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Global economic sanctions and export survival: Evidence from cross-country data

Ha Thanh Le

ABSTRACT

Objective: The aim of the article is to study the relationship between global economic sanctions and export survival. We also investigate the moderating roles of international linkages in the nexus of sanctions and export survival.

Research Design & Methods: While we employ the new data base of the Global Sanctions Data Base introduced by Felbermayr *et- al.* (2020), export survival rate is defined as the ratio of the number of survivors to the entrants. We apply the structural gravity model combining the dyad panel dataset of 66 countries during the 1997-2014 period.

Findings: We find the adverse effects of global economic sanctions on export survival. The marginal effects of sanctions become more sizable if there is a longer distance between the sender and the target country. By contrast, the adverse effects of global sanctions can be alleviated if the target country participates in global value chains or global bank linkages.

Implications & Recommendations: The findings of our study provide vital insights to help policy makers to improve the export performance of countries facing global sanctions.

Contribution & Value Added: This article is the first to investigate the effects of economic sanctions on export survival. The moderating roles of international linkages in this nexus are described in this study.

Article type: research article

Keywords: global economic sanctions; export survival; global value chains; global bank linkages

JEL codes: F21, G21, O16, C33

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INTRODUCTION

Current international trade is characterized by a low rate of export survival (Besedes & Prusa, 2006a, 2006b, 2011; Brenton *et al.,* 2009). As starting export, export performance and maintaining export relationships are all important issues in the international trade, it is imperative to explore the driving forces of this low survival rate. Prior scholars indicate that factors such as trade credit, global value chains (Díaz-Mora *et al.*, 2018; Turkan, 2019) and others significantly determine nation's export survival rate. However, the literature has remained silent on the association between global economic sanctions (GESs) and export survival thus far. A strong interdependency between countries for military assistance, foreign direct investment (FDI), trade inflows or financial reserves (IMF, 2009) further fuels highly integrated international environments. This puts domestic economies at a high risk of adverse macroeconomic policies, for example a reduction in FDI or aid. As a result, these economies are exposed as being vulnerable in the increasingly integrated world. The network of international interdependencies and the vulnerability of less developed nations result in the application of "sanctions." Since GESs have become increasingly used over time (Felbermayr *et al.*, 2020), there is a call for research on the relationship between GESs and export survival.

As Felbermayr *et al.* (2020) and Folch (2010) revealed, GESs take various forms, such as the withdrawal of arms and military assistance, trade restrictions (*i.e.* partial, or total embargoes), financial or economic blockades (*i.e.* asset freeze), and travel bans. These are triggered by a wide variety of economic, political, and environmental policies or they serve multiple purposes (proactive, punitive or demonstrative). According to Folch (2010), the actions or specific methods of intervention are based on coercive measures (threats) against a sanctioned party (a target country) by one country (a sanctioning country or a sender, *e.g.* the United States), a coalition of countries (*e.g.* the European Union), or international organisations (*e.g.* the United Nations). The primary goal of GESs is to punish or change a specific policy or behaviour of the target country.

Since the GESs serve as a means of dispute settlement for peaceful conflict resolution, they receive substantial appreciation in the context of international negotiation. However, there has been a serious warning against GESs and the way they are used to fulfil the original purposes. Many scholars are concerned about the consequences of GESs, such as their negative effect on life expectancy and infant mortality (Ali Mohamed & Shah, 2000; Daponte & Garfield, 2000), on human rights and democracy levels (Peksen & Drury, 2010), the availability of food and drinking water (Cortright & Lopez, 2000), and the access to health care and medicine (Garfield, 2002). In addition to their social consequences, the economic consequences of GESs have also gained attention from scholars. Very few studies demonstrate the adverse effects of GESs on the flow of FDI (Barry & Kleinberg, 2015). Our study contributes to the extant literature by investigating the relationship between GESs and export survival.

In this article, we apply a modified gravity model to examine the association between GESs and export survival rate. To the best of our knowledge, this article is the first to study this issue. While the interdependence between nations through international trade is one of the bases for the application of GESs, it is important to analyse the impacts of GESs on the probability that a target country will remain in foreign markets as a way to evaluate the effectiveness of GESs. Moreover, our study advances the literature by indicating a channel through which sanctioned states can attenuate the adverse effects of GESs. For this purpose, we test the moderating role of international linkage participation in this relationship. To perform these tests, we employ the dyad panel dataset covering 66 countries from 1997 to 2014 and the new database from Felbermayr *et al.* (2020). The findings of this paper are expected to provide insightful lessons for policymakers in both the sanctioning and sanctioned state. Regarding the senders, our study provides important policy implications that could be used to improve the success rate of GESs in punishing the target country's international trade. Regarding the target country, this research indicates a strategic way to help a country to improve its export performance and survive longer in foreign markets.

The rest of the paper proceeds as follows. Section two will provide a review of the relevant literature and develops the hypotheses. Section three will present the model, data, and estimation method. Section four will outline the empirical results and discussion. Section five will conclude the paper.

LITERATURE REVIEW

In this article, we investigate the drivers of export survival rate. Our main focus is on the effects of GESs. Hence, this article is closely related to two strands of the literature. The first strand consists of papers studying the relationship between GESs and export survival, and the second is papers explaining the moderating roles of global linkage participation on the association between GESs and export survival.

Global Economic Sanctions and Export Survival

We contend that the trade between the source and target country may be affected by the GESs through their impact on factor endowments. Therefore, the export survival rate is expected to be influenced by the GESs. The reasons are as follows. Firstly, based on the Heckscher-Ohlin model of international trade, countries should trade more if there are larger differences in their factor endowment (Ghosh & Yamarik, 2005; Debaere, 2003; Romalis, 2004). It is most likely that senders imposing economic sanctions on other countries are developed countries, while the target countries are less developed. The GESs further expand the "distance" between senders and target countries in terms of factor

endowments. In particular, the mobility of natural resources between these countries may be disrupted by trade sanctions, such as trade barriers, tariffs, or trading bans. Similarly, financial sanctions hinder the capital inflows of the target country by restricting the provision of certain financial services or access to credit. Therefore, these sanctions expand the distance between the sender and the target country, discourage firms from participating in global trade, or reduce their probability of remaining in international markets. Secondly, we contend that the GESs create difficulties for both the exports and imports of senders and the target countries. According to Hufbauer *et al.* (2009), the commercial and financial ties between the sender and target country are disrupted due to the penalties against targeted states through either trade or financial sanctions.

Furthermore, physical capital plays a critical role in the success of a country's exports. The government uses the budget to invest in public infrastructure, for example roads and transport infrastructures, or information and communications technology (ICT) infrastructures, which may reduce trade costs and improve supply capacity. These advantages enhance a country's participation and success in foreign markets. For many countries, FDI is regarded as the main financial source of these investments. Moreover, FDI helps receiving countries to enhance their comparative advantages through technology transfers. However, GESs potentially restrict future economic access to the target country, making speculation about current and future investment opportunities there gloomy. In turn, the risk disincentivises global investors (Jensen, 2008; Li, 2009; Biglaiser & Staats, 2010), thus reducing the inward flows of FDI into the target states (Janeba, 2002). Accordingly, GESs potentially create disadvantages for the sanctioned country's exports.

Based on our discussion, we posit that:

H1: Being sanctioned in the previous year reduces the probability of export survival in the current year.

Moderating Roles of Global Linkage Participation

In this article, we contend that participation in global linkages such global supply chains (GVCs) and global bank linkages (GBLs) may help countries to attenuate the adverse effects of GESs. There are reasons to support our belief. Firstly, joining global supply chains by trading parts and components creates long-lived relationships and leads to higher survival rates (Obashi, 2010; Corcoles *et al.*, 2015). Deep participation in the GVC helps firms to obtain a more stable trade relationship (Díaz-Mora *et al.*, 2018), which reduces uncertainty and enhances the trust and reliability of trade partners. Moreover, a positive extension of export duration stems from product quality, product diversity, and investment in asset-pricing improvements for firms integrated into the GVC (Zhu *et al.*, 2019). These raise a country's survivability when exploring the international markets, even if it faces a GES or any difficulties created by GES. Secondly, joining global bank linkages mitigates the export risk from information asymmetries or difficulties in payment enforcement (Hale *et al.*, 2013). As revealed by Olsen (2013) and Niepmann and Schmidt-Eisenlohr (2017), cross-border bank linkages can also enforce or guarantee payments. Furthermore, information on creditworthiness can be passed from banks in the sanctioning country to other banks in the target country, which are connected. Then this information may be passed to exporting firms. Hence, the information asymmetries leading to export risks can reduce, and this can improve the export survival rate. Thirdly, the global linkages also help countries to promote the inward flows of FDI. Hale (2012) and Poelhekke (2015) provide empirical evidence on the positive association between global linkages and the FDI flow. The global linkages reduce information asymmetries, which makes FDI investors more confident in their investments. As a consequence, the adverse impacts of GESs on FDI flows can be mitigated, and therefore the target countries are more likely to enjoy the benefits and comparative advantages of FDI. These countries can then compete with each other and survive better in foreign markets. By studying the effects of foreign value added within GVCs on wage, Partekka and Wolszczak-Derlacz (2017) also highlight the importance of global linkage participation.

Based on our discussion, we posit that:

H2: The effects of global economic sanctions on export survival are weaker if a country joins international linkages.

To the best of our knowledge, there is no article exploring the nexus of sanction and export survival, especially across countries. Recently, a few studies have investigated the influences of sanctions on firm performance (Ahn & Ludema, 2020) or the exporting behaviour of firms (Crozet *et al.*, 2021). Other studies, such as Bellora and Fontagné (2020) and Mao and Görg (2020), explore the impacts of the recent US-China trade war on the GVC, but their country-specific research only focuses on a typical form of sanction. Our paper contributes to the current literature in the following dimensions. Firstly, we are the first to investigate the direct effects of sanctions on export survival probability of firms by using cross-country data. Secondly, Peksen (2019) argues that the success of sanctions relies on the international relationship between sanctioning and sanctioned states, but there is no paper incorporating the moderating effects of international linkages on the association between sanctions and export survival. Therefore, we explore the moderating roles of international linkages on the sanction-export survival nexus.

RESEARCH METHODOLOGY

We specify the following model to examine the impacts of GESs on export survival:

$$SUR_{ijt}^{p} = \beta_0 + \beta_1 Sanction_{i,t-1} + \beta_2 CONTROL_{ij,t-1} + v_t + \lambda_i + \gamma_j + \varepsilon_{ijt} \quad (1)$$

in which superscripts *i* and *j* denote the source and target country, and *t* denotes year while v_t, λ_i, and γ_j capture year, source-country-fixed and target-country-fixed, respectively. Moreover, ε_{ijt} is the error term. The dependent variable, SUR^p, is an export survival rate measure. We denote *FSUR, SSUR,* and *TSUR* as the ratio of the numbers of first-year, second-year and third-year survivors to the number of entrants in year t, respectively. The detailed measures of *FSUR, SSUR,* and *TSUR* are provided in Appendix A. The key variable, $Sanction_{ijt}$, captures all bilateral sanctions of country *i* imposed on country *j* in year *t.* We employ the Global Sanctions Data Base introduced by Felbermayr *et al.* (2020). This dataset classifies sanctions into different types (*i.e.* trade versus financial sanctions) and only concentrates on effective sanctions (excluding threats). $Sanction_{ijt}$ takes a value of one if there are any type of sanctions between country *i* and *j*, and 0 otherwise.

In addition to the sanction variable, we also incorporate a set of other control variables, *CONTROL*. In particular, the GVC plays a critical role in the probability of export survival. While trade in parts and components generates a longer-lived relationship and better survival rates (Corcoles *et al.,* 2015), Turkan (2016) provides empirical evidence to advocate the role of GVC in export survival in Turkey. We follow Koopman *et al.* (2010) to classify GVC participation by the source of the value added incorporated in exports, looking both backward and forward from the view of a reference country (country A). Backward participation (*Backward*) is the value added of country B, contained in exports from country A to country B; forward participation (*Forward*) is the value added of country A, which is embodied as intermediate goods that support the production of exports from country B to country C. The sum of both *Backward* and *Forward* is the total GVC (*GVCtotal*). The GVC participation data is taken from the OECD TiVA database. The variable GDP_i is the gross domestic product of recipient country *j*. This variable is available from the World Bank database. As contended by Brenton *et al.* (2009), the market size captured by this variable is anticipated to determine export survival. The bilateral distance between the home and host country (*lnD*) is also added into the model. According to Stirbat *et al.* (2015), this variable may be negatively associated with export survival since trading over long distance may lead to impediments such transportation costs. This variable is taken from the Centre d'Études Prospectives et d'Informations Internationales (CEPII). The dummy variable *FTA* takes the value of one if country *i* and *j* belong to the same FTA and 0 otherwise. The Herfindahl-Hirschman index (HHI), which measures the market concentration in the destination market. The HHI is a measure of diversification and it takes any value between 0 and 1, with higher values representing a greater concentration in the destination market. Export survival may be negatively affected by *HHI*, as argued by Corcoles *et al.* (2015). The variables *Value* and *Share* are respectively the export value per entrant and the share of new products in the total export value of incumbents. Besedes and Prusa (2006) reveal that the former, which captures firms' confidence level, may impact their trade survival as the greater the confidence level, the more durable the relationship is. The latter reflects experience with a product. As contended by Stirbat

et al. (2015), the survival rate could be dampened by this variable because exporting subsequent products is less costly and risky than exporting new products. We collect the data for variables *SUR*, *HHI*, *Value*, and *Share* from Exporter Dynamics Database of The World Bank at country-destination-year level. The choice of explanatory variables is based on the literature on export survival and the availability of data. In this article, we attempt to incorporate as many explanatory variables as possible, based on the data availability in the structural gravity model.

After merging and cleaning the data, the sample contains roughly 5500 country-year observations from 66 countries[1] during the period of 1997-2014. The reasons for our sample selection are as follows. Our key explanatory variable, Sanction, is sourced from the new database of the Global Sanctions Data Base introduced by Felbermayr *et al.* (2020). However, the data on economic sanctions are only available from 1950 to 2016. The other sanction data are not suitable for use in the gravity model due to their lack of continuity and completeness. The lack of data on sanctions is the biggest challenge for researchers who wish to explore the impacts of sanctions. Furthermore, one of our main concerns is examining the moderating roles of international linkages such as GVCs and global bank linkage in the nexus between sanctions and export survival. These variables are only available until 2014. Some gravity variables face the same challenge. After cleaning and merging all the sources of data, our database covers 66 countries during the 1997–2014 period. The statistical descriptions of all the included variables are presented in Table 1. As shown in the table, the average survival rate of firms in their first year of exporting is roughly 40% and this diminishes to 24% and 17% in the second and third year, respectively. The average number of bilateral sanctions implemented is quite small (roughly 3%) in our sample.

Table 1. Statistical summary

Variable	Obs	Mean	Std. Dev.	Min	Max
FSUR	5495	0.40	0.12	0.00	1.00
SSUR	4506	0.24	0.11	0.00	1.00
TSUR	3715	0.17	0.09	0.00	1.00
Sanction	97756	0.02	0.15	0.00	1.00
GVCtotal	6646	0.62	1.11	0.00	17.98
Backward	6646	0.36	0.83	0.00	15.16
Forward	6646	0.25	0.51	0.00	5.90
Link	97732	0.10	0.41	0.00	5.31
GDP	6646	26.64	1.52	23.27	30.45
lnD	6646	8.61	0.96	5.08	9.88
FTA	6646	0.47	0.50	0.00	1.00
HHI	6625	0.14	0.18	0.00	1.00
lnValue	6309	0.23	0.46	0.00	11.18
Share	6306	0.17	0.10	0.00	1.00

Source: own study.

The correlations between explanatory variables are summarised in Table 2. Since the correlation coefficients are all lower than 0.8, there should be no problem of multicollinearity in our regressions.

We firstly regress the set of export survival probability on *Sanction* and the control variables. To examine the moderating roles of global linkages in the relationship between sanctions and export survival probability, we suggest the following model:

$$SUR_{ijt}^{p} = \varphi_0 + \varphi_1 Sanction_{i,t-1} + \varphi_2 CONTROL_{ij,t-1} + \varphi_3 GL_{i,t-1} + \varphi_4 GL_{i,t-1} * \\ * Sanction_{i,t-1} + v_t + \lambda_i + \gamma_j + \varepsilon_{ijt} \quad (2)$$

in which $GL_{i,t}$ denotes the global linkages, which are either GVCs or GBLs. The sign and magnitude of the interactions between $GL_{i,t}$ and $Sanction_{i,t}$ reflect the moderating roles of global linkages.

[1] A description of the countries included in the sample is provided in Table A.1 in the Appendix.

Table 2. Correlation matrix

Variable	Sanction	GVCtotal	GDP	lnD	FTA	HHI	Value	Share
Sanction	1							
GVCtotal	0.0413	1						
GDP	0.140	0.332	1					
lnD	0.0379	-0.445	0.0971	1				
FTA	-0.0799	0.225	-0.146	-0.637	1			
HHI	-0.0360	-0.251	-0.200	0.308	-0.184	1		
lnValue	-0.00210	0.167	0.115	-0.0111	0.00434	0.0933	1	
Share	0.103	0.00806	0.130	-0.0129	-0.00750	-0.0825	-0.138	1

Source: own study.

RESULTS AND DISCUSSION

Baseline Results

We report the estimation results of Equation (1) in Table 3, to examine the effects of GES in year *t-1* on the export survival in year t. The standard errors are clustered on country-pair and both country and year fixed effects are considered in all models. The main findings will be conveyed in this section. Firstly, the coefficients of *Sanction* are statistically significant and negative, as expected. The results imply that the GES decreases the survival probability of export firms in the target country. Our empirical results are consistent with the argument of Felbermayr *et al.* (2020) that economic sanctions adversely affect the exporting value of a country. Moreover, Chen and Garcia (2016) reveal that importing activities decrease under the impacts of sanctions. Our study emphasises that sanctioned states are more likely to leave foreign markets than non-sanctioned ones. Secondly, the results indicate that the effects of GES become less sizable after one year and two years of survival, at 1% level of significance, as reported in Columns 1 to 3 of Table 3. In other words, the impacts of sanctions decline over time for exporting firms with experience and success in foreign markets. There are plausible explanations for this finding. The success of exporting in the first year may boost trust and reliability between exporting firms and their training partners (Chaney, 2014), thus reinforcing their relationship and increasing the probability of surviving in foreign markets in the following years.

