
<i>Individual predictors</i>		
2	How does religion influence the entrepreneurial process when viewed through the lens of the theory of planned behavior?	<ul style="list-style-type: none"> <li>▪ Ambivalent role of religion in entrepreneurial process according to TPB</li> <li>▪ Positive outcomes of religion on entrepreneurial attitudes and on behavioral control</li> <li>▪ Negative outcomes of religion on behavioral control and subjective norms</li> <li>▪ Need for further research on religion and entrepreneurial intentions</li> </ul>
3	How do sustainability-focused intentions translate into social actions of early-stage entrepreneurs? And which perceptual factors moderate this relationship?	<ul style="list-style-type: none"> <li>▪ Existence of sustainability-related intention-action gap in entrepreneurship</li> <li>▪ In line with theoretical assumptions from the TPB, sustainability-focused intentions enhance social entrepreneurial actions</li> <li>▪ Positive perceptions such as self-efficacy and knowing other entrepreneurs strengthen translation of sustainability-focused intentions into social actions</li> <li>▪ Fear of failure serves as negative moderator and weakens the implementation of social actions</li> </ul>
4	How do reductions in well-being influence the subsequent behavior of the self-employed in terms of venture-related investment decisions?	<ul style="list-style-type: none"> <li>▪ Importance of behavioral perspectives for investment decisions of self-employed as consequence of reduced well-being</li> <li>▪ Reductions in financial well-being are positively related to time investments supporting the performance feedback perspective</li> <li>▪ Reductions in non-financial well-being are negatively related to time and monetary investments supporting the broadening-and-build perspective</li> </ul>
<i>Contextual predictors</i>		
5	Which contextual factors predict social and ecological entrepreneurial considerations on country-level?	<ul style="list-style-type: none"> <li>▪ Governmental, regulatory and cultural factors have the highest predictive power for social and ecological considerations in entrepreneurship</li> <li>▪ Socio-economic factors show a high relevance for social considerations</li> <li>▪ Economic factors are relevant predictors for ecological considerations</li> </ul>

**Chapter 2** highlights how religion influences the entrepreneurial process through the lens of the TPB (RQ 1). The systematic literature review of 107 empirical articles reveals an ambivalent role of religion with positive as well as negative effects. For once, the chapter points

out positive outcomes of religion on entrepreneurial attitudes, such as resilience and altruism and on behavioral control by providing access to resources and networks. In contrast, religion can also lead to negative consequences for behavioral control, such as limited access to financing and for subjective norms due to religious restrictions. These restrictions predominantly affect women entrepreneurs. Overall, the categorization of articles according to the TPB shows that especially the influence of religion-related entrepreneurial attitudes, subjective norms and perceived behavioral control on entrepreneurial actions is well-researched. Simultaneously, this chapter emphasizes the need for further research on the influence of religion on entrepreneurial intentions and its impact on the gap between intentions and actions.

**Chapter 3** concentrates on the juncture between sustainability-focused intentions and actions in early-stage entrepreneurship and on relevant perceptual moderators in this context (RQ 2). In line with the theoretical assumptions from the TPB, the results show that sustainability-focused intentions positively predict social entrepreneurial actions. Moreover, positive perceptions such as self-efficacy and knowing other entrepreneurs as role models strengthen this relationship. In contrast, the negative perception of fear of failure shows a negative interaction effect and weakens the implementation of social actions. This corroborates the importance of positive perceptions for entrepreneurship in general and for aspects of sustainability in particular. Especially in today's challenging world with severe effects of social injustice and climate change, it becomes increasingly important to ensure that entrepreneurial intentions for sustainability also translate into the according actions. Chapter 3 yields valuable insights on this topic and highlights the need for further research on the sustainability-related intention-action gap.

Considering well-being as a final individual predictor, **Chapter 4** investigates how reductions in well-being influence the subsequent investment decisions of the self-employed (RQ 3). By drawing on a sample of German self-employed during COVID-19, Chapter 4 answers this question by emphasizing the importance of two behavioral perspectives for the decision making of self-employed. We show that reductions in financial well-being are positively related to time investments, thereby providing support for the performance feedback perspective indicating that negative performance might induce higher efforts to improve the business situation. Further, reductions in non-financial well-being are negatively related to time and monetary investments supporting the broadening-and-build perspective in that negative psychological experiences can narrow the thought-action repertoire and hinder resource deployment.

Conclusively, this chapter provides valuable insights on the importance of well-being for the self-employed and the continuation of the venture.

Finally, **Chapter 5** extends this dissertation to a perspective on multiple contextual predictors. Specifically, we analyze which contextual factors predict social and ecological considerations in entrepreneurial actions on country-level (RQ 4). To provide a holistic perspective, data sets from the Global Entrepreneurship Monitor (GEM), the World Bank and the OECD are combined over 84 countries. By employing an explorative machine learning approach, this chapter shows that especially governmental, regulatory and cultural factors have a high predictive power for social and ecological considerations. Moreover, socio-economic factors have a high relevance for social considerations while economic factors hold relevance for ecological considerations. This suggests that entrepreneurs can be encouraged to incorporate social and ecological aspects in entrepreneurship through country-level factors such as the government, regulations and culture.

Overall, the insights from the literature review and the three quantitative empirical studies in this dissertation highlight that the entrepreneurial process is a complex and highly individualized mechanism (Koe, 2016; Walter & Heinrichs, 2015). It can be positively and negatively influenced by different predictors on individual and contextual level.

## 6.2 Implications for theory and practice

### 6.2.1 Theoretical implications

This dissertation provides multiple implications for theory and practice. Starting with the theoretical implications, **Chapters 2 to 4** contribute to the understanding of entrepreneurship and self-employment as highly individualized disciplines (Koe, 2016; Walter & Heinrichs, 2015). By focusing on different **individual predictors**, these chapters show that the entrepreneurial process is shaped by various traits and predispositions of the entrepreneur or self-employed. This highlights the need to consider individual aspects in these fields of research (Walter & Heinrichs, 2015).

More in detail, the literature review in **Chapter 2** indicates positive as well as negative implications of religion on the entrepreneurial process. By highlighting positive effects on attitudes and behavioral control, this chapter corroborates that religion can be an enabler for entrepreneurial actions, especially for altruistic and social aspects (Baikovich et al., 2022; Chen et al., 2023; Cater et al., 2017; Sharifi-Tehrani, 2023). However, the identified negative

outcomes of religion on other aspects of behavioral control and on subjective norms for entrepreneurship (Anglin et al., 2023; Jones et al., 2024; Tlaiss & McAdam, 2021a, 2021b; Wasserman & Baikovich, 2024), emphasize the ambivalent role of religion (Jones et al., 2024; Yan, 2020). In this regard, religion can be a double-edged sword with multifaceted consequences according to different circumstances (Hollow, 2022). Especially religious affiliation, level of religiosity, the characteristics of the entrepreneur and the individual entrepreneurial endeavor can lead to complex effects of religion in entrepreneurship (Hollow, 2022).

The quantitative empirical study in **Chapter 3** extends the perspective on individual predictors by considering perceptual moderators for the sustainability-related intention-action gap. Thereby, it contributes to important literature streams about sustainability and entrepreneurship. It addresses the need to specify the intention-action gap for different disciplines (Kautonen et al., 2013) and enhances our theoretical understanding of the sustainability-focused entrepreneurial process. From the results, we can conclude on the importance of intentions to ensure the implementation of social actions. Moreover, Chapter 3 corroborates prior research that individual perceptions play an essential role for sustainability in early-stage entrepreneurship (Hanohov & Baldacchino, 2018; Kim et al., 2020; Patzelt & Shepherd, 2011). In this regard, similar perceptual moderators seem to apply to traditional and sustainability-focused behavior (Chevalier et al., 2022; Van Gelderen et al., 2015, 2018). Finally, the chapter also supports the suitability of the TPB in this context (Kunttu et al., 2017; Prabowo et al., 2022; Romero-Colmenares & Reyes-Rodríguez, 2022; Thelken and de Jong, 2020). Beyond the scope of previous studies, it points out the link between intentions and actions, thereby advancing the understanding of the most important step in the sustainability-focused entrepreneurial process.

The focus of **Chapter 4** remains on individual predictors by empirically researching the consequences of well-being for venture-related investment decisions in self-employment. This extends our knowledge about well-being in self-employment and yields important insights into two behavioral perspectives. While predominantly used to describe the behavior of decision makers in firms (Alexy et al., 2016; Argote & Greve, 2007; Greve, 2003), Chapter 4 shows that the performance feedback perspective can also predict the investment behavior of the self-employed. Similar to large and established firms, the self-employed increase search efforts with regard to time investments when facing negative performance feedback in terms of decreasing financial well-being (Alexy et al., 2016; Greve, 2003). As a second behavioral perspective, the chapter contributes to the broadening-and-build theory by applying the reverse logic. While

initially focusing on a broader thought-action repertoire and higher cognitive resources as outcomes of positivity (Fredrickson, 1998, 2001, 2004), the reverse logic of negativity can also be relevant to determine the behavior of self-employed during crisis times. Thus, Chapter 4 points out the severity of reductions in non-financial well-being altering and restraining venture-related investments.

The last quantitative empirical study in **Chapter 5** takes a broad and explorative approach to **contextual predictors** for social and ecological considerations in entrepreneurial actions. This chapter goes beyond the scope of previous research by including a large sample and a large number of contextual predictors from five categories. The results indicate that social and ecological considerations are predicted by similar governmental and cultural, but by different market-related, contextual factors. Hence, this chapter contributes to research on sustainability in entrepreneurship (Muñoz, & Cohen, 2018; Schaefer et al., 2015) and demonstrates similarities as well as differences between the contextual predictors for the different types of sustainability-focused entrepreneurship (Schaefer et al., 2015; Thompson et al., 2011).

In total, this dissertation contributes to a broader understanding of traditional and sustainability-focused behavior of entrepreneurs and self-employed based on different multi-level predictors. It highlights the complexity of these disciplines requiring a distinction between different predictors, stages and directions of the entrepreneurial process.

### 6.2.2 Practical implications

This dissertation yields further practical insights for entrepreneurs, self-employed and policy makers.

#### *Entrepreneurs and self-employed*

Starting with entrepreneurs and self-employed, this dissertation points out the need to be aware of the complexity of the entrepreneurial process and the relevance of different predictors. Specifically, the first three studies emphasize the importance of **individual predictors** such as subjective beliefs, perceptions and feelings that can alter traditional and sustainability-focused behavior. **Chapter 2** for instance describes that religious beliefs often influence a venture and the venture-related decision making (Siwale et al., 2023; Tahir, 2023). This means that strategies and operations might be guided by these beliefs, leading to a different entrepreneurial process depending on the individual religious adherence and extent of religiosity.

**Chapter 3** highlights further practical implications for early-stage entrepreneurs with regard to the sustainability-related intention-action gap. In this context, entrepreneurs should be aware that they often have subjective perceptions that influence social actions. Especially fear of failure can restrain the entrepreneur's commitment to implement social aspects in a venture. Thus, it is important to counter negative perceptions and to concentrate on positive perceptions to ensure sustainability-focused behavior. Helpful positive aspects are for instance high self-efficacy and the connection to other entrepreneurs as role models. Previous research has underlined the need for these positive perceptions in entrepreneurship (Abbasianchavari & Block, 2022; Arenius & Minniti, 2005; Koellinger et al., 2007). In this regard, self-efficacy can be strengthened through target-oriented training (Gielnik et al., 2020) and networking can increase the connection to role models (Bosma et al., 2012; Klyver & Grant, 2010).

Additional practical implications can be derived from **Chapter 4** for the self-employed with regard to well-being. The self-employed require a certain awareness that their well-being might fluctuate and decrease in today's fast-changing business environment and that there are potential consequences for investment decisions. The results show that many self-employed already rely on increased time investments to develop their venture when financial well-being suffers and when financial resources are depleted during a crisis. Thus, time investments can be a viable and recommendable way to take action to address critical business situations (Foo et al., 2009; Giones et al., 2020; Nguyen et al., 2024; Stephan et al., 2021). Nonetheless, these time investments should be handled from a broad perspective with the aim of generating long-term value for the venture. With regard to reductions in non-financial well-being, it is important for the self-employed to note that the induced negativity can be so harmful and restrictive to their investments that the venture might not survive. The self-employed could try to counteract such a negative outcome by concentrating on those aspects of the venture that they can still control.

The relevance of **contextual predictors** for sustainability-focused entrepreneurial actions is explained in **Chapter 5**. The resulting implications apply predominantly to policy makers. However, entrepreneurs should still know that they operate in the context of a plethora of contextual factors that can influence their ventures and their individual entrepreneurial actions. Especially with regard to cultural predictors that are relatively stable over time (Beugelsdijk et al., 2015; Sperber & Hirschfeld, 2004), entrepreneurs need to be aware of possible consequences. They might live in a culture with higher or lower in-group collectivism which can foster or restrict the propensity to incorporate social and ecological aspects in a venture.

*Policy makers*

This dissertation yields further implications for policy makers. Starting with the importance of religion as an **individual predictor (Chapter 2)**, regulatory frameworks should consider that entrepreneurs and self-employed incorporate religious beliefs in their ventures. In this context, policy makers should ensure that regulations are inclusive and leave room for religious freedom and diverse religious practices. However, policy makers should also ensure that regulations and support measures prevent religion-related discrimination in entrepreneurship.

Moreover, the results in **Chapter 3** regarding the sustainability-related intention-action gap emphasize the need for policy makers to reduce negative perceptions and to stimulate positive perceptions. Specifically, fear of failure can restrain the implementation of social actions, even when the entrepreneur has intentions for sustainability. Since fear of failure can also arise from external sources like the entrepreneurial context (Cacciotti et al., 2016), policy makers should be aware of their influence on such perceptions. A complex institutional environment with high bureaucracy and high regulatory and legal demands could increase entrepreneurs' fear of failure and shift the focus from sustainability to more economic and survival-related actions. Thus, policy makers should try to reduce institutional barriers to avoid negative implications. Simultaneously, policy makers should create a supportive environment that fosters positive perceptions. Entrepreneurs could for example profit from practically oriented entrepreneurial training to enhance their self-efficacy (Gielnik et al., 2020; Piperopoulos & Dimov, 2015). Moreover, policy makers can promote entrepreneurial associations and networking events in order to increase entrepreneurs' connection to role models (Bosma et al., 2012; Klyver & Grant, 2010).

**Chapter 4** highlights important implications for policy makers regarding well-being in self-employment. In the face of increased time investments due to reductions in financial well-being, the self-employed would benefit from affordable external consulting to maintain a broad long-term perspective and to increase the venture's resilience with their effort. Further institutional support could be provided for important time-intensive tasks such as further education, digitalization, or business model innovation (Audretsch et al., 2023). In addition, tax incentives or other financial support measures might convince the self-employed to complement time investments with monetary investments to develop their venture. With regard to reductions in non-financial well-being, it is important that policy makers counteract the resulting lack of investments since it could lead to a large wave of crisis-related exits from self-employment that is potentially harmful for society (Klimas et al., 2021). Hence, policy makers should ideally



reduce regulations that deprive the self-employed of control over their venture. Instead, the self-employed could profit from psychological reassurance that they are still in control so that they can mitigate the negative impact of reductions in non-financial well-being on their investments.

The perspective on **contextual predictors** in **Chapter 5** highlights the relevance of governmental and regulatory factors for social and ecological considerations. It shows that policy makers can really make an impact to foster sustainability in entrepreneurship. However, this impact cannot be achieved through specific government support for sustainability-focused ventures, but rather through general government support for new ventures (Hoogendoorn, 2016; Stephan et al., 2015; Tunio et al., 2021; Yi, 2021). Also noteworthy for policy makers is the high relevance of the cultural factor in-group collectivism. Even though cultures are relatively stable over time (Beugelsdijk et al., 2015; Sperber & Hirschfeld, 2004), policy makers can try to increase other-regarding values and a focus on the people in a society to foster social and ecological considerations. Additionally, policy makers should be aware of the effect of market-related, contextual factors. Especially social considerations can be enhanced when entrepreneurs perceive problems in their socio-economic environment. Hence, policy makers could increase the visibility of existing social problems so that entrepreneurs can address these challenges through their venture (Austin et al., 2006; Zahra et al., 2009). Finally, economic predictors such as available business opportunities are crucial for entrepreneurs' ecological considerations (Cohen & Winn, 2007; Dean & McMullen, 2007; Sarma et al., 2024). Accordingly, policy makers can help to point out economic opportunities that can be effectively addressed by incorporating ecological aspects.

In total, this dissertation points out that entrepreneurs, self-employed and policy makers must consider many different individual and contextual factors that can influence the entrepreneurial process. These factors might also have interdependencies that could further increase the complexity of the process (Koe, 2016). Especially for policy makers it is important to note that there is not one universal solution how to design a venture. In this regard, also support measures might not all appeal to entrepreneurs and self-employed in a similar way.

### 6.3 Limitations and future research

This dissertation contributes to a broader understanding of the entrepreneurial process as predicted by a selection of individual and contextual factors presented in the different chapters. As pointed out in the implications in Section 6.2, the high complexity and individuality of the

entrepreneurial process makes it difficult to capture all relevant aspects in one specific study or dissertation. Accordingly, there are several chapter-related and overall limitations.

When first looking at religion as **individual predictor** in **Chapter 2**, it is important to mention that no systematic coding of the articles was conducted and that the chapter relied on careful personal evaluation of thematic fit to select the articles. It must further be acknowledged that the categorization according to the TPB restricts the insights about the entrepreneurial process to those fitting to this framework. In addition, the categorization required some interpretative flexibility and minor adjustments to the model of Ajzen (1991). Further research is needed to gain broader information about the two connections added to the framework and to validate their accuracy and general relevance. Another limitation is linked to the significance of contingency factors in the context of religion and entrepreneurship. The literature review only has a limited ability to provide such a nuanced analysis of contingency effects and different types of religion. In this regard, future research would benefit from a detailed distinction of contingency effects and different religions including also atheism and agnosticism. Another possibility for future research is to rely on a different theoretical framework. Concepts such as effectuation (Read & Sarasvathy, 2005; Sarasvathy, 2001), the process theory of entrepreneurial ecosystems (Spigel & Harrison, 2018), or regulatory focus theory (Brockner et al., 2004) could offer valuable insights. A meta-analysis could be used to determine if the overall effect of religion on entrepreneurship is predominantly positive or negative. A final avenue for further research concerns the lack of empirical insights on religion and entrepreneurial intentions. Since we could only identify a few articles related to entrepreneurial intentions, there is a need for future research on this topic.

Additional limitations result from our perspective on perceptual moderators for the sustainability-related intention-action gap in **Chapter 3**. Even though we rely on broadly applicable GEM data from 44 countries worldwide, our analyses do not provide causal conclusions and cannot fully control for all potential country-specific effects such as institutional or cultural differences. Thus, future research should validate the results from this chapter with more sophisticated analytical techniques to investigate causality and to account for specific countries and contextual settings. Further, it must be noted that Chapter 3 refers to social entrepreneurial actions, omitting the perspective on ecological aspects. Future research on the entrepreneurial intention-action gap could incorporate other aspects such as ecological impact or overall sustainability (Kautonen et al., 2013). In general, we would like to encourage more research on this topic. Since this chapter provides one of the first studies to connect

sustainability-focused intentions with subsequent actions, there is high potential for future research.

The quantitative empirical study about reductions in well-being in **Chapter 4** is also limited in some respects. There are likely other consequences of reduced well-being in self-employment in addition to time and monetary investments that deserve further examination. In this regard, it might be interesting to shed light on decisions such as venture internationalization or growth to address the increasing importance of variations in well-being in today's fast-changing environment. Moreover, it would be beneficial to examine other decision makers such as entrepreneurs, CEOs and managers to gain a more complete understanding of the consequences of well-being. Other limitations are rooted in the data and methodological procedure of the chapter. Since the data is based on a single survey of German self-employed during COVID-19 with a limited scope of items, additional research is required to validate our insights for other countries and crises, ideally with a multi-item approach to increase measurement validity. Moreover, the seemingly unrelated regression provides only limited information about causality. Similar to Chapter 3, we recommend more sophisticated analytical techniques, such as panel data and time series analyses, to investigate causality.

To summarize, Chapters 2 to 4 of this dissertation include studies considering different individual predictors for the entrepreneurial process. However, these studies cannot provide a full view on all individual aspects and they do not take into account potential interdependencies. Thus, future research could include other behavioral and perceptual aspects such as motivations, emotions and personality as well as a perspective on interdependencies between these predictors.

Furthermore, the quantitative empirical study about **contextual predictors** for social and ecological considerations in entrepreneurial actions in **Chapter 5** is not without limitations. Even though the machine learning approach holds the advantage of being able to handle a large number of predictors, it restricts the interpretation of single factors. Therefore, Chapter 5 should serve as a basis for further, hypothesis-based research to gain more detailed information on the predictors that we identified as most relevant (Hofman et al., 2017). Another limitation refers to the restricted availability of data and variables about ecological influences. The scope of our data, including World Bank and OECD data, only yielded two variables with sufficient country coverage to be included in our analyses. Taken together with the marginal influence of these factors, this topic warrants further investigation. Future research should try to access additional

data to determine the relationship between ecological factors and sustainability-focused entrepreneurial actions.

In addition, there are some overall limitations that apply to more than one chapter. One of those is related to the use of GEM data in **Chapters 3** and **5**. All analyses and interpretations in these chapters rest on the assumption of validity of the GEM items. Moreover, it is important to note that the dependent variables in both chapters only measure sustainability-focused considerations and actions in entrepreneurship. These variables do not provide any information on the overall sustainability of the venture and thus, do not necessarily describe sustainability-focused entrepreneurship in the closer definition. Instead, these variables rather refer to the entrepreneurs' current efforts to integrate sustainability-focused aspects in any type of venture.

Overall, there are likely many more predictors for the entrepreneurial process that go beyond the scope of this dissertation. Such a multitude of factors on individual and contextual level makes it difficult to provide a complete view on the topic. To this end, this dissertation agrees with previous research that one or a few predictors alone cannot sufficiently serve as explanation for entrepreneurial intentions and actions (Hollow, 2022; Walter & Heinrichs, 2015). Further research is required to explore other predictors and potential interdependencies that might be as complex and manifold as the entrepreneurial process itself (Koe, 2016; Walter & Heinrichs, 2015).

Finally, the view on the entrepreneurial process is somewhat restricted by the theoretical focus of this dissertation. It lies on the final stages of the process in terms of intentions and actions. Especially the three quantitative empirical studies in this dissertation (**Chapters 3 to 5**) examine entrepreneurial action only with regard to sustainability-focused actions and investments. It must be acknowledged that this is a rather narrow perspective that leaves room for additional research on many other types of entrepreneurial actions. Other important aspects could be venture-related strategies such as innovation, growth and leadership. In addition, future research could incorporate different theoretical models and additional stages of the entrepreneurial process.

# References

## A

- Abbasianchavari, A., & Block, J. (2022). Perceptual factors explaining the gender gap in entrepreneurial propensity: A replication and extension. *Journal of Business Venturing Insights*, 17(1), e00303.
- Abbasianchavari, A., & Moritz, A. (2021). The impact of role models on entrepreneurial intentions and behavior: a review of the literature. *Management Review Quarterly*, 71(2), 1-40.
- Abreu, M., Oner, O., Brouwer, A., & van Leeuwen, E. (2019). Well-being effects of self-employment: A spatial inquiry. *Journal of Business Venturing*, 34(4), 589-607.
- Ackah, C., Torvikey, G. D., Obeng Adomaa, F., & Asante, K.T. (2024). “You cannot rely on bank loans to expand your business”: Aversion to formal credit among female micro-entrepreneurs in Ghana. *International Journal of Social Economics*, 51(7), 870-883.
- Acs, Z. (2006). How is entrepreneurship good for economic growth? *Innovations: Technology, Governance, Globalization*, 1(1), 97-107.
- Adams-Prassl, A., Boneva, T., Golin, M., & Rauh, C. (2020). Inequality in the impact of the coronavirus shock: Evidence from real time surveys. *Journal of Public Economics*, 189, 104245.
- Aeon, B., & Aguinis, H. (2017). It’s about time: New perspectives and insights on time management. *Academy of Management Perspectives*, 31(4), 309-330.
- Agu, A. G., Kalu, O. O., Esi-Ubani, C. O., & Agu, P. C. (2021). Drivers of sustainable entrepreneurial intentions among university students: an integrated model from a developing world context. *International Journal of Sustainability in Higher Education*, 22(3), 659-680.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.
- Akehurst, G., Comeche, J. M., & Galindo, M. A. (2009). Job satisfaction and commitment in the entrepreneurial SME. *Small Business Economics*, 32(3), 277-289.

