Do external forces shape student entrepreneurship? A quantitative study of drivers and barriers for student entrepreneurship.

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Abstract:
This thesis looks at how changes in the world around us—like new technologies, climate change, or major crises—influence whether university students around the world want to start their own business. Based on the External Enablers Framework, the study focuses on four types of environmental changes and how they affect students' interest in becoming entrepreneurs now or in the next five years. Survey data was analyzed using logistic regression. The results show that some changes, like technological developments, increase students' interest in entrepreneurship, while others, such as societal crises, can discourage it. The study also explores how these effects differ depending on a student's age, gender, study background, or whether their parents are entrepreneurs. The findings help us better understand what drives or blocks student entrepreneurship and suggest how support could be tailored to different groups of students.

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1 INTRODUCTION

Entrepreneurship is the process of designing, launching, and running a new business, often initially a small business, which typically begins as a startup offering a product, process, or service for sale or hire (*Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2017)*. Student entrepreneurship then refers to the process in which students design, launch, and run a new business, often initially a small business, which typically begins as a startup offering a product, process, or service for sale or hire.

Looking into the data of the GUESSS survey, as shown in figure 1, it can be concluded that the share of students that pursue an entrepreneurial career in five years post-graduation is significantly higher (30%) than the share of students that pursue an entrepreneurial career directly after studies (15,7%). Also, in most countries from the GUESSS survey, there is a significant gap between students that are currently running their own business, and students that are trying to run their own business (nascent entrepreneurs). In the Netherlands, the first group of students represent 16,3%, while the second group represents 25,2% (Sieger et al., 2023). Work has a big impact on your life, it is important to understand what holds people back from their desires (barriers), and what enables students to achieve their desires (drivers). A significant number of students pursue an entrepreneurial career, but apparently don't act and/or first pursue employment. Therefore, it is important to research this topic. Since the GUESS survey incorporates external enabler mechanisms, it will be interesting to research the external enablers (EE) mechanisms of student entrepreneurship. These external enabler mechanisms can be technological advancements, regulatory changes, changes in demographics or socio-cultural changes.

In regions where entrepreneurship is encouraged and supported, students show higher entrepreneurial intentions (Ács, Z. J., Autio, E., & Szerb, L., 2014). This corresponds to the ecosystem theory, which states that an entrepreneurial environment can enhance entrepreneurial intentions by reducing perceived risk and increasing perceived opportunities. Research about the effect of external enabler mechanisms on business intentions (entrepreneurship) has been done. Research found that technological changes have an impact on opportunity beliefs which then has an impact on entrepreneurial intentions (Grégoire & Shepherd, 2012). Regulatory changes is another external enabler mechanism that drives entrepreneurial intentions. An experiment by the Japanese government found that reforming bankruptcy rules (regulatory change) impacted the entrepreneurial intentions (Eberhart et al., 2017). Sociocultural trends is an external enabler mechanism that impact entrepreneurial activity. This (EEM) changes the environment and, unlike regulatory changes, is not always top-down introduced. One article states that the (American) Woman's Christian Temperance Union (WCTU), promoted beliefs and attitudes towards alcohol consumption that impacted the brewery- and soft drink producing industry (Hiatt et al., 2009). Changes to the natural environment also have an impact on entrepreneurial intentions (Dutta, 2017). Men could think of natural disasters like tsunamis, wildfires, earthquakes that change intentions towards entrepreneurship not to speak about changing existing companies that are impacted by disasters.

Entrepreneurial opportunity explains the factor beyond knowledge about the individual (track record, personality traits). Entrepreneurial opportunity is the factor that explains an individual's entrepreneurial action. Entrepreneurial opportunity is a vague concept since several studies use different definitions of the construct 'opportunity' (Davidsson, P. (2015)), thus there is lack of construct clarity.

Therefore, later research proposed that, to capture all ideas for the construct of opportunity, more constructs are needed. The three new constructs that capture 'entrepreneurial opportunity' are: external enablers, new venture ideas and opportunity confidence.

The 'external enablers' construct is the subject settled in this thesis. External enablers are external changes to the (business) environment such as technological advancements, regulatory changes, changes in demographics or socio-cultural changes which may affect new venture creation attempts. The 'new venture ideas' construct is about the individual's imagined future ventures. The 'opportunity confidence' construct is about the individual's evaluation of attractiveness, of a stimulus, as a foundation for creating new ventures (entrepreneurial activity).

Factors that influence students 'entrepreneurial intentions are identified: business incubation programmes, non-reimbursable grants for entrepreneurial students, networking events to promote entrepreneurship, mentoring services, innovation labs for business idea validation and entrepreneurship courses (Sisu et al., 2024). It's clear that research has been done on several external enablers and its effects on entrepreneurial activity. However, little research has been done on the effect of external enablers on student entrepreneurship. Thus far, no research has been done on the GUESSS surveys' external enablers and it's effects on students' entrepreneurial intentions.