Regarding the other control variables, our study confirms that the distance between sender and target country is negatively associated with the survival rate of exporters in the target country. The literature demonstrates that exporting firms may leave foreign markets due to the high transaction costs created by the long distances between two trading partners. By contrast, this risk of failure can reduce through the proximity and share of commons (Petersen & Rajan, 2002). To conduct a robustness check on the effects of distance, we consider different types of distance, including both physical and "soft" distances and investigating how the distance moderates the association between GES and export survival. To perform this, we add the interactions between this type of distance and the sanction variable in Equation (1) and report the results in Table 4. The four types of distance are the distance in financial market development and tax system, and cultural and physical distance. Regarding distance in financial market development, we employ a composite index of financial market development based on nine components, which capture the stability, depth and efficiency of financial systems, and financial access (as in Donaubauer *et al.*, 2020). We measure the distance in the tax system by using the data from the World Tax Database augmented by data published by the Heritage Foundation. Regarding the cultural distance, we base it on Schwartz's (2006) method of measuring cultural distance for different waves of the World Value Surveys. Our results demonstrate the statistically significant and negative coefficients of these interactions. The risk of failure in foreign markets can be accelerated by the distance. The distance also signifies the marginal effects of sanctions on the probably of survival. In other words, the effects of GES become stronger for firms operating in a country that has a long "distance" from its trading partners.

Table 3. Baseline results

VARIABLES	First-year Survivor	Second-year Survivor	Third-year Survivor
	(1)	(3)	(5)
Sanction	-0.0440***	-0.0370***	-0.0350***
	(0.0134)	(0.0143)	(0.0131)
GVCtotal	0.00286	0.00471	0.00564*
	(0.00303)	(0.00313)	(0.00308)
GDP	0.00255	0.00667	-0.0161
	(0.0100)	(0.0103)	(0.0123)
lnD	-0.0431***	-0.0383***	-0.0335***
	(0.00416)	(0.00380)	(0.00357)
FTA	3.10e-05	0.0122**	0.0120**
	(0.00624)	(0.00574)	(0.00486)
HHI	-0.0259*	-0.0131	0.00226
	(0.0157)	(0.0148)	(0.0134)
lnValue	0.0144***	0.0110***	0.00686
	(0.00331)	(0.00392)	(0.00427)
Share	-0.168***	-0.154***	-0.109**
	(0.0428)	(0.0432)	(0.0501)
Constant	0.727**	0.400	0.972***
	(0.304)	(0.314)	(0.377)
Observations	5 445	4 464	3 683
Country FE	YES	YES	YES
Year FE	YES	YES	YES
R2	0.412	0.474	0.480

Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.
Source: own study.

We also find that exporters are more likely to survive longer if there are preferential trade agreements. According to Caporale *et al.* (2009) and Hannan (2016), FTA provides incentives and advantages to trading partners, thus helping exporting firms to secure more export gains and compete with others in foreign markets. The estimation of Equation (1) also reveals the negative effect of the HHI on survival rate. The finding implies that firms' export performance can be improved if they enter into transactions with different trading partners (Funke & Ruhwedel, 2001). Diversification of trading partners can reduce the risk and help firms to survive longer in foreign markets. However, this variable is only statistically significant for the sample of first-year survivors; we do not find similar evidence for the sample of second-year and third-year survivors. This fact suggests the further implications that new and young exporters should diversify their trading partners, while firms that have existed for a long time in the market should focus on developing their relationships with their strategic partners.

Regarding the remaining variables, our results are aligned with those of prior works. In particular, initial trust in counterparts and in the sustainability of their trade relationships, captured by the initial export value of the entrant (ln*Value*), enhances the probability of surviving in foreign markets. The positive sign of *lnValue* is consistent with Besedes (2008) and Impulliti *et al.* (2013). Similarly, we also find a negative association between the share of new products in the total export value of surviving entrants (*Share*) and export survival, as in Esteve-Pérez *et al.* (2013).

Table 4. The distance in financial market development, tax system, cultural and physical distance

VARIABLES	First-year Survivor				Second-year Survivor				Third-year Survivor			
	Financial Development	Tax System	Culture	Physical Distance	Financial Development	Tax System	Culture	Physical Distance	Financial Development	Tax System	Culture	Physical Distance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sanction	-0.0113	0.0906	0.0176	0.0842*	-0.0161	0.0392	-0.0697	0.122***	-0.0191	0.0186	-0.0750	0.0441
	(0.0154)	(0.0559)	(0.0841)	(0.0468)	(0.0171)	(0.0489)	(0.188)	(0.0427)	(0.0160)	(0.0582)	(0.112)	(0.0532)
Difference	0.0110***	0.000479	-0.0754	0.00723***	0.0118***	0.000274	-0.112**	0.00549***	0.00934***	0.000552	-0.0585	0.00488***
	(0.00340)	(0.000671)	(0.0495)	(0.00113)	(0.00317)	(0.000586)	(0.0458)	(0.00119)	(0.00341)	(0.000615)	(0.0434)	(0.00121)
Sanction*Difference	-0.0157**	-0.00432*	-0.293	-0.0123**	-0.0133**	-0.00217	0.254	-0.0165***	-0.0148*	-0.00132	0.314	-0.00823
	(0.00638)	(0.00232)	(0.660)	(0.00523)	(0.00558)	(0.00184)	(1.327)	(0.00454)	(0.00872)	(0.00223)	(0.803)	(0.00568)
GVCtotal	0.00261	0.00310	0.00136	-0.000612	0.00442	0.00425	0.00168	0.00143	0.00788***	0.00714**	0.00137	0.00255
	(0.00303)	(0.00320)	(0.00195)	(0.00260)	(0.00326)	(0.00319)	-0.00239	(0.00303)	(0.00279)	(0.00283)	(0.00418)	(0.00370)
GDP	-0.00145	-0.00283	-0.0163	-0.00207	-0.0108	-0.0159	-0.00280	-0.00444	-0.0177**	-0.0288*	-0.00847	-0.0214*
	(0.00887)	(0.0102)	(0.0137)	(0.00909)	(0.00830)	(0.0110)	(0.0132)	(0.0101)	(0.00896)	(0.0150)	(0.0121)	(0.0127)
lnD	-0.0425***	-0.0430***	-0.0165***	-0.0759***	-0.0382***	-0.0365***	-0.0144***	-0.0632***	-0.0314***	-0.0300***	-0.0118**	-0.0556***
	(0.00430)	(0.00449)	(0.00568)	(0.00662)	(0.00406)	(0.00404)	(0.00522)	(0.00662)	(0.00365)	(0.00365)	(0.00488)	(0.00704)
FTA	-0.000432	0.00503	0.00443	0.00188	0.0153***	0.0186***	0.0126**	0.0119**	0.0138***	0.0145***	0.0129**	0.0120**
	(0.00619)	(0.00724)	(0.00677)	(0.00575)	(0.00587)	(0.00597)	(0.00637)	(0.00542)	(0.00524)	(0.00540)	(0.00558)	(0.00486)
HHI	-0.0499***	-0.0504***	-0.0405	-0.0388***	-0.0239*	-0.0303**	-0.0150	-0.0334**	-0.00548	-0.0122	0.00833	-0.0297**
	(0.0158)	(0.0172)	(0.0280)	(0.0149)	(0.0133)	(0.0144)	(0.0269)	(0.0144)	(0.0145)	(0.0152)	(0.0231)	(0.0137)
lnValue	0.0138***	0.0129***	0.00816**	0.0114***	0.0146***	0.0193***	0.00665	0.0115**	0.00828*	0.0169***	0.000341	0.00760
	(0.00446)	(0.00422)	(0.00360)	(0.00394)	(0.00433)	(0.00338)	(0.00581)	(0.00475)	(0.00430)	(0.00490)	(0.00416)	(0.00603)
Share	-0.351***	-0.320***	-0.100*	-0.211***	-0.281***	-0.266***	-0.0459	-0.199***	-0.239***	-0.241***	-0.0809*	-0.107
	(0.0420)	(0.0440)	(0.0555)	(0.0571)	(0.0322)	(0.0338)	(0.0459)	(0.0646)	(0.0319)	(0.0344)	(0.0430)	(0.0861)
Observations	3 990	3 675	2 210	4 565	3 260	3 055	1 860	3 713	2 677	2 483	1 571	3 053
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R2	0.602	0.590	0.361	0.529	0.644	0.640	0.399	0.571	0.647	0.643	0.368	0.567

Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: own study.

Moderating Roles of Global Value Chains and Global Bank Linkages

Global Value Chains

In the previous analysis, we mostly concentrate on factors that signify the marginal effects of GES. In this section, we argue that there are channels that exporters can use to reduce the harmful effects of GES. The first channel is participation in GVCs. To investigate our belief, we follow Koopman *et al.* (2010) to classify GVCs into *Backward* and *Forward,* and we add their interactions and GES into Equation (1). The results are displayed in Table 5. Firstly, *Backward, Forward,* and *GVCtotal* (the sum of *Backward* and *Forward*) are statistically significant and have the expected positive sign as presented in Columns (2), (4), (5) and (8). Our findings are consistent with Díaz-Mora *et al.* (2018). However, Díaz-Mora *et al.* (2018) provide empirical evidence for a more important role for the forward dimension than for the backward one. More importantly, the coefficient of an interaction between *Backward* and *Sanction* is statistically significant and positive for the sample of the first-year and second-year survivors. Our finding provides the empirical evidence to support our argument that GVCs (*Backward type)* can be considered as an effective channel to help exporting firms alleviate the impacts of sanctions. The findings of our study advocate the argument of Peterson (2020) that a better connection to international networks makes the consequences of sanctions less severe.

Global Bank Linkages

Another channel through which the adverse effects of GES can be attenuated is global bank linkage (GBL). The effects of risk can be mitigated by a higher share of trade finance in a given country (Niepmann & Schmidt-Eisenlohr, 2017). In this article, we contend that the adverse effects of GES can be alleviated due to the information advantage about the home and host-country firms. Therefore, exporting firms are more likely to survive in foreign markets. To investigate our prediction, we incorporate an interaction between GBL and GES. The GBL, *LINK,* measures the aggregate number of bank linkages of country *i* in country *j* and this is simply the sum of bank pairs in which banks in country *i* lend to those in country *j*. The bank linkages are computed based on syndicated bank loans from Dealogic's Loan Analysis,[2] and then rescaled by dividing by 100. The results are summarised in Table 6. The coefficients of interaction in all models are statistically significant and have the expected positive sign. The findings suggest that GBLs play an essential role in mitigating the adverse impacts of GES on export performance. Our emphasis on the moderating role of GBL on the sanction-export survival nexus supports Peterson's discussion.

Endogeneity Issue

Up to now, we have abstracted the endogeneity issue that possibly stems from the reverse causality between GES and export survival, and omitted variables. Concerning reverse causality, as contended by Wagner (1988), a country that survives longer in foreign markets can maintain its international relationships, thus it climbs to a higher position in the global trade network. While sanctions express a country's bargaining power, a better position in the global trade network implies a strong bargaining power, and therefore influences sanction actions. Furthermore, the levels of vulnerability and leverage, which also depend on the position in the global trade network, determine the type of sanction behaviour such as unilateral or multilateral sanctions (Peterson, 2018). Concerning the omitted variables, the existence of unobservable factors such as export-oriented policies that influence both firms' survival and sanctions can lead to biased estimation.

[2] We thank Caballero *et al.* (2018) for sharing the data.

Table 5. Interaction between sanctions and global value chains

VARIABLES	First-year Survivor			Second-year Survivor			Third-year Survivor		
	Total GVC	Backward	Forward	Total GVC	Backward	Forward	Total GVC	Backward	Forward
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sanction	-0.0402	-0.0443***	-0.0324	-0.0466*	-0.0313*	-0.00407	-0.0139	-0.0518***	-0.0224
	(0.0330)	(0.0144)	(0.0340)	(0.0248)	(0.0167)	(0.0562)	(0.0200)	(0.0193)	(0.0370)
GVC	0.00306	0.0147***	0.00543	0.00634*	0.00964***	0.00345	0.00467	0.00882**	0.00321
	(0.00310)	(0.00326)	(0.00360)	(0.00334)	(0.00289)	(0.00322)	(0.00292)	(0.00404)	(0.00305)
Sanction*GVC	0.00317	0.0628***	0.00313	0.0186	0.0397*	-0.0350	-0.0157	0.284*	-0.00752
	(0.0235)	(0.0163)	(0.0515)	(0.0146)	(0.0255)	(0.0931)	(0.0201)	(0.166)	(0.0838)
GDP	-0.00544	-0.00305	-0.00561	-0.00108	0.00113	-0.000489	-0.0320**	-0.0307**	-0.0316**
	(0.0120)	(0.0119)	(0.0119)	(0.0121)	(0.0121)	(0.0121)	(0.0139)	(0.0139)	(0.0139)
lnD	-0.0424***	-0.0386***	-0.0430***	-0.0366***	-0.0373***	-0.0400***	-0.0324***	-0.0329***	-0.0346***
	(0.00439)	(0.00404)	(0.00389)	(0.00386)	(0.00359)	(0.00346)	(0.00353)	(0.00337)	(0.00326)
FTA	-0.00125	-0.000415	-0.00203	0.0129**	0.0128**	0.0120*	0.0134**	0.0133**	0.0129**
	(0.00664)	(0.00655)	(0.00671)	(0.00604)	(0.00604)	(0.00614)	(0.00524)	(0.00523)	(0.00531)
HHI	-0.0223	-0.0252	-0.0226	-0.0149	-0.0159	-0.0143	-0.00423	-0.00479	-0.00405
	(0.0170)	(0.0169)	(0.0170)	(0.0157)	(0.0156)	(0.0156)	(0.0138)	(0.0138)	(0.0138)
lnValue	0.0141***	0.0143***	0.0142***	0.0116***	0.0121***	0.0121***	0.00756*	0.00794**	0.00783**
	(0.00308)	(0.00312)	(0.00310)	(0.00352)	(0.00359)	(0.00357)	(0.00389)	(0.00395)	(0.00391)
Share	-0.163***	-0.168***	-0.164***	-0.209***	-0.212***	-0.210***	-0.192***	-0.194***	-0.192***
	(0.0471)	(0.0472)	(0.0473)	(0.0352)	(0.0352)	(0.0353)	(0.0263)	(0.0263)	(0.0264)
Observations	4 705	4 705	4 705	3 828	3 828	3 828	3 104	3 104	3 104
Number of pair	839	839	839	736	736	736	685	685	685
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
R2	0.420	0.423	0.420	0.504	0.504	0.502	0.510	0.511	0.509

Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: own study.

Table 6. Interaction between sanctions and global bank linkages

VARIABLES	First-year Survivor	Second-year Survivor	Third-year Survivor
	(1)	(2)	(3)
Sanction	-0.0474***	-0.0391***	-0.0365***
	(0.0129)	(0.0143)	(0.0125)
Link	-0.00276	-0.00166	-0.00202
	(0.00218)	(0.00202)	(0.00183)
Sanction*Link	0.0476***	0.0218*	0.0203***
	(0.0104)	(0.0131)	(0.00457)
GVCtotal	0.00289	0.00472	0.00570*
	(0.00304)	(0.00314)	(0.00307)
GDP	0.00316	0.00712	-0.0155
	(0.0101)	(0.0104)	(0.0125)
lnD	-0.0432***	-0.0383***	-0.0335***
	(0.00416)	(0.00381)	(0.00357)
FTA	9.62e-05	0.0123**	0.0121**
	(0.00624)	(0.00575)	(0.00485)
HHI	-0.0258	-0.0130	0.00235
	(0.0157)	(0.0148)	(0.0134)
lnValue	0.0144***	0.0110***	0.00687
	(0.00331)	(0.00392)	(0.00428)
Share	-0.167***	-0.154***	-0.108**
	(0.0428)	(0.0432)	(0.0501)
Constant	0.713**	0.389	0.956**
	(0.305)	(0.316)	(0.381)
Observations	5 445	4 464	3 683
Country FE	YES	YES	YES
Year FE	YES	YES	YES
R2	0.413	0.474	0.480

Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.
Source: own study.

The above discussions suggest that there is potential for the endogeneity issue, which may bias our estimation results. To address this issue, we apply the instrumental variable (IVs) method. We apply the location average approach proposed by Fisman and Svensson (2007). In this article, we employ the average sanction level applied to a target country by all sender countries as an instrumental variable. As revealed by Baldwin and Jaimovich (2012), this instrument is well built in the standard domino effect of tariff liberalisation. Moreover, the location average approach can minimise omitted unobservable errors related to sanction intensity (Ha *et al.*, 2021). We also used the Global Peace Index (GPI) taken from the Institute for Economics and Peace as another instrument. Cox and Drury (2006) reveal the relationship between sanction and demographic peace. To check the validity of the instrumental variables, we conducted various endogeneity tests and report them to Table 7. All tests demonstrate that our instruments are valid and appropriate. The IV estimation results are then outlined in Table 8. It can be seen that the effects of GES on export survival become more pronounced when the endogeneity issue is controlled.

Table 7. Endogeneity test

Sanction (First stage model)	Coefficient		
	First-year Survivor	Second-year Survivor	Third-year Survivor
Sargan χ^2 statistics (Over-identification test)	3.41 (0.64)	0.07 (0.783)	1.47 (0.225)
Anderson Canon.Corr. LM statistic (Under-identification test)	2312.17 (0.000)	1814.08 (0.000)	1363.71 (0.000)
Cragg-Donald Wald F-statistic	4891.20 (0.000)	3958.58 (0.000)	3243.57 (0.000)

Source: own study.

Table 8. IV estimation

VARIABLES	First-year Survivor	Second-year Survivor	Third-year Survivor
	(1)	(2)	(3)
Sanction	-0.0644*** (0.0242)	-0.0556** (0.0220)	-0.0413** (0.0205)
GVCtotal	0.00691* (0.00395)	0.00795** (0.00334)	0.00790*** (0.00283)
GDP	-0.00533 (0.0146)	0.00537 (0.0138)	-0.0195 (0.0152)
lnD	-0.0368*** (0.00476)	-0.0329*** (0.00415)	-0.0278*** (0.00368)
FTA	0.00363 (0.00809)	0.0104 (0.00744)	0.0111* (0.00620)
HHI	-0.0462** (0.0191)	-0.0379** (0.0170)	-0.0396** (0.0162)
lnValue	0.0164*** (0.00394)	0.0116*** (0.00341)	0.00953** (0.00383)
Share	-0.304*** (0.0430)	-0.335*** (0.0343)	-0.315*** (0.0290)
Constant	0.939** (0.442)	0.439 (0.420)	1.078** (0.461)
Observations	3 588	2 916	2 290
Country FE	YES	YES	YES
Year FE	YES	YES	YES
R2	0.424	0.490	0.530

Robust standard errors in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1.
Source: own study.

CONCLUSIONS

This article uses a database of 66 countries during the 1997-2014 period to investigate the association between global sanctions and export survival. By employing the structural gravity model, we indicate the adverse effects of global sanctions on export survival. The marginal effects of sanctions become stronger if there is a longer physical or "soft" distance between the sender and target country. By contrast, our study suggests two channels, GVCs and GBLs, through which exporters in target countries can alleviate the harmful effects of sanctions.

Our empirical findings are expected to provide some vital implications for both economists and policy makers to help exporters survive better and maintain international trade when confronting the threat of economic sanctions. Our findings show that being a part of global linkages makes the consequence of sanctions less significant. Regarding the sanctioning states, our findings provide implications to improve the success of economic sanctions, especially if the target countries have a good connection

with others through trade and capital investments. In particular, other policies that aim to disrupt global linkages such as global supply chains, global banking networks and global investments, should be implemented simultaneously with economic sanctions. In this spirit, the combination of different policies could make economic sanctions more effective. Regarding the sanctioned states, these countries should become more involved in global linkages to alleviate economic hardship due to economic sanctions. In addition, the governments of target countries should encourage firms to indirectly invest in the senders through their partners and subsidiaries. These policies could be considered as a way to ease tensions between sanctioning and sanctioned countries.