- Akoh, A. (2020). Barriers to the growth of micro tailoring businesses in Nigeria: Assessing socio-economic and socio-cultural environments. *Society and Business Review*, 15(4), 397-414.
- Alacovska, A., Langevang, T., & Steedman R. (2021). The work of hope: Spiritualizing, hustling and waiting in the creative industries in Ghana. *Environment and Planning A: Economy and Space*, 53(4), 619-637.
- Alexy, O., Bascavusoglu-Moreau, E., & Salter, A. J. (2016). Toward an aspiration-level theory of open innovation. *Industrial and Corporate Change*, 25(2), 289-306.
- Alstete, J. W. (2008). Aspects of entrepreneurial success. *Journal of Small Business and Enterprise Development*, 15(3), 584-594.
- Althalathini, D., Al-Dajani, H., & Apostolopoulos, N. (2022). The impact of Islamic feminism in empowering women's entrepreneurship in conflict zones: Evidence from Afghanistan, Iraq and Palestine. *Journal of Business Ethics*, 178(1), 39-55.
- Amankwah-Amoah, J., Adomako, S., & Berko, D. O. (2022). Once bitten, twice shy? The relationship between business failure experience and entrepreneurial collaboration. *Journal of Business Research*, 139(5), 983-992.
- Amit, R., MacCrimmon, K. R., Zietsma, C., & Oesch, J. M. (2001). Does money matter? Wealth attainment as the motive for initiating growth-oriented technology ventures. *Journal of Business Venturing*, 16(2), 119-143.
- Anggadwita, G., Dana, L. P., Ramadani, V., & Ramadan, R. Y. (2021). Empowering Islamic boarding schools by applying the humane entrepreneurship approach: The case of Indonesia. *International Journal of Entrepreneurial Behavior and Research*, 27(6), 1580-1604.
- Anglin, A. H., Milanov, H., & Short, J. C. (2023). Religious expression and crowdfunded microfinance success: Insights from role congruity theory. *Journal of Business Ethics*, 185(2), 397-426.
- Arenius, P., & Minniti, M. (2005). Perceptual variables and nascent entrepreneurship. *Small Business Economics*, 24(3), 233-247.
- Argote, L., & Greve, H. R. (2007). A behavioral theory of the firm—40 years and counting: Introduction and impact. *Organization Science*, 18(3), 337-349.
- Arthur, K. N. A., & Adom, A. Y. (2019). Explorative study of entrepreneurship training programmes in Christian institutions in Ghana. *Journal of Enterprising Communities: People and Places in the Global Economy*, 14(5), 713-727.
- Artunç, C. (2019). Religious minorities and firm ownership in early twentieth-century Egypt. *The Economic History Review*, 72(3), 979-1007.
- Assmann, D., & Ehrl, P. (2021). Individualistic culture and entrepreneurial opportunities. *Journal of Economic Behavior and Organization*, 188(4), 1248-1268.
- Audretsch, D. B., Belitski, M., Caiazza, R., Chowdhury, F., & Menter, M. (2023). Entrepreneurial growth, value creation and new technologies. *The Journal of Technology Transfer*, 48(5), 1535-1551.

- Audretsch, D. B., Bönte, W., & Tamvada, J. P. (2013). Religion, social class, and entrepreneurial choice. *Journal of Business Venturing*, 28(6), 774-789.
- Audretsch, D. B., Obschonka, M., Gosling, S. D., & Potter, J. (2017). A new perspective on entrepreneurial regions: Linking cultural identity with latent and manifest entrepreneurship. *Small Business Economics*, 48(3), 681-697.
- Austin, J., Stevenson, H., & Wei-Skillern, J. (2006). Social and commercial entrepreneurship: same, different, or both?. *Entrepreneurship Theory and Practice*, 30(1), 1-22.
- Avnimelech, G., & Zelekha, Y. (2023). Religion and the gender gap in entrepreneurship. *International Entrepreneurship and Management Journal*, 19(2), 629-665.
- Ayala, J.C., & Manzano, G. (2014). The resilience of the entrepreneur. Influence on the success of the business. A longitudinal analysis. *Journal of Economic Psychology*, 42(3), 126-135.
- Aygün, Z. K., Arslan, M., & Güney, S. (2008). Work values of Turkish and American university students. *Journal of Business Ethics*, 80(2), 205-223.
- Ayob, A. H., & Saiyed, A. A. (2020). Islam, institutions and entrepreneurship: evidence from Muslim populations across nations. *International Journal of Islamic and Middle Eastern Finance and Management*, 13(4), 635-653.

## B

- Backman, M., Hagen, J., Kekezi, O., Naldi, L., & Wallin, T. (2023). In the eye of the storm: Entrepreneurs and well-being during the COVID-19 crisis. *Entrepreneurship Theory and Practice*, 47(3), 751-787.
- Bacq, S., & Janssen, F. (2011). The multiple faces of social entrepreneurship: A review of definitional issues based on geographical and thematic criteria. *Entrepreneurship & Regional Development*, 23(5-6), 373-403.
- Baikovich, A., Wasserman, V., & Pfefferman, T. (2022). 'Evolution from the inside out': Revisiting the impact of (re) productive resistance among ultra-orthodox female entrepreneurs. *Organization Studies*, 43(8), 1247-1271.
- Barbosa, S. D., & Smith, B. R. (2024). Specifying the role of religion in entrepreneurial action: a cognitive perspective. *Small Business Economics*, 62(4), 1315-1336.
- Baron, R. A. (2006). Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities. *Academy of Management Perspectives*, 20(1), 104-119.
- Basir, K. H., & Musa, S. F. P. D. (2022). An Islamic perspective of agripreneurs motivation. *Journal of Enterprising Communities: People and Places in the Global Economy*, 16(3), 402-420.
- Batjargal, B., Jack, S., Mickiewicz, T., Stam, E., Stam, W., & Wennberg, K. (2023). Crises, Covid-19, and entrepreneurship. *Entrepreneurship Theory and Practice*, 47(3), 651-661.
- Baumol, W. J., & Strom, R. J. (2007). Entrepreneurship and economic growth. *Strategic Entrepreneurship Journal*, 1(3-4), 233-237.

- Belitski, M., Guenther, C., Kritikos, A. S., & Thurik, R. (2022). Economic effects of the Covid-19 pandemic on entrepreneurship and small businesses. *Small Business Economics*, 58(1), 593-609.
- Bell, J., & Stellingwerf, J.J. (2012). Sustainable entrepreneurship: The motivations and challenges of sustainable entrepreneurs in the renewable energy industry. *Amana-Key* 2012, 265–268.
- Benz, M., & Frey, B. S. (2008a). Being independent is a great thing: Subjective evaluations of self-employment and hierarchy. *Economica*, 75(298), 362-383.
- Benz, M., & Frey, B. S. (2008b). The value of doing what you like: Evidence from the self-employed in 23 countries. *Journal of Economic Behavior and Organization*, 68(3-4), 445-455.
- Bernardino, S., Santos, J. F., & Ribeiro, J. C. (2016). Social entrepreneurship: Does institutional environment make a difference?. In L. Carvalho (Eds.), *Handbook of research on entrepreneurial success and its impact on regional development* (pp. 513-538). IGI Global.
- Bernardus, D., Murwani, F. D., Ardyan, E., Padmawidjaja, L., Aji, I. D. K., Jatiperwira, S. Y., ..., & Hermanto, Y. B. (2020). Which psychological characteristics strengthen “The entrepreneurial intention-action relationship”? An extension of the theory of planned behavior. *Cogent Business & Management*, 7(1), 1823579.
- Berry, C. M., Gruys, M. L., & Sackett, P. R. (2006). Educational attainment as a proxy for cognitive ability in selection: Effects on levels of cognitive ability and adverse impact. *Journal of Applied Psychology*, 91(3), 696-705.
- Bertschek, I., Block, J.H., Kritikos, A.S., & Stiel, C. (2024). German financial state aid during Covid-19 pandemic: Higher impact among digitalized self-employed. *Entrepreneurship and Regional Development*, 36(1-2), 76-97.
- Beugelsdijk, S., Maseland, R., & Van Hoorn, A. (2015). Are scores on Hofstede's dimensions of national culture stable over time? A Cohort Analysis. *Global Strategy Journal*, 5(3), 223-240.
- Binder, M., & Coad, A. (2013). Life satisfaction and self-employment: A matching approach. *Small Business Economics*, 40(4), 1009-1033.
- Bischoff, K. (2021). A study on the perceived strength of sustainable entrepreneurial ecosystems on the dimensions of stakeholder theory and culture. *Small Business Economics*, 56(3), 1121-1140.
- Blanchflower, D. G. (2000). Self-employment in OECD countries. *Labour Economics*, 7(5), 471-505.
- Block, J. H., Fisch, C., & Gnad, M. (2025). Religion and Entrepreneurship through the lens of the Theory of Planned Behavior: A Systematic Literature Review. *Foundations and Trends in Entrepreneurship*, 21(1), 1-86.
- Block, J. H., Fisch, C., & Hirschmann, M. (2022a). The determinants of bootstrap financing in crises: evidence from entrepreneurial ventures in the Covid-19 pandemic. *Small Business Economics*, 58(2), 867-885.
- Block, J. H., Fisch, C., & Rehan, F. (2020). Religion and entrepreneurship: A map of the field and a bibliometric analysis. *Management Review Quarterly*, 70(5), 591-627.



- Block, J. H., Kritikos, A.S., Priem, M., & Stiel, C. (2022b). Emergency aid for self-employed in the Covid-19 pandemic: A flash in the pan? *Journal of Economic Psychology*, 93, 102567.
- Block, J., & Sandner, P. (2009). Necessity and opportunity entrepreneurs and their duration in self-employment: evidence from German micro data. *Journal of Industry, Competition and Trade*, 9, 117-137.
- Bogatyreva, K., Edelman, L. F., Manolova, T. S., Osiyevskyy, O., & Shirokova, G. (2019). When do entrepreneurial intentions lead to actions? The role of national culture. *Journal of Business Research*, 96(9), 309-321.
- Bönte, W., Lombardo, S., & Urbig, D. (2017). Economics meets psychology: Experimental and self-reported measures of individual competitiveness. *Personality and Individual Differences*, 116, 179-185.
- Bosma, N., Hessels, J., Schutjens, V., Van Praag, M., & Verheul, I. (2012). Entrepreneurship and role models. *Journal of Economic Psychology*, 33(2), 410-424.
- Bosnjak, M., Ajzen, I., & Schmidt, P. (2020). The theory of planned behavior: Selected recent advances and applications. *Europe's Journal of Psychology*, 16(3), 352-356.
- Brockner, J., Higgins, E. T., & Low, M. B. (2004). Regulatory focus theory and the entrepreneurial process. *Journal of Business Venturing*, 19(2), 203-220.
- Brüderl J., Preisendörfer P., & Ziegler, R. (1992). Survival chances of newly founded business organizations. *American Sociological Review*, 57(2), 227-242.
- Brüggen, E. C., Hogreve, J., Holmlund, M., Kabadayi, S., & Löfgren, M. (2017). Financial well-being: A conceptualization and research agenda. *Journal of Business Research*, 79, 228-237.
- Brundin, E., & Gustafsson, V. (2013). Entrepreneurs' decision making under different levels of uncertainty: The role of emotions. *International Journal of Entrepreneurial Behavior & Research*, 19(6), 568-591.
- Brush, C. G., De Bruin, A., & Welter, F. (2009). A gender-aware framework for women's entrepreneurship. *International Journal of Gender and Entrepreneurship*, 1(1), 8-24.

## C

- Cacciotti, G., Hayton, J. C., Mitchell, J. R., & Giazitzoglu, A. (2016). A reconceptualization of fear of failure in entrepreneurship. *Journal of Business Venturing*, 31(3), 302-325.
- Caliendo, M., Fossen, F., & Kritikos, A.S. (2010). The impact of risk attitudes on entrepreneurial survival. *Journal of Economic Behavior and Organization*, 76(1), 45-63.
- Caliendo, M., Fossen, F., & Kritikos, A.S. (2014). Personality characteristics and the decisions to become and stay self-employed. *Small Business Economics*, 42(4), 787-814.
- Caliendo, M., Fossen, F., & Kritikos A.S. (2022). Personality characteristics and the decision to hire. *Industrial and Corporate Change*, 31(3), 736-761.

- Caliendo, M., Graeber, D., Kritikos, A.S., & Seebauer, J. (2023a). Pandemic depression: Covid-19 and the mental health of the self-employed. *Entrepreneurship Theory and Practice*, 47(3), 788-830.
- Caliendo, M., Kritikos, A.S., & Stier, C. (2023b). The influence of start-up motivation on entrepreneurial performance. *Small Business Economics*, 61(3), 869-889.
- Camelo-Ordaz, C., Diáñez-González, J. P., & Ruiz-Navarro, J. (2016). The influence of gender on entrepreneurial intention: The mediating role of perceptual factors: La influencia del género sobre la intención emprendedora: El papel mediador de los factores de percepción. *BRQ Business Research Quarterly*, 19(4), 261-277.
- Canestrino, R., Ćwiklicki, M., Magliocca, P., & Pawelek, B. (2020). Understanding social entrepreneurship: A cultural perspective in business research. *Journal of Business Research*, 110(3), 132-143.
- Carruthers, T. J., Venter, M. W., & Botha, M. (2019). The relationship between entrepreneurial competencies and the recurring entrepreneurial intention and action of existing entrepreneurs. *The Southern African Journal of Entrepreneurship and Small Business Management*, 11(1), 1-15.
- Cassar, G., & Friedman, H. (2009). Does self-efficacy affect entrepreneurial investment?. *Strategic Entrepreneurship Journal*, 3(3), 241-260.
- Cater, J. J., Collins, L. A., & Beal, B. D. (2017). Ethics, faith, and profit: Exploring the motives of the US fair trade social entrepreneurs. *Journal of Business Ethics*, 146(1), 185-201.
- Cavalcanti Junqueira, M. I., Discua Cruz, A., & Gratton, P. C. (2023). Not by what we see: how Christian religious beliefs influence market and community logics in a rural context. *International Journal of Organizational Analysis*, 31(5), 1176-1206.
- Cegarra-Navarro, J. G., Vătămănescu, E. M., Dabija, D. C., & Nicolescu, L. (2024). The role of knowledge and interpersonal competences in the development of civic and public engagement and entrepreneurial intention. *International Entrepreneurship and Management Journal*, 20(1), 189-213.
- Cha, M. S., & Bae, Z. T. (2010). The entrepreneurial journey: From entrepreneurial intent to opportunity realization. *The Journal of High Technology Management Research*, 21(1), 31-42.
- Chadwick, I. C., & Raver, J. L. (2020). Psychological resilience and its downstream effects for business survival in nascent entrepreneurship. *Entrepreneurship Theory and Practice*, 44(2), 233-255.
- Chakraborty, T., Ganguly, M., & Natarajan, A. (2019). Predicting entrepreneurial satisfaction: The role of non-financial incentive factors and quality of life among women digital entrepreneurs. *Journal for Global Business Advancement*, 12(3), 328-355.
- Chandra, Y. (2017). Social entrepreneurship as emancipatory work. *Journal of Business Venturing*, 32(6), 657-673.
- Chen, Y., Klyver, K., & Zhang, H. (2023). Altruistic entrepreneurs: How does religious belief affect entrepreneurial career persistence?. *Journal of Small Business Management*, 62(5), 2638-2669.

- Chevalier, S., Calmé, I., Coillot, H., Le Rudulier, K., & Fouquereau, E. (2022). How can students' entrepreneurial intention be increased? The role of psychological capital, perceived learning from an entrepreneurship education program, emotions and their relationships. *Europe's Journal of Psychology*, 18(1), 84.
- Choudhury-Kaul, S., Supriyadi, O., & Fahlevi, N. (2023). Muslim Indonesian women entrepreneurs: A factor analysis of business performance. *Journal of Islamic Marketing*, 14(12), 3186-3207.
- Chu, F., Zhang, W., & Jiang, Y. (2021). How does policy perception affect green entrepreneurship behavior? An empirical analysis from China. *Discrete Dynamics in Nature and Society*, 2021(1), 7973046.
- Cohen, B., & Winn, M. I. (2007). Market imperfections, opportunity and sustainable entrepreneurship. *Journal of Business Venturing*, 22(1), 29-49.
- Cohn, M. A., & Fredrickson, B. L. (2006). Beyond the moment, beyond the self: Shared ground between selective investment theory and the broaden-and-build theory of positive emotions. *Psychological Inquiry*, 17(1), 39-44.
- Cooper, A. C., & Dunkelberg, W. C. (1986). Entrepreneurship and paths to business ownership. *Strategic Management Journal*, 7(1), 53-68.
- Corrêa, V. S., Queiroz, M. M., Cruz, M. A., & Shigaki, H. B. (2022). Entrepreneurial orientation far beyond opportunity: The influence of the necessity for innovativeness, proactiveness and risk-taking. *International Journal of Entrepreneurial Behavior and Research*, 28(4), 952-979.
- Croson, D. C., & Minniti, M. (2012). Slipping the surly bonds: The value of autonomy in self-employment. *Journal of Economic Psychology*, 33(2), 355-365.
- Cucchi, C., Lubberink, R., Dentoni, D., & Gartner, W. B. (2022). 'That's Witchcraft': Community entrepreneuring as a process of navigating intra-community tensions through spiritual practices. *Organization Studies*, 43(2), 179-201.
- Cunha, J., Ferreira, C., Araújo, M., & Nunes, M. L. (2022). The mediating role of entrepreneurial intention between creativity and social innovation tendency. *Social Enterprise Journal*, 18(2), 383-405.
- Cyert, R., & March, J.G. (1963). *A Behavioral Theory of the Firm*. Prentice-Hall, Englewood Cliffs, NJ.

## D

- Dawson, C. (2017). Financial optimism and entrepreneurial satisfaction. *Strategic Entrepreneurship Journal*, 11(2), 171-194.
- Dean, T. J., & McMullen, J. S. (2007). Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. *Journal of Business Venturing*, 22(1), 50-76.
- Dejardin, M., Hoogendoorn, B., Janssen, F., Rietveld, C. A., & van Burg, E. (2024). Coupling engagement with analytical rigor: Advancing research on religion and entrepreneurship using a mechanism-based approach. *Small Business Economics*, 62(4), 1273-1284.

- Deller, S. C., Conroy, T., & Markeson, B. (2018). Social capital, religion and small business activity. *Journal of Economic Behavior and Organization*, 155, 365-381.
- Desa, G., & Basu, S. (2013). Optimization or bricolage? Overcoming resource constraints in global social entrepreneurship. *Strategic Entrepreneurship Journal*, 7(1), 26-49.
- Devece, C., Peris-Ortiz, M., & Rueda-Armengot, C. (2016). Entrepreneurship during economic crisis: Success factors and paths to failure. *Journal of Business Research*, 69(11), 5366-5370.
- Dhahri, S., Slimani, S., & Omri, A. (2021). Behavioral entrepreneurship for achieving the sustainable development goals. *Technological Forecasting and Social Change*, 165(3), 120561.
- Di Pietro, F., & Masciarelli, F. (2022). The effect of local religiosity on financing cross-regional entrepreneurial projects via crowdfunding (Local religiosity and crowdfunding). *Journal of Business Ethics*, 178(3), 429-443.
- Dissanayake, S. (2022). The impact of Buddhist religion on entrepreneurial intention. *Journal of Management, Spirituality & Religion*, 19(3), 302-319.
- Dodd, S. D., & Gotsis, G. (2007). The interrelationships between entrepreneurship and religion. *The International Journal of Entrepreneurship and Innovation*, 8(2), 93-104.
- Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. (2011). Individual risk attitudes: Measurement, determinants, and behavioral consequences. *Journal of the European Economic Association*, 9(3), 522-550.

## E

- Eklund, J., Levratto, N., & Ramello, G. B. (2020). Entrepreneurship and failure: two sides of the same coin?. *Small Business Economics*, 54(2), 373-382.
- Eppinger, P. S., Meythaler, N., Sindlinger, M. M., & Smolka, M. (2018). The great trade collapse and the Spanish export miracle: Firm-level evidence from the crisis. *The World Economy*, 41(2), 457-493.
- Erceg-Hurn, D. M., & Mirosevich, V. M. (2008). Modern robust statistical methods - an easy way to maximize the accuracy and power of your research. *American Psychologist*, 63(7), 591-601.
- Ertimur, B., & Coskuner-Balli, G. (2015). Navigating the institutional logics of markets: Implications for strategic brand management. *Journal of Marketing*, 79(2), 40-61.
- Essers, C., & Benschop, Y. (2009). Muslim businesswomen doing boundary work: The negotiation of Islam, gender and ethnicity within entrepreneurial contexts. *Human Relations*, 62(3), 403-423.
- Essers, C., Benschop, Y., & Doorewaard, H. (2010). Female ethnicity: Understanding Muslim immigrant businesswomen in the Netherlands. *Gender, Work and Organization*, 17(3), 320-339.

- Essers, C., Pio, E., Verduijn, K., & Bensliman, N. (2021). Navigating belonging as a Muslim Moroccan female entrepreneur. *Journal of Small Business Management*, 59(6), 1250-1278.
- Essers, C., & Tedmanson, D. (2014). Upsetting 'Others' in the Netherlands: Narratives of Muslim Turkish Migrant Businesswomen at the Crossroads of Ethnicity, Gender and Religion. *Gender, Work and Organization*, 21(4), 353-367.
- Estrin, S., Mickiewicz, T., & Stephan, U. (2013). Entrepreneurship, social capital, and institutions: Social and commercial entrepreneurship across nations. *Entrepreneurship Theory and Practice*, 37(3), 479-504.

## F

- Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., & Sunde, U. (2018). Global evidence on economic preferences. *The Quarterly Journal of Economics*, 133(4), 1645-1692.
- Famiola, M., & Wulansari, A. (2020). SMEs' social and environmental initiatives in Indonesia: an institutional and resource-based analysis. *Social Responsibility Journal*, 16(1), 15-27.
- Fathonih, A., Anggadwita, G., & Ibraimi, S. (2019). Sharia venture capital as financing alternative of Muslim entrepreneurs: Opportunities, challenges and future research directions. *Journal of Enterprising Communities: People and Places in the Global Economy*, 13(3), 333-352.
- Fellnhöfer, K. (2017). The power of passion in entrepreneurship education: Entrepreneurial role models encourage passion?. *Journal of Entrepreneurship Education*, 20(1), 58-87.
- Ferri, E., & Urbano, D. (2011). *Social entrepreneurship and environmental factors: A cross-country comparison* (Research Work). Barcelona: International Doctorate in Entrepreneurship and Business Management, Department of Business Economics & Administration, Universitat Autònoma de Barcelona.
- Fichter, K., Lüdeke-Freund, F., Schaltegger, S., & Schillebeeckx, S. J. (2023). Sustainability impact assessment of new ventures: An emerging field of research. *Journal of Cleaner Production*, 384, 135452.
- Fiorentino, R., Longobardi, S., & Scaletti, A. (2021). The early growth of start-ups: innovation matters. Evidence from Italy. *European Journal of Innovation Management*, 24(5), 1525-1546.
- Foo, M.-D., Uy, M. A., & Baron, R. A. (2009). How do feelings influence effort? An empirical study of entrepreneurs' affect and venture effort. *Journal of Applied Psychology*, 94(4), 1086-1094.
- Fossati, D. (2019). Embedded diasporas: Ethnic prejudice, transnational networks and foreign investment. *Review of International Political Economy*, 26(1), 134-157.
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, 2(3), 300-319.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3), 218-226.

- Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical transactions of the royal society of London. Series B: Biological Sciences*, 359(1449), 1367-1377.
- Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science*, 13(2), 172-175.
- Frese, M., & Gielnik, M. M. (2023). The psychology of entrepreneurship: Action and process. *Annual Review of Organizational Psychology and Organizational Behavior*, 10(1), 137-164.
- Frese, M., Van Gelderen, M., & Ombach, M. (2000). How to plan as a small scale business owner: Psychological process characteristics of action strategies and success. *Journal of Small Business Management*, 38(2), 1-18.

## G

- Gabarret, I., Vedel, B., & Decaillon, J. (2017). A social affair: Identifying motivation of social entrepreneurs. *International Journal of Entrepreneurship and Small Business*, 31(3), 399-415.
- Gantenbein, P., Kind, A., & Volonté, C. (2019). Individualism and venture capital: A cross-country study. *Management International Review*, 59(5), 741-777.
- Ganzin, M., Islam, G., & Suddaby, R. (2020). Spirituality and entrepreneurship: The role of magical thinking in future-oriented sensemaking. *Organization studies*, 41(1), 77-102.
- García, C., Salmerón, R., García, C., & García, J. (2020). Residualization: Justification, properties and application. *Journal of Applied Statistics*, 47(11), 1990-2010.
- Gast, J., Gundolf, K., & Cesinger, B. (2017). Doing business in a green way: A systematic review of the ecological sustainability entrepreneurship literature and future research directions. *Journal of Cleaner Production*, 147(45), 44-56.
- Gholamrezai, S., Aliabadi, V., & Ataei, P. (2021). Recognizing dimensions of sustainability entrepreneurship among local producers of agricultural inputs. *Journal of Environmental Planning and Management*, 64(14), 2500-2531.
- Giacomin, O., Janssen, F., Shinnar, R. S., Gundolf, K., & Shiri, N. (2023). Individual religious affiliation, religiosity and entrepreneurial intentions among students in four countries. *International Small Business Journal*, 41(3), 318-346.
- Gielnik, M., Bledow, R., & Stark, M. S. (2020). A dynamic account of self-efficacy in entrepreneurship. *Journal of Applied Psychology*, 105(5), 487-505.
- Gielnik, M., Zacher, H., & Frese, M. (2012). Focus on opportunities as a mediator of the relationship between business owners' age and venture growth. *Journal of Business Venturing*, 27(1), 127-142.
- Gieure, C., del Mar Benavides-Espinosa, M., & Roig-Dobón, S. (2020). The entrepreneurial process: The link between intentions and behavior. *Journal of Business Research*, 112(2), 541-548.

- Gimeno, J., Folta, T. B., Cooper, A. C., & Woo, C. Y. (1997). Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Administrative Science Quarterly*, 42(4), 750-783.
- Giones, F., Brem, A., Pollack, J. M., Michaelis, T. L., Klyver, K., & Brinckmann, J. (2020). Revising entrepreneurial action in response to exogenous shocks: Considering the Covid-19 pandemic. *Journal of Business Venturing Insights*, 14, e00186.
- Global Entrepreneurship Monitor (2025). *Global Entrepreneurship Monitor 2023/2024 Sustainability and Entrepreneurship Report: Awareness and Actions*. London: GEM.
- Global Entrepreneurship Research Association (2023). *Global Entrepreneurship Monitor Knowledge Base*. Retrieved from: <https://www.gemconsortium.org/about/wiki> (Accessed 31.08.2023 & 16.12.2024).
- Gnad, M., Steinmetz, H., Moritz, M., Block, J., & Lasch, F. (2024). Contextual predictors of social and ecological considerations in entrepreneurship: A country-level explorative machine learning approach. *Betriebswirtschaftliche Forschung und Praxis*, 76(2), 121-150.
- Gódány, Z., Machová, R., Mura, L., & Zsigmond, T. (2021). Entrepreneurship motivation in the 21st century in terms of pull and push factors. *TEM Journal*, 10(1), 334-342.
- Goebel, J., Grabka, M., Liebig, S., Kroh, M., Richter, D., Schröder, C., & Schupp, J. (2019). The German socio-economic panel study (SOEP). *Journal of Economics and Statistics* 239(2), 345-360.
- Gorgievski, M., Bakker, A., Schaufeli, W., Van der Veen, H., & Giesen, C. (2010). Financial problems and psychological distress: Investigating reciprocal effects among business owners. *Journal of Occupational and Organizational Psychology*, 83(2), 513-530.
- Gorgievski, M., Moriano, J.A., & Bakker, A. B. (2014). Relating work engagement and workaholism to entrepreneurial performance. *Journal of Managerial Psychology*, 29(2), 106-121.
- Graeber, D., Kritikos, A. S., & Seebauer, J. (2021). Covid-19: A crisis of the female self-employed. *Journal of Population Economics*, 34, 1141-1187.
- Greco, A., & de Jong, G. (2017). Sustainable entrepreneurship: Definitions, themes and research gaps. *Working paper*, Centre for Sustainable Entrepreneurship.
- Gregori, P., Holzmann, P., Krajger, I., Schwarz, E. J., & Harms, R. (2024). Entrepreneurship and environmental sustainability: the effects of passion and self-efficacy on entrepreneurial intentions. *Journal of Small Business and Enterprise Development*, (ahead-of-print).
- Greve, H. R. (2003). Investment and the behavioral theory of the firm: Evidence from shipbuilding. *Industrial and Corporate Change*, 12(5), 1051-1076.
- Grieco, C. (2018). What do social entrepreneurs need to walk their talk? Understanding the attitude-behavior gap in social impact assessment practice. *Nonprofit Management and Leadership*, 29(1), 105-122.
- Griffiths, M. D., Gundry, L. K., & Kickul, J. R. (2013). The socio-political, economic, and cultural determinants of social entrepreneurship activity: An empirical examination. *Journal of Small Business and Enterprise Development*, 20(2), 341-357.

- Groot, A., & Dankbaar, B. (2014). Does social innovation require social entrepreneurship? *Technology Innovation Management Review*, 4(12), 17-26.
- Grözinger, A. C., Wolff, S., Ruf, P. J., & Moog, P. (2022). The power of shared positivity: Organizational psychological capital and firm performance during exogenous crises. *Small Business Economics*, 58(2), 689-716.
- Gunawan, A. A., Essers, C., & van Riel, A. C. (2021). The adoption of ecopreneurship practices in Indonesian craft SMEs: Value-based motivations and intersections of identities. *International Journal of Entrepreneurial Behavior and Research*, 27(3), 730-752.
- Gursoy, D., Altinay, L., & Kenebayeva, A. (2017). Religiosity and entrepreneurship behaviours. *International Journal of Hospitality Management*, 67, 87-94.

## H

- Hanohov, R., & Baldacchino, L. (2018). Opportunity recognition in sustainable entrepreneurship: an exploratory study. *International Journal of Entrepreneurial Behavior & Research*, 24(2), 333-358.
- Harima, A., Gießelmann, J., Götsch, V., & Schlichting, L. (2021). Entrepreneurship? Let us do it later: procrastination in the intention-behavior gap of student entrepreneurship. *International Journal of Entrepreneurial Behavior & Research*, 27(5), 1189-1213.
- Harper, D. A. (2008). Towards a theory of entrepreneurial teams. *Journal of Business Venturing*, 23(6), 613-626.
- Hatak, I., Chang, M., Harms, R., & Wiklund, J. (2021). ADHD symptoms, entrepreneurial passion, and entrepreneurial performance. *Small Business Economics*, 57, 1693-1713.
- Hechavarria, D. M., Renko, M., & Matthews, C. H. (2012). The nascent entrepreneurship hub: goals, entrepreneurial self-efficacy and start-up outcomes. *Small Business Economics*, 39(3), 685-701.
- Henley, A. (2017). Does religion influence entrepreneurial behaviour?. *International Small Business Journal*, 35(5), 597-617.
- Herteliu, C., I. Jianu, I Jianu, V. C. Bobb, G. Dhesi, S. I. Ceptureanu, ..., & M. Ausloos (2021). Money's importance from the religious perspective. *Annals of Operations Research*, 299(1), 375-399.
- Hessels, J., Van Gelderen, M., & Thurik, R. (2008). Entrepreneurial aspirations, motivations, and their drivers. *Small Business Economics*, 31(3), 323-339.
- Hessels, J., & van Stel, A. (2011). Entrepreneurship, export orientation, and economic growth. *Small Business Economics*, 37(2), 255-268.
- Hill, P. C., Pargament, K. I., Hood, R. W., McCullough, J. M. E., Swyers, J. P., Larson, D. B., & Zinnbauer, B. J. (2000). Conceptualizing religion and spirituality: Points of commonality, points of departure. *Journal for the Theory of Social Behaviour*, 30(1), 51-77.



- Hinderer, S., & Kuckertz, A. (2022). The bioeconomy transformation as an external enabler of sustainable entrepreneurship. *Business Strategy and the Environment*, 31(7), 2947-2963.
- Hmieleski, K. M., & Carr, J. C. (2007). *The relationship between entrepreneur psychological capital and well-being* [Conference paper]. Babson College Entrepreneurship Research Conference (BCERC) 2007, Madrid, Frontiers of Entrepreneurship Research 2007.
- Hofman, J. M., Sharma, A., & Watts, D. J. (2017). Prediction and explanation in social systems. *Science*, 355(6324), 486-488.
- Hollow, M. (2022). A Wesleyan work ethic? Entrepreneurship and Weber's protestant work ethic in the case of Isaac Holden, c. 1807–1897. *Business History*, 64(7), 1346-1368.
- Hoogendoorn, B. (2016). The prevalence and determinants of social entrepreneurship at the macro level. *Journal of Small Business Management*, 54(S1), 278–296.
- Hoogendoorn, B., Rietveld, C. A., & van Stel, A. (2016). Belonging, believing, bonding, and behaving: The relationship between religion and business ownership at the country level. *Journal of Evolutionary Economics*, 26(3), 519-550.
- Hoogendoorn, B., Van der Zwan, P., & Thurik, R. (2019). Sustainable entrepreneurship: The role of perceived barriers and risk. *Journal of Business Ethics*, 157(4), 1133-1154.
- Hoque, N. (2023). Promoting business zakah as a product of Islamic finance to fund social causes for well-being of the underprivileged: Evidence from Bangladesh. *Journal of Islamic Marketing*, 14(4), 966-987.
- House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Sage Publications, Thousand Oaks, CA.
- Hörisch, J., Kollat, J., & Brieger, S. A. (2017). What influences environmental entrepreneurship? A multilevel analysis of the determinants of entrepreneurs' environmental orientation. *Small Business Economics*, 48(1), 47-69.
- Hult, G. T. M., Ketchen, D. J., Griffith, D. A., Finnegan, C. A., Gonzalez-Padron, T., Harmancioglu, N., ..., & Cavusgil, S. T. (2008). Data equivalence in cross-cultural international business research: assessment and guidelines. *Journal of International Business Studies*, 39(6), 1027-1044.
- Huppert, F. A. (2009). Psychological well-being: Evidence regarding its causes and consequences. *Applied Psychology: Health and Well-Being*, 1(2), 137-164.
- Hyttinen, A., Lahtonen, J., & Pajarinen, M. (2014). Forecasting errors of new venture survival. *Strategic Entrepreneurship Journal*, 8(4), 283-302.

## J

- Jahanshahi, A. A., Brem, A., & Bhattacharjee, A. (2017). Who takes more sustainability-oriented entrepreneurial actions? The role of entrepreneurs' values, beliefs and orientations. *Sustainability*, 9(10), 1636.
- James, G., Witten, D., Hastie, T., & Tibshirani, R. (2011). *An introduction to statistical learning - with applications in R* (Vol. 112). Springer.

- Joensuu-Salo, S., Viljamaa, A., & Varamäki, E. (2022). Sustainable entrepreneurs of the future: The interplay between educational context, sustainable entrepreneurship competence, and entrepreneurial intentions. *Administrative Sciences*, 12(1), 1-15.
- Johnson, S. L., Freeman, M. A., & Staudenmaier, P. J. (2015). Manic tendencies are not related to being an entrepreneur, intending to become an entrepreneur, or succeeding as an entrepreneur. *Journal of Affective Disorders*, 173, 154-158.
- Jones, J., Hymer, C., Roccapiore, A., & Smith, B. (2024). Does religion matter to angels? Exploring the influence of religion in entrepreneurial investor decision-making. *Small Business Economics*, 62(4), 1337-1360.
- Juster, F. T., & Stafford, F. P. (1991). The allocation of time: Empirical findings, behavioral models, and problems of measurement. *Journal of Economic Literature*, 29(2), 471-522.

## K

- Kabbara, D., & Zucchella, A. (2023). Transnational entrepreneurship. Insights from female entrepreneurs in the modest fashion industry. *Journal of International Management*, 29(5), 101058.
- Kalenkoski, C. M., & Pabilonia, S. W. (2022). Impacts of Covid-19 on the self-employed. *Small Business Economics*, 58, 741-768.
- Kalnins, A., & Chung, W. (2006). Social capital, geography, and survival: Gujarati immigrant entrepreneurs in the US lodging industry. *Management Science*, 52(2), 233-247.
- Kautonen, T., Van Gelderen, M., & Fink, M. (2015). Robustness of the theory of planned behavior in predicting entrepreneurial intentions and actions. *Entrepreneurship Theory and Practice*, 39(3), 655-674.
- Kautonen, T., Van Gelderen, M., & Tornikoski, E. T. (2013). Predicting entrepreneurial behaviour: a test of the theory of planned behaviour. *Applied Economics*, 45(6), 697-707.
- Khelil, N. (2016). The many faces of entrepreneurial failure: Insights from an empirical taxonomy. *Journal of Business Venturing*, 31(1), 72-94.
- Khurana, I., Ghura, A. S., & Dutta, D. K. (2021). The influence of religion on the humane orientation of entrepreneurs. *Journal of Small Business Management*, 59(3), 417-442.
- Kiani, A., Ali, A., Biraglia, A., & Wang, D. (2021). Why I persist while others leave? Investigating the path from passion to persistence in entrepreneurship. *Journal of Small Business Management*, 61(6), 2818-2848.
- Kibler, E., Wincent, J., Kautonen, T., Cacciotti, G., & Obschonka, M. (2019). Can prosocial motivation harm entrepreneurs' subjective well-being?. *Journal of Business Venturing*, 34(4), 608-624.
- Kihlstrom, R. E., & Laffont, J. J. (1979). A general equilibrium entrepreneurial theory of firm formation based on risk aversion. *Journal of Political Economy*, 87(4), 719-748.

- Kim, A., Moon, C. W., Kim, S. K., Koh, Y. S., & Shin, J. (2020). An empirical investigation on the psychological antecedents of social entrepreneurship. *Entrepreneurship Research Journal*, 10(3), 20170129.
- Kimmitt, J., Mandakovic, V., & Muñoz, P. (2022). Social problem scale, public investment and social entrepreneurship action. *International Journal of Entrepreneurial Behavior & Research*, 28(6), 1391-1413.
- Kirkwood, J. (2012). Family matters: Exploring the role of family in the new venture creation decision. *Journal of Small Business & Entrepreneurship*, 25(2), 141-154.
- Kirkwood, J., & Walton, S. (2010). What motivates ecopreneurs to start businesses? *International Journal of Entrepreneurial Behavior & Research*, 16(3), 204-228.
- Klimas, P., Czakon, W., Kraus, S., Kailer, N., & Maalaoui, A. (2021). Entrepreneurial failure: A synthesis and conceptual framework of its effects. *European Management Review*, 18(1), 167-182.
- Klyver, K., & Grant, S. (2010). Gender differences in entrepreneurial networking and participation. *International Journal of Gender and Entrepreneurship*, 2(3), 213-227.
- Koe, W. L. (2016). The relationship between Individual Entrepreneurial Orientation (IEO) and entrepreneurial intention. *Journal of Global Entrepreneurship Research*, 6(1), 1-11.
- Koe, W. L., & Majid, I. A. (2014). Socio-cultural factors and intention towards sustainable entrepreneurship. *Eurasian Journal of Business and Economics*, 7(13), 145-156.
- Koellinger, P., Minniti, M., & Schade, C. (2007). "I think I can, I think I can": Overconfidence and entrepreneurial behavior. *Journal of Economic Psychology*, 28(4), 502-527.
- Kojana, T., & Mamabolo, A. (2020). Religious Entrepreneurs' Motives and Practices in the Different Phases of the Entrepreneurial Process. *International Review of Entrepreneurship*, 18(3), 337-370.
- Kong, F., Zhao, L., & Tsai, C. H. (2020). The relationship between entrepreneurial intention and action: the effects of fear of failure and role model. *Frontiers in Psychology*, 11, 229.
- Koudstaal, M., Sloof, R., & Van Praag, M. (2015). Are entrepreneurs more optimistic and overconfident than managers and employees?. *Working paper*, Tinbergen Institute, No. 15-124/VII.
- Kritikos, A., Graeber, D., & Seebauer, J. (2020). Corona-Pandemie wird zur Krise für Selbständige. *DIW Aktuell No. 47*.
- Kritikos, A. S., Graeber, D., & Seebauer, J. (2021). Corona-Pandemie drängt Selbstständige vermehrt zur Geschäftsaufgabe – Frauen stärker betroffen. *DIW Aktuell No. 69*.
- Kuntu, A., Puumalainen, K., & Fellnhöfer, K. (2017). Socially-oriented entrepreneurial goals and intentions: the role of values and knowledge. *Journal for International Business and Entrepreneurship Development*, 10(4), 337-361.
- Kwon, I., & Sohn, K. (2017). Job dissatisfaction of the self-employed in Indonesia. *Small Business Economics*, 49(1), 233-249.

## L

- Laguna, M., Alessandri, G., & Caprara, G. V. (2016). Personal goal realisation in entrepreneurs: A multilevel analysis of the role of affect and positive orientation. *Applied Psychology*, 65(3), 587-604.
- Lange, T. (2012). Job satisfaction and self-employment: Autonomy or personality? *Small Business Economics*, 38(2), 165-177.
- Lanivich, S. E., Bennett, A., Kessler, S. R., McIntyre, N., & Smith, A. W. (2021). RICH with well-being: An entrepreneurial mindset for thriving in early-stage entrepreneurship. *Journal of Business Research*, 124(1), 571-580.
- Lee, K. H., & Min, B. (2015). Green R&D for eco-innovation and its impact on carbon emissions and firm performance. *Journal of Cleaner Production*, 108, 534-542.
- Lelkes, O. (2006). Tasting freedom: Happiness, religion and economic transition. *Journal of Economic Behavior and Organization*, 59(2), 173-194.
- Lepoutre, J., Justo, R., Terjesen, S., & Bosma, N. (2013). Designing a global standardized methodology for measuring social entrepreneurship activity: the Global Entrepreneurship Monitor social entrepreneurship study. *Small Business Economics*, 40(3), 693-714.
- Levesque, M., & Minniti, M. (2006). The effect of aging on entrepreneurial behavior. *Journal of Business Venturing*, 21(2), 177-194.
- Li, C., Murad, M., Shahzad, F., Khan, M. A. S., Ashraf, S. F., & Dogbe, C. S. K. (2020). Entrepreneurial passion to entrepreneurial behavior: role of entrepreneurial alertness, entrepreneurial self-efficacy and proactive personality. *Frontiers in Psychology*, 11, 1611.
- Li, S., Wu D., & Sun Y. (2021). The impact of entrepreneurial optimism and labor law on business performance of new ventures. *Frontiers in Psychology*, 12, 697002.
- Liñán, F., & Chen, Y. W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, 33(3), 593-617.
- Liñán, F., Rodríguez-Cohard, J. C., & Rueda-Cantuche, J. M. (2011). Factors affecting entrepreneurial intention levels: a role for education. *International Entrepreneurship and Management Journal*, 7(2), 195-218.
- Liu, Z., Xu, Z., Zhou, Z., & Li, Y. (2019). Buddhist entrepreneurs and new venture performance: The mediating role of entrepreneurial risk-taking. *Small Business Economics*, 52(3), 713-727.
- Lopes, J. M., Suchek, N., & Gomes, S. (2023). The antecedents of sustainability-oriented entrepreneurial intentions: An exploratory study of Angolan higher education students. *Journal of Cleaner Production*, 391, 136236.
- Lortie, J., & Castogiovanni, G. (2015). The theory of planned behavior in entrepreneurship research: What we know and future directions. *International Entrepreneurship and Management Journal*, 11(4), 935-957.

**M**

- Mair, J., & Noboa, E. (2006). *Social entrepreneurship: How intentions to create a social venture are formed*. In *Social entrepreneurship* (pp. 121-135). London: Palgrave Macmillan UK.
- Makki, A. A., Alidrisi, H., Iqbal, A., & Al-Sasi, B. O. (2020). Barriers to green entrepreneurship: An ISM-based investigation. *Journal of Risk and Financial Management*, 13(11), 249.
- Maniyalath, N., & Narendran; R. (2016). The human development index predicts female entrepreneurship rates. *International Journal of Entrepreneurial Behavior and Research*, 22(5), 745-766.
- Marshall, D. R., Meek, W. R., Swab, R. G., & Markin, E. (2020). Access to resources and entrepreneurial well-being: A self-efficacy approach. *Journal of Business Research*, 120(4), 203-212.
- Martin, B. C., McNally, J. J., & Kay, M. J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, 28(2), 211-224.
- McIntyre, N., Quaye, E. S., Anning-Dorson, T., Lanivich, S., & Adomako; S. (2023). Investigating the impact of religiosity on entrepreneurial intentions. *Journal of Business Research*, 156(3), 113528.
- Meek, W. R., Pacheco, D. F., & York, J. G. (2010). The impact of social norms on entrepreneurial action: Evidence from the environmental entrepreneurship context. *Journal of Business Venturing*, 25(5), 493-509.
- Miao, C., Gast, J., Laouiti; R., & Nakara, W. (2022). Institutional factors, religiosity, and entrepreneurial activity: A quantitative examination across 85 countries. *World Development*, 149(5), 105695.
- Middermann, L. H., Kratzer, J., & Perner, S. (2020). The impact of environmental risk exposure on the determinants of sustainable entrepreneurship. *Sustainability*, 12(4), 1534.
- Minns, C., & Rizov, M. (2005). The spirit of capitalism? Ethnicity, religion, and self-employment in early 20th century Canada. *Explorations in Economic History*, 42(2), 259-281.
- Mitchell, W., Wu, Z., Bruton, G. D., & Gautam, D. K. (2022). Microlevel analysis of institutional intermediation in a rudimentary market-based economy: Entrepreneurship in Kathmandu's Indrachok Market. *Organization Science*, 33(6), 2106-2134.
- Mitra, J., & Basit, A. (2021). Personal networks and growth aspirations: a case study of second-generation, Muslim, female entrepreneurs. *Small Business Economics*, 56(1), 121-143.
- Mondal, S., Singh, S., & Gupta, H. (2023). Assessing enablers of green entrepreneurship in circular economy: An integrated approach. *Journal of Cleaner Production*, 388(2), 135999.
- Montano, D. E., & Kasprzyk, D. (2015). Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. *Health behavior: Theory, Research and Practice*, 70(4), 231.

- Morgenroth, T., Ryan, M. K., & Peters, K. (2015). The motivational theory of role modeling: How role models influence role aspirants' goals. *Review of General Psychology*, 19(4), 465-483.
- Moya-Clemente, I., Ribes-Giner, G., & Pantoja-Díaz, O. (2020). Identifying environmental and economic development factors in sustainable entrepreneurship over time by partial least squares (PLS). *PloS one*, 15(9), e0238462.
- Muhammad, N., McElwee, G., & Dana, L. P. (2017). Barriers to the development and progress of entrepreneurship in rural Pakistan. *International Journal of Entrepreneurial Behavior and Research*, 23(2), 279-295.
- Muhammad, N., Robinson, D., & Nisar, M. (2019). The influence of Muslim marriages on entrepreneurial intentions of women entrepreneurs: Evidence from Pakistan. *International Journal of Entrepreneurial Behavior and Research*, 25(7), 1389-1409.
- Muñoz, P., & Cohen, B. (2018). Sustainable entrepreneurship research: Taking stock and looking ahead. *Business Strategy and the Environment*, 27(3), 300-322.
- Murnieks, C. Y., Klotz, A. C., & Shepherd, D. A. (2020). Entrepreneurial motivation: A review of the literature and an agenda for future research. *Journal of Organizational Behavior*, 41(2), 115-143.