1.1 Research objective and question

The primary objective of this research is to investigate the extent to which external enabler mechanisms such as technological, regulatory, demographic and sociocultural changes, have an impact on the entrepreneurial intentions and behaviour of students. Drawing upon the GUESS dataset, the impact of external enablers can be found on student entrepreneurship. The thesis aims to contribute to

a deeper understanding of student entrepreneurial behaviour and intentions.

Therefore, the following research question is developed: *To what extent do external enabler mechanisms influence entrepreneurial intentions of university students?*

1.2 Academic and practical relevance

As explained in the research gap, external enablers for entrepreneurial intentions and behaviour has been researched, however, external enablers and its impact on student entrepreneurship has not been researched significantly. Students are a group that shapes the future and have different characteristics than the average citizen. Students are young, have little capital, little experience and have prospects for a long career. Therefore, it is relevant to research how external enablers affect students, since students may react in a different way than the average citizen, especially in a rapidly changing world.

Students are young and will shape the future. Therefore it is important for students, but also the government, universities and other relevant institutions, to know how students are affected in their entrepreneurial intentions, by their external environment. 'This topic is important as entrepreneurship is key to economic growth/ recovery and increasingly seen by universities as part of their graduate employability remit.' (Smith et al., 2019). External enablers are either occurring naturally or are intentionally created. For instance, changes to the natural environment such as earthquakes and natural disasters cannot be affected in most cases. However, the regulatory environment or technological environment can be crafted towards stimulating student entrepreneurship. In general, this study will unveil the effects of external enablers on student entrepreneurship, this will help explain student entrepreneurial behaviour.

In this study, the framework is operationalized using data from the GUESSS dataset (Global University Entrepreneurial Spirit Students' Survey), which contains survey responses from students worldwide on their entrepreneurial intentions, behaviors, and perceptions of their environment. This dataset includes variables that map well onto both theoretical perspectives: e.g., students' entrepreneurial intentions, perceived support or barriers (external enablers), and actual entrepreneurial activity.

The framework distinguishes external enablers by several dimensions, namely: types, characteristics, mechanisms and roles, while also taking into account the influence of agent and context characteristics. In this thesis, the focus lies primarily on the types, roles of enablers, as well as agent and context characteristics.

2 LITERATURE REVIEW

Entrepreneurial intentions are shaped by a dynamic interaction between the individual and their environment (Krueger et al., 2000). This research draws on the external enabler framework (Davidsson, 2015), as shown in figure 2, to investigate how broader environmental changes influence student entrepreneurship. While traditional entrepreneurship research often centers on the individual entrepreneur, the external enabler framework shifts the focus toward the macro-environmental mechanisms—such as technological advancements, regulatory shifts, demographic trends, and socio-cultural changes—that shape entrepreneurial possibilities and behaviors. This framework is particularly relevant for understanding student entrepreneurship, as students are often in a transitional life phase where external signals significantly influence career intentions (Walter et al., 2013). Types of external enablers refer to the external enablers from the GUESSS survey. The GUESSS dataset are the following: (1) new technologies (e.g. AI), (2) climate change and/or the quest for sustainability, (3) demographic change (e.g., ageing population, baby), (4) changed laws and/or regulations, (5) sociocultural trends (e.g., animal welfare, pet products, LGBT+ rights/culture), (6) societal crises (e.g., bank crisis, Ukraine crisis, etc.), (7) other, major societal developments. These enablers form the independent variables.

The framework addresses roles the enablers may play in the entrepreneurial process. These roles are: (1) Triggering entrepreneurship by creating initial motivation or opportunity, (2) Shaping the venture's development in terms of offering, structure or process and (3) Outcome enhancing, by increasing the likelihood of long-term success. The dependent variables are about whether and when students intend to become entrepreneurs. As stated in the introduction, the GUESSS report showcases the difference in entrepreneurial intention directly after graduation and 5 years after graduation. These two different outcomes, based on time, form the dependent variables. This matches the 'roles' dimension. Triggering means when enablers motivate immediate action (pursuing an entrepreneurial career directly after studies). Shaping is when enablers influence how a student sees a business in the future (pursuing an entrepreneurial career 5 years after completing studies).

The GUESSS survey data doesn't measure how enablers work, which relates to mechanisms. The data also doesn't assess onset (sudden or gradual) or scope (sectoral, temporal, geographic), which are characteristics. Thus, the dimensions:

Much research has been done on drivers and barriers for (student) entrepreneurship. For instance, common barriers are: limited access to finance, contacts, knowledge and experience, according to (Smith et al., 2019).
As stated before, the GUESSS dataset, provides seven external enablers,. New technologies (e.g. AI), is the first external enabler. Recent entrepreneurial literature has extensively discussed the enabling role of digital technology in entrepreneurial processes and outcomes. 'Digital technology significantly transformed innovation, thereby accelerating the process of new venture creation' (Jahanbakht & Ahmadi, 2024). In a different study, 'the analyses show how digitalisation and new technologies, such as Artificial Intelligence and Blockchain, are facilitating the reduction of intercultural barriers and promoting the evolution of traditional business models. These results highlight the role of emerging technologies in seizing new opportunities and addressing challenges for businesses in an increasingly digitalised and globalised context.' (Secinaro et al., 2025). Also, 'AI is identified as a key external enabler in new venture creation alongside other Industry 4.0 technologies' (Chalmers et al., 2021). Therefore, it can be concluded that digital technologies accelerate the process of new venture creation. It can also be concluded that AI transforms existing businesses, and that it is identified as a key external enabler in new venture creation (entrepreneurial intention). The relationship between new technologies and entrepreneurship seems positive. However, it is not clear how new technologies such as AI impact student entrepreneurship, and if so, how strong. Since the GUESSS dataset contains recent results and AI is more and more popular, it is relevant to incorporate this external enabler in the research.

Climate change and/or the quest for sustainability is the second external enabler. A study indicates that 'climate-related natural disasters significantly disrupt enterprise operations, leading to reduced firm entries and increased exits in the short term. This phenomenon is primarily driven by an overreaction to immediate disaster shocks. Entrepreneurs tend to overestimate the severity of these shocks, resulting in precautionary exits and a reluctance to initiate new ventures.' *(Han & Zhou, 2025)*. Another study, done among students, found a positive and significant correlation between climate change knowledge and the intention of sustainable entrepreneurs (Zhang et al., 2024). This study's dependent variable is **sustainable** entrepreneurial intention, this is not the same as entrepreneurial intention. Possibly, climate change knowledge fosters sustainable entrepreneurial intention, but not entrepreneurial intention in general. Therefore, it is not very clear how climate change and/or the quest for sustainability, impacts student entrepreneurship. Climate change is becoming more and more relevant. A study analyzing 222,060 climate change-related papers found a significant increase in research output, with the number of publications doubling every 5-6 years (Stanhill, 2001). Due to its uncertain effect on student entrepreneurship and its relevance, this external enabler will be incorporated in this research.

Changed laws and or regulations is the fourth external enabler. A study among Chinese students reveals a positive impact between entrepreneurial policy (through entrepreneurial education) and entrepreneurial willingness. 'In particular, the continuous introduction of preferential policies for young entrepreneurs has greatly stimulated the entrepreneurship vitality of Chinese youth, and an increasing number of entrepreneurs continue to emerge with their own projects across the country (Zelin et al., 2021)' However, it is important to address that, in this study, entrepreneurial policies are researched and not changed laws and or regulations in general, like the external enabler this research is about. Another study conducted among young potential entrepreneurs from Kosovo and Turkey, who previously and currently owned a business, shows conflicting results. The research 'did not find any evidence regarding our expectation of the impact of regulatory institutions on entrepreneurial intentions (Anwar et al., 2023).' The study presented possible causes for this insignificant result: 'regulatory institutions have a more significant impact on the activities of incumbent firms rather than on the intentions of early-stage entrepreneurs, institutions do not always play an essential role in the case of 'necessity entrepreneurship, there are doubts that individuals aiming to start their business understand or are aware of the existence of such institutions.' Therefore, it can be concluded that different studies show conflicting results. Results from the effect changed laws and or regulations on student entrepreneurship has value since it contributes to a general understanding of the effect of changed laws, thus can lead to effective institutional policies.. Due to its conflicting results and practical implications, this external enabler is relevant and will be incorporated in this research.

Societal crises (e.g., bank crisis, Ukraine crisis, etc.) is the sixth external enabler and is not specific, rather broad, and therefore has much research. A study among 3.684 Italian university students found that 'while the perception of the economic crisis as an obstacle to new business creation does not impact on the propensity toward entrepreneurship, it has a negative and highly significant impact on the likelihood to start a business' (Arrighetti et al., 2016). A study on COVID-19's implications states that 'COVID-19 facilitated NVC (new venture creation) by creating favorable conditions for entrepreneurial initiatives despite disrupting economic activities' (Jahanbakht & Ahmadi, 2024). This finding would indicate a positive effect between the external enabler 'Societal crises' and 'entrepreneurial intention'. Other studies however, point in different directions. In a research among university students of

Croatia showed that entrepreneurial intention decreased during COVID-19 due to perceived crisis severity (Asad, Fryan, & Shomo, 2023). A synthetic-control study states that the Russia-Ukraine war caused a 20% decline in self-employment, driven by fewer new ventures, and more closures (Audretsch et al., 2023). Societal crises is a broad external enabler. Most societal crises seem to have a negative impact on entrepreneurship, while certain crises possibly foster new venture creation (COVD-19). Since there is a Ukraine crisis as we speak, this external enabler is relevant. For these reasons, this external enabler is incorporated in the research.

2.1 Hypotheses

Building on insights from the literature and the External Enablers Framework by Kimjeon and Davidsson (2022), this study explores how different types of societal changes influence students' willingness to start a business. These changes—such as technological developments or shifts in laws—may serve as enablers that shape entrepreneurial intentions.