Although we do our best to control all the potential issues, our study still contains limitations that need to be improved upon in further research. Firstly, we only focus on the direct effects of sanctions on the target countries, while their spillover effects on third parties that are either non-embargoed products or non-sanctioning countries, as suggested by Crozet and Hinz (2017), suggest more interesting policy implications. Secondly, other channels through which the impacts of economic sanctions may be mitigated should be considered. Thirdly, the effects of sanctions on other types of international transactions such as the formation of global investment and banking networks, or on other dimensions like welfare and entrepreneurship in the target countries should be investigated. Future research should take these issues into account to shed more light on the effects of sanctions.

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Appendix: Definition of export survival rate

- $Entrant_t$: a firm that does not export in year t-1 but exports in year t.
- $Survivor_t$: a firm that does not export in year t-1 but exports in both years t and t+1.
- 2-$Year Survivor_t$: a firm that does not export in year t-1 but exports in years t, t+1 and t+2.
- 3-$Year Survivor_t$: a firm that does not export in year t-1 but exports in years t, t+1, t+2 and t+3.

$FSUR_t = Survivor_t / Entrant_t$
$SSUR_t$=2-$Year Survivor_t / Entrant_t$
$FSUR_t$=3-$Year Survivor_t / Entrant_t$

Table A.1. Countries in the sample

Country	%	Country	%	Country	%	Country	%
United Arab Emirates	1.50	Chile	1.58	Spain	1.97	India	1.79
Argentina	1.62	China	1.86	Estonia	1.33	Ireland	1.71
Australia	1.79	Colombia	1.23	Finland	1.46	Iceland	0.65
Austria	1.68	Costa Rica	0.96	France	2.24	Israel	1.08
Belgium	2.02	Czechia	1.68	United Kingdom	2.07	Italy	1.99
Bulgaria	1.54	Germany	2.11	Greece	1.44	Japan	1.85
Bahamas	1.05	Denmark	1.81	Hong Kong	1.89	Korea	1.67
Brazil	1.94	Dominican Republic	0.82	Honduras	0.47	Lithuania	1.15
Canada	2.03	Ecuador	0.88	Hungary	1.74	Luxembourg	1.88
Switzerland	1.90	Egypt	1.32	Indonesia	1.48	Latvia	1.25
Country	**%**	**Country**	**%**	**Country**	**%**		
Morocco	1.00	Poland	1.67	Turkey	1.47		
Mexico	1.59	Portugal	1.71	Ukraine	1.15		
Malaysia	1.61	Romania	1.50	Uruguay	1.35		
Netherlands	2.30	Russian Federation	1.71	United States	2.33		
Norway	1.71	Singapore	1.75	Venezuela	1.33		
New Zealand	1.17	El Salvador	0.55	South Africa	1.71		
Pakistan	0.87	Slovenia	1.06				
Panama	1.48	Sweden	1.60				
Peru	1.50	Thailand	1.64				
Philippines	1.25	Trinidad and Tobago	0.55				

Source: own study.

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Conflict of Interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Economic resilience in developing countries: The role of democracy in the face of external shocks

Salah Ahmed, Mohamed Ali Trabelsi

ABSTRACT

Objective: The objective of this article is to examine the role of democracy in strengthening the resilience of developing economies in the face of exogenous negative external shocks.

Research Design & Methods: To achieve our research objectives, we used the duration model to estimate how democracy can determine the probable duration of an economic growth spell.

Findings: By examining a panel of 96 developing countries observed in 1965-2015, we found that democracy is a resilience factor, insofar as it helps to support growth spells in the event of negative external shocks. The results show that an improvement in democracy score is associated with an increase in the expected duration of a growth spell. The second finding is that some dimensions of democratic institutions like political participation and egalitarian inclusion can lead to a sustainable economic growth.

Implications & Recommendations: The benefits of democracy for improving living standards in developing coutries. The study should be subject to further research as more variables that account for major shocks could be considered, such as political and civil unrest, internal conflicts, or natural disasters. These shocks may occur during a growth period and cause very serious disruptive effects.

Contribution & Value Added: The originality of this work lies in studying the role of democracy in the face of exogenous negative external shocks through the duration model which represents an original empirical study.

Article type: research article

Keywords: resilience; economic growth; developing countries; democracy; survival models

JEL codes: E32, E60, F43, O11

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INTRODUCTION

The difference between economically successful and unsuccessful countries are not only reflected in growth rates but also in the ability to sustain and support these rates during crises, *i.e.* their resilience. Facing different common external shocks reflected in changing trade situation, demand for export, and financial flows, the obvious questions are: Why do developing countries react differently? Do democratic institutions support economic growth, despite negative external shocks? How does democracy contribute to improving the resilience of these countries? Finally, what are the specific democratic political institutions that matter the most in explaining the positive effect of democracies on growth spell duration?

In this regard, cross-sectional comparative studies offer only few answers. Indeed, using annual averages, they do not distinguish periods of instability resulting from sudden increases and decreases in growth. They implicitly assume homogeneity of business cycles. In addition, they do not shed light on the reasons why some growth spells tend to shortly fade away.

Such limitations opened the way for a line of research that tries to consider breaking points and growth reversal in these countries. These studies seek to examine – over decades – growth gaps and acceleration (Hausmann, Pritchett & Rodrik, 2005), the combination of multiple growth regimes (Jerzmanowski, 2006),

the duration of a growth collapse (Hausmann, Rodriguez & Wagner, 2008), the beginning and end of growth spells (Jones & Olken, 2008), and finally, stagnation factors (Reddy & Minoiu, 2009).

Drawing on this literature and the study of Berg, Ostry and Zettelmeyer (2012), our study aims to examine the relationship between democracy and resilience by focusing on sustained growth spells.

The focus on growth periods provides a clearer view on the growth process than on an analysis of average growth rates and eliminates potential biases resulting from breakpoints. In addition, the emphasis on sustained growth can shed light on the long-term "growth-democracy-resilience" relationship, by-passing the short-term fluctuations of average growth rates.

In this paper, we propose to empirically answer these questions in developing countries using duration models while highlighting the factors that determine the risk inherent to the end of growth periods. This study tests the hypothesis that democracy contributes to supporting the duration of economic growth spells in developing countries. Therefore, we show how democracy contributes to improving the resilience of these countries in the face of external shocks.

Duration analysis allows us to estimate the link between the probability that a growth period will end the following year using a set of variables, representing trade shocks, trade openness, inflation, human capital, investment, and the quality of democratic institutions: electoral democracy index, participation democracy index, egalitarian democracy index, and political institutions.

The rest of the paper is structured as follows. In the first section, we will review the literature on the concept of economic resilience and the role of democratic institutions in economic resilience. The results of the estimates of the effect of democracy on resilience will be presented in the second section, using the duration model applied to 96 developing countries in 1965-2015. Finally, the paper will conclude with a summary of the main results.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Economic resilience

Before examining the role of democracy in resilience, we must firstly clarify the concept of resilience. Duval and Vogel (2008) define economic resilience as the ability to keep production close to its potential despite a shock. Therefore, resilience has at least two dimensions: the degree to which shocks are absorbed and the speed at which economies return to equilibrium after a shock. Thus, resilience is the ability of different economies to reach their growth potential after a disruptive shock. Whenever a loss of production after a shock and its absorption is significant, the economy is considered less resilient.

The concept of "resilience" denotes this ability to react. It is the ability of a given country to effectively anticipate, absorb, integrate, or overcome the effects of a shock in time. It is defined as the ability of a country to sustain growth periods and to minimize recovery following an adverse shock.

According to Guillaumont (2009), economic resilience is defined as the ability to recover from a shock. The ability to cancel and counter threats to growth that are often linked to economic, political, social, or natural shocks. Berg *et al.* (2012) define growth resilience as the capacity to sustain growth over a long period. The International Monetary Fund (IMF, 2012) defines resilience as "the ability of an economy to sustain longer and more vigorous periods of expansion and to experience shorter and less severe contraction periods and faster recoveries."

The literature agrees on defining economic resilience as the ability to recover from unfavourable economic conditions or economic shocks. In our study, we will retain the definition which assumes that the resilience of an economy indicates the capacity to support longer periods of expansion.

Democracy's role in economic growth resilience

Theoretically, the effect of democracy on economic resilience is ambiguous. In fact, proponents of the nondemocracy perspective argue that democracy can hinder growth because government is subject to short-term political pressures, particularly from distributional coalitions.

Olson (1982) argues that democracies are affected by special interest groups. As Olson points out, political competition fundamentally affects how governments manage the economy, thereby influencing the returns, to a productive versus non-productive activity for individuals. In turn, these returns

directly influence the propensity of economic agents to supply production factors (*e.g.* labour and capital), specialize, and innovate, helping dictate the course of economic development. The state needs to be insulated from redistributional forces found in democracies (Olson, 1982).

In contrast to these contentions, there are some arguments in favour of the effects of democracy:

- Democracy facilitates the establishment of resilient institutions and policies that mitigate the effects of negative shocks. Indeed, democratic regimes better manage the consequences of external shocks and limit the occurrence of internal shocks, thanks to a better ability to deal with socio-political conflicts. The presence of social freedom and political rights improves the capacity of the economy to adjust to the international environment while democracy promotes better income distribution (Rodrik, 1999).
- Rodrik (1999) and Quinn & Woolley (2001) gather solid evidence indicating that democratic countries experience less volatility. Acemoglu, Johnson, Robinson and Thaicharoen (2003) highlight the importance of institutions in explaining the differences in instability between countries. Mobarak (2005) found that democracy reduces instability through increased citizen control over the management of economic policy.

Examining a panel of countries, Collier, Goderis and Hoeffler (2006) found that democracy has a mixed effect. It reduces the effects of export price shocks but amplifies shocks linked to the import oil price.

Rodrik (2000) argues that democracy is a factor for long-term growth stability and shock absorption. Democratic institutions encourage political consensus on political responses to external shocks and therefore manage conflicts better than autocracies. Participatory political regimes induce a greater desire for cooperation and conciliation, resulting in economic stability.

Berg *et al.* (2012) examine the determinants of growth duration in a sample of 140 countries, after identifying periods of strong growth and break points in economic growth in the 1950-2010 period. The results indicate that the duration of economic growth depends on the degree of equality of income distribution, the quality of democratic institutions, trade openness, and macroeconomic stability.

Essers (2012) concludes that democracy has a significant and negative impact on the growth rates observed in 2007-2009 period. In the same context and with examining the political determinants of the magnitude of growth in acceleration and deceleration episodes in 125 countries over the period of 1950-2010, Kunal, Lant, Sabyasachi and Selim (2018) show that democracies do not necessarily outperform autocracies in a growth acceleration episode. However, the former can avoid large growth collapses.

In conclusion, the link between shocks and economic growth depends on a country's institutional capacity to manage conflicts and adjust the economy to its equilibrium. This capacity depends on the presence of democratic institutions, which promote economic stability through political competition.

RESEARCH METHODOLOGY

Main hypothesis and expectations

In line with the literature review, we test the hypothesis that democracy is a resilience factor in that it increases a country's ability to sustain growth periods following an adverse external shock, and we will retain the definition which assumes that the resilience of an economy indicates the capacity to support longer periods of expansion.

Our aim is to estimate the impact of democracy on the probability that a country's period of relatively strong economic growth will come to an end. In other words, we are interested in investigating whether the "waiting period" during which a country remains in distress is associated with democracy.

After a brief overview of democracy indicators, the duration model, and the selected variables, we will present the results of our estimates, which would allow us to determine the impact of democracy on the degree of persistence of sustained economic growth.

Democracy indicators

The choice of a democracy measure may impact the estimates of democracy's effect on growth. Existing democracy indices are typically subject to considerable measurement error, leading to spurious

changes in the democracy score of a country even though its democratic institutions do not truly change. Even with year and country fixed effects, changes in democracy may correlate with other changes or respond to current or future economic conditions, raising obvious omitted variable bias concerns (Acemoglu, Johnson, Robinson & Thaicharoen, 2019).

There is an ongoing debate about the appropriate measure of democracy. This debate highlights the information on which the institutional quality indices are based, but also measurements on a discrete or continuous scale. Our estimates employ continuous measures of democracy used in the literature. These continuous measures are more consistent with the slowly changing nature of institutions described by North (1990), unlike dichotomous measures. To check the sensitivity of our results to different measures of democracy, we use two indices: the Polity2 indicator and the V-dem index.

- The composite index of polity2 uses sub-scores for constraints on the executive branch, competitiveness of political participation and openness and competitiveness of executive recruitment (Marshall, Gurr & Keith, 2019). The measure, Polity2, comes from the POLITY IV base which is part of a research program at the Center for International Development and Conflict Management (CIDCM) of the University of Maryland. This database covers 186 countries. The Polity index ranges from −10 to 10 (difference between democracy and autocracy) with large positive values representing a greater degree of democracy and large negative values denoting a greater degree of autocracy. Polity IV essentially measures the degree of liberalism of political regimes.
- The V-Dem index[1] (Varieties of Democracy Dataset version 9) is a new approach to conceptualizing and measuring democracy. It provides a multidimensional and disaggregated dataset that reflects the complexity of the concept of democracy as a system of rule that goes beyond the simple electoral process. The V-Dem project distinguishes between five high-level principles of democracy: electoral, liberal, participatory, deliberative, and egalitarian, and collects data to measure these principles.

To assess the effect of the type of democracy on an economic growth spell duration, we use three dimensions of democracy.

Firstly, the electoral dimension of democracy embodies the core value of making rulers responsive to citizens through competition for the approval of a broad electorate during periodic elections, as captured by Dahl's (1972) conceptualization of "polyarchy."

The electoral principle of democracy[1] is defined as selecting leaders who are responsive and accountable to citizens through the mechanism of competitive elections as captured by Dahl (1972). This objective is achieved when elections are free and fair, the executive is selected (directly or indirectly) through elections, suffrage is extensive, and political and civil society organizations can operate freely.

To capture these requirements, the Polyarchy index combines indicators on the level of suffrage, freedom to join political and civil society organizations, whether elections are transparent and without systematic irregularities, and whether the chief executive is selected through elections.

The electoral dimension of democracy[1] seeks to embody the core value of making rulers responsive to citizens, achieved through electoral competition for the electorate's approval under circumstances when suffrage is extensive; political and civil society organizations can operate freely; elections are clean and not marred by fraud or systematic irregularities; and elections affect the composition of the chief executive of the country. In between elections, there is freedom of expression and an independent media capable of presenting alternative views on matters of political relevance.

Secondly, the participatory dimension of democracy[1] (the participatory democracy index) denotes active participation by citizens in all political processes, electoral and non-electoral. The dimension is motivated by uneasiness about the bedrock practice of electoral democracy: delegating authority to representatives. Then, direct rule by citizens is preferred, wherever practicable. This model of democracy thus takes suffrage for granted, emphasizing engagement in civil society organizations, direct democracy, and subnational elected bodies.

Thirdly, the egalitarian dimension of democracy[1] (the egalitarian democracy index) holds that material and immaterial inequalities inhibit the exercise of formal rights and liberties and diminish the ability

[1] The V-dem institute (University of Gothenburg, Sweden)

of citizens from all social groups to participate. Egalitarian democracy is achieved when rights and freedoms of individuals are protected equally across all social groups; and when resources are distributed equally across all social groups. The distribution of resources should be sufficient to ensure that citizens' basic needs are met in a way that enables their meaningful participation. Additionally, an equal distribution of resources ensures the potential for greater equality in the distribution of power. To make it a measure of egalitarian democracy, the index also takes the level of electoral democracy into account.

Empirical model

The dependent variable in our econometric model is the probability that sustained economic growth will end. According to Berg *et al.* (2012) and Abiad, Bluedorn, Guajardo and Topalova (2015), a country is considered to have achieved sustained growth if it records a regular growth rate greater than or equal to 2% over a period of time.

The duration model used is a proportional failure point model based on Weibull's distribution. The probability density of this distribution is defined by:

$$f(t;\gamma;\delta) = \frac{\gamma}{\delta}\left(\frac{t}{\delta}\right)^{\gamma-1} e^{-(t/\delta)^{\gamma}} \quad (1)$$

where:

$t > 0$ - is the assigned variable or break point;

$\gamma > 0$ - is the shape parameter and;

$\delta > 0$ - the distribution scale parameter.

Its survival function is defined by: $S(t;\gamma;\delta) = e^{-(t/\delta)^{\gamma}}$ and its failure cumulative distribution function is defined by : $F(t;\gamma;\delta) = 1 - e^{-(t/\delta)^{\gamma}}$. The scale parameter is determined by replacing δ with t in the cumulative distribution function, which gives us: $F(\delta) = 1 - e^{-1} = 0.632 = 63.2\ per\ cent$. This shows that the scale parameter δ represents the point for which 63.2% of failures are recorded.

If we denote $\lambda(t)$ the instantaneous failure rate, we show that: $Log\lambda(t) = Log\ \gamma + (\gamma - 1)Log\ t - \gamma Log\delta$. This equation is represented by a line whose abscissa is $Log\ t$ and the ordinate is $Log\lambda(t)$ (Palisson, 1989). From this relationship, we deduce that the slope of the line has as expression: $p = (\gamma - 1)$. The hazard of Weibull's distribution increases with time if γ > 1, decreases if γ < 1 and constant if it is 1. The estimation of the parameter makes it possible to conclude to an increase, a constancy, or a decrease of the exit probability with the duration of persistence in the growth phase.

We model how the evolution of the period (as a function of different independent variables) affects the probability that it will end at some point in the analysis time. Consistent with the proportional hazard hypothesis, the effect of the independent variables is multiplicative related to hazard (and not related to survival time as in the accelerated failure model). The model assumes that the failure point associated with the duration of period j is expressed as a product of a random variable τ_j and a proportionality scale which is a function of the weighted sum of a set of K independent variables x_{tj}.

$$t_j = exp\left(\sum_{k=1}^{K} \beta_k x_{k,tj}\right)\tau_j \quad (2)$$

in which τ_j follows a Weibull's distribution with a shape parameter γ. The coefficients β_k express temporal ratios which indicate to what extent a variation of a unit of an independent variable would shorten or lengthen the anticipated duration of reference $E(\tau_j)$.

Data and descriptive statistics

Referring to the database of Berg *et al.* (2012), our analysis unit (the duration variable) was a growth period. This period was defined as a period of strong growth following a high growth and ending either with a slowdown in growth or with the end of the sample. This approach identified the complete phases of growth as periods of time that meet the following two conditions. Firstly, they begin with a launching, followed by a GDP growth period at least 2% on average. Secondly, they end with a decrease in growth, followed by a period of average GDP growth less than 2%.