## N

- Nagy, M. S. (2002). Using a single item approach to measure of facet job satisfaction. *Journal of Occupational and Organizational Psychology*, 75(1), 77-86.
- Neubert, M. J., Bradley, S. W., Ardianti, R., & Simiyu, E. M. (2017). The role of spiritual capital in innovation and performance: Evidence from developing economies. *Entrepreneurship Theory and Practice*, 41(4), 621-640.
- Neumann, T. (2021). The impact of entrepreneurship on economic, social and environmental welfare and its determinants: a systematic review. *Management Review Quarterly*, 71(3), 553-584.
- Ngassa, T. C. (2024). Examining whether religion is a positive factor in access to self-employment for youths: Evidences from Congolese data. *International Journal of Social Economics*, 51(3), 392-406.
- Ngo, T. V. N., Le, T. L., Pham, T. T. H., Nguyen, T. T. T., & Duong, C. D. (2024). Empowering entrepreneurs: bridging the attitude-intention-behaviour gap through dynamic entrepreneurship education. *Asia Pacific Journal of Innovation and Entrepreneurship*, 18(4), 355-374.
- Nguyen, B., Tran, H. A., Stephan, U., Van, H. N., & Anh, P. T. H. (2024). "I can't get it out of my mind"-Why, how, and when crisis rumination leads entrepreneurs to act and pivot during crises. *Journal of Business Venturing*, 39(4), 106395.
- Nicolás, C., Rubio, A., & Fernández-Laviada, A. (2018). Cognitive determinants of social entrepreneurship: Variations according to the degree of economic development. *Journal of Social Entrepreneurship*, 9(2), 154-168.

- Nieß, C., & Biemann, T. (2014). The role of risk propensity in predicting self-employment. *Journal of Applied Psychology*, 99(5), 1000-1009.
- Nikolaev, B., Shir, N., & Wiklund, J. (2020). Dispositional positive and negative affect and self-employment transitions: The mediating role of job satisfaction. *Entrepreneurship Theory and Practice*, 44(3), 451-474.
- Nikolova, M. (2019). Switching to self-employment can be good for your health. *Journal of Business Venturing*, 34(4), 664-691.
- Nsereko, I., Balunywa, J. W., Kyazze, L. M., Nsereko, H. B., & Nakato, J. (2022). Entrepreneurial alertness and social entrepreneurial venture creation: the mediating role of personal initiative. *Journal of Enterprising Communities: People and Places in the Global Economy*, 16(3), 361-383.
- Nunziata, L., & Rocco, L. (2016). A tale of minorities: Evidence on religious ethics and entrepreneurship. *Journal of Economic Growth*, 21(2), 189-224.
- Nunziata, L., & Rocco, L. (2024). The protestant ethic and entrepreneurship: Inside the black box. *Small Business Economics*, 62(4), 1285-1313.
- Nyock Ilouga, S., Nyock Mouloungni, A. C., & Sahut, J. M. (2014). Entrepreneurial intention and career choices: The role of volition. *Small Business Economics*, 42(4), 717-728.

## O

- Ojo, S. (2019). Navigating ethnic entrepreneurship in religion and culture meld. *Journal of Enterprising Communities: People and Places in the Global Economy*, 13(5), 625-646.
- Ojo, S., & Nwankwo, S. (2020). God in the marketplace: Pentecostalism and marketing ritualization among Black Africans in the UK. *Journal of Enterprising Communities: People and Places in the Global Economy*, 14(3), 349-372.
- Onjewu, A. K. E., Anosike, P., & Godwin, E. S. (2023). The mediating role of planned behaviour in the religiosity and nascent entrepreneurship nexus. *International Journal of Entrepreneurial Behavior and Research*, 29(8), 1950-1969.
- Orlando, B., Tortora, D., Riso, T., Di Gregorio, A., & Del Giudice, M. (2022). Entrepreneurial intentions and high-status seeking in career expectations: A portrait of talents in emerging countries. *The International Journal of Human Resource Management*, 33(11), 2339-2372.
- Örtqvist, D., & Wincent, J. (2010). Role stress, exhaustion, and satisfaction: A cross-lagged structural equation modeling approach supporting Hobfoll's loss spirals. *Journal of Applied Social Psychology*, 40(6), 1357-1384.
- Outsios, G., & Farooqi, S. A. (2017). Gender in sustainable entrepreneurship: Evidence from the UK. *Gender in Management: An International Journal*, 32(3), 183-202.

**P**

- Pankov, S., Velamuri, V. K., & Schneckenberg, D. (2021). Towards sustainable entrepreneurial ecosystems: Examining the effect of contextual factors on sustainable entrepreneurial activities in the sharing economy. *Small Business Economics*, 56(3), 1073-1095.
- Parboteeah, K. P., Walter, S. G., & Block, J. H. (2015). When does Christian religion matter for entrepreneurial activity? The contingent effect of a country's investments into knowledge. *Journal of Business Ethics*, 130(2), 447-465.
- Patel, P. C., & Thatcher, S. M. B. (2014). Sticking it out: Individual attributes and persistence in self-employment. *Journal of Management*, 40(7), 1932-1979.
- Patel, P. C., & Wolfe, M. T. (2022). Of free markets and a secular mind: The value of economic decentralization and individual secular values in entrepreneurship. *Small Business Economics*, 58(1), 93-119.
- Patel, P. C., & Wolfe, M. T. (2023). Friends for richer or poorer: Economic connectedness, regional social capital, and county entrepreneurial activity. *Journal of Small Business Management*, 62(5), 2247-2286.
- Patzelt, H., & Shepherd, D. A. (2011). Recognizing opportunities for sustainable development. *Entrepreneurship Theory and Practice*, 35(4), 631-652.
- Pavlovich, K., & Corner, P. D. (2014). Conscious enterprise emergence: Shared value creation through expanded conscious awareness. *Journal of Business Ethics*, 121(3), 341-351.
- Pedrini, M. (2018, May 21). *Entrepreneurs as change agents of sustainable development*. Retrieved from: <https://impact.economist.com/sustainability/circular-economies/entrepreneurs-as-change-agents-of-sustainable-development> (Accessed 26.11.2024).
- Pérez-Nordtvedt, L., & Fallatah, M. I. (2022). Social innovation in Saudi Arabia: The role of entrepreneurs' spirituality, ego resilience and alertness. *Journal of Small Business Management*, 60(5), 1080-1121.
- Pham, D., Jones, P., Dobson, S., Liñán, F., & Viala, C. (2021). Entrepreneurial implementation intention as a tool to moderate the stability of entrepreneurial goal intention: A sensemaking approach. *Journal of Business Research*, 123, 97-105.
- Piperopoulos, P., & Dimov, D. (2015). Burst bubbles or build steam? Entrepreneurship education, entrepreneurial self-efficacy, and entrepreneurial intentions. *Journal of Small Business Management*, 53(4), 970-985.
- Prabowo, H., Ikhsan, R. B., & Yuniarty, Y. (2022). Drivers of green entrepreneurial intention: Why does sustainability awareness matter among university students?. *Frontiers in Psychology*, 13, 873140.
- Prasetyo, P., Azwardi, A., & Kistanti, N. (2023). Gender equality and social inclusion (GESI) and institutions as key drivers of green entrepreneurship. *International Journal of Data and Network Science*, 7(1), 391-398.
- Priyono, A., Moin, A., & Putri, V. N. A. O. (2020). Identifying digital transformation paths in the business model of SMEs during the COVID-19 pandemic. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(4), 104.



- Prohorovs, A. (2022). Russia's war in Ukraine: Consequences for European countries' businesses and economies. *Journal of Risk and Financial Management*, 15(7), 295.
- Purwandani, J. A., & Michaud, G. (2021). What are the drivers and barriers for green business practice adoption for SMEs?. *Environment Systems and Decisions*, 41(4), 577-593.
- Puumalainen, K., Sjögrén, H., Syrjä, P., & Barraket, J. (2015). Comparing social entrepreneurship across nations: An exploratory study of institutional effects. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, 32(4), 276-287.

## R

- Rafiki, A., & Nasution, F. N. (2019). Business success factors of Muslim women entrepreneurs in Indonesia. *Journal of Enterprising Communities: People and Places in the Global Economy*, 13(5), 584-604.
- Rashid, S., & Ratten, V. (2022). Spirituality and entrepreneurship: Integration of spiritual beliefs in an entrepreneurial journey. *Journal of Enterprising Communities: People and Places in the Global Economy*, 16(6), 876-899.
- Read, S., & Sarasvathy, S. D. (2005). Knowing what to do and doing what you know: Effectuation as a form of entrepreneurial expertise. *The Journal of Private Equity*, 9(1), 45-62.
- Rehan, F., Block, J., & Fisch, C. (2019). Entrepreneurship in Islamic communities: How do Islamic values and Islamic practices influence entrepreneurship intentions?. *Journal of Enterprising Communities: People and Places in the Global Economy*, 13(5), 557-583.
- Rietveld, C. A., & Hoogendoorn, B. (2022). The mediating role of values in the relationship between religion and entrepreneurship. *Small Business Economics*, 58(3), 1309-1335.
- Ritchie, H. A. (2016). Unwrapping institutional change in fragile settings: Women entrepreneurs driving institutional pathways in Afghanistan. *World Development*, 83(1), 39-53.
- Romero-Castro, N., López-Cabarcos, M. A., & Piñeiro-Chousa, J. (2023). Finance, technology, and values: A configurational approach to the analysis of rural entrepreneurship. *Technological Forecasting and Social Change*, 190(3), 122444.
- Romero-Colmenares, L. M., & Reyes-Rodríguez, J. F. (2022). Sustainable entrepreneurial intentions: Exploration of a model based on the theory of planned behaviour among university students in north-east Colombia. *The International Journal of Management Education*, 20(2), 100627.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological monographs: General and Applied*, 80(1), 1-28.

## S

- Sáez-Martínez, F. J., González-Moreno, Á., & Hogan, T. (2014). The role of the University in eco-entrepreneurship: Evidence from the Eurobarometer Survey on Attitudes of European Entrepreneurs towards Eco-innovation. *Environmental Engineering and Management Journal*, 13(10), 2541-2541.
- Salaheldeen, M., & Battour, M. (2024). Fostering innovation capability and sustainable innovation in halal industry: The role of halal entrepreneurs' success. *Journal of Islamic Marketing*, 15(3), 777-799.
- Salaheldeen, M., Battour, M., Nazri, M. A., Bustamam, U. S. A., & Hashim, A. J. C. M. (2022). The perception of success in the halal market: Developing a halal entrepreneurship success scale. *Journal of Islamic Marketing*, 14(3), 799-825.
- Saleem, F., Adeel, A., Ali, R., & Hyder, S. (2018). Intentions to adopt ecopreneurship: moderating role of collectivism and altruism. *Entrepreneurship and Sustainability Issues*, 6(2), 517-537.
- Samujh, H. R. (2011). Micro-businesses need support: Survival precedes sustainability. *Corporate Governance: The International Journal of Business in Society*, 11(1), 15-28.
- Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26(2), 243-263.
- Sarkar, S., Rufin, C., & Houghton, J. (2018). Inequality and entrepreneurial thresholds. *Journal of Business Venturing*, 33(3), 278-295.
- Sarma, S., Attaran, S., & Attaran, M. (2024). Sustainable entrepreneurship: Factors influencing opportunity recognition and exploitation. *The International Journal of Entrepreneurship and Innovation*, 25(1), 56-69.
- Savastano, M., Samo, A. H., Channa, N. A., & Amendola, C. (2022). Toward a Conceptual Framework to Foster Green Entrepreneurship Growth in the Agriculture Industry. *Sustainability*, 14(7), 4089.
- Schaefer, K., Corner, P. D., & Kearins, K. (2015). Social, environmental and sustainable entrepreneurship research: what is needed for sustainability-as-flourishing?. *Organization & Environment*, 28(4), 394-413.
- Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: categories and interactions. *Business Strategy and the Environment*, 20(4), 222-237.
- Schmidt, R., Sager, G., Carney, G., Jackson, J. J., Zanca, K., Muller, A., & Jackson, J. (1999). *Patterns of Religion*. Wadsworth Publishing, Belmont, CA.
- Schmutzler, J., Andonova, V., & Diaz-Serrano, L. (2019). How context shapes entrepreneurial self-efficacy as a driver of entrepreneurial intentions: A multilevel approach. *Entrepreneurship Theory and Practice*, 43(5), 880-920.
- Schwenk, C. R. (1988). The cognitive perspective on strategic decision making. *Journal of Management Studies*, 25(1), 41-55.

- Scott, K., Ummer, O., & LeFevre, A. (2021). The devil is in the detail: reflections on the value and application of cognitive interviewing to strengthen quantitative surveys in global health. *Health Policy and Planning*, 36(6), 982-995.
- Shahverdi, M., Ismail, K., & Qureshi, M. I. (2018). The effect of perceived barriers on social entrepreneurship intention in Malaysian universities: The moderating role of education. *Management Science Letters*, 8(5), 341-352.
- Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, 33, 141-149.
- Sharifi-Tehrani, M. (2023). Corporate social entrepreneurial orientation in the hospitality and tourism industry: A religiosity perspective. *International Journal of Contemporary Hospitality Management*, 35(8), 2890-2915.
- Shepherd, D. A., Patzelt, H., & Baron, R. A. (2013). "I care about nature, but...": Disengaging values in assessing opportunities that cause harm. *Academy of Management Journal*, 56(5), 1251-1273.
- Shepherd, D. A., Wennberg, K., Suddaby, R., & Wiklund, J. (2019). What are we explaining? A review and agenda on initiating, engaging, performing, and contextualizing entrepreneurship. *Journal of Management*, 45(1), 159-196.
- Shinnar, R. S., Hsu, D. K., & Powell, B. C. (2014). Self-efficacy, entrepreneurial intentions, and gender: Assessing the impact of entrepreneurship education longitudinally. *The International Journal of Management Education*, 12(3), 561-570.
- Shinnar, R. S., Hsu, D. K., Powell, B. C., & Zhou, H. (2018). Entrepreneurial intentions and start-ups: are women or men more likely to enact their intentions?. *International Small Business Journal*, 36(1), 60-80.
- Shinnar, R. S., & Nayir, D. Z. (2019). Immigrant entrepreneurship in an emerging economy: The case of Turkey. *Journal of Small Business Management*, 57(2), 559-575.
- Shirokova, G., Osiyevskyy, O., & Bogatyreva, K. (2016). Exploring the intention-behavior link in student entrepreneurship: Moderating effects of individual and environmental characteristics. *European Management Journal*, 34(4), 386-399.
- Singh, G., Sharma, S., Sharma, R., & Dwivedi, Y. K. (2021). Investigating environmental sustainability in small family-owned businesses: Integration of religiosity, ethical judgment, and theory of planned behavior. *Technological Forecasting and Social Change*, 173(6), 121094.
- Singh, R. P. (2001). A comment on developing the field of entrepreneurship through the study of opportunity recognition and exploitation. *Academy of Management Review*, 26(1), 10-12.
- Siwale, J., Gurău, C., Aluko, O., Dana, L. P., & Ojo, S. (2023). Toward understanding the dynamics of the relationship between religion, entrepreneurship and social change: Empirical findings from technology-savvy African immigrants in UK. *Technological Forecasting and Social Change*, 186(1), 122153.
- Smith, B. R., Conger, M. J., McMullen, J. S., & Neubert, M. J. (2019). Why believe? The promise of research on the role of religion in entrepreneurial action. *Journal of Business Venturing Insights*, 11(1), e00119.

- Smith, B. R., McMullen, J. S., & Cardon, M. S. (2021). Toward a theological turn in entrepreneurship: How religion could enable transformative research in our field. *Journal of Business Venturing*, 36(5), 106139.
- Smith, B., Gümüşay, A. A., & Townsend, D. M. (2023a). Bridging worlds: The intersection of religion and entrepreneurship as meaningful heterodoxy. *Journal of Business Venturing Insights*, 20(5), e00406.
- Smith, B. R., Lawson, A., Barbosa, S. D., & Jones, J. (2023b). Navigating the highs and lows of entrepreneurial identity threats to persist: The countervailing force of a relational identity with God. *Journal of Business Venturing*, 38(4), 106317.
- Solórzano-García, M., Navio-Marco, J., & Laguia, A. (2022). The influence of intrinsic motivation and contextual factors on MOOC students' social entrepreneurial intentions. *Interactive Learning Environments*, 30(9), 1768-1780.
- Soman, D. (2001). The mental accounting of sunk time costs: Why time is not like money. *Journal of Behavioral Decision Making*, 14(3), 169-185.
- Spence, M., Ben Boubaker Gherib, J., & Ondoua Biwolé, V. (2011). Sustainable entrepreneurship: is entrepreneurial will enough? A north-south comparison. *Journal of Business Ethics*, 99(3), 335-367.
- Sperber, D., & Hirschfeld, L. A. (2004). The cognitive foundations of cultural stability and diversity. *Trends in Cognitive Sciences*, 8(1), 40-46.
- Spigel, B., & Harrison, R. (2018). Toward a process theory of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, 12(1), 151-168.
- Stasielowicz, L. (2020). How important is cognitive ability when adapting to changes? A meta-analysis of the performance adaptation literature. *Personality and Individual Differences*, 166, 110178.
- Statista (2024). *Anzahl der Kirchenaustritte in Deutschland nach Konfessionen von 1992 bis 2023*. Retrieved from: <https://de.statista.com/statistik/daten/studie/4052/umfrage/kirchenaustritte-in-deutschland-nach-konfessionen/> (Accessed 13.09.2024).
- Stephan, U. (2018). Entrepreneurs' mental health and well-being: A review and research agenda. *Academy of Management Perspectives*, 32(3), 290-322.
- Stephan, U., Rauch, A., & Hatak, I. (2022). Happy entrepreneurs? Everywhere? A meta-analysis of entrepreneurship and wellbeing. *Entrepreneurship Theory and Practice*, 47(2), 553-593.
- Stephan, U., & Uhlaner, L. M. (2010). Performance-based vs. socially supportive culture: A cross-national study of descriptive norms and entrepreneurship. *Journal of International Business Studies*, 41(8): 1347-1364.
- Stephan, U., Uhlaner, L., & Stride, C. (2015). Institutions and social entrepreneurship: The role of institutional voids, institutional support, and institutional configurations. *Journal of International Business Studies*, 46(3), 308-331.
- Stephan, U., Zbierowski, P., Pérez-Luño, A., Klausen, A., Alba Cabañas, M., Barki, E., Benzari, A., Bernhard-Oettel, C., Boekhorst, J., Dash, A., Efendic, A., Eib, C., Hanard, P.-J., Holienka, M., Iakovleva, T., Kawakatsu, S., Khalid, S., Kovacicová, Z., Leatherbee, M., ..., & Zahid, M. (2021). Entrepreneurship during the Covid-19 Pandemic: A global study

of entrepreneurs' challenges, resilience, and well-being. *King's Business School Impact Paper*.

- Stephan U., Zbierowski P., Pérez-Luño A., Wach D., Wiklund J., Alba Cabañas M., Barki E., Benzari A., Bernhard-Oettel C., & Boekhorst J. A. (2023). Act or wait-and-see? Adversity, agility, and entrepreneur wellbeing across countries during the Covid-19 pandemic. *Entrepreneurship Theory and Practice*, 47(3), 682-723.
- Sternberg, R., Gorynia-Pfeffer, N., Täube, F., Wendt, N., Baharian, A., & Wallisch, M. (2024). Global Entrepreneurship Monitor: Unternehmensgründungen im weltweiten Vergleich, Länderbericht Deutschland 2023/24. Retrieved from: <https://www.rkw-kompetenzzentrum.de/publikationen/studie/global-entrepreneurship-monitor-2023-2024/> (Accessed 29.11.2024).
- Strobl, C., Malley, J., & Tutz, G. (2009). An introduction to recursive partitioning: Rationale, application, and characteristics of classification and regression trees, bagging, and random forests. *Psychological Methods*, 14(4), 323-348.
- Suci, A., & Hardi, H. (2020). Literacy experiment of Islamic financing to non-Muslim small and micro business. *Journal of Islamic Marketing*, 11(1), 179-191.
- Sutikno, B., Hamdi, M., Indarti, N., Manik, H. F. G. G., Lukito-Budi, A. S., & Anggadwita, G. (2023). Does Religiosity Matter for New Venture Creation Among Gen Y and Gen Z in Indonesia?. *Journal of Developmental Entrepreneurship*, 28(1), 2350004.

## T

- Tahir, R. (2023). Work and religion: an exploratory study of Muslim entrepreneurs in the United Arab Emirates. *Journal of Islamic Marketing*, 14(10), 2600-2621.
- Tan, L. P., Le, A. N. H., & Xuan, L. P. (2020). A systematic literature review on social entrepreneurial intention. *Journal of Social Entrepreneurship*, 11(3), 241-256.
- Tesprasit, K., Aksharanandana, P., & Kanchanavibhu, A. (2020). Building green entrepreneurship: a journey of environmental awareness to green entrepreneurs in Thailand. *Journal of Information Technology Applications & Management*, 27(5), 35-47.
- Thaler, R. H. (1999). Mental accounting matters. *Journal of Behavioral Decision Making*, 12(3), 183-206.
- Thelken, H. N., & de Jong, G. (2020). The impact of values and future orientation on intention formation within sustainable entrepreneurship. *Journal of Cleaner Production*, 266(2), 122052.
- Thompson, N., Kiefer, K., & York, J. G. (2011). Distinctions not dichotomies: Exploring social, sustainable, and environmental entrepreneurship. In G. T. Lumpkin & J. A. Katz (Eds.), *Social and sustainable entrepreneurship* (Vol. 13, pp. 201-229). Emerald Group Publishing Limited.
- Thompson, N., Van Gelderen, M., & Keppler, L. (2020). No need to worry? Anxiety and coping in the entrepreneurship process. *Frontiers in Psychology*, 11, 398.

- Tiwari, P., Bhat, A. K., & Tikoria, J. (2017a). An empirical analysis of the factors affecting social entrepreneurial intentions. *Journal of Global Entrepreneurship Research*, 7(9), 1-25.
- Tiwari, P., Bhat, A. K., & Tikoria, J. (2017b). The role of emotional intelligence and self-efficacy on social entrepreneurial attitudes and social entrepreneurial intentions. *Journal of Social Entrepreneurship*, 8(2), 165-185.
- Tlaiss, H. A. (2015). How Islamic business ethics impact women entrepreneurs: Insights from four Arab Middle Eastern countries. *Journal of Business Ethics*, 129(4), 859-877.
- Tlaiss, H. A., & McAdam, M. (2021a). Islam, Arab women's entrepreneurship and the construal of success. *International Journal of Entrepreneurial Behavior and Research*, 27(3), 821-844.
- Tlaiss, H. A., & McAdam, M. (2021b). Unexpected lives: The intersection of Islam and Arab women's entrepreneurship. *Journal of Business Ethics*, 171(2), 253-272.
- Tlaiss, H. A., & McAdam, M. (2023). Muslim feminists and entrepreneurship at times and in contexts of crises. *Gender, Work and Organization*, 30(5), 1759-1784.
- Torrès, O., Benzari, A., Fisch, C., Mukerjee, J., Swalhi, A., & Thurik, R. (2022). Risk of burnout in french entrepreneurs during the Covid-19 crisis. *Small Business Economics*, 58(2), 717-739.
- Trajano, S. D. S., Sousa-Filho, J. M. D., Matos, S., & Lessa, B. D. S. (2023). Do volunteers intend to become social entrepreneurs? The influence of pro-social behavior on social entrepreneurial intentions. *Nonprofit and Voluntary Sector Quarterly*, 52(2), 443-473.
- Tran, V. H., Vu, T. N., Pham, H. T., Nguyen, T. P. T., & Duong, C. D. (2024). Closing the entrepreneurial attitude-intention-behavior gap: The direct and moderating role of entrepreneurship education. *Journal of International Education in Business*, 17(1), 107-132.
- Triguero, A., Moreno-Mondéjar, L., & Davia, M. A. (2013). Drivers of different types of eco-innovation in European SMEs. *Ecological economics*, 92, 25-33.
- Tunio, M. N., Chaudhry, I. S., Shaikh, S., Jariko, M. A, Brahmi, M. (2021). Determinants of the sustainable entrepreneurial engagement of youth in developing country—An empirical evidence from Pakistan. *Sustainability*, 13(14), 7764.