To capture both short-term and longer-term effects, this research focuses on two dependent variables, students' entrepreneurial intention directly after graduation and 5 years after graduation. Entrepreneurial intentions evolve throughout students' career and students' view on their career. However, the literature review did not show results about this difference, this could give an extra, interesting insight. The difference between these dependent variables is, due to lack of research, not incorporated in the hypothesis, since no expectation can be made.

To answer the main research question of this thesis: *'To what extent do external enabler mechanisms influence entrepreneurial intentions of university students?',* four hypothesis have been formulated.

The literature review shows several studies that conclude that new technologies and AI has an enabling effect on new venture creation and its transforming effect on existing businesses. These studies point in the direction of new technologies such as AI, possibly having an enabling effect on student entrepreneurial intentions. Accordingly, the following has been hypothesised:

Hypothesis 1: New technologies (e.g., AI) positively influence students' entrepreneurial intentions.

The literature review shows a study that climate change reduced firm entries. However, a different study found a positive and significant correlation between climate change knowledge and the intention of sustainable entrepreneurs. However, this study shows the effect on the intention of **sustainable** entrepreneurship, not entrepreneurship in general. Different studies show conflicting results. Most studies however, show that climate change has a negative effect on entrepreneurial intention. Accordingly, the following has been hypothesised:

Hypothesis 2: Climate change and/or the quest for sustainability negatively influences students' entrepreneurial intentions.

Different studies show conflicting results on the effect of changes in laws. This is partially explained by the fact that one changed law is not the other, therefore, the effect is depending on the type of the changed law. Most studies research the effect of a **specific** law on entrepreneurship in general, therefore, results may vary. A study, presented in the literature review, shows convincing results that changed laws and or regulations have no effect on entrepreneurial intention. Most studies however, show that changed laws have a negative effect on entrepreneurship. Accordingly, the following has been hypothesised:

Hypothesis 3: Changed laws and or regulations negatively influence students' entrepreneurial intentions.

A study found that an economic crisis has a negative and highly significant impact on the likelihood to start a business. A different study found that COVID-19 enabled new venture creation. A different study found that the Russia-Ukraine war caused a 20% decline in self-employment, driven by fewer new ventures. It can be concluded that different studies (researching different crises), show different results. However, most studies point in the direction of societal crises being a barrier for entrepreneurship in general. Therefore, the expectation is that societal crises is also a barrier for student entrepreneurship. Accordingly, the following has been hypothesised:

Hypothesis 4: Societal crises (e.g., bank crisis, Ukraine crisis, etc.) negatively influence students' entrepreneurial intentions.

2.2 Conceptual framework

A conceptual framework is created in order to explain the aim of this research. This conceptual framework illustrates the 4 external enablers' effect on students' entrepreneurial intentions (both directly after graduation and also 5 years graduation). The effect is controlled by the 4 control variables: gender, age, study field and parental entrepreneurial background. Consequently, the following conceptual model is designed.

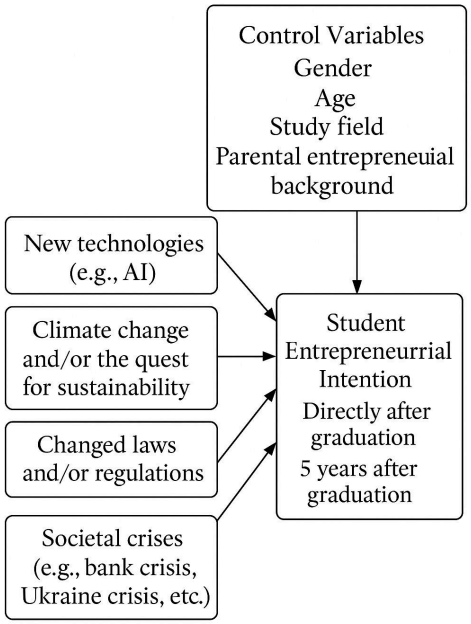


Figure 3: Conceptual model

3. METHODOLOGY / RESEARCH DESIGN

3.1 Research design

This study follows a quantitative, cross-sectional research design, utilizing secondary data from the GUESSS (Global University Entrepreneurial Spirit Students' Survey) dataset. GUESSS is a globally recognized project that surveys individual students across multiple countries to understand their entrepreneurial intentions, activities, and perceptions of the entrepreneurial environment. The purpose of the research is to test the hypotheses about the effect of external enablers on entrepreneurial intention among students. The dataset derives from the most recent global report (2023) and therefore aims to create an up to date view of student entrepreneurship. This dataset is well-suited for researching students' entrepreneurial intentions. This is the case since the dataset provides both contextual (e.g. country) as individual-level variables (e.g. background).