Likewise, incomplete growth periods can be defined as those that meet condition (i) and are still running at the end of the sample.

Following Berg *et al.* (2012), growth spells were assumed to be real GDP per capita growth periods that last at least five years. They were to start with an increase of at least 2% in real GDP per capita and end with a decrease followed by a growth period of less than 2% on average, or simply with the end of the observation period. The duration of continuous periods of accelerated growth could have been interrupted by exogenous shocks, particularly in the most vulnerable countries. The 2% growth per capita threshold was already used in the literature and is considered a reasonable growth per capita for low-income countries.

Likewise, "incomplete" growth spells were defined as those which meet the first condition but are still in progress at the end of the sample. A total of 56 full periods and 52 incomplete periods were identified in the sample (Table 1).

Table 1. Duration and frequency of GDP per capita growth spells

Region	Number of countries	Number of growth spells completed	Average duration	Number of growth spells uncompleted	Average duration
Asia	15	8	15.6	14	26.7
Latin America	22	23	8.2	13	19.2
Sub-Saharan Africa	44	18	6.4	20	17.6
MENA	15	7	11.9	5	20.2

Source: own study.

Berg *et al.* (2012) define a period of complete growth as a period of time that begins with an upward break. It is followed by an average growth rate of at least 2% and ends with a downward break. The data sources for the variables are shown in Table 2.

Among the variables that indicate exogenous external shocks, we retained terms of trade and change in US interest rates. The chosen democracy variable was Polity IV. This was an index ranging from +10 (democracy) to -10 (autocracy). The democracy index showed the effective presence of institutional rules framing power and the presence of institutions that allow citizens to express their expectations and choose their political elites. Autocracy was characterized by the absence or restriction of political competition and control, the execution of power being slightly restricted by institutions, and leaders are only selected from a political elite.

Table 2. Variables and data sources

Variables	Description	Sources
Vdem	Electoral democracy Index	The V-Dem Institute (University of Gothenburg)
Vdempart	Participation democracy index	The V-Dem Institute (University of Gothenburg)
Vdemegal	Egalitarian democracy index	The V-Dem Institute (University of Gothenburg)
Polity	Political institutions (P4polity2)	Polity IV
Inv	Ln (investments,% of GDP)	PWT 7.1 (Penn World Table)
Humcap	Ln (primary + secondary years of education)	Barro Lee
Exchange rate	Exchange rate, national currency/USD (market+estimated).	PWT (Penn World Table)
Open	Trade openness =Export +imp% of GDP	WBI (Wallonie-Bruxelles International)
Inflation	Ln (100+inflation rate)	WBI (Wallonie-Bruxelles International)
Change in terms of trade	Terms of trade growth (Price level of exports/Price level of imports)	IMF (International Monetary Fund)

Source: own study.

The study examined a panel of 96 developing countries observed during the 1965-2015 period. Table 1 presents stylized facts about the frequency and duration of growth periods. Most growth periods took place in Africa (around 35% of all periods, a rate which is proportional to the share of these countries in the sample), while the least growth periods (around 10% of the total) occured in advanced countries.

Furthermore, we observed that while it is not unusual to start a growth period, countries differed in their ability to maintain it for longer periods. Compared to other regions, African and Latin American countries had the shortest average growth period, while on average, a full period in Asia lasted about 16 years (Table 1).

In Sub-Saharan Africa, the growth periods tended to experience breaks and discontinuities fairly quickly, compared to Asian or MENA countries. These findings can be explained by the political instability of these countries and the armed conflicts during the 1970s, 1980s, and 1990s (Adam, 2002).

Table 3 reports the descriptive statistics of the data across the total period. Conducting a non-parametric estimation[2] of the survival of growth spells according to political regime, we found that democratic countries had a higher survival rate than authoritarian countries (Figure 1). This finding can be explained by the political stability of democratic countries and their resilience in the face of external shocks.

Table 3. Descriptive statistics of the variables

Variable	Obs	Mean	Std Dev	Min	Max
p4polity2	4 453	-1.153829	6.711612	-10	10
Inv	4 624	2.889192	0.641048	-0.3232415	4.383527
Vdem_part	4 570	0.1837567	0.1558495	0.009	0.805
Vdem_poly	4 570	0.3258193	0.2268712	0.008	0.929
Vdem_egal	4 570	0.227844	0.1607496	0.017	0.836
Inflation rate	3 444	36.71384	495.9857	17.64042	23 773.13
Hum cap	4 233	1.198931	0.7997237	-3.684944	2.47215
Open	4 625	64.82642	44.01233	4.111102	433.0451
Exhange rate	4 411	334.2211	1 344.71	8.10e-14	18 612.92
Changes in terms of trade	4 317	0.0562438	10.88022	-114.7957	91.88754

Source: own study.

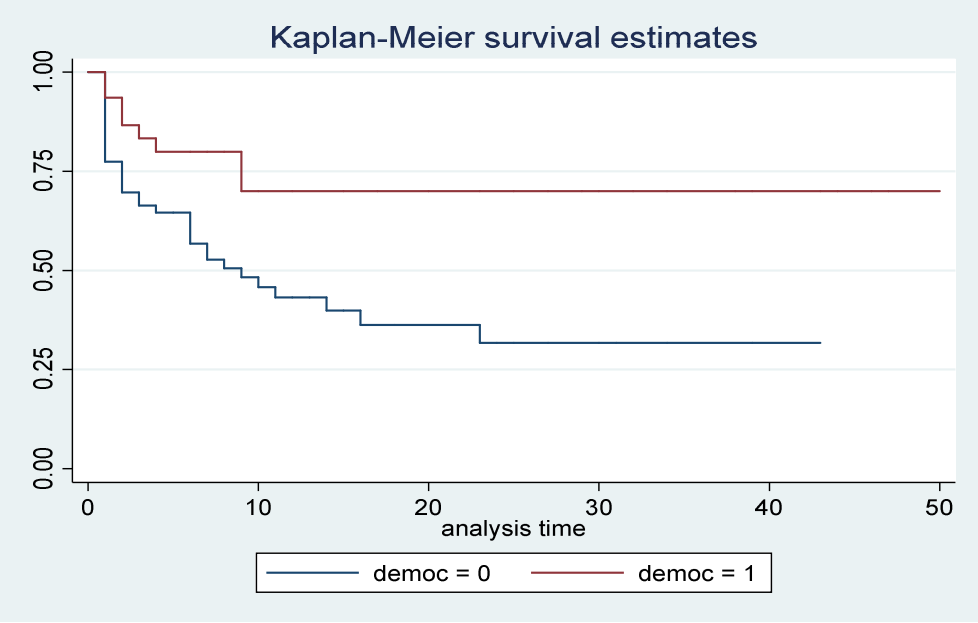

Figure 1. Nonparametric estimation of the survival of growth spells according to political regime
Source: own elaboration.

[2] The Kaplan-Meier estimator is a non-parametric statistic used to estimate the survival function from lifetime data. Their curve shows the probability of an event at a respective time interval. The curve should approach the true survival function for the population under investigation, provided the sample size is large enough.

RESULTS AND DISCUSSION

After arriving at the descriptive analysis of the data in Table 3, which shows a strong heterogeneity in the sample, we estimated a maximum likelihood of survival models in a parametric regression by using Weibull's survival distribution.

The results in Table 4 show the regression coefficients, which can be interpreted as "risk ratios:" the factor by which a risk rate increases when the covariate increases by unit one. For example, a risk ratio of 1.05 means that a change of one unit in the regressor increases the risk of slowing growth by 5% in the following period. A risk ratio of 1 means that there is no effect, and a risk ratio less than one denotes a "growth protection effect."

The dependent variable represents the risk that the growth phase will be interrupted. The coefficient associated with the independent variable represents the change in the probability that the growth episode ends next year for a variation of one unit in the given independent variable. As expected, negative external shocks were associated with higher growth failure rates. These negative exogenous external shocks negatively affected the duration of a growth period. Real negative external shocks were particularly costly in terms of production in developing countries.

The results highlighted the beneficial effects of improving political institutions (making them more democratic). Democracy significantly extended the duration of growth periods. This promoted more resilient and more sustainable growth.

A proportional hazard model with time varying covariates was used to relate the probability that a growth spell will end to a variety of economic and political variables. A hazard ratio of 0.9 means that a unit change in the regressor decreases the expected time of duration by 10%. A hazard ratio of 1 means there is no effect and a ratio of 1.1 means it increases expected duration by 10%. We tested the probability that the true hazard ratio equals 1.

The results reported in Table 4 support the hypothesis that democratic countries tended to respond better to negative external shocks. These results corroborate with those of Essers (2012) who showed the ability of democratic countries to face economic crisis, specifically the 2008 crisis.

All proxies for institutions were enterd into the model with statistical significance and expected signs. The results also highlighted the beneficial effects of improving political institutions (making them more democratic) and terms of trade. A one-point improvement in the democracy score was associated with at least 8% increase in the expected duration of a growth spell. Lower inflation generally extended growth periods. On the other hand, an increase in investment rate and a greater trade openness had no significant effect. Table 4 shows that – while the signs of these two variables are positive – human capital and overvaluation of the exchange rate are statistically insignificant.

Our estimates validated the hypothesis that democracy is a resilience factor. Resilience expresses institutional ability to support longer expansion phases. This finding is consistent with those of some authors like Berg *et al.* (2012), Ostry, Berg & Tsangarides (2014), and Abiad *et al.* (2015). These authors conclude that negative external shocks and macroeconomic volatility negatively correlate with the length of growth periods and that democracy supports growth periods. Our results support their findings in focusing on the role of some democratic indicators like political participation and egalitarian inclusion, which significantly sustains the duration of growth periods and corroborate with those of some authors such as Berg *et al.* (2012) who find that the duration of growth episodes is positively associated with lower income inequality, democratic institutions, and macroeconomic stability.

Table 4. Democracy and the duration of growth spells

Equations	(1)	(2)	(3)	(4)
Dependent variable	**Analysis time when record ends**	**Analysis time when record ends**	**Analysis time when record ends**	**Analysis time when record ends**
Inv	1.067 **(0.0645)**	1.063 **(0.0632)**	1.063 **(0.0625)**	1.076 **(0.0606)**
Inflation	**1.030***** **(0.0110)**	**1.034***** **(0.0118)**	**1.038***** **(0.0125)**	**1.039***** **(0.0129)**
Change in Terms of trade	**0.969**** **(0.0140)**	**0.966**** **(0.0140)**	**0.965**** **(0.0138)**	**0.967**** **(0.0135)**
Polity	**0.923**** **(0.0325)**			
Exchange rate	0.998 (0.0014)	0.998 (0.0013)	0.998 (0.0014)	0.998 (0.0013)
Humcap	0.786 (0.2677)	0.796 (0.2732)	0.796 (0.2743)	0.817 (0.2907)
Open	0.998 (0.0043)	0.999 (0.0044)	0.999 (0.0042)	1.001 (0.0043)
Vdem		**0.788**** **(0.0861)**		
Vdempart			**0.967**** **(0.0154)**	
Vdemegal				**0.693**** (0.1150)
Observations	794	794	794	794
Success/failure	67/27	67/27	67/27	67/27
Log-likelihood	-67.755	-67.866	-67.934	-67.631

Notes: The table reports hazard ratios. where a hazard ratio larger than 1 implies that increases in the associated variable shortens spells, while a ratio smaller than 1 implies that the covariate has a "protective" effect, i.e., it helps sustain the spell. *, **, & *** denote statistical significance at the 10%. 5% and 1% levels respectively. P-values are given in brackets under the coefficient estimates.
Source: own study.

CONCLUSIONS

The duration of current accelerated growth periods can be interrupted by exogenous negative shocks, particularly in the most vulnerable countries. According to our hypothesis, democracy impacts the length of growth periods in developing countries vulnerable to exogenous negative shocks, thus showing that democracy is likely to protect the growth process of these countries.

On the other hand, our results show that democracy significantly extends the duration of growth periods. This promotes more resilient and sustainable growth. An improvement in the democracy score is associated with an increase in the expected duration of a growth spell. We should point out that our analysis of duration only considers periods of growth but not economic stagnation. Therefore, we cannot predict the crisis of stagnation in countries that have started a democratic political transition such as Tunisia.

The factors that cause sustained growth usually do not explain why a country is stagnant. The dynamics of stagnation are difficult to predict. It can even start with the democratization of political institutions. The case of Tunisia is a better example where the crisis of economic stagnation has continued for 10 years for several political and identity reasons.

Firstly, the impact of political democratization on economic growth is not immediate and takes a lot of time. Secondly, the building of democratic economic institutions and structural reforms face resistance from vested interests, lobbies, and other groups opposed to reform. The third obstacle is related to political instability and social unrest.

Despite the heterogeneity of growth experiences among countries in transition, democracy is a very useful factor in immunizing the country against external shocks such as a vaccine that inhibits the development of a virus and develops antibodies while avoiding the complications of contamination. Our results support the idea that democracies do better than autocracies in managing conflicts caused by external shocks.

However, our study may be subject to further research. More variables that account for major shocks can be considered, such as political and civil unrest, internal conflicts, or natural disasters like the Covid-19 pandemic. These shocks may occur during a growth period and cause very serious disruptive effects.

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Appendix: List of countries

Africa	Africa	Latin America	MENA	Asia
Gambia. The	Congo. Dem. Rep.	Guatemala	Syria	Malaysia
Ghana	Chad	Honduras	Bahrain	Indonesia
Sudan	Guinea-Bissau	Ecuador	Qatar	Thailand
Guinea	Mauritius	Nicaragua	Saudi Arabia	Philippines
Malawi	Rwanda	Guyana	Egypt	Korea. Republic of
Cameroon	Sierra Leone	Haiti	Libya	Vietnam
Nigeria	Togo	Costa Rica	Yemen	Taiwan
Gabon	Lesotho	Brazil	Morocco	Laos
Central African Republic	Ethiopia	Chile	Iraq	Cambodia
Equatorial Guinea	Mali	Uruguay	Jordan	Singapore
Seychelles	Botswana	Venezuela	Kuwait	Bangladesh
Kenya	Ivory Cost	Panama	Tunisia	Nepal
South Africa	Liberia	Peru	Iran	India
Mozambique	Angola	Mexico	Algeria	Sri Lanka
Congo. Republic of	Tanzania	Jamaica	Lebanon	Pakistan
Senegal	Uganda	Dominican Republic	Oman	
Zimbabwe	Mauritania	Argentina	United Arab Emirates	
Namibia	Benin	Colombia	Turkey	
Burkina Faso	Cape Verde	Paraguay		
Niger	Zambia	El Salvador		
Madagascar	Burundi	Bolivia		

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Oil rent, entrepreneurial start-ups, and institutional quality: Insights from African oil-rich countries

Folorunsho M. Ajide, Kenny A. Soyemi

ABSTRACT

Objective: The objective of this study was to examine the moderating effect of institutional quality in the relationship between oil rents and entrepreneurial start-ups for oil-rich countries in Africa.

Research Design & Methods: The study employed panel regression techniques that included instrumental variable (IV) estimator to analyse the data of 11 oil-rich countries in Africa over a period of 2006-2018.

Findings: The following results emerged. (1) Oil rent's impact is positive and significantly affects entrepreneurial start-ups. (2) The interactive coefficients of oil rents and institutional quality have a negative and significant impact on entrepreneurial start-ups. This means the quality of African institution reduces and leaks out entrepreneurial benefits of oil rents in African oil-rich countries. We establish that institutional quality's threshold at which oil rent would accelerate entrepreneurial start-ups is 2.23 on a five-point scale.

Implications & Recommendations: This study revealed that the ability of oil rents to consistently promote entrepreneurial development in oil-rich economies depends on the level of institutional conditions. This situation may create a growth trap for African oil-dependent economies because entrepreneurial start-ups depend on the quality of institutional foundations, which may position the growth inclusiveness and government actions on the right paths. In this context, our empirical findings reveal that African governments need to work on the institutional quality of their economies to reduce the institutional curse of oil rents on African entrepreneurial start-ups.

Contribution & Value Added: The article advances our understanding on the nexus of entrepreneurship and oil rents. It is the first study conducted on oil-rich countries in Africa. Moreover, the work differs from the literature by examining the threshold level at which African institutional quality would meaningfully enhance positive relationship between oil rents and entrepreneurial start-ups.

Article type: research article

Keywords: Africa; institutions; new business entry; oil rents; panel-corrected standard errors

JEL codes: M13, N97, O43

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INTRODUCTION

Many countries in Africa have recognized the value of entrepreneurship in job creation and sustainable growth in a bid to achieve sustainable development. This phenomenon motivated researchers and policy-makers in Africa, where several interesting regularities emerged. Firstly, researchers in this area largely focus on the impact of entrepreneurship on African growth (Adusei, 2016; Peprah & Adekoya, 2020) with the neglect of institutional context in the relationship. Strong institutions offer entrepreneurs the means of attaining personal security and material welfare, which assist in lifting societies out of poverty. A country with good institutions has the tendency to experience sustainable growth and an equalitarian society with resultant impacts on every sector of the economy (Mobarak & Karshenasan, 2012; Bustamante *et al.,* 2020; Ajide & Osinubi, 2020).

Several channels through which these can happen include the strict rule of law, honesty and professionalism in business, reduction in transaction costs, and the timely provision of property rights. However, current developments reveal that economies – especially economies of the oil-rich countries – may be cursed by their institutions if the norms, beliefs, culture, and practices evolving within the countries lead to outcomes detrimental to most economic agents. Majbouri (2016) empirically reveals this by explaining that economies with oil rents may experience a decline in entrepreneurial start-ups because of rent-seeking behaviours appearing where the institutional quality is weak. Torres and Godinho (2019) further corroborate these findings by explaining that corruption control is key to attain an impressive level of innovative entrepreneurship in oil dependent countries. However, more research is needed to better learn whether the combination of oil rents and institutional conditions provide a blessing or curse for entrepreneurial development.

It is surprising that there is no study that empirically examines the role of institutions in the nexus of oil rents and entrepreneurship, despite the fact that most of economies in Africa depend on natural resources. This study aims to fill this important knowledge gap. Therefore, the objective of this article is to examine the impact of oil rents and its interaction with institutional quality on entrepreneurial start-ups in oil rich countries in Africa. The novelties of this article will be discussed as follows. Firstly, we will study the case of eleven selected African oil-rich countries. Studies reveal that economies with abundant natural resources have substantial high chances of growth in all sectors through entrepreneurial start-up activities and development, but the ability to realise this mission depends on how rents from the natural resources accruable to the economy are harnessed and utilised (Olayungbo & Adediran, 2017; Ajide, 2021). Oil production and export play a significant role in these countries accounting for relatively 60-90% of gross earnings while the issues of resource and institutional curse has been an intense debate in the literature of these countries. More so, the majority of these countries have developed and embraced entrepreneurship policies. They focus on entrepreneurial start-ups and give support for the establishment of young dynamic firms with a potential to be the engine of sustainable growth and economic transformations. Governments of these countries are directing efforts to develop conducive entrepreneurial environment and emergence of new firms in general (Adusei, 2016; Kantis, *et al.*, 2020). However, entrepreneurship data in these countries are relatively limited; making empirical studies of this nature relatively scarce (Kantis, *et al.*, 2020). Our study relies on World Bank entrepreneurship data to fill this important literature gap.