## U

- Ucbasaran, D., Westhead, P., Wright, M., & Flores, M. (2010). The nature of entrepreneurial experience, business failure and comparative optimism. *Journal of Business Venturing*, 25(6), 541-555.
- Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, 26(3), 341-358.
- Usai, A., Orlando, B., & Mazzoleni, A. (2020). Happiness as a driver of entrepreneurial initiative and innovation capital. *Journal of Intellectual Capital*, 21(6), 1229-1255.

- Utomo, S. B., Sekaryuni, R., Widarjono, A., Tohirin, A., Sudarsono, H. (2021). Promoting Islamic financial ecosystem to improve halal industry performance in Indonesia: A demand and supply analysis. *Journal of Islamic Marketing*, 12(5), 992-1011.

## V

- Van der Zwan, P., Hessels, J., & Rietveld, C. A. (2018). Self-employment and satisfaction with life, work, and leisure. *Journal of Economic Psychology*, 64, 73-88.
- van Ewijk, A. R., & Weber, W. (2021). The value of knowing what you want: goal hierarchy and entrepreneurial intentions. *Journal of Business Venturing Insights*, 15(3), e00215.
- Van Gelderen, M., Brand, M., Van Praag, M., Bodewes, W., Poutsma, E., & Van Gils, A. (2008). Explaining entrepreneurial intentions by means of the theory of planned behaviour. *Career Development International*, 13(6), 538-559
- Van Gelderen, M., Kautonen, T., & Fink, M. (2015). From entrepreneurial intentions to actions: Self-control and action-related doubt, fear, and aversion. *Journal of Business Venturing*, 30(5), 655-673.
- Van Gelderen, M., Kautonen, T., Wincent, J., & Biniari, M. (2018). Implementation intentions in the entrepreneurial process: concept, empirical findings, and research agenda. *Small Business Economics*, 51(4), 923-941.
- Veleva, V. (2021). The role of entrepreneurs in advancing sustainable lifestyles: Challenges, impacts, and future opportunities. *Journal of Cleaner Production*, 283(1), 124658.
- Verheul, I., Carree, M., & Thurik, R. (2009). Allocation and productivity of time in new ventures of female and male entrepreneurs. *Small Business Economics*, 33(3), 273-291.
- Verver, M., & Koning, J. (2024). An anthropological perspective on contextualizing entrepreneurship. *Small Business Economics*, 62(2), 649-665.
- Vuorio, A. M., Puumalainen, K., & Fellnhofer, K. (2018). Drivers of entrepreneurial intentions in sustainable entrepreneurship. *International Journal of Entrepreneurial Behavior & Research*, 24(2), 359-381.

## W

- Waddock, S., & Steckler, E. (2016). Visionaries and wayfinders: Deliberate and emergent pathways to vision in social entrepreneurship. *Journal of Business Ethics*, 133(4), 719-734.
- Walls, P., & Williams, R. (2004). Accounting for Irish Catholic ill health in Scotland: A qualitative exploration of some links between 'religion', class and health. *Sociology of Health and Illness*, 26(5), 527-556.
- Walter, S. G., & Heinrichs, S. (2015). Who becomes an entrepreneur? A 30-years-review of individual-level research. *Journal of Small Business and Enterprise Development*, 22(2), 225-248.

- Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology*, 82(2), 247-252.
- Ward, T. B. (2004). Cognition, creativity, and entrepreneurship. *Journal of Business Venturing*, 19(2), 173-188.
- Wasserman, V., & Baikovich, A. (2024). Fashion as embodied resistance: The case of Jewish ultraorthodox female entrepreneurs. *Gender, Work and Organization*, 31(2), 535-553.
- Weiss, J., Anisimova, T., & Shirokova, G. (2019). The translation of entrepreneurial intention into start-up behaviour: The moderating role of regional social capital. *International Small Business Journal*, 37(5), 473-501.
- Wennberg, K., & Holmquist, C. (2008). Problemistic search and international entrepreneurship. *European Management Journal*, 26(6), 441-454.
- White, J.V., & Gupta, V.K. (2020). Stress and Well-Being in Entrepreneurship: A Critical Review and Future Research Agenda. In P. L. Perrewé, P. D. Harms & C.-H. Chang (Eds), *Entrepreneurial and Small Business Stressors, Experienced Stress, and Well-Being* (Vol. 18, pp. 65-93). Emerald Publishing Limited. Bingley.
- Wijaya, I. F. (2019). The impact of religiosity on self-employment. *Journal of Enterprising Communities: People and Places in the Global Economy*, 13(3), 218-241.
- Wiklund, J., Nikolaev, B., Shir, N., Foo, M. D., & Bradley, S. (2019). Entrepreneurship and well-being: Past, present, and future. *Journal of Business Venturing*, 34(4), 579-588.
- Wilson, F., Kickul, J., & Marlino, D. (2007). Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions: Implications for entrepreneurship education. *Entrepreneurship Theory and Practice*, 31(3), 387-406.
- Wiseman, T., & Young, A. (2014). Religion: Productive or unproductive?. *Journal of Institutional Economics*, 10(1), 21-45.
- Wolfe, M. T., & Patel, P. C. (2021). Everybody hurts: Self-employment, financial concerns, mental distress, and well-being during Covid-19. *Journal of Business Venturing Insights*, 15, e00231.

## X

- Xiao, X., Tan, B., Leong, C., & Tan, F. T. C. (2021). Powered by “Qinghuai”: The melding of traditional values and digital entrepreneurship in contemporary China. *Information Systems Journal*, 31(6), 769-802.
- Xu, Z., Liu, Z., & Wu, J. (2022). Buddhist entrepreneurs, charitable behaviors, and social entrepreneurship: Evidence from China. *Small Business Economics*, 59(3), 1197-1217.
- Xu, Z., Tang, Y., & Liu, Z. (2023). Buddhist entrepreneurs, managerial attention allocation, and new ventures' access to external resources. *Journal of Management Studies*, 60(2), 454-494.



**Y**

- Yan, S. (2020). A double-edged sword: Diversity within religion and market emergence. *Organization Science*, 31(3), 558-575.
- Yang, K. M., Tang, J., Donbesuur, F., & Adomako, S. (2023). Institutional support for entrepreneurship and new venture internationalization: Evidence from small firms in Ghana. *Journal of Business Research*, 154, 113360.
- Ye, Q., Zhou, R., Anwar, M. A., Siddiquei, A. N., & Asmi, F. (2020). Entrepreneurs and environmental sustainability in the digital era: Regional and institutional perspectives. *International Journal of Environmental Research and Public Health*, 17(4), 1355.
- Yi, G. (2021). From green entrepreneurial intentions to green entrepreneurial behaviors: The role of university entrepreneurial support and external institutional support. *International Entrepreneurship and Management Journal*, 17(2), 963-979.
- Youssef, A. B., Boubaker, S., & Omri, A. (2018). Entrepreneurship and sustainability: The need for innovative and institutional solutions. *Technological Forecasting and Social Change*, 129, 232-241.
- Yue, W., & Cowling, M. (2021). The Covid-19 lockdown in the United Kingdom and subjective well-being: Have the self-employed suffered more due to hours and income reductions? *International Small Business Journal*, 39(2), 93-108.

**Z**

- Zahra, S. A. (2021). International entrepreneurship in the post Covid world. *Journal of World Business*, 56(1), 101143.
- Zahra, S. A., Gedajlovic, E., Neubaum, D. O., & Shulman, J. M. (2009). A typology of social entrepreneurs: Motives, search processes and ethical challenges. *Journal of Business Venturing*, 24(5), 519-532.
- Zelekha, Y., Avnimelech, G., & Sharabi, E. (2014). Religious institutions and entrepreneurship. *Small Business Economics*, 42(4), 747-767.
- Zhang, T., & Acs, Z. (2018). Age and entrepreneurship: nuances from entrepreneur types and generation effects. *Small Business Economics*, 51, 773-809.
- Zhang, F., Zhang, H., & Bell, G. G. (2021). Corporate religiosity and individual decision on conducting entrepreneurial activity: The contingent effects of institutional environments in China. *Asia Pacific Journal of Management*, 38(3), 955-978.
- Zhao, E. Y., & Lounsbury, M. (2016). An institutional logics approach to social entrepreneurship: Market logic, religious diversity, and resource acquisition by microfinance organizations. *Journal of Business Venturing*, 31(6), 643-662.

# Appendix

**Table A2.1: Articles with categorization according to the theory of planned behavior**

Authors	Method	Attitude	Subjective norms	Behavioral control	Intention	Action
Ackah et al. (2024)	Qualitative			x		
Akoh (2020)	Qualitative		x			x
Alacovska et al. (2021)	Qualitative	x				x
Althalathini et al. (2022)	Qualitative		x			x
Amankwah-Amoah et al. (2022)	Mixed	x				x
Anggadwita et al. (2021)	Qualitative	x		x		
Anglin et al. (2023)	Quantitative			x		
Arthur & Adom (2019)	Qualitative			x		
Artunç (2019)	Quantitative			x		
Assmann & Ehrl (2021)	Quantitative		x	x		
Audretsch et al. (2013)	Quantitative					x
Audretsch et al. (2017)	Quantitative		x			
Avnimelech & Zelekha (2023)	Quantitative		x	x		x
Aygün et al. (2008)	Quantitative	x				
Ayob & Saiyed (2020)	Quantitative			x		x
Baikovich et al. (2022)	Qualitative	x	x			x
Barbosa & Smith (2024)	Quantitative	x		x		x
Basir & Musa (2022)	Qualitative	x				x
Cater et al. (2017)	Qualitative	x		x		x
Cavalcanti Junqueira et al. (2023)	Qualitative					x
Cegarra-Navarro et al. (2024)	Quantitative			x	x	
Chen et al. (2023)	Quantitative	x				x
Choudhury-Kaul et al. (2023)	Quantitative					x
Corrêa et al. (2022)	Qualitative	x		x		
Cucchi et al. (2022)	Qualitative			x		
Deller et al. (2018)	Quantitative			x		x
Di Pietro & Masciarelli (2022)	Quantitative			x		
Dissanayake (2022)	Qualitative		x		x	
Ertimur & Coskuner-Balli (2015)	Qualitative			x		x
Essers & Benschop (2009)	Qualitative	x	x			x
Essers et al. (2010)	Qualitative	x	x			x
Essers et al. (2021)	Qualitative		x			x
Essers & Tedmanson (2014)	Qualitative	x	x			
Falk et al. (2018)	Quantitative	x				
Fathonih et al. (2019)	Qualitative			x		
Fossati (2019)	Quantitative		x	x		
Gantenbein et al. (2019)	Quantitative		x	x		
Ganzin et al. (2020)	Qualitative	x				
Giacomin et al. (2023)	Quantitative				x	
Gunawan et al. (2021)	Qualitative	x				x

Authors	Method	Attitude	Subjective norms	Behavioral control	Intention	Action
Gursoy et al. (2017)	Quantitative	x	x			x
Henley (2017)	Quantitative		x			x
Herteliu et al. (2021)	Quantitative	x				x
Hollow (2022)	Qualitative	x	x			x
Hoogendoorn et al. (2016)	Quantitative					x
Hoque (2023)	Qualitative			x		
Jones et al. (2024)	Quantitative			x		
Kabbara & Zucchella (2023)	Qualitative			x		x
Kalnins & Chung (2006)	Quantitative			x		x
Khurana et al. (2021)	Qualitative	x				x
Lelkes (2006)	Quantitative			x		
Liu et al. (2019)	Quantitative					x
Maniyalath & Narendran (2016)	Quantitative					x
McIntyre et al. (2023)	Quantitative	x			x	
Miao et al. (2022)	Quantitative			x		x
Minns & Rizov (2005)	Quantitative					x
Mitchell et al. (2022)	Mixed			x		
Mitra & Basit (2021)	Qualitative			x		x
Muhammad et al. (2017)	Qualitative			x		x
Muhammad et al. (2019)	Qualitative	x	x	x	x	x
Neubert et al. (2017)	Quantitative			x		x
Ngassa (2024)	Quantitative					x
Nunziata & Rocco (2016)	Quantitative					x
Nunziata & Rocco (2024)	Quantitative		x	x		x
Ojo (2019)	Qualitative		x			
Ojo & Nwankwo (2020)	Qualitative			x		x
Onjewu et al. (2023)	Quantitative	x	x	x		x
Orlando et al. (2022)	Quantitative	x			x	
Parboteeah et al. (2015)	Quantitative			x		x
Patel & Wolfe (2022)	Quantitative			x		x
Patel & Wolfe (2023)	Quantitative			x		x
Pavlovich & Corner (2014)	Qualitative	x			x	x
Pérez-Nordtvedt & Fallatah (2022)	Quantitative	x				x
Rafiki & Nasution (2019)	Quantitative	x		x		x
Rashid & Ratten (2022)	Qualitative					x
Rehan et al. (2019)	Quantitative	x			x	
Rietveld & Hoogendoorn (2022)	Quantitative		x			x
Ritchie (2016)	Qualitative		x	x		x
Romero-Castro et al. (2023)	Quantitative			x		x
Salaheldeen & Battour (2024)	Quantitative					x
Salaheldeen et al. (2022)	Mixed					x
Sarkar et al. (2018)	Quantitative			x		x
Sharifi-Tehrani (2023)	Mixed	x				x
Shinnar & Nayir (2019)	Qualitative			x		x
Siwale et al. (2023)	Qualitative			x		x
Smith et al. (2023b)	Qualitative	x				x
Suci & Hardi (2020)	Quantitative			x		
Sutikno et al. (2023)	Quantitative	x				x
Tahir (2023)	Qualitative					x
Tlaiss (2015)	Qualitative		x			x
Tlaiss & McAdam (2023)	Qualitative		x			x
Tlaiss & McAdam (2021a)	Qualitative	x	x	x		x
Tlaiss & McAdam (2021b)	Qualitative	x	x			x

Authors	Method	Attitude	Subjective norms	Behavioral control	Intention	Action
Trajano et al. (2023)	Quantitative	x		x	x	
Utomo et al. (2021)	Mixed			x		
Verver & Koning (2024)	Qualitative			x		x
Walls & Williams (2004)	Qualitative		x			x
Wasserman & Baikovich (2024)	Qualitative		x			x
Wijaya (2019)	Quantitative					x
Wiseman & Young (2014)	Quantitative					x
Xiao et al. (2021)	Qualitative	x		x		x
Xu et al. (2022)	Quantitative	x				x
Xu et al. (2023)	Qualitative			x		x
Yan (2020)	Mixed			x		
Zelekha et al. (2014)	Quantitative					x
Zhang et al. (2021)	Quantitative			x		x
Zhao & Lounsbury (2016)	Quantitative			x		

**Table A2.2: Articles on religion and attitude toward entrepreneurship**

<b>Authors</b>	<b>TPB Category</b>	<b>Country</b>	<b>Religion</b>	<b>Key findings</b>
Alacovska et al. (2021)	Attitude on Action	Ghana	Spirituality	Spiritualizing can lead to a hopeful entrepreneurial attitude and can therefore increase the economic vitality of entrepreneurs in creative industries.
Amankwah-Amoah et al. (2022)	Attitude on Action	Ghana	Religious faith	Religious orientation shapes if business failure experience enhances the collaboration behavior of serial entrepreneurs in developing economies. Especially for non-religious entrepreneurs, business failure experience translates into increased collaborations.
Anggadwita et al. (2021)	Religion on Attitude	Indonesia	Islam	Islamic boarding schools can enhance the entrepreneurial attitudes of students by implementing a humane and spiritual approach based on Islamic religious values to teach humane entrepreneurship.
Aygün et al. (2008)	Religion on Attitude	Turkey, USA	Religiosity	Religiosity influences work ethic. Religious individuals have a strong work ethic, but entrepreneurial orientations are more influenced by gender and culture than by religiosity.
Baikovich et al. (2022)	Religion on Attitude, Attitude on Action	Israel	Judaism	Jewish women entrepreneurs must cope with gender and power inequalities in their communities. Especially women entrepreneurs and religious minority entrepreneurs must be resilient against adverse circumstances to initiate change and to turn resistance into a productive outcome.
Barbosa and Smith (2024)	Attitude on Action	USA	Christianity	Religious beliefs can have positive cognitive implications and can foster optimism in entrepreneurial decision-making. Religious beliefs can further help entrepreneurs to cope with uncertainty. However, religious beliefs can also contribute to overconfidence bias with possible negative effects.
Basir and Musa (2022)	Attitude on Action	Brunei	Islam	Islamic religious values motivate individuals to become entrepreneurs in the agricultural sector with positive implications on the entrepreneur's mindset and the growth of the agricultural venture.
Cater et al. (2017)	Attitude on Action	USA	Religious faith	Entrepreneurial attitudes such as altruism and shared values can lead to social behavior in a venture. Especially the motivation to engage in fair trade practices is often rooted in religious faith.
Chen et al. (2023)	Attitude on Action	China	Religious faith	Religious values permeate into altruistic attitudes and consequently increase entrepreneurial persistence.

Corrêa et al. (2022)	Religion on Attitude	Brazil	Neo-Pentecostal Evangelical	Religious entrepreneurs in emerging economies are motivated by opportunity search and creation and the need for survival. These motivations lead to entrepreneurial attitudes such as innovativeness, proactivity and risk-taking.
Essers and Benschop (2009)	Religion on Attitude	Netherlands	Islam	Muslim women entrepreneurs create their work identities by incorporating gender, ethnicity and religion. Their entrepreneurial attitudes and identities are a result of the intersection of these aspects.
Essers et al. (2010)	Religion on Attitude	Netherlands	Islam	Women entrepreneurs include gender and ethnicity in their entrepreneurial identity to cope with their specific entrepreneurial situation. Female ethnicity in Islam can be restrictive leading to social exclusion, but it can also be supportive in providing autonomous agency.
Essers and Tedmanson (2014)	Religion on Attitude	Netherlands	Islam	Muslim women entrepreneurs must consider different identities in entrepreneurship, including gender and religion. They must stand up to the political marginalization that they often encounter in Western countries. The response to such political aspects also influences their identities.
Falk et al. (2018)	Religion on Attitude	International (76 countries)	Protestantism	Religion influences economic preferences in terms of patience. Protestant ethic increases individuals' patience. No significant effect of religion is found for other economic preferences such as risk-taking, reciprocity, altruism and trust.
Ganzin et al. (2020)	Religion on Attitude	Canada	Spirituality	Entrepreneurial thinking and entrepreneurs' cognitive capacity in a spiritual context can enhance resilience and reduce uncertainties and negative expectations in entrepreneurship.
Gunawan et al. (2021)	Attitude on Action	Indonesia	Religious faith	Social identity is constructed by gender, religion and ethnicity and influences ecological entrepreneurial motivations through self-enhancement, conservation and self-transcendence values. Especially religious identity can motivate ecological entrepreneurship practices in the Indonesian craft sector.
Gursoy et al. (2017)	Attitude on Action	Turkey	Islam, Religiosity	Religiosity plays a critical role in shaping individual values and entrepreneurial behaviors. Practicing Muslim entrepreneurs stick to more traditional customs and ideas while non-practicing Muslim entrepreneurs have more independent thoughts and actions when it comes to choosing, creating and exploring processes in entrepreneurship.
Herteliu et al. (2021)	Attitude on Action	Romania	Religious affiliations, Religiosity	Religion influences the attitude of individuals toward money and thus also impacts if they try to start a new venture.

Hollow (2022)	Attitude on Action	UK	Protestantism	Protestant work ethic can motivate the decision to start a venture by giving a sense of Christian calling.
McIntyre et al. (2023)	Attitude on Intention	Ghana	Religiosity	Religiosity is positively related to attitudes such as self-efficacy and interdependent self-construal. The positive effect of religion on these attitudes translates into higher social and traditional entrepreneurial intentions.
Muhammad et al. (2019)	Attitude on Intention	Pakistan	Islam	The religious background of Muslim women entrepreneurs influences their entrepreneurial intentions through their marriages. The type of marriage (love, arranged, forced) affects entrepreneurial attitudes and entrepreneurial intentions. In forced marriages, women often experience insecurity and stress which motivates entrepreneurial intentions while love marriages are linked to motivations such as sharing financial responsibility and gaining trust of their partners.
Onjewu et al. (2023)	Attitude on Action	Nigeria	Religiosity	Religiosity affects nascent entrepreneurship through the enhancement of entrepreneurial attitudes so that individuals believe that starting a business is worthwhile and rewarding.
Orlando et al. (2022)	Attitude on Intention	Africa (19 countries)	Religious faith	Religious aspects can lead to gender-related differences in career motivations of men and women. Men have higher career expectations and entrepreneurial intentions due to cultural and religious influences in emerging economies.
Pavlovich and Corner (2014)	Attitude on Intention, Attitude on Action	New Zealand	Spirituality	Spiritual practices increase conscious awareness of social problems which enhances social entrepreneurial intentions and shapes venture characteristics such as supply chain and manufacturing decisions focused on shared value.
Pérez-Nordtvedt and Fallatah (2022)	Attitude on Action	Saudi Arabia	Spirituality	Entrepreneurs' spirituality interacts with personal attributes such as resilience and alertness leading to social innovation in the ventures. Different aspects of spirituality (vertical versus horizontal) can result in different outcomes of social innovation in terms of inclusiveness, frugality and flexibility.
Rafiki and Nasution (2019)	Attitude on Action	Indonesia	Islam	An important success factor for Muslim women entrepreneurs is their personal aspirations.
Rehan et al. (2019)	Attitude on Intention	Pakistan	Islam	Values and practices of Islamic religion positively influence entrepreneurship intentions. The effect is mediated by the attitude toward entrepreneurship. Thus, Islamic values and practices increase entrepreneurial attitudes and subsequently the entrepreneurial intentions of students.

Sharifi-Tehran (2023)	Attitude on Action	Iran	Islam, Religiosity	Practicing Islam has a positive influence on social entrepreneurial attitudes and in turn on the incorporation of social aspects. Practicing religious believers in Islam have higher social proactiveness, innovativeness, risk-taking and persistence than nonpracticing believers which is also reflected in their social entrepreneurial behavior.
Smith et al. (2023b)	Attitude on Action	USA	Christianity	Entrepreneurs balance entrepreneurial identity and religious identity when dealing with threats and uncertainty. Through the interaction of both identities, they can achieve higher stability and persistence in entrepreneurial actions.
Sutikno et al. (2023)	Attitude on Action	Indonesia	Religiosity, Islam	Religiosity negatively affects new venture creation in Gen Y. Entrepreneurial orientation moderates this relationship, the negative impact of religiosity on new venture creation is stronger for individuals with high entrepreneurial orientation.
Tlaiss and McAdam (2021a)	Attitude on Action	Lebanon	Islam	Muslim women entrepreneurs construct their identity at the juncture of entrepreneurial, religious and female aspects. Their entrepreneurial success is often based on the success of combining these different identities.
Tlaiss and McAdam (2021b)	Attitude on Action	Lebanon	Islam	Muslim women entrepreneurs interpret their religion with a feminist view. Hence, Islam can be a source of inspiration and resilience which is also reflected in entrepreneurial decisions.
Xiao et al. (2021)	Attitude on Action	China	Spirituality	Qinghuai is a Chinese concept describing the two dimensions of spiritual idealism and perpetual development. It is shown to be an important enabler of digital entrepreneurship in China. Qinghuai can enhance individual attitudes such as selflessness and self-cultivation and thus support the digital transformation in a venture.
Xu et al. (2022)	Attitude on Action	China	Buddhism	The share of Buddhist entrepreneurs in a region enhances the level of social behavior such as charity in the region due to the incorporation of Buddhist values and attitudes in the venture.