3.2 Data and measurement

The dataset derives from the most recent global report (2023). The sample consists of 226.719 university students who participated in the most recent wave of the GUESSS survey. This sample consists of students from 58 countries, including students from several continents, giving an international view on the effect of external enablers on student entrepreneurial intention. The current research will focus on student responses from all countries, as this increases the chances of statistically significant results.

The external enablers form the independent variables for this research. Thus, the independent variables in this research are: new technologies (e.g., AI), climate change and/or the quest for sustainability, changed laws and or regulations and societal crises (e.g., bank crisis, Ukraine crisis, etc.). In the GUESSS survey, the impact of these external enablers was examined on idea behind students' planned business. The following question was given: 'Please indicate your level of agreement with the following statements (1=strongly disagree, 7=strongly agree). The idea behind my planned business is driven by… - *a possible external enabler (e.g. new technologies (e.g., AI)).* Thus, the impact of the external enablers were measured by using a seven-point Likert scale (1=strongly disagree, 7=strongly agree). These enablers will be grouped into four enabler categories based on Davidsson's (2015) framework.

The control variables in this thesis are, as stated in the literature review: gender, age, study field, and parental entrepreneurial background. The use for specifically these control variables can be motivated by the following literature. For the control variable 'gender', a study about gender effects on entrepreneurial intention states that 'Although the percentage of female entrepreneurs has increased over the past several years, it is far below the level of males'. 'The study reveals a higher average EI for men compared to women.' (Zhao, Seibert, & Lumpkin, 2013). The question regarding gender in the GUESSS survey is 'Your gender?', possible answers were: male, female and other. For the control variable 'age', a study about influencing factors for student entrepreneurial intention claims that older students have a higher entrepreneurial intention, possibly due to more life experience and networks (Zaharia, Pînzaru, & Vitelar, 2024). The question regarding age in the GUESSS survey is 'What is your year of birth?', subtracting the answer from 2023(the date of taking the survey) gave the age of the respondent. For the control variable 'study field', a study suggests that study field is a factor that influences entrepreneurial intentions. The study suggests that tech and engineering students often have higher entrepreneurial intentions, a reason for this can be increased perceived competence and opportunity (Ahmed, Chandran, Klobas, Liñán, & Kokkalis, 2022). The question regarding study field in the GUESSS survey is 'What is your main field of study?', there were 12 different possible answers with the last answer being 'other'. However, this thesis focuses only on 4 study fields, namely: Business / management, Engineering (incl. architecture), Human medicine / health sciences, social sciences (e.g., psychology, politics, education), since these study fields represented the highest amount of

students (therefore this control variable is categorical). For the control variable ‘parental entrepreneurial background’ several studies consistently prove that students with entrepreneurial parents, tend to have higher entrepreneurial intention. A study among Hungarian students suggests that ‘Results confirm a view that family business background has a significant positive impact on entrepreneurial intention, and is most likely to exert its impact through increased human capital levels in the form of entrepreneurial knowledge, skills and experience (Nica & Mirica, 2023).’ The question regarding parental entrepreneurial background in the GUESSS survey is ‘Are your parents self-employed and/or majority owners of a business?’, possible answers were: No - Yes, father - Yes, mother - Yes, both. Entrepreneurial Intentions forms the dependent variable for this research. It is measured through two GUESSS survey questions related to students' future career aspirations and likelihood of starting a business either directly after graduation or five years after graduation. These two questions will form the two dependent variables. The question regarding future career aspirations directly after graduation is ‘Which career path do you intend to pursue right after completion of your studies? I want to be…’, ten possible answers were provided with one being ‘a founder (entrepreneur) working in my own business’ The question regarding future career aspirations 5 years after graduation is ‘Which career path do you intend to pursue 5 years later? I want to be…’, again, ten possible answers were provided with one being ‘a founder (entrepreneur) working in my own business’.

3.3 Analysis

The data was collected and managed by the GUESSS project team via a structured online questionnaire distributed to university students. As this study uses existing data, no new data collection is performed. The analysis will be conducted by importing the dataset into Rstudio. The research question and hypothesis are tested by inferential analysis, the research uses multiple linear regression models to find the influences of external enablers on student entrepreneurial intention. The control variables ‘gender, age, study field, and parental entrepreneurial background’ are included to avoid third variables influencing the research. The technique used to conduct the analysis is: Multiple regression analysis to assess the predictive power of external enablers on entrepreneurial intentions and activity Multiple regression analysis allows to estimate the individual effect of each external enabler, while controlling for others. It include control variables to isolate the effects of the independent variables. Also, multiple regression analysis quantifies the strength (estimate and statistical significance) and direction (positive or negative estimate) of relationships between variables. Therefore, this method is well-suited to research the dataset. To ensure statistical significance, significance will be tested at a 95% confidence level ($p < 0.05$), and robustness checks will be carried out where necessary.

4 RESULTS

The dataset from the GUESSS report, was imported into Rstudio. Before analyzing the data, several steps were crucial to carry out. First, several variables were changed into different data types. The dependent variables were changed from categorical to dummy variables. The control variable ‘gender’ was changed from numerical to categorical.