In addition to the fact that these countries have either weak or poor quality of institution, we attempt to develop a relative threshold level at which these institutions would meaningfully enhance entrepreneurial start-ups via oil rents in the economy. This supports the explanation of Mobarak and Karshenasan (2012) who hint that institutional quality may change the orientation of entrepreneur as an innovator and in creating productive hub of an economy. Entrepreneurs may decide to consider rent seeking or engage in productive activities depending on how strong the underlining political structure and economic institutions of a nation are. In the same manner, the relative profitable engagement depends on rule of law and bureaucratic efficiency. Strong and efficient quality of institutions may lead an entrepreneur to an equilibrium to add values to the economy while low and inefficient institutions may lead them to be a rent-seeker. Abundant revenue from natural resource may lower the entrepreneurial start-ups, growth and national income of a country with poor institutional quality (Kolstad 2007; Mobarak & Karshenasan, 2012; Majbouri, 2016). This means that oil rents interaction with institutions could be a source of blessing to an economy if the outcome is beneficial to entrepreneurial development, however, if the outcome is disadvantageous it could be a curse, especially when there are weak institutional qualities. Another contribution of this study has to do with the policy perspective. The article provides a clear-cut empirical policy direction for African economy as shared by United Nations' sustainable development goals (SDGs) aim at boosting growth, providing decent work and reducing poverty to zero level in the world through entrepreneurial ecosystem. This happens by achieving high level of productivity via entrepreneurial networks, innovative activities, and job creation by 2030.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Oil rent in Africa

Oil rent is described as return for ownership of oil resource, which is paid/payable to states that own it. Theoretically, Yates (2015) defines oil rent as revenue generated from a given petroleum products sold to consumers minus total cost of production, marketing activities, and transportation. Basically, this definition connotes oil rent as a surplus or excess income over total costs from initial exploration as crude oil till final disposal to consumers as refined products (Reader, 2015). Scholars agree that oil rent is predominately associated with the hypothesis of 'resource curse,' from which Africa is not exempted. Resource curse is typically used to explain situations occurring in most economies that are endowed with resources but no visible improvements on their economies and governance. Such economies display tendencies to include great level of corruption, high inflation rate, unimaginable infrastructural deficit (Akanni, 2007); truncated economic growth and development (Matallah & Matallah, 2016), pseudo-democratic system of government, internal conflict, incessant social and environmental problems (NRGI, 2015). According to the 2019 IMF Report, the African continent plays host to five out of the top thirty leading oil producing countries, accounting for 7.9 million barrels per day (representing 9.6%) in the world. These countries are Nigeria (2 million barrels per day), Angola (1.4 million barrels per day), Algeria (1.3 million barrels per day), Libya (1.2 million barrels per day), and Egypt (630,000 barrels per day). Others are Democratic Republic of Congo, Gabon, Equatorial Guinea, South Sudan, Chad, Sudan and Tunisia. Virtually all these African countries are developing economies characterized by resource curse which is rooted in the 'rentier state theory.' These economies rely on international oil prices that are volatile and unpredictable, thereby hobnobbing between oil boom and down regimes.

Entrepreneurial environment and institutional indicators of oil-rich African countries

The 2017 African Economic Outlook reports that 22% of active working population age in Africa are starting businesses with active female gender participation put at 27% and twice the number of African women who are willing to launch a start-up. The average age of early entrepreneurs is 31 years old, much younger than in East Asia (36 years old) and Latin America (35 years old). These situate African continent as having high potentials for not only genuine entrepreneurs but also industries to strive. While this statistics seems to provide heart-warming information, there are issues culminating into challenges that need to be put into proper perspective for it to be addressed, if Africa is to maintain its position with great potentials. Among these issues and challenges, the survival rate of African entrepreneurial start-ups is predominant. According to Gwammbuka (2019), the continent has the highest rate of small and medium enterprises' discontinuance. This is due to limited access to finance, lack of infrastructural facilities like: electricity, multiple taxes and stringent customs, and trade regulations. Lack of innovation among early entrepreneurial start-ups is a major determinant of sudden wind-up among African entrepreneurs as unexpected loss of paid unemployment is what motivated them rather than genuine entrepreneurial need to launch a startup and continuous nurture to fruition. This aligns with Kuada's opinion (2015) that mere formation of a business does not define or guarantee a genuine entrepreneur. Recently, majority of countries located within the African continent have woken up to these challenge by entrenching institutional frameworks through policy documents to back up government efforts at supporting the entrepreneurial drive among its citizens. This is consequent upon reality of the enormous potential that entrepreneurial activities offer these countries, especially when it comes to enhancing industrialization drive thereby improving on their economic growth and development.

In the institutional environment, the average institutional indicators of oil-rich countries in Africa seem to be very low. The average World Bank Governance indicators show that most of indicators are relatively low (below -0.8) over the years when compare to the benchmark of -2.5 (weak) and 2.5 (strong) (World Bank Governance Indicators, 2019). Using 2015 and 2018 figures, the political stability and absence of violence seems to be the highest (ranging between -0.70 and -0.77) followed by regulatory quality (about -0.63). However, the control of corruption indicator reveals most of oil rich coun-

tries have higher level of corrupt environment (average of -0.46) and the level of accountability is relatively low (-0.41 on average). This means that all the countries have weak institutional framework which poses threat to business and entrepreneurial environment in African oil-rich countries (Ajide, 2021).

Theory, previous studies, and hypotheses development

The theory of rentier state argues that the regular external rent deriving from natural resources may give a setback for the need to have a productive domestic sector through organization of innovative entrepreneurial initiatives (Mahdavy, 1970; Beblawi & Luciani, 1987; Le Trinh, 2019; Haque, 2020). Lack of good tax system weakens the economic system, because there may be no call for public accountability due to public distribution of wealth from natural resource such as oil rents during boom. This phenomenon distorts the institutional quality of the country leading to financial indiscipline and non-competition in other sectors of the economy. This practice brings a curse on the oil-rich countries making the institutional development to be fragile (Mustapha & Masih, 2016). The entrepreneurial process that could improve the level of growth and innovative activities in the oil-rich economies may relatively weaken due to poor governance and rent seeking (Sachs & Warner, 1997). Majbouri (2016) hints how the oil rent may affect entrepreneurship. Oil rents may provide an economic opportunity for the establishment of new and innovative business which improves the level of consumer earnings, thereby increasing the level of demand for products and services. However, oil rents may induce entrepreneurs to engage in rent-seeking behaviour which make them to neglect value-added activities and innovative ambitions. Oil well may be perceived by citizens to destroy formal and informal institutional structures with high social costs (Dana *et al.,* 2009). This means that society with weak institutional environment couple with natural resource rent may have setback in it entrepreneurial start-ups (Bylund & McCaffrey, 2017; Torres & Godinho, 2019).

Baumol (1990) proposes that institutional system may lure economic agents to participate in non-productive activities which account for why most oil-rich economies experienced differences in relative impact of oil rent on growth and entrepreneurial development (Williamson, 2000). The study of Torres and Godinho (2019) employs quantitative analysis to reveal that control of corruption is very important for entrepreneurial development. Moreover, Torres and Godinho explain that oil rent is not a curse if control of corruption is given serious attention. This submission is not consistent with the study of Majbouri (2016) whose results based on panel data estimation show that oil rent reduces entrepreneurship. Besides these empirical findings, it is worthwhile to verify this issue in the context of oil rich countries in Africa. This makes us propose that:

H1: Oil rent positively affects entrepreneurial start-ups in African oil rich countries.

North (1990, p. 3) theoretically explains that institutional quality constitutes 'the rules of the game in a given society.' This implies that it regulates contractual relationship among the economic actors in an economy (Williams, 2000; Aparicio *et al*. 2016). Studies suggest that availability of natural resources especially lootable ones (for instance, oil) may reallocate skills and talents to unproductive resources, thereby reducing the level of country's entrepreneurial activities (Torvik, 2002; Farzanegan, 2014). This reflects the negative impact of oil rent termed oil curse especially where there is weak institutional environment (Majbouri, 2016). Weak institutional quality enables the elites to have larger share of oil rents and distribute it to family and friends at the expenses of the large society (Badeeb *et al.* 2017). Corruption which is an element of institutional environment discourages entrepreneurial start-ups, because it increases transaction costs (Anokhin & Schulze, 2009; Sekliuckiene *et al*., 2018). Weak institutional quality increases the level of economic uncertainty (Dreher & Gassebner, 2013). Recent studies relate oil rent to institutional quality. Haque (2020) hints that rent seeking behaviour leads to poor institutional environment in Kingdom of Saudi Arabia. Fosu and Gafa (2019) document that improved resource rent is associated with weak institutional quality and retards productive activities. In addition, Mohammed *et al*. (2017) empirically explain that oil rents intensify the country's corrupt practices. Dartey-Baah *et al.* (2014) further highlight that political elites capitalize on weak institutional quality to misappropriate oil rents. In this case, we propose the second hypothesis:

H2: African institutional environment negatively affects the oil rents and entrepreneurial start-ups relationship in African oil rich countries.

The next section explains how we tested the two hypotheses using the data of oil-rich countries in Africa.

RESEARCH METHODOLOGY

Model specification

The empirical model for investigating the causal relationship between entrepreneurial start-ups and oil rents including the interaction terms align with previous literature (Majbouri, 2016; Torres & Godinho, 2019). The model also follows the features of panel dataset showing the cross-sections and time series data. Equation (1) shows the model specification:

$$EP_{it} = \beta_0 + \beta_1 LOIL_{it} + \beta_2 INS_{it} + \beta_3 (LOIL \times INS)_{it} + \delta' X_{it} + \varepsilon_{it} \quad (1)$$

in which, (EP) is entrepreneurial start-ups, *i* stands for individual country, *t* stands for year index. LOIL stands for Oil rents (% of GDP), INS stands for quality of institution. X stands for the control variables. Control variables include; Time required to get business registered (LTM), Startup procedures (LST) and GDP growth rate (*GRO*). In general, the unbalanced panel data used for the estimation spanned from 2006 to 2018 covering 11 selected oil-rich countries. These countries include: Algeria, Benin, Gabon, Ghana, Mauritania, Morocco, Nigeria, Niger, South Africa, South Sudan, and Tunisia. They were selected based on data availability on the key variables of interest. Table 1 shows that our sources of data include: World Bank Development Indicators, World Bank Entrepreneurship Snapshot database and World Bank Governance Indicators (WGI). The governance data takes the lowest value of -2.5 (weak institutions) and highest value of +2.5 (strong institutions). We build the composite institutional indicators comprises the six institutional components: Control of Corruption (COR), Government Effectiveness (GOE), Political Stability and Absence of Violence (POS), Voice and Accountability (VOA), Regulatory Quality (REQ), and Rule of Law (ROL). We follow Delavallade (2006) and Adedokun (2017) and transform the institutional data into a composite index (INS) on a range of 0 (weak institutions) to 5(strong institutions) by adding 2.5 to World Bank Institutional Indicator. We then take the average of the six indicators to have a composite index (Table 1) (Olaniyi & Oladeji, 2020; Ajide, 2021).

Table 1. Sources of data and variable measurements

Variables	Acronym*	Measurements	Sources
Entrepreneurial start-ups	*EP*	Number of new registered business per 1 000 adult population	World Bank Entrepreneurship Database
Oil rent	*LOIL*	Oil rents expressed as percentage of GDP. Oil	World Bank Database
Quality of Institutions	*INS*	Average of the six governance indicators after adding 2.5 to make a scale, ranging from 0 (weak) to 5 (strong).	World Governance Indicators
economic growth	*GRO*	it is measured as growth rate of annual GDP per capita	World Development Indicators
Days required to start a new venture	*LTM*	Measured as the time it takes venturing activities to commence expressed in days	Doing Business indicators
Number of firms' registration procedures	*LST*	The number of procedures for a firm to complete formal register in a country.	Doing Business indicators

Note: * LOIL, LTM and LST are converted to natural logarithm.
Source: own study.

In Table 2, we show the descriptive statistics of the study variables. The mean value of new business density is 2.39 per 1000 people between the age of 15-64. This implies in a population comprises of adults, there are two persons venturing into entrepreneurial activities. The maximum number of adults engaged in business registration within the period of study is 10.38 per 1000 adults. In addition, the natural log of oil rent is 0.91 with a highest value of 4.02. The composite institution index has a

mean of 1.19 on a scale of zero to five. This portrays that the quality of institutions in African oil-dependent countries is too low.

Table 2. Descriptive statistics

Statistics	EP	LOIL	INS	LST	LTM	GRO
Mean	2.39	0.910	1.191	0.928	1.384	4.053
Median	0.97	0.445	1.372	0.903	1.267	3.82
Maximum	10.38	1.747	2.923	1.11	1.732	10.06
Minimum	0.00	0.00	0.000	0.609	0.698	-3.31
Std. Dev.	3.23	1.065	1.011	0.379	1.164	2.82
Observations	127	143	143	143	143	143

Source: own elaboration.

The growth of these countries is about 4.05 with a maximum of 10.06. The volatility rate is 2.82 due to frequent fluctuation in oil price in global market. The number of days for registering business and start-ups requirement is reasonably acceptable based on the criteria set by World Bank Doing Business Indicators. This development can be attributed to the doing business reforms currently taking in these countries.

Derivation of marginal impacts and threshold values

As shown in equation (1), it is very clear that oil impact on entrepreneurial activities can be directly captured through β_1 and indirectly captured through β_3. This implies that the coefficients measured the conditional impact of institutions in the relationship between oil rent and entrepreneurial start-up. In a situation of ($\beta_3 > 0$) and ($\beta_1 > 0$), it implies that institution complements oil rents in enhancing entrepreneurial start-ups. Meanwhile, if ($\beta_3 < 0$) and ($\beta_1 < 0$), it means the quality of institutions worsening the negative effect of oil rents. However, if ($\beta_3 < 0$) and ($\beta_1 > 0$), it means institutions weaken the positive impact of oil rents on entrepreneurial start-ups. We can also compute the marginal impact by taking the partial derivatives of equation (1) and making it equal to zero. This leads us to the computation of the institutional quality threshold value of ($\frac{\beta_1}{\beta_3}$) (Ajide & Osinubi, 2020; Ehigiamusoe *et al.,* 2020).

Estimation strategies

Before we estimated the model, we examined the properties of our data via panel unit root test of Levin, *et al.* (2002) and Augmented Dickey Fuller (Fisher) panel unit test (Fisher, 1932). This is done to avoid spurious regression and to select appropriate estimation. After the confirmation, we employ two stage least square instrumental variables (2SLS/IV). Compared to Ordinary Least Square (OLS), 2SLS/IV is more reliable in the presence of endogeneity problem, especially when independent variables correlate with error terms. In addition, it is useful when there are feedback loops in the model. Therefore, it serves as an extension to OLS. In the implementation of IV/2SLS, we follow the procedure of Ivashina (2009) and Asongu and Tchamyou (2015). We regressed the entrepreneurial start-ups variable on its first lag. In the second stage, we used the saved fitted values as loading for the main regression (Tchamyou, 2014; Asongu & Tchamyou, 2015; Ferede, 2019; Ajide, 2021). As a robustness check, we implemented panel correction standard error estimator (PCSE) for correction of any potential contemporaneous error.

RESULTS AND DISCUSSION

Preliminary test

In Table 3, we report the panel unit tests conducted on each variable using ADF-Fisher type and LLC tests. The tests reveal that the variables are stationary at level, meaning they have integration of order zero.

Based on these results, testing for panel co-integration is irrelevant in this study. This justifies the appropriateness of panel least square (POLS), fixed effect (FE), IV/2SLS, and PCSE techniques.

Table 3. Panel unit root tests

Variables	ADF Fisher-type unit-root test at level	Levin-Lin-Chu unit-root test at level
EP	-4.0205*** (0.000)	-4.5929*** (0.000)
LST	-7.5807*** (0.000)	-6.3759*** (0.000)
GRO	-2.7203** (0.001)	-4.4327*** (0.000)
LOIL	-8.6864*** (0.000)	-5.2605*** (0.000)
LTM	-4.8554*** (0.000)	-6.3597*** (0.000)
INS	-2.4675*** (0.000)	-5.3926** (0.000)
COR	-3.7920*** (0.000)	-2.7932*** (0.000)
GOE	-2.6903*** (0.000)	-4.1861*** (0.000)
POS	-4.1849*** (0.000)	-4.3565** (0.000)
REQ	-2.5165*** (0.000)	-5.5058*** (0.000)
ROL	-4.3907*** (0.000)	-5.0620*** (0.000)
VOA	-8.7617*** (0.000)	-5.1928*** (0.000)

Note: ***, **, * denote significance at 1%, 5% and 10% respectively. The null-hypothesis is that series has a common unit root. P-values are in parentheses.
Source: own study.

Impact of oil rent on entrepreneurial start-ups and mediating Effect of institutions

In most cases, it is often difficult to know the most reliable techniques to be used. This is basically due to the fact that each technique has its own strengths and weaknesses. For example, POLS technique is based on the assumption of no issue of variables' omission. This assumption is hardly met in practice. In the same vein, the panel fixed effect (FE) estimator permits shifts in intercept for individual unit in the panel. Based on these, the study reports the results from the two estimating techniques. Furthermore, there is a growing literature suggesting the probability of potential endogeneity between entrepreneurship and macroeconomic factors (Acs *et al.,* 2012; Ferede, 2019). Failure to consider this issue may lead to fundamentally biased estimated coefficient (Adeniyi *et al.,* 2015; Ajide, 2021). In order to address this problem, we re-estimate the model using instrumental variable estimator of two stage least square (IV/2SLS). Table 4 reports the results of the relationship between entrepreneurship, oil rent, and institutional quality in Africa.

The table 4 reveals that oil rent is positive across the estimations but not statistically significant for the case of POLS coefficient and only significant at 10% for the case of FE estimator. The coefficients of FE have substantially higher magnitudes compared to POLS. However, all the coefficients in the two estimates are lower in terms of magnitude compared with the coefficients in IV/2SLS estimated results. In addition, the coefficient of interaction term in POLS is negative, but not statistically significant while in other competing estimators (FE and IV/2SLS), the coefficients are significant. However, all the coefficients in IV/2SLS estimator are higher than those ones produced by FE. Though in terms of coefficient signs the three estimators are similar, but for obvious reasons POLS and FE estimation techniques are relatively biased and understate the coefficients of the variables.

This may be due to variables omission, endogeneity or simultaneity biasedness. For this reason, our discussion is based on the results of IV/2SLS estimator.