**Table A2.3: Articles on religion and subjective norms for entrepreneurship**

<b>Authors</b>	<b>TPB Category</b>	<b>Country</b>	<b>Religion</b>	<b>Key findings</b>
Akoh (2020)	Subj. Norms on Action	Nigeria	Religious beliefs	Women entrepreneurs in the fashion industry can modify tailoring practices to cope with unfavorable religious beliefs and practices such as seclusion in Nigeria.
Althalathini et al. (2022)	Subj. Norms on Action	Afghanistan, Iraq and Palestine	Islam	Islamic feminism empowers women entrepreneurship. The feminist interpretation of Islamic values shapes women's entrepreneurial behavior and increases their ability to endure hardships and master difficult business situations.
Assmann and Ehrl (2021)	Religion on Subj. Norms	International (69 countries)	Religious affiliations	Individualism is very conducive to entrepreneurship, specifically to opportunity entrepreneurship. Different religious affiliations only slightly reduce the positive effect of individualism on entrepreneurship.
Audretsch et al. (2017)	Religion on Subj. Norms	USA	Religious faith	Religious values are not found to directly impact local entrepreneurial culture.
Avnimelech and Zelekha (2023)	Religion on Subj. Norms, Subj. Norms on Action	International (102 countries)	All major religions	Women entrepreneurs face religious restrictions, especially in hierarchical religions such as Islam and Catholicism with a negative effect on their engagement in entrepreneurship. This leads to a higher gender gap in entrepreneurship in countries with hierarchical religions.
Baikovich et al. (2022)	Subj. Norms on Action	Israel	Judaism	Jewish women entrepreneurs must cope with gender and power inequalities in their communities. Resistance against inequalities should be combined with a degree of compliance to stimulate successful change in the religious context to facilitate women entrepreneurship.
Dissanayake (2022)	Subj. Norms on Intention	Sri Lanka	Buddhism	Buddhist religion induces religion-related principles and ethical rules that subsequently affect entrepreneurial intentions.
Essers and Benschop (2009)	Religion on Subj. Norms, Subj. Norms on Action	Netherlands	Islam	Muslim women entrepreneurs can face exclusion from society due to religious norms and rules. However, Islam also provides a certain space for individualism and entrepreneurship which can be exploited by women entrepreneurs. They can stretch the boundaries of Islamic rules to overcome the restrictive perspective.
Essers et al. (2010)	Religion on Subj. Norms, Subj. Norms on Action	Netherlands	Islam	Women entrepreneurship in Islam can be restrictive due to the honor or men in Muslim communities. Women entrepreneurs interpret their female ethnicity individually to overcome social exclusion.

Essers et al. (2021)	Subj. Norms on Action	Netherlands	Islam	Women entrepreneurship in Islam is often linked to norms and restrictions imposed by family, community and clients. Especially women entrepreneurs from ethnic minorities must navigate their gender, ethnicity and religion to overcome stereotypes and social exclusion and to legitimize their ventures.
Essers and Tedmanson (2014)	Religion on Subj. Norms	Netherlands	Islam	Muslim women entrepreneurs often encounter political marginalization in Western countries which can lead to restrictions on entrepreneurship. In their entrepreneurial identity, they have to consider how to overcome these religious and political obstacles.
Fossati (2019)	Religion on Subj. Norms	Indonesia	Islam	Chinese ethnic minority entrepreneurs face social exclusion and discrimination in Muslim-dominated countries. Thus, entrepreneurs can experience obstacles in their ventures related to religious and ethnic norms.
Gantenbein et al. (2019)	Religion on Subj. Norms	International (88 countries)	Religious affiliations, Religious diversity	Individualism can facilitate investments of venture capital in entrepreneurs and young ventures. The importance of individualism remains high, even when incorporating controls and interactions with different religions and religious diversity.
Gursoy et al. (2017)	Subj. Norms on Action	Turkey	Islam, Religiosity	Religiosity plays a critical role in shaping individual values and entrepreneurial behaviors. Practicing Muslim entrepreneurs stick to more traditional customs and ideas while non-practicing Muslim entrepreneurs have more independent thoughts and actions when it comes to choosing, creating and exploring processes in entrepreneurship.
Henley (2017)	Subj. Norms on Action	International (74 countries)	Religious affiliations, Religious diversity	Religious inclusion and pluralism enhance entrepreneurial action. Religious pluralism positively mediates the effect of religion on entrepreneurial action.
Hollow (2022)	Subj. Norms on Action	UK	Protestantism	Adherence to different religions and belonging to certain religious groups can induce pressures and constraints that subsequently affect entrepreneurial decisions.
Muhammad et al. (2019)	Subj. Norms on Intention	Pakistan	Islam	The religious background of Muslim women entrepreneurs influences their entrepreneurial intentions through their marriages. Muslim women are often restricted in entrepreneurship because they do not feel family and community support for their entrepreneurial intentions.

Nunziata and Rocco (2024)	Subj. Norms on Action	Europe (8 countries)	Protestantism	A strong attachment of a Protestant minority to their religion enhances the likelihood of entrepreneurship through different aspects such as higher individualism and less regard for rules as compared to Catholic minorities.
Ojo (2019)	Religion on Subj. Norms	UK	Christianity, Islam, Traditional African religion	Immigrant entrepreneurs rely on religious beliefs when adapting to a new socio-cultural environment.
Onjewu et al. (2023)	Subj. Norms on Action	Nigeria	Religiosity	Religiosity can improve entrepreneurs' perception of support for their venture. Religious entrepreneurs are more likely to perceive that their family and significant others evaluate their decision to start a business as positive which in turn increases nascent entrepreneurship.
Rietveld and Hoogendoorn (2022)	Religion on Subj. Norms	Europe (32 countries)	Religious faith, Religious affiliations	Religious values can be conducive or obstructive to entrepreneurship. Belonging to a religion and entrepreneurship are both focused more on self-transcendence as compared to self-enhancement. However, belonging to a religion can also lead to conservative values while entrepreneurship would rather profit from openness to change. Effects are stable across major religions but depend on active engagement in a religion.
Ritchie (2016)	Subj. Norms on Action	Afghanistan	Islam	External actors such as NGOs can help to overcome religious norms, reshape religious rules and enable women entrepreneurship.
Tlaiss (2015)	Subj. Norms on Action	Middle East (4 countries, UAE, Kuwait, Oman, Lebanon)	Islam	Islamic work values are embedded in the entrepreneurial activities of Arab women. They interpret Islamic work values in terms of hard work, honesty, truthfulness, fairness, justice and benevolence to overcome traditional, restrictive interpretations of Islam. The focus on these values is important for the survival and success of Muslim women ventures.
Tlaiss and McAdam (2021a)	Subj. Norms on Action	Lebanon	Islam	Muslim women entrepreneurs rely on Islamic feminism to be successful even in an environment of patriarchal societal and cultural norms and gender-based restrictions.
Tlaiss and McAdam (2021b)	Subj. Norms on Action	Lebanon	Islam	Muslim women entrepreneurs interpret their religion with a feminist view. Restrictions are taken into account in all entrepreneurial decisions and Islamic feminism is applied to persist in restrictive, patriarchal structures and to successfully engage in personal and business growth.

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Tlaiss and McAdam (2023)	Subj. Norms on Action	Lebanon	Islam	Muslim women entrepreneurs draw on feminism and Islamic values to cope with crises. Islamic values are deepened during a crisis and interpreted in terms of Muslim feminism to overcome difficulties during a crisis.
Walls and Williams (2004)	Subj. Norms on Action	UK	Catholicism	Belonging to a certain religious group can lead to discrimination in the job market (Catholics with Irish roots in the UK). This job market discrimination leads to an increase in self-employment due to the lack of other options.
Wasserman and Baikovich (2024)	Religion on Subj. Norms; Subj. Norms on Action	Israel	Judaism	Jewish ultraorthodox women entrepreneurs in the fashion industry face religious restrictions in authoritative, patriarchal societies. These rules and restrictions can be changed due to the disruption of religious clothing and hairstyling leading to better visibility and higher economic status for women entrepreneurs.

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**Table A2.4: Articles on religion and behavioral control in entrepreneurship**

<b>Authors</b>	<b>TPB Category</b>	<b>Country</b>	<b>Religion</b>	<b>Key findings</b>
Ackah et al. (2024)	Religion on Beh. Control	Ghana	Islam	Islamic boarding schools can impart entrepreneurial knowledge to students by communicating a humane and spiritual approach to entrepreneurship based on Islamic religious values.
Anggadwita et al. (2021)	Religion on Beh. Control	Indonesia	Islam	Women entrepreneurs in Ghana often do not rely on bank loans because interest payments are not well accepted in Islam. They prefer informal sources of capital provided for example by friends, family, or religious organizations.
Anglin et al. (2023)	Religion on Beh. Control	USA	Religiosity	Expression of religiosity in crowdfunding can harm the campaign's success due to inconsistency between religious, virtuous behavior and the stereotypical role of an entrepreneur. The negative effect can be mitigated when entrepreneurs highlight entrepreneurial orientation in crowdfunding.
Arthur and Adom (2019)	Religion on Beh. Control	Ghana	Christianity	Christian religious organizations in Ghana provide entrepreneurship training programs to provide potential and practicing entrepreneurs with management skills.
Artunç (2019)	Religion on Beh. Control	Egypt	Islam	Small ventures of Muslim minority entrepreneurs had legal disadvantages and restricted capital access in historical Egypt.
Assmann and Ehrl (2021)	Religion on Beh. Control	International (69 countries)	Religious affiliations	Individualism is very conducive to opportunity perception in entrepreneurship. Different religious affiliations only slightly reduce the positive effect of individualism on entrepreneurial opportunity perception. Thus, the perception of entrepreneurial opportunities rather depends on cultural traits such as individualism and less on religious affiliation.
Avnimelech and Zelekha (2023)	Beh. Control on Action	International (102 countries)	All major religions	Religion can provide women entrepreneurs with social capital through religion-based social networks. This can have a positive effect on women entrepreneurship because it can compensate restricted access to traditional entrepreneurial networks.
Ayob and Saiyed (2020)	Beh. Control on Action	International (88 countries)	Islam	Muslim entrepreneurship is more driven by necessity than by opportunity which has negative implications for entrepreneurship rates in Muslim countries.
Barbosa and Smith (2024)	Beh. Control on Action	USA	Christianity	Religious beliefs have positive cognitive implications and a positive effect on the assessment of business opportunities. Religious beliefs enhance the perceived feasibility and desirability of a potential new venture and increase the chances for entrepreneurial action.

Cater et al. (2017)	Beh. Control on Action	USA	Religious faith	Belonging to a religious community has positive effects on social practices in entrepreneurship. Specifically, fair trade practices in entrepreneurship are often rooted in religious faith. Religious communities can provide valuable support for fair trade practices in a venture.
Cegarra-Navarro et al. (2024)	Beh. Control on Intention	Romania	Spirituality	Spiritual capital increases interpersonal competencies and consequently entrepreneurial intentions. This positive effect is partly mediated by civic and public engagement.
Corrêa et al. (2022)	Religion on Beh. Control	Brazil	Neo-Pentecostal Evangelical Spirituality	Religious entrepreneurs in emerging economies place high importance on opportunity search and creation leading to higher innovativeness, proactivity and risk-taking.
Cucchi et al. (2022)	Religion on Beh. Control	Malawi	Spirituality	Spirituality can have a positive effect on entrepreneurial communities which is rooted in higher group cohesion. This can improve the coping abilities of entrepreneurial communities.
Deller et al. (2018)	Beh. Control on Action	USA	Religious affiliations, Religious diversity	A religious community can provide an entrepreneurial network and social capital. Especially communities with a large concentration of religious congregations foster entrepreneurial activity and performance in the area and shape entrepreneurial decisions.
Di Pietro and Masciarelli (2022)	Religion on Beh. Control	Switzerland	Protestant, Catholic	A cross-regional resource flow in crowdfunding is more likely between regions with the same primary religion due to enhanced social interactions and trust. Thus, religion can have a positive effect when crowdfunding is carried out across different regions.
Ertimur and Coskuner-Balli (2015)	Beh. Control on Action	USA	Spirituality	Spirituality enhances cultural capital which can be used by entrepreneurs to legitimize their ventures in the US yoga industry.
Fathonih et al. (2019)	Religion on Beh. Control	Indonesia	Islam	There are capital-funding institutions based on Sharia principles in Indonesia that can provide Sharia venture capital to Muslim entrepreneurs as an alternative source of financing to develop their businesses based on Islamic principles.
Fossati (2019)	Religion on Beh. Control	Indonesia	Islam	Chinese ethnic minority entrepreneurs face social exclusion and discrimination in Muslim-dominated Indonesia. Such an exclusion of entrepreneurs from ethnic and religious minorities restricts international resource flows due to lower public support. Acceptance of entrepreneurs from diverse ethnic and religious backgrounds can enhance the international economic integration of a country.

Gantenbein et al. (2019)	Religion on Beh. Control	International (88 countries)	Religious affiliations, Religious diversity	There is a positive effect of religious diversity and a negative effect of large and dominating religions (e.g., Christianity, Islam and Buddhism) on the amount of venture capital invested in entrepreneurs in a country.
Hoque (2023)	Religion on Beh. Control	Bangladesh	Islam	Islamic finance, specifically business zakah, is used by entrepreneurs to fund charitable purposes and can thus contribute to the well-being of society.
Jones et al. (2024)	Religion on Beh. Control	USA	Christianity	There is a negative evaluation of religious ventures by traditional angel investors when these investors are not religious themselves. However, entrepreneurs' religiosity can lead to successful angel financing when the investors are religious and when the entrepreneur is perceived as authentic.
Kabbara and Zucchella (2023)	Beh. Control on Action	International (9 countries)	Islam	Women entrepreneurs leverage religious values to connect to international communities and to exploit international business opportunities. Thus, religious values can be helpful for women entrepreneurs' internationalization activities.
Kalnins and Chung (2006)	Beh. Control on Action	USA	Religious affiliations	Immigrant entrepreneurs rely on ethnic and religious ties in their community to create and maintain their ventures. The likelihood of venture survival increases in an area with other resource-strong ventures owned by members of the entrepreneurs' own ethnic group.
Lelkes (2006)	Religion on Beh. Control	Hungary	Religious affiliations, Religiosity	Non-religious individuals show better opportunity recognition when there are economic changes and greater economic freedom on a market.
Miao et al. (2022)	Beh. Control on Action	International (85 countries)	Religiosity	Lower religiosity in a country moderates the effect of government effectiveness on entrepreneurship. Specifically, a positive effect of government effectiveness on entrepreneurship rates can be achieved through higher political freedom in a context of lower religiosity.
Mitchell et al. (2022)	Religion on Beh. Control	Nepal	Religious affiliations	There is a positive effect of religion on entrepreneurial connections. Religious figures can serve as institutional intermediaries and the support of a religious community can compensate institutional voids in rudimentary market-based economies.
Mitra and Basit (2021)	Beh. Control on Action	UK	Islam	Belonging to a religious community has positive effects on Muslim women entrepreneurs. It provides them with access to larger networks and influences their growth aspirations and related decisions.

Muhammad et al. (2017)	Beh. Control on Action	Pakistan	Islam	Strict religious rules can build barriers and suppress social capital leading to lower levels of entrepreneurship especially in rural areas.
Muhammad et al. (2019)	Beh. Control on Intention	Pakistan	Islam	The religious background of Muslim women entrepreneurs influences their entrepreneurial intentions through their marriages. They develop higher self-efficacy in forced marriages resulting in stronger entrepreneurial intentions.
Neubert et al. (2017)	Beh. Control on Action	Kenya, Indonesia	Spirituality, Religious faith	Spiritual capital is a resource that can be conducive to entrepreneurship in contexts with lower institutional support. It can increase innovation and the performance of entrepreneurial ventures.
Nunziata and Rocco (2024)	Beh. Control on Action	Europe (8 countries)	Protestantism	Strong attachment of a Protestant minority to their religion boosts entrepreneurship in an area through higher education as compared to Catholic minorities.
Ojo and Nwankwo (2020)	Beh. Control on Action	UK	Pentecostalism	Church affiliation specifically to Pentecostalism provides a market space for African immigrant entrepreneurs in the UK and shapes their entrepreneurial marketing strategies.
Onjewu et al. (2023)	Beh. Control on Action	Nigeria	Religiosity	Religiosity increases individuals' confidence in their own capabilities and in turn, also increases nascent entrepreneurship. Thus, religiosity enhances nascent entrepreneurship through higher self-efficacy.
Parboteeah et al. (2015)	Beh. Control on Action	International (27 countries)	Christianity	Country-level religious profile and investments in knowledge and technology impact the entrepreneurial activity in the country. Knowledge investments are required to enhance the translation of cognitive and normative religious aspects into entrepreneurial action.
Patel and Wolfe (2022)	Beh. Control on Action	International (11 countries)	Religious faith	Non-religious, secular values positively moderate the effect of economic decentralization on self-employment.
Patel and Wolfe (2023)	Beh. Control on Action	USA	Religiosity	There is no significant impact of country-level religiosity on economic connectedness and the resulting entrepreneurial activities.
Rafiki and Nasution (2019)	Beh. Control on Action	Indonesia	Islam	Access to networks is an important success factor for Muslim women entrepreneurs.
Ritchie (2016)	Beh. Control on Action	Afghanistan	Islam	External actors such as NGOs can provide education for women entrepreneurs to overcome restrictions in contexts of religious oppression. Interdependencies between religion, education and knowledge must be recognized to foster entrepreneurship in a specific area.



Romero-Castro et al. (2023)	Beh. Control on Action	Spain	Spirituality	Spiritual values, access to finance and access to technology and digitalization must be aligned to enhance rural entrepreneurship.
Sarkar et al. (2018)	Beh. Control on Action	India	Religious affiliations, Religious diversity	Differentiation into religious groups can restrict the extent and benefits of social networks. This makes it harder to overcome the entrepreneurial threshold.
Shinnar and Nayir (2019)	Beh. Control on Action	Turkey	Religious faith	Religious and cultural knowledge facilitates opportunity recognition and resource acquisition of immigrant entrepreneurs. Spiritual and cultural capital further enriches entrepreneurs' activities with higher economic relevance.
Siwale et al. (2023)	Beh. Control on Action	UK	Christianity	African immigrant entrepreneurs can profit from belonging to a Christian community in the UK which provides a religious network and social capital. Such a network can influence the entrepreneurial process, decisions and actions.
Suci and Hardi (2020)	Religion on Beh. Control	Indonesia	Islam	Counseling and the imparted knowledge can increase the intention to use Islamic financial products for non-Muslim entrepreneurs.
Tlaiss and McAdam (2021a)	Beh. Control on Action	Lebanon	Islam	Muslim women entrepreneurs can rely on religious teachings as a resource for their entrepreneurial decision-making and success.
Utomo et al. (2021)	Religion on Beh. Control	Indonesia	Islam	Highlights the importance of a well-developed Islamic financial ecosystem for the halal industry. Business owners' literacy, awareness and attitude can affect their intention to use Islamic financial products.
Verver and Koning (2024)	Beh. Control on Action	Cambodia, Indonesia	Spirituality, Religious affiliations	Immigrant entrepreneurs draw on spiritual ties and membership in religious communities to determine their entrepreneurial process. The interconnectedness with the environment and especially with the religious community is important for immigrant entrepreneurs.
Xiao et al. (2021)	Beh. Control on Action	China	Spirituality	Qinghuai is a Chinese concept describing the two dimensions of spiritual idealism and perpetual development. It is shown to be an important enabler of digital entrepreneurship in China. Qinghuai and especially its dimension of spiritual idealism influences how digital entrepreneurs in China identify and capture business opportunities.

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Xu et al. (2023)	Beh. Control on Action	China	Buddhism	Buddhism is positively linked to external activities such as stakeholder interaction. This enhances sociopolitical legitimacy and increases the chances to acquire external resources.
Yan (2020)	Religion on Beh. Control	International (22 countries)	Islam	The emergence of Islamic fund markets shows that religion can impact financial markets. Muslim entrepreneurs can profit from Islamic conform practices because they can gain access to these financial markets.
Zhang et al. (2021)	Beh. Control on Action	China	Religiosity	Religiosity increases the likelihood of conducting entrepreneurial activities in well-developed markets, but it decreases the chances for entrepreneurship in corrupted markets.
Zhao and Lounsbury (2016)	Religion on Beh. Control	International (9 regions)	Religious diversity	Religious diversity can deter the flow of commercial and public capital into social ventures even if the country has a strong and well-developed market logic.

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**Table A2.5: Articles on religion and entrepreneurial intentions**

<b>Authors</b>	<b>TPB Category</b>	<b>Country</b>	<b>Religion</b>	<b>Key findings</b>
Giacomin et al. (2023)	Religion on Intention	Belgium, France, Iran, USA	Religious affiliations, Religiosity	Having a religious affiliation (Christian or Muslim) positively affects the entrepreneurial intentions of students. The effect of individual religiosity on entrepreneurial intentions varies across different religious affiliations and depends on the specific religious dimension that is considered.
McIntyre et al. (2023)	Religion on Intention	Ghana	Religiosity	Individual religiosity does not impact the traditional entrepreneurial intentions of students, but there is a positive effect on students' social entrepreneurial intentions.
Trajano et al. (2023)	Religion on Intention	Brazil	Religiosity	Religiosity of volunteers is positively linked to their social entrepreneurial intentions when the volunteers are below the age of 20 years. For other age groups of volunteers, there is no significant effect of religiosity on social entrepreneurial intentions.

Table A2.6: Articles on religion and entrepreneurial actions

Authors	TPB Category	Country	Religion	Key findings
Audretsch et al. (2013)	Religion on Action (Engagement)	India	Religious affiliations	Some religions are more conducive to self-employment than others. While Hindus have a lower likelihood of self-employment, Muslims are more often self-employed than individuals from other religions.
Cavalcanti Junqueira et al. (2023)	Religion on Action (Behavior)	USA	Christianity	Christian entrepreneurs in rural, religious contexts can be strongly influenced by their communities leading to a change in the business logic. Religious and community aspects can then gain higher importance than market factors.
Choudhury-Kaul et al. (2023)	Religion on Action (Behavior)	Indonesia	Islam	Religious aspects such as Shariah guidance and stress management through prayers are important factors that influence the business performance of Muslim Indonesian women entrepreneurs.
Henley (2017)	Religion on Action (Engagement)	International (74 countries)	Religious affiliations, Religious diversity	There is a positive effect of Evangelical and Pentecostal Christian religious affiliation on entrepreneurial activity.
Hoogendoorn et al. (2016)	Religion on Action (Engagement)	International (30 OECD countries)	Religiosity	There is a positive effect of internal aspects of religiosity such as believing and behaving on a country's business ownership rate while the aspects of belonging and bonding are not significantly associated with business ownership.
Liu et al. (2019)	Religion on Action (Behavior)	China	Buddhism	Buddhist religion is shown to impact venture performance positively. The effect is based on the entrepreneurial risk-taking strategy that is linked to Buddhist values and that includes higher and riskier investments in research and development and debt financing.
Maniyalath and Narendran (2016)	Religion on Action (Engagement)	International (61 countries)	Religious affiliations, Religiosity	The religious composition of a country predicts women entrepreneurship. A higher share of Christians in a country is positively linked to women entrepreneurship while a higher share of Muslims has a negative impact on women entrepreneurship rates.
Minns and Rizov (2005)	Religion on Action (Engagement)	Canada	Religious affiliations, Christianity	General Christian affiliation has only little impact on self-employment in Canadian historical data. The specific religion of Judaism increases the likelihood of self-employment while Catholicism decreases the chances of being self-employed.