The control variable ‘field of study’ was changed from numerical to categorical. The control variable ‘parents self employed’ was changed from numerical to categorical. These data type conversions were crucial to avoid errors in Rstudio. Also, the data was cleaned. All unanswered questions in the dataset denotes as ‘-99’ in Rstudio, this lead to insignificant results at first. All cells containing ‘-99’ were transformed into ‘NA’, so it would not impact the results.

4.1 Regression results

Table 1: dependent variable 1 (Entrepreneurial intentions directly after graduation) - regression results				
Variable	Estimate	Std. Error	z value	Pr(>|z|)
intercept / constant	-1.2635669	0.0798102	-15.832	< 2e-16 ***
Independent variables				
new technologies	0.0191002	0.0068065	2.806	0.005013 **
climate change	-0.0033971	0.0075918	-0.447	0.654535
changed laws	-0.0001148	0.0086850	-0.013	0.989451
societal crises	-0.0344950	0.0084630	-4.076	4.58e-05 ***
Control variables				
business / management	0.5850073	0.0585635	9.989	< 2e-16 ***
engineering	-0.0199311	0.0615549	-0.324	0.746094
human medicine	0.0350052	0.0695533	0.503	0.614764
social sciences	0.0107950	0.0691953	0.156	0.876027
age	0.0136207	0.0018242	7.467	8.22e-14 ***
gender, female	-0.2658836	0.0256254	-10.376	< 2e-16 ***
gender, other	-0.2563637	0.1477969	-1.735	0.082818 .
parents self-employed: father	0.0941368	0.0296999	3.170	0.001526 **
self-employed: mother	0.0363457	0.0500364	0.726	0.467603
self-employed: both	0.1664014	0.0353371	4.709	2.49e-06 ***

Significant codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 2: dependent variable 2 (Entrepreneurial intentions 5 years after graduation) - regression results				
Variable	Estimate	Std. Error	z value	Pr(>|z|)
intercept / constant	-0.524648	0.073687	-7.120	1.08e-12 ***
Independent variables				
new technologies	0.043163	0.006386	6.759	1.38e-11 ***
climate change	-0.004039	0.007136	-0.566	0.571363
changed laws	-0.033206	0.008146	-4.076	4.57e-05 ***
societal crises	-0.057465	0.007933	-7.244	4.37e-13 ***
Control variables				
business / management	0.864562	0.053369	16.200	< 2e-16 ***
engineering	0.479840	0.054962	8.730	< 2e-16 ***
human medicine	0.212805	0.061913	3.437	0.000588 ***
social sciences	0.087624	0.061507	1.425	0.154267
age	0.017910	0.001783	10.046	< 2e-16 ***
gender, female	-0.082913	0.023934	-3.464	0.000532 ***
gender, other	-0.328963	0.133095	-2.472	0.013449 *
parents self-employed: father	-0.034058	0.027715	-1.229	0.219116
self-employed: mother	-0.048822	0.046557	-1.049	0.294340
self-employed: both	0.013585	0.033588	0.404	0.685864

(The idea behind my planned business is driven by… - new technologies (e.g., AI)):
The results make clear that in both scenarios, there's a statistically significant positive relationship between the IV and the DV(looking at P values). Interestingly, the estimate is greater in the second scenario (entrepreneurial intention 5 years after graduation). Therefore, it can be concluded that new technologies (e.g., AI), increase the odds of entrepreneurship intentions more in 5 years than on present entrepreneurship intentions.
The plot shows the effect that new technologies (e.g., AI) (x axis) have on student entrepreneurial intention directly after studies (blue line) and 5 years after studies (red line). The plot shows that the positive relationship between new technologies and dependent variable 2 (redline) is stronger than the positive relationship between new technologies and dependent variable 1 (blue line). This can be concluded giving the following plot:

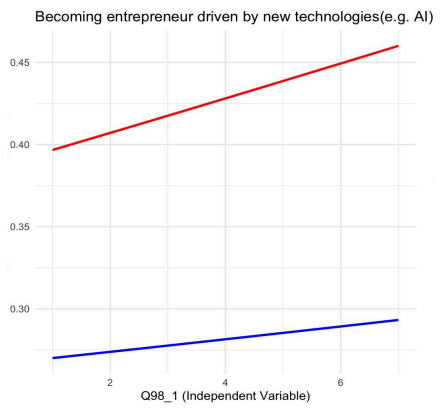


Figure 4: Plot showing new technologies' enabling effect on students' entrepreneurial intentions

Therefore it can be concluded that for students, new technologies(e.g. AI) are more of a reason to start a business in 5 years than it is now. Also, since both scenarios are positive, it can be concluded that new technologies(e.g. AI) can be considered an external enabler, that encourages students to become entrepreneurs. This result clearly confirms our hypothesis of new technologies(e.g. AI) having a positive effect on students' entrepreneurial intentions. In other words, new technologies(e.g. AI) is a driver for student entrepreneurship.