Column 4 (the IV/2SLS) shows that the association between the oil rent and entrepreneurial start-ups is positive and significant irrespective of estimating techniques. Moreover, the results show that the impact of institutional quality on entrepreneurial start-up is positive and significant at 1% significance level. Specifically, a percent increase in oil rent improves the level of an entrepreneurial start-up by 7.2%. This submission is consistent with the view of 'big-push' effect of natural resources, expressed in Rosenstein-Rodan (1943) and Murphy *et al*. (1989). It is believed that natural resource discovery or boom would offer the needed fund and physical capital to speed up the level of industrialization though business development and sustained economic activities (Sachs & Warner, 1999). Furthermore, our results conform to the study of Okkonen and Suhonen (2010; 2013). They show that oil and gas rent improves new business set-ups and lead to an improvement in disposable income of oil rich countries. Similarly, the results suggest that the direct impact of institutional quality increases the level of entrepreneurship. Thus, a 1% increases institutional quality improves the level of business entry by 7.18%. This is consistent with the confirmation of Torres and Godinho (2019). They recommend that control of corruption matters in the achievement of entrepreneurial development in the economies of oil-rich countries. However, the coefficient of interactive variables of oil rent and institutional quality is negative and significant at 1% level of significance supporting the view that government owns oil well may be lobbied by entrepreneurs who see opportunity to connect with government and weaken the institutional quality through rent seeking behaviour. These entrepreneurs further participate in unproductive activities that reduces the level of innovative output (Kolstad & Wiig, 2009; Hodler, 2006).

In this vein, Majbouri (2016) documents that an increase in oil rent per capita diminishes entrepreneurial development in an environment with high level of corrupt practices. The coefficient of interaction terms present the case of resource curse hypothesis via governance and institutional quality, leading to reduction in the number of entrepreneurial start-ups in oil-rich African countries (Fuso & Gafa, 2019). This is because the abundance of oil rents may bring a new political landscape for democracy with some elements of autocratic system leading to inefficient redistributive policies that weaken existing institutional quality (Auty, 2000; Sachs & Warner, 2001; Acemoglu *et al*., 2004). It also means that oil rent may retard entrepreneurial start-ups indirectly through the impact of institutional quality (Isham *et al*., 2005; Olayungbo & Adediran, 2017).

In fact, the conventional wisdom suggests that institutional quality should improve entrepreneurial development. This is workable on the premise of governance stability, bureaucratic quality, and absence of corruption. Meanwhile, as shown in the results, oil rent may distort the process as documented. This also reflects the view of Aparicio *et al*. (2016). They explain that institutional conditions perform vital roles in ascertaining whether entrepreneurial creativities would lead to productive outcomes (Baumol, 1996). Further, in oil-rich countries, the government mainly depends on oil rent to make other sectors of the economy functional. Since government is the primary receivers of rents, this oil rent has potential impact on political and other institutional structure of the economic system. Any negative shocks to the oil rent affects the institutional quality and may retard the level of entrepreneurial mindsets of citizens.

Threshold of institutional factor in oil rent-entrepreneurial start-ups nexus

Following the existing literature (Olaniyi & Oladeji, 2020; Ajide, 2021), the institutional quality's threshold that need to be accomplished by the countries in order to gain from oil rents with respect to entrepreneurial start-up is calculated. The estimated equation (1) is differentiated with respect to *LOIL* (Oil rent). The resultant equation is made equal to zero to obtain the threshold level, $\frac{\partial(EP)}{\partial LOIL} = 7.243 - 3.241INS = 0$. Table 5 presents the marginal impacts and threshold level at which institutional context would advance African entrepreneurial activities.

Table 4. Regression results

Variables	POLS	FE	IV/2SLS
LOIL	0.061 (0.366)	0.431* (0.054)	7.243** (0.011)
INS	1.467*** (0.008)	1.309 (0.371)	7.183*** (0.003)
LOIL×INS	-0.045 (0.241)	-0.309** (0.024)	-3.241*** (0.008)
LST	-0.611 (0.000)	1.455* (0.046)	-1.463 (0.439)
LTM	0.049*** (0.002)	-0.326 (0.588)	-1.736 (0.296)
GRO	-0.173 (0.120)	-0.0059 (0.849)	0.327 (0.676)
Constant	4.069** (0.010)	-2.830 (0.398)	-8.201 (0.221)
R-squared	0.272	0.934	n/a
Wald test	82.18	107.355	2143.803
P-value (Wald test)	0.000	0.000	0.000
Hausman Test(Ch-Sq.St)		18.394 (0.005)	
Prob. (J-stat)	n/a	n/a	0.444
No. of countries	11	11	11

Note: dependent variable is entrepreneurial start-ups (EP).***, **, * denote significance at 1%, 5% and 10% respectively. The first lag of entrepreneurial start-ups variable is used as instrument. P-values are in parentheses.
Source: own study.

Table 5. Marginal and total impacts of oil rent and threshold value of institutional quality

Levels of impact	Indicators
Unconditional impact	7.243**
Conditional impact	-3.241***
Threshold value for institutional quality(scale: 0 to 5)	2.23**

Note: **,*** denote significance at 5% and 1% respectively.
Source: own study.

Table 5 shows that for oil rent to contribute meaningfully to improving the level of entrepreneurial start-ups, African oil dependent countries must setup an institutional quality framework with a threshold value of 2.23 on a five-point scale. As demonstrated in the earlier results, it is very clear that the current level of institutional quality does perform a positive role in strengthening the relationship between oil rent and entrepreneurial start-ups. It rather stunts the oil rent in the process of entrepreneurial development by playing substitutive role in the entrepreneurial process. This occurs due to weak institutional development which is below the threshold point. The current average level is 1.19 which is below the threshold value of 2.23. The oil-rich countries in Africa have a lower institutional quality which makes it hard to stimulate entrepreneurial development. Even those countries that seem to have a reasonable level of institutional quality are unable to maintain it over time. It has been established that if institutional quality is below the acceptable level, it may drag the level of growth and entrepreneurship of an economy behind the contemporaries. This submission also supports the argument of resource curse in oil rich countries explaining that rent seeking behaviour in those countries may alter and weaken the institutional structures (Frankel, 2012). It may result in negative or insignificant impact (Olaniyi & Oladeji, 2020; Ajide & Osinubi, 2020). However, beyond the threshold issues, oil rent has a direct positive impact on entrepreneurial start-ups.

Robustness check

In most cases, the indicators of business environment such as time required to start business (days) and start-up procedures (number) display repeated observation on some set of countries. When estimated, this kind of data may reveal non-spherical errors. It may exhibit heteroskedasticity and contemporaneous errors across units. This makes statistical inferences from standard errors generated through ordinary least square inaccurate (Bailey & Katz, 2011). In order to correct this potential problem, we implemented Beck and Katz (1995)'s panel-corrected standard errors (PCSE) as a robustness test reported in Table 6. We documented some interesting results, most especially, on the coefficients of institutional requirements in establishing businesses. These include time required to start a business (LTM) and start-up procedures (LST). Their coefficients become significant at 1% significance level while other variables are also significant.

Table 6. Results of regressions on composite and individual institutional indicators (with PCSE)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LOIL	0.061**	0.039*	0.0631***	-0.008	0.062**	0.063**	-0.013
	(0.041)	(0.087)	(0.014)	(0.764)	(0.036)	(0.024)	(0.247)
INS	1.467***						
	(0.000)						
LOIL×INS	-0.045**						
	(0.021)						
REQ		1.090**					
		(0.010)					
LOIL×REQ		-0.032*					
		(0.094)					
VOA			0.034				
			(0.839)				
LOIL×VOA			-0.022				
			(0.185)				
GOE				0.903***			
				(0.001)			
LOIL×GOE				0.009			
				(0.649)			
COR					3.214***		
					(0.000)		
LOIL×COR					-0.048*		
					(0.066)		
ROL						0.590*	
						(0.060)	
LOIL×ROL						-0.040*	
						(0.084)	
POS							0.270
							(0.178)
LOIL×POS							-0.005
							(0.236)
LST	-0.611***	-0.077	-0.660***	-0.672***	-0.098	-0.653***	-0.067
	(0.000)	(0.279)	(0.000)	(0.000)	(0.147)	(0.000)	(0.359)
LTM	0.049***	0.006	0.056***	0.054***	0.024	0.055***	0.003
	(0.000)	(0.703)	(0.000)	(0.000)	(0.189)	(0.000)	(0.840)
GRO	-0.173***	-0.009	-0.183***	-0.171***	0.012	-0.179***	-0.007
	(0.007)	(0.390)	(0.004)	(0.006)	(0.380)	(0.007)	(0.445)
Constant	4.069**	2.561***	7.509***	7.855***	4.110***	7.660***	2.305
	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
R-squared	0.364	0.237	0.335	0.354	0.337	0.338	0.126

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Wald test	364.70	36.88	114.27	118.87	35.47	147.44	13.07
P-value(Wald test)	0.000	0.000	0.000	0.000	0.000	0.000	0.001
No. of countries	11	11	11	11	11	11	11

Note: dependent variable is entrepreneurial start-ups (EP). Note: Control of Corruption (COR), Government Effectiveness (GOE), Political Stability and Absence of Violence (POS), Regulatory Quality (REQ), Rule of Law (ROL) and Voice and Accountability (VOA). ***, **, * denote significance at 1%, 5% and 10% respectively. P-values are in parentheses.
Source: own study.

Most importantly, our variables of interest (except the estimated models that contain GOE and POS) still remain significant and have similar signs with the results generated from pooled OLS, fixed effect, and IV/2SLS. The robustness tests further support the view of Hodler (2006) who explains that resource rents offer negative pressure on institutional environment. In the same vein, Mavrotas *et al.* (2011) suggest that institutional quality performs a significant role in the determination of what would be the resource rent in a given economy. This means that in a society with larger presence of oil rents, the extent of institutional quality would determine whether there would be positive or negative outcomes. Therefore, the impact of oil rents will probably differ from country to country depending on the quality of institutional framework that guides governance machineries (van der Ploeg, 2011). To sum up, the coefficients of the interaction terms suggest that due to weak institutional quality of oil-rich countries in Africa, oil rents become a curse to their economies.

CONCLUSIONS

This article contributes to the debates on the oil rents-entrepreneurial development nexus by investigating the role of institutional quality in the relationship. The study employs panel estimating techniques to analyse the data over a period of 2006-2018 of eleven oil-rich countries in the African continent to provide some interesting contributions to the literature and policy considerations. Firstly, the oil rent impact is positive and significant on entrepreneurial start-ups in Africa. Institutional quality impact is also positive on entrepreneurial start-ups while the interactive coefficients of oil rents and institutions have negative and significant impact on entrepreneurial start-ups. This supports the empirical work documented by a number of studies (Dwumfour & Ntow-Gyamfi, 2018). This group of studies explains that natural resources such as oil rents might be a curse and/or a blessing to the institutional foundation of an economy. Oil rents are linked to downward pressures on quality of institutions (Hodler, 2006). This relates to the assertion that the role of potential destruction of natural resources in an economy such as rent seeking is built on the fact that oil rents are easily appropriable which leads to high rate of bribery, public policy distortions, and diversion of entrepreneurial mindsets away from productivities (Zhukova, 2006). Since it has been acknowledged in the literature that strong institutional quality plays the key role in determining whether oil rent is a curse or blessing, this study empirically develops the threshold level at which institutional conditions for oil rent can be a blessing in oil-rich African countries. The results reveal that threshold level should be 2.23 on a five-point scale. At this minimum level, institutions can forestall the potential negative impacts of oil rents on entrepreneurial start-ups.

In relation to policy perspective, this study shows that the ability of oil rents to consistently promote entrepreneurial development in oil-rich economies is conditioned on institutional context of African society. This situation may create a growth trap for African oil dependent economies in which entrepreneurial start-ups are dependent on quality of institutional foundations, which would position the growth inclusiveness and government actions on the right paths. In this context, our empirical findings suggest that African governments need to work on the institutional quality of their economies to reduce the institutional curse of oil rents on entrepreneurial start-ups. This study documents that oil rent influences entrepreneurial start-ups, but the institutions might be a curse to this impact, thereby reducing its efficacy on entrepreneurship development. Furthermore, our results reveal that business start-up regulations reduce the entrepreneurial development in Africa. In this case, reforms are needed to ensure that regulation is beneficial for the progress of entrepreneurial start-ups.

The main limitations of the study are highlighted as follows. The first group of the limitations relates to data availability for entrepreneurship. We have only explored World Bank database on entrepreneurship which is mainly available at national level over a short period. Future studies may explore national survey data. Whenever new African datasets are available, future researchers may employ other measures of entrepreneurship including self-employment rates, Global Entrepreneurship Monitor. Moreover, they may establish business ownership rate, which, among other, is necessity and opportunity driven. Secondly, another group of our study's limitations relates to the employed econometric strategies. We are unable to replicate the results using dynamic econometric tools and its variants. This may serve as an aspiration for future studies. Finally, this study employs quantitative tools of analysis, hence, future studies may re-investigate the study's objective using qualitative analytical tools.

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Working capital financing and corporate profitability in the ASEAN region: The role of financial development

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ABSTRACT

Objective: This article empirically investigates the role played by financial development in determining the relationship between working capital financing and firms' profitability.

Research Design & Methods: Employing data of publicly listed manufacturing firms in five ASEAN countries – namely Indonesia, Malaysia, Philippines, Singapore, and Thailand – spanning 2009-2018, resulted in 6183 firm-years observations. This study conducts an analysis using the two-steps generalized method of moments (GMM) estimator.

Findings: The inverted U-shape effect of working capital financing on firm profitability is confirmed. Moreover, new evidence appeared that firms which operate in more financially developed regions have the opportunity to utilise a greater percentage of short-term debt without destroying their profitability.

Implications & Recommendations: Corporate managers should avoid using excessive short-term debt to finance their working capital requirement as the risk of refinancing and interest outweigh its benefit. Secondly, given the significant role played by financial development, policy makers should give priority to financial reforms and development to ensure firms have access to finance and hence foster their growth for the benefit of the economy.

Contribution & Value Added: This article contributes to the existing literature in two ways. Firstly, this is the first study to analyse the role of financial development on working capital financing and profitability relationship. Secondly, the study extends the insight of this research area onto a large emerging region that has never been studied before: the ASEAN region.

Article type: research article

Keywords: working capital financing; financial development; performance

JEL codes: G30, G32

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INTRODUCTION

Working capital management is essential to firms' decision-making. Working capital policies are necessary for the firm as they have direct effects on day-to-day activities, which in turn affect company performance. Corporate finance literature argues that managing working capital focuses on two aspects, namely investment and financing decisions. So far, there have been numerous empirical studies examining the effect of working capital investment on firm performance (*e.g.* Shin & Soenen, 1998; Deloof, 2003; Kieschnick *et al*., 2013; Aktas *et al*., 2015; Baños-Caballero *et al*., 2014; Charitou *et al*., 2012; Setianto & Pratiwi, 2019). However, studies on the financing of working capital are very limited; so far, three empirical studies have examined the impact of financing policy of working capital requirements on performance (Baños-Caballero *et al*., 2016; Altaf & Ahmad, 2019; Pandan & Nanda, 2018).

To finance their working capital, firms have two alternatives, namely internal financing sources using free cash flow or external funding sources using debt or equity. Theoretically, financial managers

may adopt conservative or aggressive financing strategies, with each of these strategies having specific costs and benefits. Thus, managers must find an optimal combination between short-term and long-term sources when financing their working capital requirements and maximizing firm performance.

Few empirical studies identify the impact of working capital financing (WCF) on company performance. Baños-Caballero *et al*. (2016) are the first to examine the case of Spanish firms. They found that working capital financing strategies have an inverted U-shaped effect on performance. Studies conducted in India by Altaf and Ahmad (2019) and Pandan and Nanda (2018) have revealed a U-shaped relationship, which indicates that both conservative and aggressive financing strategy will have a positive effect on firm profitability. So far, there are only three studies that have examined the relationship of working capital financing and company performance, thus encouraging this study to expand research in this field to the context of manufacturing companies in the ASEAN region.

The main objective of this study is to examine the role of financial development on the relationship between working capital financing and profitability in ASEAN countries. This article attempts to contribute to this line of enquiry in several novel ways. Firstly, complementing the previous studies in working capital financing, we analyse the role played by financial development, a factor that has not been examined previously. Cross-country studies conducted by Rajan and Zingales (1995) and Booth *et al*. (2001) suggest that financial development is a primary factor that affect firms' financing decisions. It means that financial development could possibly become a factor that determines the relationship between working capital financing and firm performance. The level of financial development in which a company operates will determine the ease of access to external financing. Financial development will expand firms' financing sources, reduce financial constraints, and effectively decrease the cost of external financing. De Carvalho (2009) argues that bank and other financial institutions' credit is easier to access by the firms in countries with advanced degrees of financial development. Accordingly, we see a need to scrutinise whether financial development is a factor that can determine the working capital financing and performance relationships.

Secondly, ours is the first study to analyse working capital financing in the ASEAN context. The ASEAN region has the potential to be an interesting example because it consists of developing countries with unique characteristics and world attention. According to the World Bank, the ASEAN's contribution to the global economy reached 3.5% in 2018. The ASEAN region has a very large domestic market, reaching 642 million people, with a very large middle class, causing the economy in this region to grow rapidly by 5.9% each year, far higher than global economic growth, which typically reaches only 3.8%. This wide-open business opportunity provides a strong incentive for companies in this region to grow more rapidly. Expansion becomes a choice that must be taken by the company, causing greater complexity in managing a business, including working capital. On the other hand, when compared to developed countries' financial markets, ASEAN countries' financial markets are relatively underdeveloped. As stated by Gertner *et al.* (1994) and Lee *et al*. (2012), companies in emerging markets may rely more on internal funds and banks as sources of financing because their stock markets are less developed. The banking sector is still the main form of financial intermediation and the major source of external capital for companies and parties who need capital to run their business (Mishkin, 2001). Some of the above characteristics may not occur in places where other previous studies were conducted. Therefore, this study is expected to fill research gaps and broaden understanding related to the working capital financing strategies in the setting of large emerging markets.

Thirdly, this study conducted an analysis by employing panel data procedure to account for the unobservable heterogeneity. Lastly, the generalized method of moments (GMM) technique was employed to overcome the potential problem of endogeneity.

In this study, a concave relationship is demonstrated between short-term debt financing of working capital requirement and performance. That is, the effect of working capital financing is positive at low portions of short-term debt and negative at greater levels of short-term debt. In addition, new evidence is found that the optimal level of short-term debt financing is changed not only due to the degree of financial constraints faced by each firm but also due to the degree of financial development

of the country where the firm operates. Firms in the higher level of financial development region exhibit higher optimum levels of short-term debt financing. These results are robust by the introduction of various proxies of financial constraints and country level of financial development.

The rest of the article is organized as follows. The next section will review the relevant literature on the relation between working capital financing, firm performance, financial constraints, and financial development. Section 3 will demonstrate the data, variables, and empirical approach. Section 4 will present the estimation results, and the final section will offer concluding remarks.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Working capital financing and firm performance

Traditional corporate finance literature suggests that strategies in financing current assets affect performance (Smith, 1980; Van Horne, 1969). However, few empirical studies examine the relationship. Theoretically, working capital requirement is the gap between current assets and accounts payables. If the current asset is greater than the account payables, financial manager has to seek the most suitable funding source to finance the working capital requirement. For that purpose, financial manager may choose between short-term and long-term sources of financing; the choice will determine whether the manager adopts a conservative or aggressive strategy in financing the working capital requirement. Both strategies have their own costs and benefits; it is contingent upon internal and external conditions of each company (Baños-Caballero *et al.*, 2016). It is the challenge for managers to align the policies with company characteristics and hence will lift company performance.