Muhammad et al. (2019)	Religion on Action (Behavior)	Pakistan	Islam	Religious rules and family support in Muslim marriages play an important role in the growth and success of Muslim women entrepreneurs. A lack of support for example in forced marriages can be obstructive to venture development.
Ngassa (2024)	Religion on Action (Engagement)	Congo	Christianity, Islam	Belonging to the Christian or Muslim religion can facilitate access to self-employment for young people in African countries with a difficult labor market situation.
Nunziata and Rocco (2016)	Religion on Action (Engagement)	Switzerland	Protestantism, Catholicism	Protestantism is associated with a higher propensity for entrepreneurship (than Catholicism) when it is the minority religion with less than 25% adherence to the region's total population.
Parboteeah et al. (2015)	Religion on Action (Engagement)	International (27 countries)	Christianity	A country's religious profile does not directly impact individual entrepreneurial action, but knowledge investments can help enhance the translation of cognitive and normative religious aspects into entrepreneurial action.
Patel and Wolfe (2022)	Religion on Action (Engagement)	International (11 countries)	Religious faith	Non-religious, secular values do not directly influence self-employment, but they positively moderate the effect of economic decentralization on self-employment.
Rafiki and Nasution (2019)	Religion on Action (Behavior)	Indonesia	Islam	Family situation in terms of financing and support can determine the success of Muslim women entrepreneurs.
Rashid and Ratten (2022)	Religion on Action (Behavior)	Pakistan	Spirituality	Spirituality shapes the individual entrepreneurial journey and determines which goals are pursued by the entrepreneur and how the venture is run.
Rietveld and Hoogendoorn (2022)	Religion on Action (Engagement)	Europe (32 countries)	Religious faith, Religious affiliations	Generally belonging to a religion is not significantly associated with entrepreneurship. However, the particular religion of Judaism increases the likelihood of entrepreneurship while Protestantism decreases the chances for entrepreneurship.
Salaheldeen and Battour (2024)	Religion on Action (Behavior)	Malaysia	Islam	Halal entrepreneurial success is positively linked to innovation capability and sustainable innovation. The relationship between halal entrepreneurial success and sustainable innovation is mediated by innovation capability.
Salaheldeen et al. (2022)	Religion on Action (Behavior)	Malaysia	Islam	Development of a halal entrepreneurship success scale that is based on Islamic, economic, social and environmental aspects.

Sharifi-Tehrani (2023)	Religion on Action (Behavior)	Iran	Islam, Religiosity	Islamic religiosity (practicing Muslim religious beliefs) has a direct positive impact on entrepreneurs' social behavior in their ventures.
Siwale et al. (2023)	Religion on Action (Behavior)	UK	Christianity	Different types of religious manifestations such as relationship to God affect entrepreneurial decision making. Immigrant entrepreneurs' Christian beliefs shape their entrepreneurial decisions in UK-based ventures.
Tahir (2023)	Religion on Action (Behavior)	United Arab Emirates	Islam	Islamic religion has an impact on entrepreneurial decisions and activities. Muslim entrepreneurs align their work with their religious values and beliefs.
Wijaya (2019)	Religion on Action (Engagement)	Indonesia	Islam	Analyzing the number of prayers in Indonesian mosques, the author finds a positive association between the level of religiosity in an area and self-employment.
Wiseman and Young (2014)	Religion on Action (Behavior)	USA	Religiosity	Religiosity in a state is negatively related to productive entrepreneurship in terms of profit-seeking and innovative activities. The share of non-religious individuals is positively related to productive entrepreneurship.
Xu et al. (2022)	Religion on Action (Engagement)	China	Buddhism	A higher share of Buddhist entrepreneurs increases the chances of venture foundations in less developed regions. However, this effect is weakened when Buddhist entrepreneurs engage in prosocial behaviors like charity.
Zelekha et al. (2014)	Religion on Action (Engagement)	International (176 countries)	Religious affiliations, Religious diversity	The share of different religions can impact entrepreneurship rates in a country. Especially the share of Jewish, Hindu, Protestant and Orthodox people has a positive effect on entrepreneurship rates.

**Table A3.1: Variable descriptions**

Variable	Description
<b>Dependent variables</b>	
Social entrepreneurial action	Binary variable indicating if an early-stage entrepreneur has taken any steps to maximize the social impact of the venture over the past year (1 = Yes, 0 = No).
<b>Independent variables</b>	
Sustainability-focused entrepreneurial intention	Binary variable indicating if an early-stage entrepreneur wishes to prioritize the social and/or ecological impact of the venture above profitability or growth (1). Zero (0) otherwise.
<b>Control variables</b>	
Ownership of venture	Binary variable capturing if the entrepreneur is owner of the venture (1) or not (0).
Team leading venture	Binary variable showing if the venture is led by a team (1) or only one entrepreneur (0).
Exports (foreign customers)	Binary variable indicating if the entrepreneur has customers in other foreign countries (1) or not (0).
New product	Ordinal variable capturing if the product/service uses new technologies or procedures (0 = Not new, 1 = New in living area, 2 = New in country, 3 = New to the world).
Employees	Metric variable indicating the number of employees of the venture at time of data collection. Limited to micro ventures under 10 employees according to EU definition.
Foundation due to family tradition	Binary variable indicating if the entrepreneur reports family tradition as a reason for founding the venture (1). Zero (0) otherwise.
Necessity foundation (scarce jobs)	Binary variable capturing if the entrepreneur has founded the venture due to necessity and scarce jobs (1). Zero (0) otherwise.
Female gender	Binary variable capturing whether the entrepreneur is female (1) or not (0).
Age	Metric variable indicating exact age of the respondents at time of data collection, limited to individuals between 18 and 64 years.
Education	Binary variable capturing if the respondent has graduate experience/obtained a university degree (1). Zero (0) otherwise.
Opportunity availability	Binary variable indicating if the entrepreneur thinks there will be good opportunities for starting a business in the next six months in his/her living area (1). Zero (0) otherwise. Self-reported values on an initial scale of 1 (disagree) to 5 (agree), recoded to Dummy (1) for values of 4 and 5.
Proactiveness	Binary variable indicating if the entrepreneur acts on profitable business opportunities, when they are spotted (1). Zero (0) otherwise. Self-reported values, initially on an inverted scale of 1 to 5, recoded to Dummy (1) for values of 1 and 2.
Vision	Binary variable indicating if all decisions of the entrepreneur are part of a long-term career plan (1). Zero (0) otherwise. Self-reported values on an initial scale of 1 (disagree) to 5 (agree), recoded to Dummy (1) for values of 4 and 5.
Personal innovativeness	Binary variable indicating if other people would describe the respondent as highly innovative (1). Zero (0) otherwise. Self-reported values on an initial scale of 1 (disagree) to 5 (agree), recoded to Dummy (1) for values of 4 and 5.
Industry	Binary variables for 21 industries were built according to the categories of ISIC Rev. 4 (categories A to U).
Country	Binary variables for all 44 countries included in the regression analyses.

**Moderators**

Fear of failure	Binary variable indicating if the entrepreneur would not start a business for fear it might fail (1). Zero (0) otherwise. Self-reported values on an initial scale of 1 (disagree) to 5 (agree), recoded to Dummy (1) for values of 4 and 5.
Self-efficacy	Binary variable indicating if the entrepreneur thinks that he/she personally has the knowledge, skill and experience required to start a new business (1). Zero (0) otherwise. Self-reported values on an initial scale of 1 (disagree) to 5 (agree), recoded to Dummy (1) for values of 4 and 5.
Knowing other entrepreneurs	Binary variable indicating if the respondent personally knows at least one person who has started a business or became self-employed in the past 2 years (1). Zero (0) otherwise. Self-reported values how many entrepreneurs/self-employed the respondent knows, recoded to Dummy (1) for knowing at least one or more.

**Table A3.2: List of observations per country**

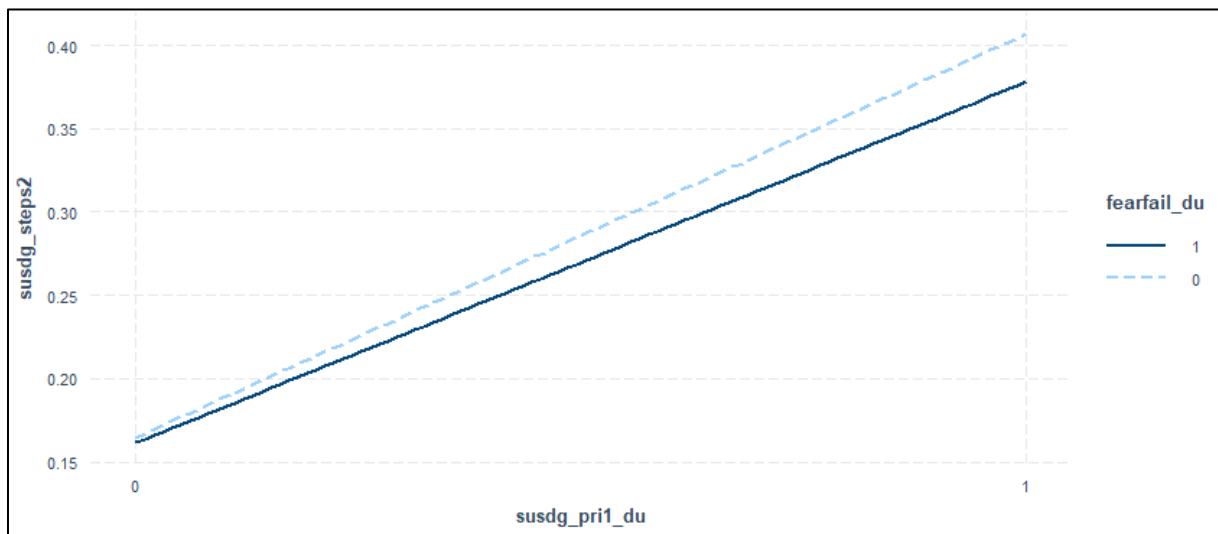
No.	Country	Observation	No.	Country	Observation
1	Belarus	488	23	Morocco	456
2	Brazil	437	24	Netherlands	241
3	Canada	412	25	Norway	55
4	Chile	2,754	26	Panama	631
5	Colombia	473	27	Poland	125
6	Croatia	380	28	Qatar	775
7	Cyprus	181	29	Romania	233
8	Dominican Republic	1,227	30	Russia	220
9	Egypt	870	31	Saudia Arabia	913
10	Finland	133	32	Slovakia	190
11	Germany	286	33	Slovenia	144
12	Greece	146	34	South Africa	938
13	Guatemala	541	35	South Korea	371
14	Hungary	191	36	Spain	1,289
15	India	932	37	Sudan	989
16	Iran	857	38	Sweden	303
17	Ireland	280	39	Switzerland	200
18	Israel	259	40	Turkey	484
19	Italy	82	41	United Arab Emirates	530
20	Japan	202	42	United Kingdom	166
21	Kazakhstan	590	43	United States	300
22	Latvia	228	44	Uruguay	506



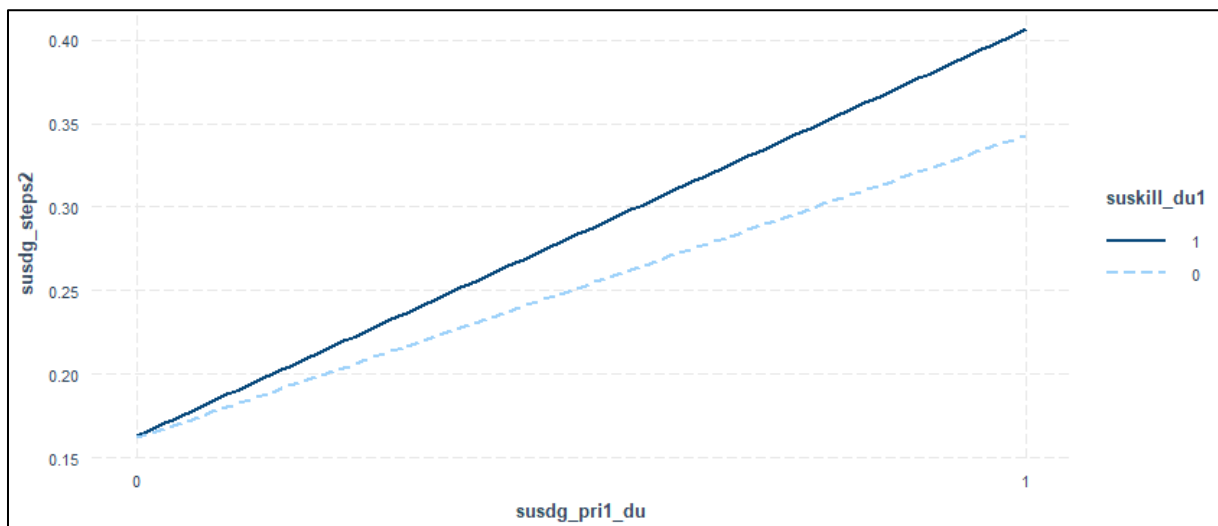
Table A3.3: Correlations

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
1. Social entrepreneurial action																		
2. Sustainability-focused intention	.50***																	
3. Ownership of venture	.49***	.64***																
4. Team leading the venture	.20***	.25***	.38***															
5. Exports (foreign customers)	.18***	.18***	.29***	.12***														
6. New product	.26***	.31***	.37***	.18***	.28***													
7. Employees	.24***	.21***	.27***	.08***	.08***	.12***												
8. Foundation due to family tradition	.33***	.39***	.42***	.16***	.08***	.19***	.24***											
9. Necessity foundation (scarce jobs)	.41***	.54***	.67***	.24***	.15***	.25***	.22***	.45***										
10. Age	.01	-.00	-.01*	-.04***	.01	-.02**	.02**	-.01*	-.01									
11. Female gender	-.03***	-.01	-.01	-.04***	-.02***	-.03***	-.06***	-.02***	.02*	-.02**								
12. Education (graduate experience)	.01	-.01	.01	.03***	.07***	.02**	-.00	-.05***	-.05***	.03*	.02**							
13. Opportunity availability	.09***	.11***	.10***	.03***	.01	.05***	.09***	.14***	.08***	-.02**	-.05***	-.04***						
14. Proactiveness	.05***	.04***	.07***	.01	.01	.04***	.04***	-.01*	.03***	.00	-.02**	.01	-.04***					
15. Vision	.01	-.03***	-.00	-.02***	.02*	-.05***	.07**	.04***	-.00	-.05***	-.04***	-.00	.04***	.20***				
16. Personal innovativeness	.02**	-.02**	-.02**	-.02**	.03***	-.02***	.08***	.04***	.02*	-.03***	-.01	.01*	.04***	.19***	.65***			
17. Fear of failure	-.06***	-.05***	-.11***	-.03***	-.05***	-.05***	-.00	.02***	-.03***	-.01	.03***	-.03***	-.00	-.13***	.02***	.00		
18. Self-efficacy	.12***	.14***	.17***	.02**	.04***	.07***	.08***	.11***	.14***	.05***	-.06***	-.02**	.21***	.06***	.11***	.13***	-.03***	
19. Knowing entrepreneurs	.15***	.17***	.22***	.13***	.08***	.10***	.10***	.09***	.15***	-.04***	-.04***	.02***	.13***	.02***	-.00	.02*	-.04***	.15***

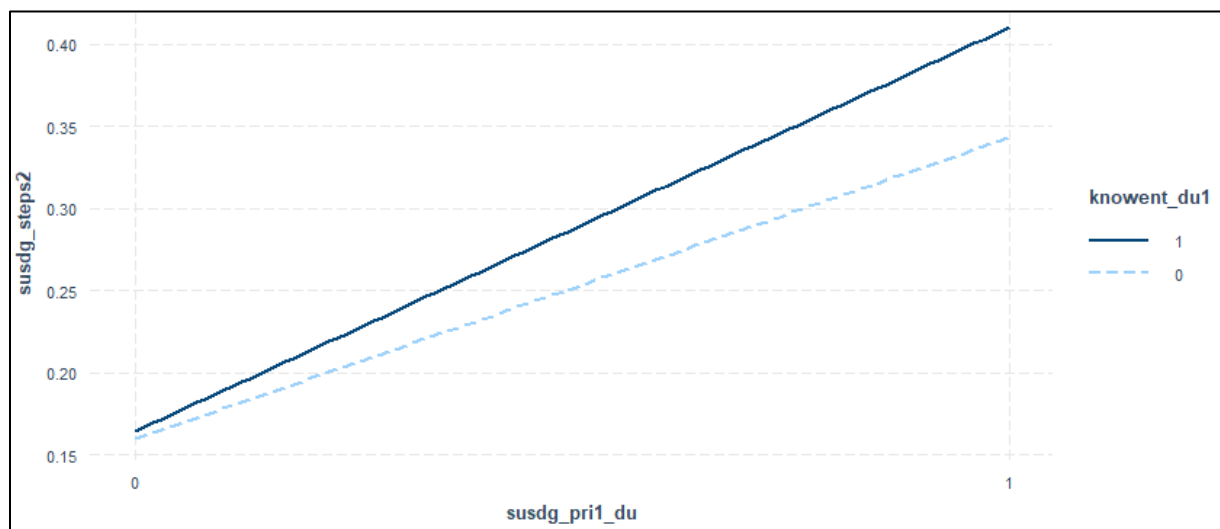
Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

**Figure A3.1: Interaction plot for fear of failure as moderator**

*Source:* Own illustration.

**Figure A3.2: Interaction plot for self-efficacy as moderator**

*Source:* Own illustration.

**Figure A3.3: Interaction plot for knowing other entrepreneurs as moderator**

Source: Own illustration.

**Table A4.1: Variable descriptions**

Variable	Description
<b>Dependent variables</b>	
Time investments	Ordinal variable indicating if a lot of time was invested in venture development during crisis, measured in 3 categories from -1 (no) over 0 (neutral) to 1 (yes).
Monetary investments	Ordinal variable indicating if a lot of money was invested in venture development during crisis, measured in 3 categories from -1 (no) over 0 (neutral) to 1 (yes).
Investments into venture development	Ordinal variable indicating agreement to high investments into venture development during crisis, measured as the mean between time and monetary investments, recoded into 3 categories from -1 (low agreement) over 0 (neutral) to 1 (high agreement).
<b>Independent variables</b>	
Reduction in financial well-being	Binary variable (yes/no) capturing negative change in financial well-being, based on measures of the variable before and during COVID-19.
Reduction in non-financial well-being	Variable capturing negative change in occupational well-being net of financial well-being, based on measures of the variable before and during COVID-19. The net effect is computed from residualizing reduction in occupational well-being (yes/no) from reduction in financial well-being (yes/no).
<b>Control variables</b>	
Optimism before COVID	Ordinal variable capturing individual's optimism before the COVID-19 pandemic on a 7-point Likert scale (1 = very low, 7 = very high).
Risk tolerance before COVID	Ordinal variable capturing individual propensity to take risks before the COVID-19 pandemic on a 7-point Likert scale (1 = very low, 7 = very high).
Locus of control before COVID	Ordinal variable capturing individual's locus of control before the COVID-19 pandemic on a 7-point Likert scale (1 = very low, 7 = very high).
Digitalization before COVID	Ordinal variables capturing average degree of digitalization of products, processes and sales based on 7-point Likert scale (1 = very low, 7 = very high).
Export sales	Binary variable (0/1) equal to one if venture generates export sales, zero otherwise.
Female gender	Binary variable (0/1) capturing whether the self-employed is female.
Employees	Binary variable (0/1) equal to 1 if the self-employed has employees, zero otherwise.
More than 25 percent revenue decline	Binary variable (0/1) capturing whether a venture was affected by more than 25% revenue decline due to the COVID-19 pandemic in 2020 or expects a revenue decline of this magnitude in 2021.
Venture size	Ordinal variable capturing monthly operational expenses (1 = 0 to 500 Euros, 2 = 501 to 1,000 Euros, 3 = 1,001 to 1,500 Euros, 4 = 1,501 to 2,000 Euros, 5 = 2,001 to 2,500 Euros, 6 = 2,501 to 3,000 Euros, 7 = 3,001 to 4,000 Euros, 8 = 4,001 to 5,000 Euros, 9 = 5,001 to 10,000 Euros, 10 = 10,001 to 15,000 Euros, 11 = 15,001 Euro and more).
Liquidity of venture	Ordinal variable indicating remaining time of liquidity (1 = Already insolvent, 2 = Living from retirement provisions, 3 = 1 month, 4 = 2 months, ..., 9 = 7-12 months, 10 = more than 12 month).
Business experience	Ordinal variable indicating experience with self-employment, grouped in 8 categories (1 = 2 years or less, 2 = 3 years, 3 = 4 years, 4 = 5 years, 5 = 6 to 11 years, 6 = 12 to 21 years, 7 = 22 to 31 years, 8 = 32 or more years).
Age	Ordinal variable capturing respondent's age group (1 = less than 29 years, 2 = 30 to 44 years, 3 = 45 to 59 years, 4 = 60+ years).
Education	Ordinal variable indicating respondent's highest educational degree (1 = school graduation, 2 = apprenticeship, 3 = university degree).
Financial well-being before COVID	Ordinal variable capturing individual's financial well-being before the COVID-19 pandemic on an 11-point Likert scale (0 = very low, 10 = very high).
Non-financial well-being before COVID	Ordinal variable capturing individual's occupational well-being net of financial well-being before the COVID-19 pandemic. The net effect is computed from residualizing occupational well-being (ordinal measure with 11-point Likert scale) from financial well-being (ordinal measure with 11-point Likert scale).
Industry	Dummy variables for 27 industries: (1) Other industries; (2) Office services and other business services (debt collection,...); (3) Finance and insurance services; (4) Photography (excluding press photographers); (5) Hairdressers, cosmetics, other personal services; (6) Gastronomy, accommodation; (7) Health, medicine and therapy; (8) Trade (retail, wholesale, also automotive repair, sales representatives); (9) Craft, manufacturing industry; (10) IT, software, web service; (11) Real estate, property management, renting; (12) Engineers and architects; (13) Journalists and press photographers; (14) Communication design, product design; (16) Editors; (17) Legal and tax consulting, accounting; (18) Travel agency and tour operator services; (19) Social work, social services, childcare; (20) Sports and recreational services; (21) Transportation of persons, goods; (22) Management consulting incl. PR, human resources, coaching; (23) Event industry: cultural events; (24) Event industry: business events; (25) Further education, school, teaching; (26) Advertising and market research; (27) Translators and interpreters.