(The idea behind my planned business is driven by… - climate change and/or the quest for sustainability):
In both regression models, the coefficient for climate change and/or the quest for sustainability, was not statistically significant ($p > 0.05$). This indicates that climate change and/or the quest for sustainability does not have a meaningful association with either the intention to become an entrepreneur directly after studies (dependent variable 1) or the intention of being an entrepreneur in five years (dependent variable 2), when controlling for the other variables in the model. Therefore, climate change and/or the quest for sustainability appears to play a limited role in shaping entrepreneurial motivation in this sample. This outcome debunks our hypothesis of climate change and/or the quest for sustainability having a negative effect on students' entrepreneurial intentions.

(The idea behind my planned business is driven by… - changed laws and/or regulations):
For dependent variable 1, the effect is not statistically significant at all ($p \approx 0.99$). The coefficient is nearly zero, meaning no observable relationship between being driven by changes in laws/regulations and the likelihood of becoming an entrepreneur right after studies. Surprisingly, for dependent variable 2, the relationship is statistically significant and negative.
It suggests that people whose business ideas are driven by changes in laws/regulations are significantly less likely to intend on being an entrepreneur 5 years after studies. This outcome partially confirms our hypothesis of changed laws and/or regulations having a negative effect on students' entrepreneurial intentions.

(The idea behind my planned business is driven by… - societal crises (e.g., bank crisis, Ukraine crisis, etc.)):
Following the regression results, it can be concluded that tudents who are exposed to societal crises (e.g., bank crisis, Ukraine crisis, etc.) are less likely to pursue entrepreneurship, since the impact is significantly negative. However, it can be concluded that societal crises has a bigger impact on future entrepreneurship than current, since the estimate derived from the second dependent variable (entrepreneurial intention 5 years after graduation) is greater than the estimate derived from the first dependent variable. The results from the regression analysis confirms hypothesis 4.

Dependent variable 1 odds ratios general:

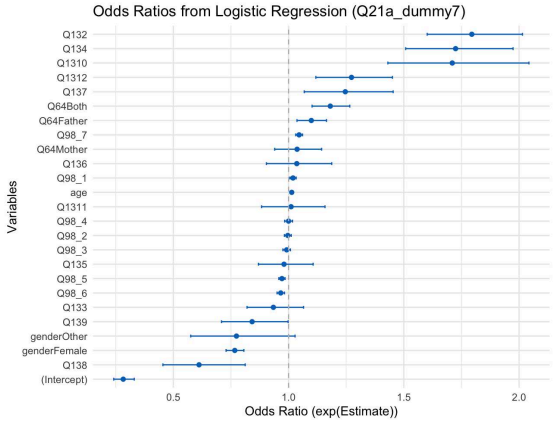


Figure 5: Odds ratios derived from the variables' effect on dependent variable 1

Dependent variable 2 odds ratios general:

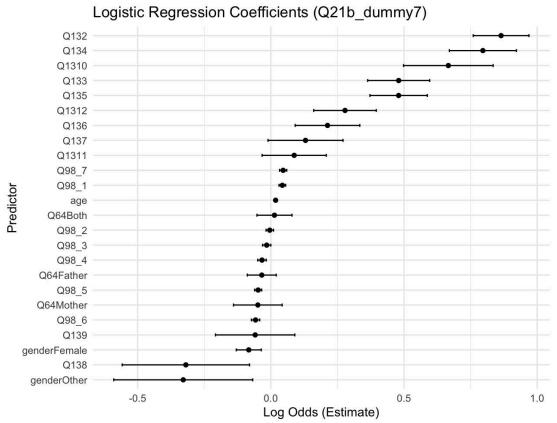


Figure 6: Odds ratios derived from the variables' effect on dependent variable 2

Following the log odds results, the influence of external enablers on entrepreneurial intentions differs between male and female students. The odds ratios clearly show that being female, has a strongly negative impact on entrepreneurial intention. Having an entrepreneurial father has more impact than having an entrepreneurial mother. While, in the situation where both parents are entrepreneurial, the impact is the strongest and students are the most intended to pursue entrepreneurship in this group, following the first regression table. The second regression table, showed no significance in results for parents' entrepreneurial background. The influence of external enablers on entrepreneurial intentions differs depending on the student's field of study. For dependent variable 1, Business students (denoted as Q132) are more likely to become entrepreneurs following the results of

the odds ratios, as expected. Human medicine / health sciences students follow as second, social sciences students follow as third, while engineering students are the least intended to pursue entrepreneurship. For the second dependent variable, business students (denoted as Q132) are more likely to become entrepreneurs following the results of the odds ratios, as expected. Engineering students follow business students as second, human medicine / health sciences students follow as third while social sciences students are the least intended to pursue entrepreneurship. This is an interesting discrepancy, since engineering students, compared to the other study fields, are more intended to first start as employees and pursue entrepreneurship 5 years after graduation.