Very limited empirical research provides evidence of the significant relationship between financing of working capital policies and financial performance. Baños-Caballero *et al.* (2016) first investigate the impact of working capital financing and profitability for the case of small and medium-sized enterprises (SME) in Spain. They found that the impact of working capital financing on performance was to follow the inverted U-shape. Another study by Pandan and Nanda (2018) suggests different patterns of working capital financing and profitability relationship across sectors in India. They found that aggressive strategy resulted in higher profitability for chemical, construction, and consumer good sectors, while a concave pattern was found for machinery, metal, and textile industries. The most recent study conducted by Altaf and Ahmad (2019) in India supports the concave relationship of financing in working capital and performance.

Since previous studies suggest the non-linear effect of working capital financing policies on performance, it implies that finance of working capital requirement with short-term debt will brings some benefits for the firm; however, it also carries substantial risk. Therefore, the effect may either be positive or negative.

The greater proportion of working capital requirement funded by short-term debt has several positive impacts on company performance. Jun and Jen (2003) argue that short-term debt has a lower default and inflation risk than long term debt, hence the lower nominal interest rates of short-term debt. Short-term debt is also easily adjusted based on the firm's financial condition. Short-term financing can reduce agency problems between shareholders and debtholders because there are other parties, namely creditors who also oversee the management (Baños-Caballero *et al.*, 2016). Moreover, the existence of debt can also reduce the cost of equity agents. Short-term financing can solve the problem of underinvestment due to periodic credit renewals, so companies that need financing for investment can issue short-term debt to reduce underinvestment risk in the company (Ozkan, 2000).

Conversely, the excessive use of short-term debt is likely to impose an adverse effect on company performance. Firms will face higher refinancing and interest rate risks if the working capital requirement for financing uses a large percentage of short-term credit. As short-term credit has a short maturity period, companies may possibly find it difficult to refinance their short-term debt and may have to bear greater cost of funds when making new loans; hence using too much short-term loan to finance working capital requirement will harm company performance (Baños-Caballero *et al.*, 2016).

Based on these arguments, the advantages and disadvantages of short-term debt that will be felt by firm depend on the proportions used. When the proportion of working capital backed by

short-term debt is low, an addition in short-term debt will increase company performance because the benefits outweigh the costs. Conversely, when the percentage of short term-debt is high, an addition to short-term loan to finance working capital requirement may result in declining firm performance, since the costs incurred may exceed the benefits (Baños-Caballero *et al.*, 2016). Thus, it is possible to have a reversed U-shape effect of working capital financing on company performance. Therefore, we posit the following hypothesis :

H1: The effect of short-term debt used to finance working capital requirement on profitability follows an inverted U-shape.

Working capital financing and the effect of financial development

Modigliani and Miller (1958) suggest that in a frictionless world, firms can easily access external financing without barriers, so internal capital is not the only factor that determines firm investment as both are perfect substitutes. Conversely, in an imperfect capital market (i.e. information asymmetry and agency costs), the cost of external capital will be higher than internally generated funds (Myers & Majluf, 1984). In the same vein, Fazzari *et al*. (1988) argue that internal finance availability, access to financial markets, and financing cost may determine firms' investment. Furthermore, Faulkender and Petersen (2006) argue that the financing decision is determined by both supply and demand of capital. Cross-country studies by Rajan and Zingales (1995) and Booth *et al.* (2001) indicate that firms' capital structures are affected by financial market environment and the degree of financial development. More specifically, Schmukler and Vesperoni (2006) suggest that financial development is the main external condition that determines a firm's financing policy.

Financial development will reduce the cost of external funding and, therefore, provides a better debt financing alternative for the firm and encourages the firm to have a higher level of debt financing. In the case of an emerging economy – characterized by a less developed capital market – firms may rely more on internal capital markets and banks as sources of financing. The banking sector is still the main form of financial intermediation and is a major source of external capital. According to Fan *et al.* (2012) information asymmetry and contracting costs between firm and creditor are the crucial factors for firms' capital structure. In a well-developed financial system, banks can easily obtain debtors' information to avoid manager opportunistic behaviours, hence banks are willing to lend credit to firms with a low cost of debt (Diamond, 1991). In contrast, firms in a less developed financial system face a higher level of asymmetric information problems, so banks charge higher contracting costs to control their credit risk. Moreover, in less developed financial systems, banks prefer to provide long-term debt due to their capacity to collect information on debtors' economy of scale and supervise the debtors (Barclay & Smith, 1995; Demirguc-Kunt & Maksimovic, 1996) since they will face a higher level of asymmetric information and moral hazard problems with borrowers by providing short-term debt. Consequently, financial development provides an easy access for the firms to obtain external debt and lower the cost of debt (Guiso *et al.*, 2004). Accordingly, as positive working capital requirement needs financing, one would predict that firms that operate in more financially developed regions will have higher optimal levels of short-term debt financing. Baños-Caballero *et al*. (2021) confirm that NWC adjustment speed is faster for firms that operate in countries with higher levels of financial development. Based on the above discussion, we propose the following hypothesis:

H2: The optimal proportion of short-term debt to finance working capital requirement is higher for firms in more financially developed regions.

RESEARCH METHODOLOGY

Data

The firm-level data used in this study were obtained from the Bloomberg database. The sample comprised publicly listed manufacturing firms of ASEAN-5 countries, namely Indonesia, Malaysia, Philippines, Singapore, and Thailand for the period of 2009-2018, resulting in 6183 firm-year observations.

The selection of manufacturing firms was conducted according to Hill *et al.* (2010) in that manufacturing firms have different working capital policies from those of service firms. More specifically, manufacturing firms were characterized with high inventory levels, while the services sector could have no inventory at all. Therefore, to avoid bias due to differences in the business features among industrial sectors, this research employed manufacturing companies as samples.

Empirical approach

To estimate the effect of working capital financing on firm profitability, the analysis was based on equation (1) below, which followed Baños-Caballero *et al.* (2016). The study employed a quadratic function to capture the possible non-linear relationships and to identify the optimum point. Additional control variables were also included in the equation to control the possible bias that could arise on account of omitted variables.

$$ROA_{i,j,t} = \beta_0 + \alpha ROA_{i,j,t-1} + \beta_1 WCF_{i,j,t} + \beta_2 WCF^2_{i,j,t} + \beta_3 Size_{i,j,t} + \\ + \beta_4 Growth_{i,j,t} + \beta_5 AT_{i,j,t} + \beta_6 Lev_{i,j,t} + \varphi_t + \delta_i + \varepsilon_{i,j,t} \quad (1)$$

In the above equation, *i, j,* and *t* represented firms, countries in which the firm locates, and time, respectively. The abbreviation ROA meant return on assets, which was measured by the ratio of net profit to total asset. The terms WCF and WCF^2 were working capital financing which were measured by the ratio of short-term debt to working capital requirement. The inclusion of these two variables was meant to allow non-monotonic effects of working capital to firm profitability. If the inverted U-shape relationship between working capital financing and profitability was hypothesized, a positive sign on β_1 and a negative sign on β_2 were expected. Moreover, the break-even point beyond which the effect of working capital financing on firms' profitability would change was estimated by $-\beta_1/2\beta_2$. Following Baños-Caballero *et al.* (2016) and Altaf and Ahmad (2019), we controlled for firm size, sales growth, asset tangibility, and leverage. The detail operation definition of variables is presented in Table 1 below. In addition, the parameter φ_t was a time dummy, δ_i was unobservable heterogeneity or time invariant individual fixed-effect component, and lastly, $\varepsilon_{i,j,t}$ was the residual error.

Table 1. Variable's definition

Variables	Acronym	Definition	Sources
Dependent Variables			
Return on assets	ROA	Net profit / total assets	Bloomberg
Independent variables			
Working capital financing	WCF	Short-term debt / working capital requirement Where working capital requirement = current assets – accounts payable	Bloomberg
Working capital financing squared	WCF^2	Square of WCF	Bloomberg
Moderation variables			
Financial development	FD	Private sector credit to GDP	https://data-bank.worldbank.org
		Financial institution index	https://data.imf.org
		Financial development Index	https://data.imf.org
Control variables			
Firm size	Size	Natural logarithm of total assets	Bloomberg
Growth	Growth	(Current year sales / previous year sales) – 1	Bloomberg
Asset tangibility	AT	Fixed assets / total assets	Bloomberg
Leverage	Lev	Total debt / total assets	Bloomberg

Source: Baños-Caballero *et al.* (2016); Altaf and Ahmad (2019).

This study employed the panel data approach to estimate the model specifications. The approach was adopted because panel data methodology offers several benefits. Firstly, this method is developed to control for unobservable heterogeneity (Hsiao, 2014). Secondly, it provides more indicators, produces more variability, and less collinearity among variables (Hsiao, 2014). Lastly, it overcomes the

endogeneity problem, as the error disturbances that affect dependent variables may also affect independent variables. Accordingly, the two-step generalized method of moments (GMM) approach developed by Arellano and Bond (1991) was employed to estimate the model specification; hence, endogeneity was controlled through the use of instrumental variables. Following Arellano and Bond (1991) the differenced lagged dependent variable and lagged differences of independent variables can be instrumented with their lags in levels, lagged two or more periods, while the exogenous variables can serve as their own instruments.

RESULTS AND DISCUSSION

Descriptive and correlation analysis

Table 2 below provides descriptive statistics of return on assets, working capital financing, and the control variables for all samples and specific countries in the form of mean, standard deviation, minimum, and maximum. In the sample, the average of ROA was 0.043. This value was close to the average of member countries. The range of working capital financing was observed to range from zero to 0.991, with an average of 0.468, which implied that on average 46.8% of working capital requirement of ASEAN firms are financed through short-term debt. Moreover, standard deviation values also suggested the diversity of working capital financing strategy among sample firms. Interestingly, the examination of individual countries' data revealed that the average values are varied across countries. Indonesian firms on average had the highest percentage of short-term debt financing of working capital requirement, which indicated that Indonesian firms adopt more aggressive working capital financing strategy compared to other ASEAN counterparts. Singaporean firms have the lowest proportion of short-term debt financing of working capital. For the control variables, the average of firm size was 27.821 (in natural logarithm) and the average sales growth was around 0.122. Furthermore, asset tangibility variable calculated by the ratio of fixed assets to total assets had the average value of 0.436 and mean value of leverage – total debt to total assets – was 0.181, which suggested that ASEAN firms rely more on equity financing than debt financing.

Table 2. Descriptive statistics

Country	Variables	N	Mean	SD	Min.	Max.
ALL	ROA	6183	0.043	0.176	-3.797	9.736
	WCF	6183	0.468	0.655	0.000	0.991
	Size	6183	27.821	1.536	23.082	33.323
	Growth	6183	0.122	0.491	-1.000	8.459
	AT	6183	0.436	0.209	0.000	0.986
	Leverage	6183	0.181	0.164	0.000	2.497
	Credit to GDP	30	92.629	41.174	27.253	149.373
	FII	30	0.394	0.056	0.297	0.450
	FDI	30	0.553	0.164	0.294	0.760
IDN	ROA	751	0.055	0.364	-0.755	9.736
	WCF	751	0.456	0.635	0.000	0.823
	Size	751	28.248	1.608	23.082	32.469
	Growth	751	0.143	0.479	-0.94	6.636
	AT	751	0.489	0.215	0.039	0.952
	Leverage	751	0.228	0.166	0.000	0.901
	Credit to GDP	10	34.698	4.803	27.253	39.402
	FII	10	0.394	0.056	0.297	0.450
	FDI	10	0.345	0.026	0.294	0.380
MYS	ROA	2656	0.038	0.158	-3.797	5.153
	WCF	2656	0.407	0.517	0.000	0.991
	Size	2656	27.531	1.445	23.803	32.833
	Growth	2656	0.11	0.524	-1.000	8.459
	AT	2656	0.446	0.213	0.000	0.986

Country	Variables	N	Mean	SD	Min.	Max.
	Leverage	2656	0.169	0.141	0.000	0.989
	Credit to GDP	10	116.445	5.775	107.122	123.104
	FII	10	0.697	0.011	0.680	0.716
	FDI	10	0.662	0.017	0.629	0.690
	ROA	156	0.064	0.060	-0.278	0.344
	WCF	156	0.461	0.410	0.000	0.883
	Size	156	29.128	1.493	26.163	32.227
	Growth	156	0.212	0.656	-1.000	5.691
PHL	AT	156	0.522	0.203	0.009	0.980
	Leverage	156	0.275	0.399	0.000	2.497
	Credit to GDP	10	41.709	13.658	29.163	66.339
	FII	10	0.367	0.035	0.314	0.440
	FDI	10	0.369	0.019	0.335	0.392
	ROA	1499	0.035	0.115	-1.077	1.762
	WCF	1499	0.367	0.553	0.000	0.878
	Size	1499	27.936	1.441	23.896	33.323
	Growth	1499	0.122	0.485	-1.000	7.677
SGP	AT	1499	0.362	0.192	0.003	0.954
	Leverage	1499	0.168	0.147	0.000	1.049
	Credit to GDP	10	115.273	12.219	94.858	128.130
	FII	10	0.719	0.030	0.673	0.770
	FDI	10	0.718	0.019	0.697	0.760
	ROA	1121	0.054	0.076	-0.517	0.624
	WCF	1121	0.530	0.625	0.000	0.960
	Size	1121	27.89	1.636	24.785	33.204
	Growth	1121	0.125	0.385	-0.891	4.659
THA	AT	1121	0.125	0.192	0.011	0.971
	Leverage	1121	0.184	0.169	0.000	0.786
	Credit to GDP	10	136.509	13.917	108.983	149.373
	FII	10	0.691	0.056	0.590	0.750
	FDI	10	0.674	0.046	0.583	0.730

Notes: SD – standard deviation; Min. – minimum; Max. – maximum; ALL – all samples; IDN – Indonesia; MYS – Malaysia; PHL – Philippines; SGP – Singapore; THA – Thailand.
Source: own elaboration in Stata.

Table 3 below presents the coefficients of pairwise correlation for all samples, but also for individual countries' data. The ROA was negatively correlated with WCF, while the results were similar for all sub samples. Size and growth had positive correlation with firm profitability, while asset tangibility and leverage showed negative correlation with ROA. Moreover, to ensure that the analysis was free from the multicollinearity problem, this study estimated variance inflation factor (VIF) to independent variables in all model estimations. The results indicated that none of the VIF values was higher than 5, which implied that the analysis was free from the multicollinearity problem.

Table 3. Correlation matrix

Variables	ROA	WCF	Size	Growth	AT	Leverage
ROA	1					
WCF	-0.0756***	1				
Size	0.0505**	0.0948*	1			
Growth	0.0573**	-0.0184	0.0331*	1		
AT	-0.0250*	0.1493**	0.1839***	-0.0294*	1	
Leverage	-0.0653**	0.4709**	0.3015*	0.0251	0.1401**	1

Notes: ***, **, * denote statistical significances at 1%, 5%, and 10% levels, respectively.
Source: own elaboration in Stata.

Working capital financing and firm profitability

Table 4 below presents the two-step GMM estimation results of the effect of working capital financing on firm profitability, which was estimated based on equation (1). The Table reports the estimation results for all samples and subsamples of individual countries. The serial correlation AR(2) test – indicated by the *p*-values of m_2 – confirmed that there is no second order serial correlation in all model estimations. In addition, the Sargan test to estimates the presence of correlation between instrument variables and error term showed non-significant results indicated by the *p*-values, which implied that there is no correlation between instrument variables and error term.

Table 4. Working capital financing and firm profitability

Variables	ALL	IDN	MYS	PHL	SGP	THA
ROA_{t-1}	-0.079**	-0.047**	-0.300***	-0.554***	-0.095***	-0.222***
	(0.034)	(0.020)	(0.025)	(0.139)	(0.036)	(0.082)
WCF	0.529***	0.058***	0.817***	0.054***	0.283***	-0.137**
	(0.148)	(0.020)	(0.231)	(0.014)	(0.078)	(0.056)
WCF^2	-0.342***	-0.031**	-0.528***	-0.037***	-0.193***	0.115**
	(0.097)	(0.013)	(0.157)	(0.010)	(0.054)	(0.054)
Size	0.044***	0.008***	0.090***	-0.003***	0.006**	0.002**
	(0.007)	(0.002)	(0.006)	(0.001)	(0.002)	(0.001)
Growth	0.116**	0.058**	0.086**	0.002	0.186***	0.036***
	(0.047)	(0.023)	(0.037)	(0.012)	(0.027)	(0.007)
AT	-2.583***	-0.208**	-5.982***	0.155**	-0.687***	-0.020
	(0.562)	(0.101)	(0.329)	(0.065)	(0.190)	(0.013)
Lev	-2.435**	-0.646***	-2.635*	0.0164	-0.811**	-0.074***
	(1,165)	(0.103)	(1,358)	(0.015)	(0.396)	(0.018)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed effect	Yes	No	No	No	No	No
m_2 (P-value)	0.334	0.870	0.112	0.162	0.959	0.312
Sargan (P-value)	0.676	0.127	0.151	0.777	0.434	0.292
N (observations)	6183	751	2656	156	1499	1121

Notes: Table 4 was estimated based on equation (1). Number in parentheses are standard errors. ***, **, * denote statistical significances at 1%, 5%, and 10% levels, respectively. ALL – all samples; IDN – Indonesia; MYS – Malaysia; PHL – Philippines; SGP – Singapore; THA: –Thailand. Instrument used was first lag of WCF. m2 was serial correlation test with the null of no second order autocorrelation.
Source: own elaboration in Stata.

Furthermore, as inferred from all sample results, there appeared a positive and significant coefficient of WCF, while the coefficient β_2 of WCF^2 was negative and significant at the level of 1%. The results supported the first hypothesis that the effect of working capital financing and firm profitability was non-monotonic, following an inverted U-shape. In addition, the results were consistent for individual country subsamples, namely Indonesia, Malaysia, Singapore, and Philippines.

These results suggested that in a low level of short-term debt financing of working capital, additional short-term debt financing will increase firm profitability because the firm will receive benefits associated with short-term debt. Specifically, rather than long-term debt, lower interest rates have a better credit condition as a result of a good firm-bank relationship, they reduce agency problems between shareholders and debtholders, reduce the cost of equity agents, and minimize the risk of underinvestment (Ozkan, 2000; Baños-Caballero *et al.*, 2016). Conversely, for firms with a high percentage of working capital requirement financed by short-term debt, additional short-term debt financing will have negative effects on firm profitability. As the proportion of short-term debt exceeds the optimal level, the risk of short-term debt financing outweighs the benefits. According to Jun and Jen (2003), firms will face higher refinancing and interest rate risk if the working capital requirement of financing uses a large proportion of short-term debt, which in turn will cause financial distress costs. Moreover,

the optimum point beyond which firm profitability tends to decrease was estimated. The results suggested that the approximate breakpoint for all sample was 0.773, estimated based on $(-\beta_1/2\beta_2)$.