Table A4.2: Correlations

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
1. Time investments																		
2. Monetary investments	.521***																	
3. Reduction in financial well-being	.082***	.015																
4. Reduction in non-financial well-being	-.026*	-.024*	-.000															
5. Financial well-being before COVID	-.029*	.038**	.138***	-.012														
6. Non-financial well-being before COVID	.066***	.029*	.056***	.145***	.000													
7. Optimism before COVID	.094***	.102***	.140***	.041***	.396***	.192***												
8. Risk tolerance before COVID	.151**	.155***	.061***	.031*	.122***	.089***	.219***											
9. Locus of control before COVID	.045***	.069***	.071***	.015	.324***	.155***	.400***	.172***										
10. Digitalization before COVID	-.004	-.034**	-.180***	-.074***	.062***	-.027*	-.009	.064***	.020									
11. Export sales	.025*	.007	-.005	-.008	.019	-.001	-.013	.057***	-.017	.185***								
12. Female gender	.022	.020	.066***	.017	-.014	.034**	.009	-.137***	-.045***	-.135***	-.108***							
13. Employees	.054***	.143***	-.084***	-.009	.084***	-.001	.072***	.091***	-.089***	.001	-.061***	-.117***						
14. More than 25 percent revenue decline	.076***	-.011	.594***	.142***	.033**	.065***	.098***	.080***	-.033**	-.157***	.024*	.038**	-.126***					
15. Venture Size	.082***	.191***	-.095***	.002	.109***	.003	.105***	.154***	.123***	-.002	-.064***	-.143***	.655***	-.126***				
16. Liquidity	-.047***	-.014	-.302***	-.091***	.092***	-.088***	-.066***	-.062***	-.006	.123***	.032**	-.093***	.047***	-.351***	.023			
17. Business experience	-.054***	-.042***	.067***	.025*	.048***	.015	-.034**	.002	.022	-.042***	.053***	-.073***	.040**	.076***	.057***	-.002		
18. Age	-.037**	-.044***	.027*	-.012	.033**	.036**	-.002	.065***	.032**	-.028*	-.045***	-.032**	.018	.057***	.049***	.007	.432***	
19. Education	.031*	.005	-.093***	-.037**	-.040**	-.019	-.078***	-.032**	.093***	.080***	.079***	.066***	-.071***	-.097***	-.114***	.153***	-.051***	-.018

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

Table A4.3: Descriptive statistics

Sample	Full-time self-employed respondents (N=6,955)				
Variable	mean	median	SD	min	max
<b>Dependent variables</b>					
Time investments	.424	1	.010	-1	1
Monetary investments	-.018	0	.011	-1	1
Investments into venture development	.206	1	.011	-1	1
<b>Independent variables</b>					
Reduction in occupational well-being (before residualization)	.708	1	.005	0	1
Reduction in financial well-being (before residualization)	.727	1	.005	0	1
Reduction in financial well-being (after residualization)	.492	.678	.004	0	.676
Reduction in non-financial well-being (after residualization)	.216	.322	.004	-.676	0
<b>Control variables</b>					
Occupational well-being before COVID (before residualization)	7.82	8	.021	0	10
Financial well-being before COVID (before residualization)	7.11	7	.026	0	10
Financial well-being before COVID (after residualization)	3.88	3.82	.014	0	5.46
Non-financial well-being before COVID (after residualization)	3.94	4.09	.016	-3.46	10
<b>Ordinal and binary control variables</b>					
Optimism before COVID	6.083	6	.013	1	7
Risk tolerance before COVID	4.993	5	.018	1	7
Locus of control before COVID	6.233	7	.013	1	7
Degree of digitalization before COVID	4.804	5	.021	1	7
Export sales	.452	0	.006	0	1
Female gender	.470	0	.006	0	1
Employees	.170	0	.005	0	1
More than 25 percent revenue decline	.703	1	.005	0	1
<b>Further control variables</b>					
	Percent	N		Percent	N
Venture size			Business experience		
0 to 500 Euros	34.1	2,373	2 years or less	4.0	277
501 to 1,000 Euros	24.3	1,689	3 years	3.3	229
1,001 to 1,500 Euros	12.7	885	4 years	3.6	250
1,501 to 2,000 Euros	7.6	527	5 years	3.8	262
2,001 to 2,500 Euros	4.0	276	6 to 11 years	21.8	1,519
2,501 to 3,000 Euros	2.9	202	12 to 21 years	35.2	2,451
3,001 to 4,000 Euros	3.1	218	22 to 31 years	21.1	1,469
4,001 to 5,000 Euros	2.1	147	32 years and more	7.2	498
5,001 to 10,000 Euros	4.2	293	Age		
10,001 to 15,000 Euros	1.9	129	29 years or less	1.4	100
more than 15,000 Euros	3.1	216	30 to 44 years	23.9	1,662
Liquidity of venture			45 to 59 years	56.6	3,933
already insolvent	9.2	637	60 years and older	18.1	1,260
using retirement provisions	8.1	560	Education		
1 month	6.6	457	high school	19.9	1,387
2 months	8.3	579	Apprenticeship	19.1	1,324
3 months	11.3	788	university degree	61.0	4,244
4 months	4.3	299			
5 months	2.8	195			
6 months	12.6	878			
7 to 12 months	13.0	906			
more than 12 months	23.8	1,656			

Source: "The situation of the self-employed during the COVID-19 pandemic in Germany 2021". Survey by DIW Berlin, Trier University and ZEW Mannheim. Own calculations.

**Table A4.4: Time and monetary investments**

		Time investments			
		not agree	neutral	agree	sum
Monetary investments	not agree	.20	.04	.17	.41
	neutral	.01	.08	.11	.20
	agree	.01	.02	.36	.39
	sum	.22	.14	.64	1.00

**Table A4.5: Marginal effects on time and monetary investments by internal locus of control**

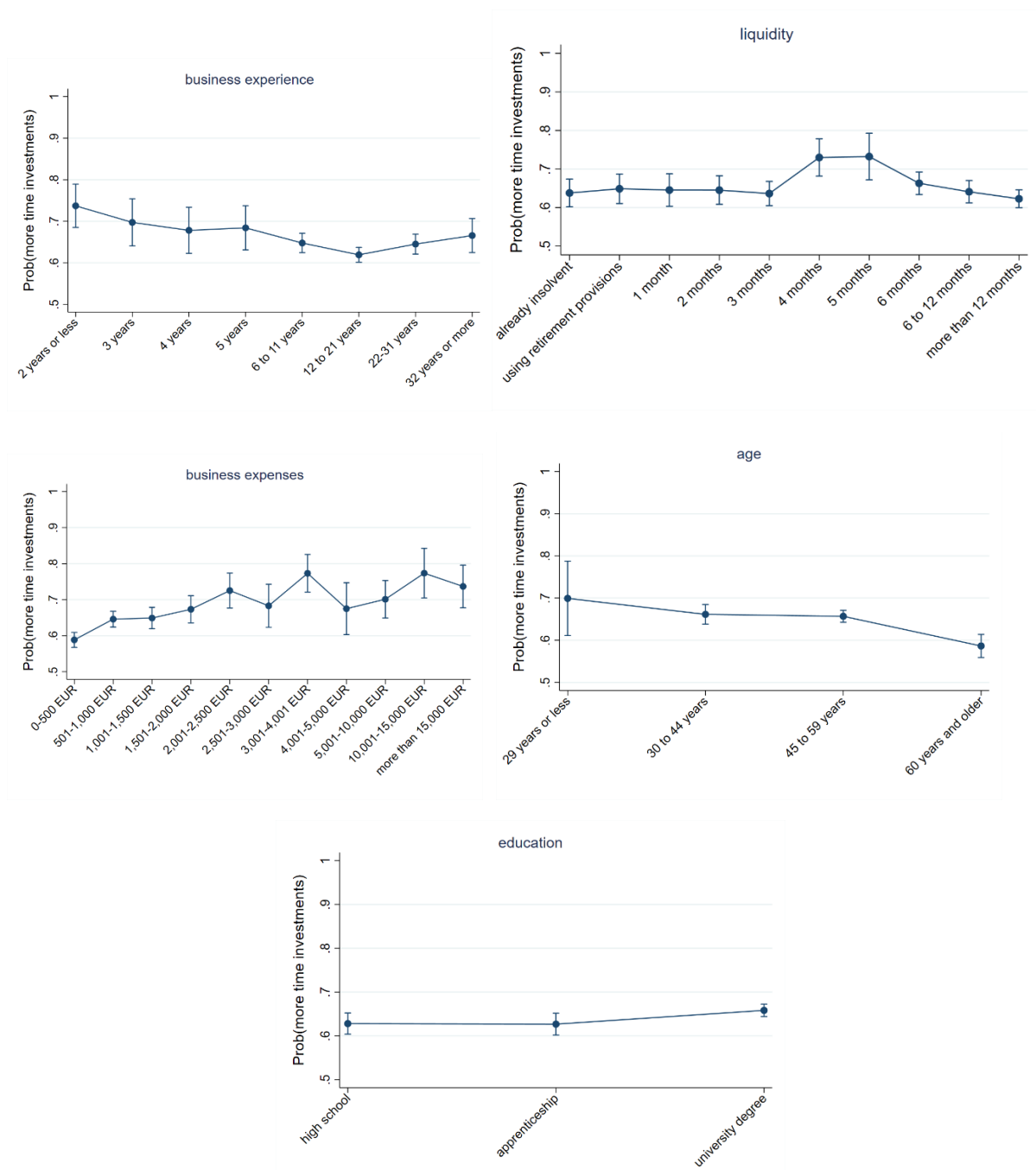
Marginal effects (dy/dx)						
	Internal locus of control before COVID				Comparison	
	Low		High		Chi2	p > Chi2
	Prob(more time investments)					
Reduction in financial well-being	.021	(.042)	.077**	(.024)	1.55	.21
Reduction in non-financial well-being	-.116**	(.034)	-.052**	(.018)	2.78	.10
	Prob(more monetary investments)					
Reduction in financial well-being	-.053	(.041)	.022	(.024)	2.98	.08
Reduction in non-financial well-being	-.090**	(.032)	-.035*	(.017)	2.27	.13

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. Reference industry: artists and cultural professionals.

**Table A4.6: Marginal effects on time and monetary investments by occupational risk**

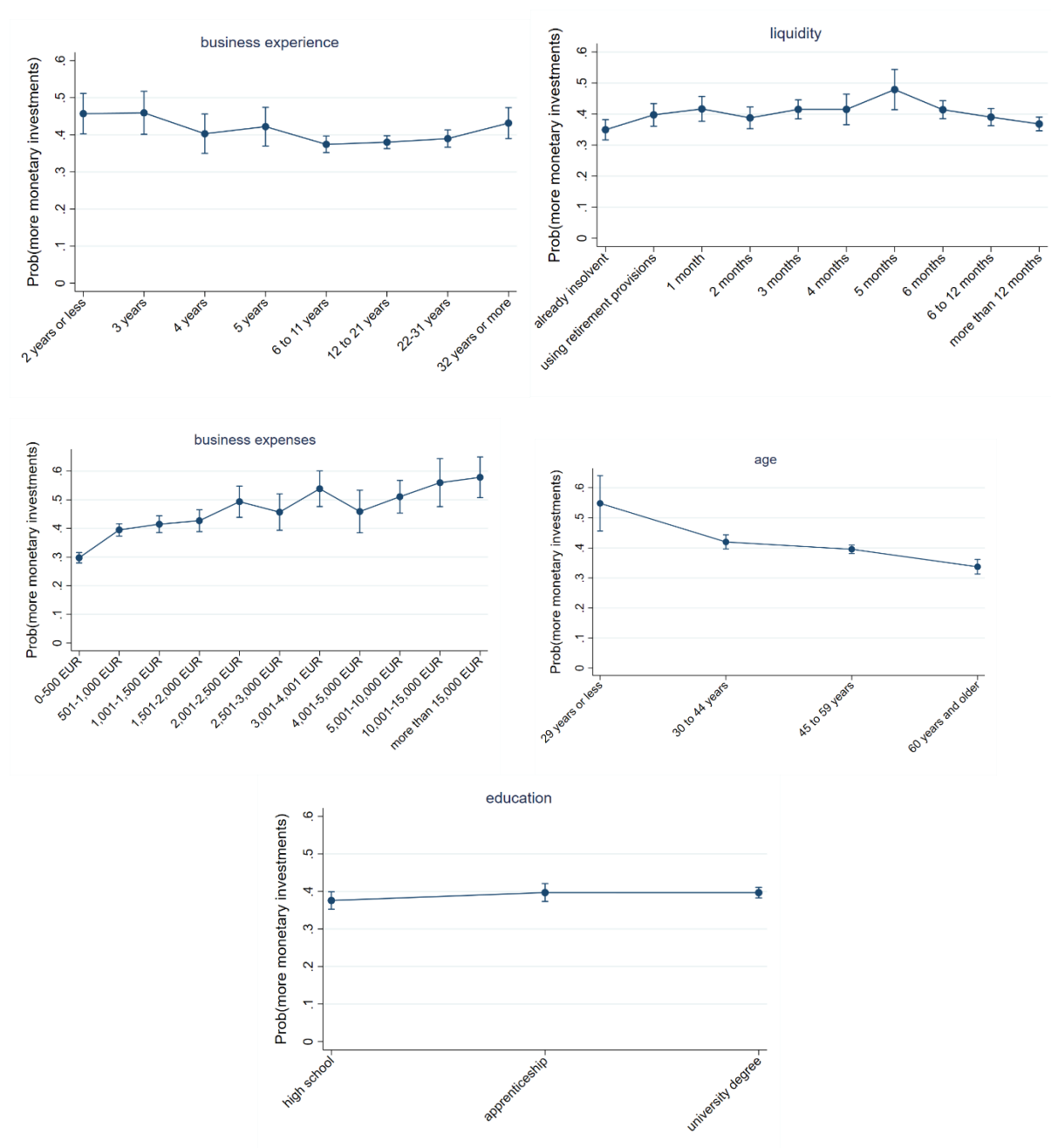
Marginal effects (dy/dx)						
	Occupational risk before COVID				Comparison	
	Low		High		Chi2	p > Chi2
	Prob(more time investments)					
Reduction in financial well-being	.070*	(.027)	.061*	(.030)	.06	.80
Reduction in non-financial well-being	-.067**	(.021)	-.064**	(.025)	.01	.92
	Prob(more monetary investments)					
Reduction in financial well-being	.012	(.025)	-.001	(.031)	.16	.69
Reduction in non-financial well-being	-.026	(.019)	-.074**	(.024)	2.43	.12

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. Reference industry: artists and cultural professionals.

**Figure A4.1: Marginal effects of controls on time investments**

Source: Own illustrations.



**Figure A4.2: Marginal effects of controls on monetary investments**

Source: Own illustrations.

**Table A5.1: Variable descriptions of predictors – Governmental, regulatory and cultural contextual factors**

Predictive factor	Category	Data source	Variable description
Environmental policy stringency index	Governmental and regulatory	OECD data	Country-specific and internationally comparable measure of the stringency of environmental policy. Stringency is defined as the degree to which environmental policies put an explicit or implicit price on polluting or environmentally harmful behavior.
Gov. agencies are competent	Governmental and regulatory	GEM NES data	In a country, the people working for government agencies are competent and effective in supporting new and growing firms measured on an 11-point Likert scale (0-10).
Gov. bureaucracy is not too difficult	Governmental and regulatory	GEM NES data	In a country, coping with government bureaucracy, regulations and licensing requirements it is not unduly difficult for new and growing firms measured on an 11-point Likert scale (0-10).
Gov. expenditure on education	Governmental and regulatory	World Bank data	General government expenditure on education (current, capital and transfers) is expressed as a percentage of GDP. It includes expenditure funded by transfers from international sources to government. General government usually refers to local, regional and central governments.
Gov. policies favor new firms	Governmental and regulatory	GEM NES data	In a country, government policies (e.g., public procurement) consistently favor new firms measured on an 11-point Likert scale (0-10).
Gov. programs for new firms are effective	Governmental and regulatory	GEM NES data	In a country, government programs aimed at supporting new and growing firms are effective measured on an 11-point Likert scale (0-10).
Gov. subsidies available for new firms	Governmental and regulatory	GEM NES data	In a country, there are sufficient government subsidies available for new and growing firms measured on an 11-point Likert scale (0-10).
Gov. support sustainability-focused startups	Governmental and regulatory	GEM NES data	In a country, the national government supports sustainability-focused firms through grants, special rights and/or tax cuts measured on an 11-point Likert scale (0-10).
Legal rights index	Governmental and regulatory	World Bank data	Strength of legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. The index ranges from 0 to 12, with higher scores indicating that these laws are designed to expand access to credit.
Social expenditure in % of GDP	Governmental and regulatory	OECD data	Public and mandatory private social expenditure in % of GDP (including pensions, sick leave, parental leave, labor programs etc.).
Assertiveness	Cultural	GLOBE data	The degree to which individuals are (and should be) assertive, confrontational and aggressive in their relationship with others. Measured by several items (see <a href="https://www.globeproject.com">https://www.globeproject.com</a> ).
Examples of entrepreneurship related to SDGs	Cultural	GEM NES data	In a country, there are prominent examples of entrepreneurial activities related to Sustainable Development Goals (SDGs) within the business sector measured on an 11-point Likert scale (0-10).
Future Orientation	Cultural	GLOBE data	The extent to which individuals engage (and should engage) in future-oriented behaviors such as planning, investing in the future and delaying gratification. Measured by several items (see <a href="https://www.globeproject.com">https://www.globeproject.com</a> ).
Gender Egalitarianism	Cultural	GLOBE data	The degree to which a collective minimizes (and should minimize) gender inequality. Measured by several items (see <a href="https://www.globeproject.com">https://www.globeproject.com</a> ).
Humane Orientation	Cultural	GLOBE data	The degree to which a collective encourages and rewards (and should encourage and reward) individuals for being fair, altruistic, generous, caring and kind to others. Measured by several items (see <a href="https://www.globeproject.com">https://www.globeproject.com</a> ).
In-group collectivism	Cultural	GLOBE data	The degree to which individuals express (and should express) pride, loyalty and cohesiveness in their organizations or families. Measured by several items (see <a href="https://www.globeproject.com">https://www.globeproject.com</a> ).
Institutional Collectivism	Cultural	GLOBE data	The degree to which organizational and societal institutional practices encourage and reward (and should encourage and reward) collective distribution of resources and collective action. Measured by several items (see <a href="https://www.globeproject.com">https://www.globeproject.com</a> ).
Performance orientation	Cultural	GLOBE data	The degree to which a collective encourages and rewards (and should encourage and reward) group members for performance improvement and excellence. Measured by several items (see <a href="https://www.globeproject.com">https://www.globeproject.com</a> ).
Power Distance	Cultural	GLOBE data	The extent to which the community accepts and endorses authority, power differences and status privileges. Measured by several items (see <a href="https://www.globeproject.com">https://www.globeproject.com</a> ).
Uncertainty Avoidance	Cultural	GLOBE data	The extent to which a society, organization, or group relies (and should rely) on social norms, rules and procedures to alleviate unpredictability of future events. The greater the desire to avoid uncertainty, the more people seek orderliness, consistency, structure, formal procedures and laws to cover situations in their daily lives. Measured by several items (see <a href="https://www.globeproject.com">https://www.globeproject.com</a> ).

**Table A5.2: Variable descriptions of predictors – Socio-economic, ecological and economic contextual factors**

Predictive factor	Category	Data source	Variable description
Adult literacy rate	Socio-economic	World Bank data	Adult literacy rate is the percentage of people ages 15 and above who can both read and write with understanding a short simple statement about their everyday life.
Gender discrimination	Socio-economic	OECD data	Overall index measured by different variables: discrimination in the family, restricted physical integrity, access to productive and financial assets, restricted civil liberties.
National poverty headcount ratio	Socio-economic	World Bank data	National poverty headcount ratio is the percentage of the population living below the national poverty line(s). National estimates are based on population-weighted subgroup estimates from household surveys. For economies for which the data are from EU-SILC, the reported year is the income reference year, which is the year before the survey year.
Net enrollment rate school children	Socio-economic	World Bank data	Net enrollment rate is the ratio of children of official school age who are enrolled in school to the population of the corresponding official school age. Primary education provides children with basic reading, writing and mathematics skills along with an elementary understanding of such subjects as history, geography, natural science, social science, art, and music.
Percentage share of income/consumption	Socio-economic	World Bank data	Percentage share of income or consumption is the share that accrues to subgroups of population indicated by deciles or quintiles. Percentage shares by quintile may not sum to 100 because of rounding.
Physicians	Socio-economic	World Bank data	Number of physicians per 1,000 people including generalist and specialist medical practitioners.
Unemployment	Socio-economic	World Bank data	Unemployment refers to the share of the labor force that is without work but available for and seeking employment.
Carbon dioxide emissions per capita	Ecological	World Bank data	Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid and gas fuels and gas flaring. They are measured in metric tons per capita.
Exposure to pollution	Ecological	OECD data	Mean population exposure to particulate matter pollution (micrograms per cubic meter).
Access of rural population to electricity	Economic	World Bank data	Access to electricity, rural is the percentage of rural population with access to electricity.
Exports (all movable goods)	Economic	World Bank data	Goods exports refer to all movable goods (including non-monetary gold and net exports of goods under merchanting) involved in a change of ownership from residents to non-residents. Data are in current U.S. dollars.
GDP per capita	Economic	World Bank data	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars.
Inflation measured by consumer price index	Economic	World Bank data	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.
Infrastructure supports new firms	Economic	GEM NES data	In a country, the physical infrastructure (roads, utilities, communications, waste disposal) provides good support for new and growing firms measured on an 11-point Likert scale (0-10).
Lending rate	Economic	World Bank data	Lending rate is the bank rate that usually meets the short- and medium-term financing needs of the private sector. This rate is normally differentiated according to creditworthiness of borrowers and objectives of financing. The terms and conditions attached to these rates differ by country, however, limiting their comparability.

**Table A5.3: Overview about relevance of predictors - Governmental, regulatory and cultural contextual factors**

Predictive factor	Category of contextual factor	Social considerations	Ecological considerations
Environmental policy stringency index	Governmental and regulatory	Medium relevance (weak negative linear relationship)	Low relevance
Gov. agencies are competent	Governmental and regulatory	Medium relevance	Low relevance
Gov. bureaucracy is not too difficult	Governmental and regulatory	Low relevance	Low relevance
Gov. expenditure on education	Governmental and regulatory	High relevance (weak negative linear relationship)	High relevance (weak negative linear relationship)
Gov. policies favor new firms	Governmental and regulatory	Low relevance	Very low relevance
Gov. programs for new firms are effective	Governmental and regulatory	Low relevance	Low relevance
Gov. subsidies available for new firms	Governmental and regulatory	Low relevance	Very low relevance
Gov. support sustainability-focused startups	Governmental and regulatory	Medium relevance	Low relevance
Legal rights index	Governmental and regulatory	Very low relevance	Very low relevance
Social expenditure in % of GDP	Governmental and regulatory	Low relevance	Low relevance (weak negative linear relationship)
Assertiveness	Cultural	Low relevance	Very low relevance
Examples of entrepreneurship related to SDGs	Cultural	High relevance	Medium relevance
Future Orientation	Cultural	Low relevance	Very low relevance
Gender Egalitarianism	Cultural	Low relevance	Very low relevance
Humane Orientation	Cultural	Low relevance	Very low relevance
In-group collectivism	Cultural	High relevance (medium strong positive linear relationship)	Medium relevance (weak positive linear relationship)
Institutional Collectivism	Cultural	Low relevance	Very low relevance
Performance orientation	Cultural	Very low relevance	Very low relevance
Power Distance	Cultural	Medium relevance	Very low relevance
Uncertainty Avoidance	Cultural	Medium relevance	Very low relevance

*Note:* The relevance of the predictor is judged based on the random forest model: Very low relevance = Predictor explains less than 30% of maximum variable importance; Low relevance = Predictor explains between 30% and 50% of maximum variable importance; Medium relevance = Predictor explains between 50% and 70% of maximum variable importance; High relevance = Predictor explains more than 70% of maximum variable importance. If a linear relationship in the LASSO model exists, the direction and strength of the relationship are listed in brackets. The strength of the relationship is determined by the standardized regression coefficient: Weak linear relationship = Regression coefficient < 0.1; Medium strong relationship = Regression coefficient between 0.1 and 0.2; Strong relationship = Regression coefficient > (-) 0.2.

**Table A5.4: Overview about relevant predictors in LASSO model - Socio-economic, ecological and economic contextual factors**

Predictive factor	Category of contextual factor	Relevance for social considerations	Relevance for ecological considerations
Adult literacy rate	Socio-economic	High relevance	High relevance
Gender discrimination	Socio-economic	Low relevance	Low relevance
National poverty headcount ratio	Socio-economic	Medium relevance (weak positive linear relationship)	Low relevance (weak positive linear relationship)
Net enrollment rate school children	Socio-economic	Low relevance	Low relevance
Percentage share of income/consumption	Socio-economic	Medium relevance (weak negative linear relationship)	Low relevance
Physicians	Socio-economic	Medium relevance	Low relevance
Unemployment	Socio-economic	Low relevance	Low relevance
Carbon dioxide emissions per capita	Ecological	Medium relevance	Low relevance
Exposure to pollution	Ecological	Medium relevance (weak positive linear relationship)	Low relevance
Access of rural population to electricity	Economic	Low relevance	Very low relevance
Exports (all movable goods)	Economic	Low relevance	Low relevance
GDP per capita	Economic	Medium relevance	Medium relevance
Inflation measured by consumer price index	Economic	Medium relevance	Medium relevance
Infrastructure supports new firms	Economic	Low relevance	Very low relevance
Lending rate	Economic	Medium relevance	Medium relevance

*Note:* The relevance of the predictor is judged based on the random forest model: Very low relevance = Predictor explains less than 30% of maximum variable importance; Low relevance = Predictor explains between 30% and 50% of maximum variable importance; Medium relevance = Predictor explains between 50% and 70% of maximum variable importance; High relevance = Predictor explains more than 70% of maximum variable importance. If a linear relationship in the LASSO model exists, the direction and strength of the relationship are listed in brackets. The strength of the relationship is determined by the standardized regression coefficient: Weak linear relationship = Regression coefficient < 0.1; Medium strong relationship = Regression coefficient between 0.1 and 0.2; Strong relationship = Regression coefficient > (-) 0.2.

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