5. DISCUSSION

5.1 Conclusion

The research question: *To what extent do external enabler mechanisms influence entrepreneurial intentions of university students,* is answered by the regression analysis results. The results show that certain external enablers show different effects on students' entrepreneurial intentions. New technologies (e.g., AI) appeared to be a strong driver for student entrepreneurship, especially 5 years after graduation. Climate change and/or the quest for sustainability is the second external enabler and turned out to have no impact on students' entrepreneurial intentions. Changed laws and/or regulations is the third external enabler and showed no impact on students' entrepreneurial intentions directly after studies. However, changed laws and/or regulations did impact students' entrepreneurial intentions 5 years after graduation. This points to a long term impact of changed laws and/or regulations. Societal crises (e.g., bank crisis, Ukraine crisis, etc.) was the last external enabler and appeared to have a strongly negative effect on students' entrepreneurial intentions. Group comparisons lead to interesting context. It can be concluded that parental entrepreneurial background impacted student entrepreneurship. Whereas having an entrepreneurial father and both parents being entrepreneurial, has a strongly positive impact on students' entrepreneurial intention directly after studies. Study fields impacted students' entrepreneurial intentions, students in certain study fields had a higher entrepreneurial intention than students in other study fields.

5.2 Practical implications

New technologies seem to encourage students to want to start their own businesses. So, schools could include these new tech tools—like AI and startup incubators—in their entrepreneurship classes and give students access to them. This can help students feel more confident about launching their own ventures. Changed laws and/or regulations partially has a negative impact on students' entrepreneurial intentions. Since the literature revealed that there is a 'positive impact between entrepreneurial policy (through entrepreneurial education) and entrepreneurial willingness' , laws can be tailored towards stimulating entrepreneurship.

Societal crises (e.g., bank crisis, Ukraine crisis, etc.) appears to be a barrier for student entrepreneurship, following the regression results. However, the literature review stated that societal crises can create new opportunities. The possibilities arising from societal crises could be explained to students to enhance student entrepreneurship.

5.3 Limitations

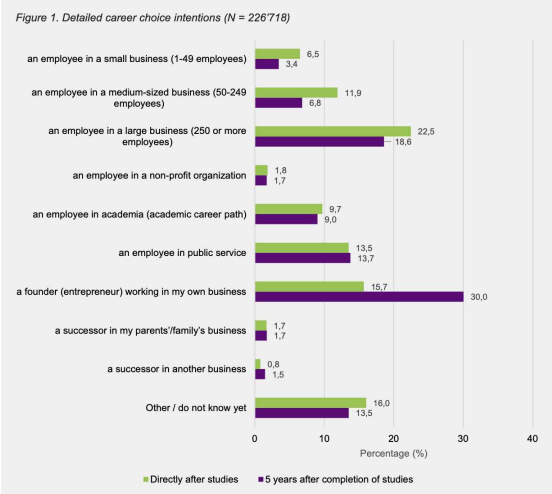
The study is based on surveys (self reported), which can be subject to getting social desirable answers. This bias, for instance, can lead to respondents overstating their entrepreneurial intentions to align with perceived expectations. Only four external enablers were included in this model, while other relevant factors like access to funding, education quality were not incorporated in the thesis. These (possibly relevant) factors were not questioned in the survey and could possibly lead to an omitted variable bias.. Finally, control variables like gender, age, study field and parental entrepreneurial background were included. Other relevant (individual-level) characteristics e.g. risk tolerance or personality traits) were not considered, which may also impact entrepreneurial intention.

5.4 Future research

Future studies can focous on how these external enablers evolve over time. Future studies could also include other (possibly relevant) factors like e.g. access to funding or education quality. Future studies could also include other control variables that might impact students' entrepreneurial intention. Finally, incorporating **qualitative** research methods, like interviews on focus groups, could show deeper insight in the external enablers' effects on students.

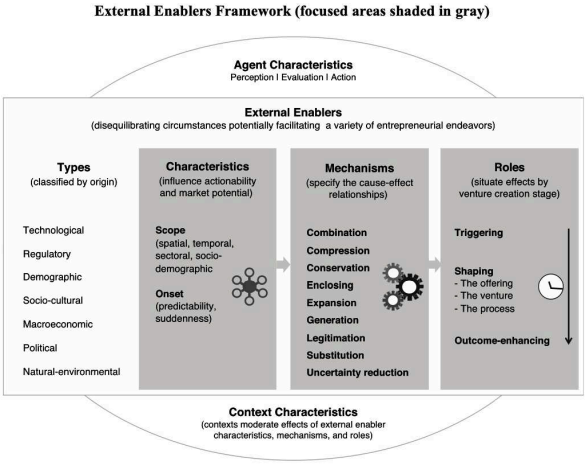
6 APPENDIX

Figure 1:



Findings GUESSS report on students' entrepreneurial intentions

Figure 2:



External enablers framework

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