Contrary to the main results, there appeared interesting results for the case of Thailand: the coefficient of β_1 was negative and significant, while the coefficient of β_2 was positive and significant. This implied that aggressive working capital financing strategy is more profitable than a conservative strategy thanks to Thailand's financial development level, which is the highest among all the ASEAN countries (see the mean value of credit to GDP ratio in Table 2), hence it is easier for Thai firms to obtain financing from financial institutions with low cost.

Table 5. Working capital financing and firm profitability (spline regression)

Variables	ALL	IDN	MYS	PHL	SGP	THA
ROA_{t-1}	-0.065**	0.071**	-0.297***	-0.572***	-0.087**	-0.075**
	(0.032)	(0.031)	(0.028)	(0.141)	(0.037)	(0.032)
WCF	0.287***	0.029***	0.488***	0.011**	0.168***	-0.009**
	(0.086)	(0.011)	(0.131)	(0.004)	(0.045)	(0.004)
(WCF-WCF*)Z	-0.472***	-0.040*	-0.846***	-0.026***	-0.233***	0.017*
	(0.144)	(0.021)	(0.229)	(0.007)	(0.063)	(0.009)
Size	0.044***	0.009***	0.093***	-0.003***	0.006**	0.003***
	(0.007)	(0.002)	(0.007)	(0.001)	(0.002)	(0.000)
Growth	0.129***	0.059**	0.083**	0.002	0.191***	0.031***
	(0.047)	(0.023)	(0.038)	(0.013)	(0.025)	(0.007)
AT	-2.413***	-0.207*	-6.102***	0.158**	-0.661***	-0.020
	(0.557)	(0.106)	(0.345)	(0.069)	(0.188)	(0.015)
Leverage	-2.394***	-0.646***	-2.507*	0.016	-0.734**	-0.086***
	(1.103)	(0.106)	(1.363)	(0.016)	(0.350)	(0.021)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed effect	Yes	No	No	No	No	No
m_2 (P-value)	0.111	0.900	0.114	0.173	0.956	0.289
Sargan (P-value)	0.666	0.142	0.176	0.794	0.112	0.158
N (observations)	6183	751	2656	156	1499	1121

Notes: Table 5 was estimated based on equation (2). Number in parentheses are standard errors. ***, **, * denote statistical significances at 1%, 5%, and 10% levels, respectively. ALL – all samples; IDN – Indonesia; MYS – Malaysia; PHL – Philippines; SGP – Singapore; THA – Thailand. Instrument used was first lag of WCF. m2 was serial correlation test with the null of no second order autocorrelation.
Source: own elaboration in Stata.

We performed further analysis to ascertain the robustness of the previous results. Following Pattillo *et al.* (2002) and Altaf and Ahmad (2019), we applied the alternative estimation approach: spline regression. For that purpose, the equation (1) was transformed as follows:

$$ROA_{i,j,t} = \beta_0 + \alpha ROA_{i,j,t-1} + \beta_1 WCF_{i,j,t} + \beta_2 (WCF_{i,j,t} - WCF^*_{i,j,t})Z + \\ + \beta_3 Size_{i,j,t} + \beta_4 Growth_{i,j,t} + \beta_5 AT_{i,j,t} + \beta_6 Lev_{i,j,t} + \varphi_t + \delta_i + \varepsilon_{i,j,t} \quad (2)$$

In the above equation, WCF* was the breakeven point calculated based on results of equation (1). The variable Z was a dummy variable that equals one (1) if the corresponding $(WCF_{i,t} - WCF^*_{i,t})$ value is positive and zero (0) if otherwise. More specifically, if the inverted U-shape effect of working capital financing on firm profitability was proved, then we expected β_1 to be positive and β_2 to be negative in equation (2).

Table 5 provides the results of spline regression. The results bear close resemblance with the results reported in Table 4, namely the expected results of positive and significant value of β_1 became apparent. Furthermore, we confirmed that β_2 as the coefficient of $(WCF_{i,t} - WCF^*_{i,t})Z$ was negative and significant at 1 percent level of significance. These results reaffirmed the previous results that the effect of working capital financing on profitability is non-monotonic.

The influence of financial development on the effect of working capital financing on firm profitability

Previous studies in working capital financing issues (i.e., Baños-Caballero *et al*., 2016; Altaf & Ahmad, 2019; Pandan & Nanda, 2018) empirically examined the role of financial constraints in determining working capital financing and profitability relationships. However, no study has yet investigated the external factors that may affect the working capital financing and profitability relationship. As argue Booth et al. (2001), firms' financing decisions are affected by the financial market environment and the level of financial development. More specifically, Schmukler and Vesperoni (2006) suggest that financial development is the main external factor that determines firms' financing policy. Financial development will provide an easy access for the firms to obtain external debt with lower cost of financing (Guiso *et al.,* 2004). Accordingly, firms which operate in more financially developed regions will have higher optimal levels of short-term debt financing. Therefore, we proposed as the main contribution of this study the financial development variable and transformed equation (1) as follows:

$$ROA_{i,j,t} = \beta_0 + \alpha ROA_{i,j,t-1} + \left(\beta_1 + \gamma_1 FD_{j,t}\right)WCF_{i,j,t} + \left(\beta_2 + \gamma_2 FD_{j,t}\right)WCF^2_{i,j,t} + \\ + \beta_3 Size_{i,j,t} + \beta_4 Growth_{i,j,t} + \beta_5 AT_{i,j,t} + \beta_6 Lev_{i,j,t} + \varphi_t + \delta_i + \varepsilon_{i,j,t} \quad (3)$$

In the above equation, FD denoted the financial development scores of the country member. Country financial development was measured by the ratio of private credit to GDP; this ratio is a commonly used proxy in previous literature to measure financial development (*e.g.* Rajan & Zingales, 1998; Cull *et al.*, 2011; Lei *et al.*, 2018). In addition, to have a more robust analysis, we employed alternative measures of financial development, namely financial institution index and financial development index. These indices are developed and published in International Monetary Fund statistics.

We expected that the optimal point of inverted U-shape relationship between working capital financing and firm profitability will be higher for firms that operate in more financially developed regions. The proposition was to be confirmed if the estimated value of the interaction terms in equation (4), i.e., $-(\beta_1 + \gamma_1)/2(\beta_2 + \gamma_2)$ wa higher than the estimated value of $(-\beta_1/2\beta_2)$.

The estimation results of equation (3) are presented in Table 6. As we can see, the coefficient of WCF was positive and significant, while the coefficient of WCF^2 emerged as negative and significant, which implied the inverted U-shape effect of working capital financing on firm profitability. Moreover, the estimated value of $-(\beta_1 + \gamma_1)/2(\beta_2 + \gamma_2)$ was 0.872 for domestic credit to GDP criteria, 0.819 for financial institution index criteria, and 0.792 for financial development index criteria, which were higher than estimated optimal value in equation 1 (Table 4), with p-value of comparison being (0.000), (0.005), and (0.145), respectively. This implied that the break-even point is higher for companies that operate in more financially developed regions. This may be so because financial development will provide a flexible access for individual and firms to financial institutions as financing sources. Thus, increasing the accessibility of alternative credit sources fosters firm investment and growth. Financial development will reduce transaction costs of saving and hence lower cost of debt. Moreover, the development of financial institutions will help firms to reduce moral hazards and adverse selection problems, hence reducing the differential cost of external finance (Rajan & Zingales, 1998).

Table 6. Financial Development and working capital financing-firm profitability relationship

Variables	Domestic credit to GDP	Financial institution index	Financial development index
ROA_{t-1}	-0.199***	-0.474***	-0.073***
	(0.009)	(0.013)	(0.020)
WCF	0.613***	0.635**	0.594***
	(0.087)	(0.302)	(0.198)
WCF x FD	-0.217**	-0.253***	-0.320***
	(0.094)	(0.066)	(0.098)
WCF^2	-0.230**	-0.242**	-0.210***
	(0.110)	(0.104)	(0.077)
WCF^2 x FD	0.002***	0.009***	0.037***
	(0.000)	(0.003)	(0.013)
Size	0.004**	0.004***	-0.014***
	(0.001)	(0.000)	(0.005)
Growth	0.039***	0.013**	0.019*
	(0.011)	(0.006)	(0,010)
AT	-1.265***	-0.032**	0.967***
	(0.483)	(0.014)	(0.338)
Leverage	-1.309***	-0.087***	0.587**
	(0.188)	(0.018)	(0.202)
Industry fixed effect	Yes	Yes	Yes
Country Fixed effect	Yes	No	No
m_2(p-value)	0.193	0.180	0.290
Sargan (p-value)	0.232	0.314	0.377
N (observations)	6183	6183	6183

Notes: Table 6 was estimated based on equation (3). Number in parentheses are standard errors. ***, **, * denote statistical significances at 1%, 5%, and 10% levels, respectively. Instrument used was first lag of WCF. m2 was serial correlation test with the null of no second order autocorrelation.
Source: own elaboration in Stata.

CONCLUSIONS

The empirical relations between working capital financing and firm profitability were previously scrutinized by few empirical studies. This article contributes to the matter by examining the mediating role of financial development on the effect of working capital financing on firm profitability of the ASEAN manufacturing firms. The focus on the ASEAN was motivated by the present concern on ASEAN's economic and financial development that offers unique features. The regional setting may impose a significant effect on working capital financing strategy applied by companies and outcomes that result from financing policies. The analysis was conducted in a panel data setting, and the generalized method of moment (GMM) approach of estimation was applied in order to control for possible heterogeneity and endogeneity problems.

The results reveal the inverted U-shape relation between working capital financing and firm profitability, suggesting that the effect of working capital financing on firm performance is non-monotonic. In firms with a low-level ratio of short-term debt to working capital requirement, an additional short-term debt increases firm performance; conversely, in firms with a high proportion of short-term debt relative to working capital requirement, additional working capital decreases firm performance. It implies the existence of an optimum level of financing in working capital requirement that balances benefits and costs resulting from short-term debt. These results strengthen the previous finding of the inverted U-shape relationship between working capital financing and firm profitability.

The main contribution of our study is the examination of the role played by financial development in determining the effect of working capital financing on firm performance. While firms' financial constraints are internal factors, countries' financial development is an external factor that determines firms' ability to access external financing. As argued by Rajan and Zingales (1998) and Guiso *et al.* (2004), financial development will provide firms with easy access to external debt and

lower debt costs. More specifically, our findings show that even though the inverted U-shape relationship between working capital financing and profitability holds, the optimum level of working capital financing is higher in countries with more developed financial systems. Financial development expands firms' financing sources, reduces financial constraints, and effectively decreases costs of external financing. The results are robust to the introduction of various proxies of country levels of financial development.

We identified potentially important implications for working capital management. Firstly, given the evidence of the inverted U-shape relationship between working capital financing and profitability, corporate managers should put greater emphasis on maximizing its utility for the benefit of firm performance. More specifically, corporate managers should avoid using too much short-term debt to finance their working capital requirement as the risk of refinancing and interest outweighs its benefit. Secondly, given the significant role played by financial development in determining working capital financing and firm performance relationship, policymakers should give priority to financial reforms and development to ensure firms with access to finance, hence foster their growth for the benefit of the economy.

The limitation of this study is related to the employed sample – the ASEAN region – which is typical of emerging markets, meaning that these findings are partly generalizable to markets with similar characteristics. Therefore, further research is needed to better understand how the relationship between working capital funding and firm performance differs across countries with different institutional and financial systems.

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Conflict of Interest

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Financial capital measure with item response theory: A didactic approximation

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ABSTRACT

Objective: The objective of the article is to present in a didactic and concise way the fundamental concepts of item response theory (IRT) and its possible application in the economic sciences and show the bias problem that occurred when estimating a latent variable such as financial capital in microentrepreneurs through IRT, assuming normal distribution in an unfounded a priori way.

Research Design & Methods: We introduce a Bayesian hierarchical IRT model for graded responses where the latent traits have a skew normal distribution. Financial capital was measured by a survey applied to 384 microentrepreneurs from the metropolitan area of Bucaramanga (Colombia). The preliminary statistical analysis of data hints that the latent trait is not symmetric. Models that include a normal and a skew normal distribution were tested.

Findings: We detected that assuming the distribution of the normal trait may overestimate the calculation of financial capital in microentrepreneurs, which would cause loans to be assigned without support.

Implications & Recommendations: When applying IRT to economic matters such as in the measurement of financial capital, it is recommended to review the assumptions that this technique handles, especially the normality of the latent trait, since if assumed without verification or theoretical support can cause bias in parameters.

Contribution & Value Added: An improvement is presented to the graded response model with normal distribution in IRT for the measurement of financial capital, paying special interest in providing a pedagogical explanation for a public related to economics.

Article type:	research article
Keywords:	IRT in economics; Skew model; Latent trait; Graded Model; Bayesian method; Financial Capital
JEL codes:	G21, C11, C52

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INTRODUCTION

The item response theory (IRT) has been widely used in education and psychology but little has spread to economics. There are two common types of latent variables in economics. First encompasses those that do not have a unit of measure such as quality of life, food security, financial capital, human capital, among others. Second – those that despite having a unit of measure, do not have sufficient information for its calculation, such as hectares of illicit crops and daily gross domestic product (GDP); both types are considered latent variables. In these cases, economics resorts to alternatives such as the measurement of proxy variables, e.g. years of education, professional experience, skills proxies of human capital, or the construction of coincident indexes. The novelty of this research is the didactic presentation of the IRT focused on the economic sciences and the proposal to adapt the classic IRT model with

normal distribution to an IRT model with asymmetric distribution, appropriate for economic variables with theoretical indications of asymmetry.

Financial capital among family entrepreneurs is an example of a variable considered conceptually asymmetric since it is intimately related to the distribution of wealth, which usually presents a positive bias, as is the case of Colombia. Financial capital comes mainly from external sources in the form of debt (Parker, 2009) and constitutes one of the variables that directly affect the performance of small businesses (Oppedal Berge, Bjorvatn, & Tungodden, 2015; Atmadja, Su, & Sharma, 2016). This is constituted by the monetary and physical assets owned by the business such as money, credits, or assets, which can be easily converted into cash or resources for the company (Mzid, Khacklouf, & Soparnot, 2019; Kaztman, 2000). This variable is constantly measured by banks, which in their financial intermediation activity capture monetary surpluses and redistribute them among the economic agents that require them – but not before ensuring that their investment is returned. They usually base their credit studies on a weighted sum of a set of questions ranging from accounting to the socioeconomic characteristics of the borrower. However, they do not have a single or comparable scale between banking entities; although many of them have similar constructs, it is common to find cases in which an applicant is subject to credit in one financial entity and not in another, possibly due to the lack of unification of the construct and the different weightings given to each measured item. These facts show the importance of allocating a single and comparable measure of financial capital for micro entrepreneurs. The success of the banking system and the guarantees for a good functioning of the circular flow of the economy depend on the correct granting of loans.

Statistical software for IRT commonly program theirs algorithms of the estimation of parameters from the frequentist approaches, assuming normality of the latent trait, but what would happen if the normal distribution of the latent trait is erroneously assumed, as could happen with financial capital, which is conceptually asymmetric? Incorrect adoption of trait distribution may cause biases in the estimated parameters of the items (Xu & Jia, 2011). Moreover, we may see that the hypothesis of normality is usually taken in the calculation for convenience and not for conceptual support, contrary to what is proposed in this article. Hence the relevance of developing and validating IRT models that assume the distribution of the traits to be different from normal, such as the model proposed here applied in the measurement of financial capital in a sample of microentrepreneurs in the metropolitan area of Bucaramanga (MAB). Therefore, our research presents in a didactic and concise way the fundamental concepts of IRT and its possible application in the economic sciences. Therefore, it is relevant to relax the normality assumption of latent trace; commonly accepted in psychology and education applications. Contradictory to the usual asymmetry found in economic variables.

For this reason, this article must be accessible to a public that is not necessarily expert in IRT – especially in economics – as it was designed to be applied and understood by academics in other fields. In this sense, the paper is divided into five parts, together with discussion and attachment. The first part will briefly present state of the art of measuring latent variables. The second part will succinctly compile parameter estimation strategies under the frequentist and Bayesian approaches from IRT models. The third part will show the specification of a hierarchical Bayesian model with a distribution of the skew latent trait with the explanation of data processing. The last part will offer the estimation results of the model and their comparison with the normal model so as to finish with discussion. The attachments contain an explanations for the skew normal distribution function of Azzalini (1985), a verification of the unidimensionality of the financial capital construct, and the adjustment to the empirical distribution of the scores of the financial capital construct.

LITERATURE REVIEW

The measurement of latent or unobservable variables has occupied much attention since the beginning of modern science. Within the elevation of the scientific method and the Copernican turn, mathematics has become the epistemological posture with the highest esteem to attain knowledge. Its prestige began to take root with the end of medieval philosophy and the birth of Descartes's rationalism in the middle of the seventeenth century. Subsequently, Immanuel Kant and his work *The Critique*

of Pure Reason consolidated the bases of mathematics as a method. These works, still far from mathematical formalization, are seminal for the positivism of Auguste Comte, who proposed the scientific method, and with it the entry of mathematics to spheres other than the natural sciences, such as sociology or economics, *i.e.* the social sciences

Some of the first attempts to measure social variables were found in the economic current of nineteenth-century marginalism. The mathematical models of Cournot, Bertrand, Hotelling, and the foundations of microeconomic theory, such as marginal utility, are a clear sign of interest in modelling the behaviour of economic agents in the same way that natural sciences do. Variables such as human capital, utility, job satisfaction, entrepreneurship, or empathy do not have a unit or instrument of direct measurement, such as the height or weight of an object does.

That is the reason why economists use instrumental or proxy variables. It is assumed that they are directly associated with the latent variable we intent to measure. For instance, years of education or years of experience are commonly used as proxy variables to measure the human capital variable (Schutlz, 1961); networks and voluntary organizations have been used to measure the social capital construct (Paldam, 2000). The human development construct is usually measured through a set of observable variables, such as life expectancy, adult literacy rate, or GDP per capita in purchasing power parity (Alkire, 2002). Thus, with the construction of coincident indexes, proxy variables are used as indirect measures of latent variables. Some examples can be consulted in Forni, Hallin, Lippi and Reichllin (2000) and in Issler and Notini (2016). Nevertheless, some of these attempts, somewhat incipient, have not achieved the desired objectives and it is common to find diverse studies about measuring latent variables from different perspectives with divergent opinions and results.

In contrast to the limited methods used in economics, scientists in social sciences have developed statistical methods for measuring latent variables. Particularly in psychometry, the classical test theory (CTT) attributed to Spearman (1904) was the first serious approach to measure mental constructs such as intelligence and skills in mathematics. The CTT was a hegemonic paradigm of psychometry for more than 60 years.

Currently, IRT models constitute the preferred statistical tools of statisticians for measuring latent variables. They are a set of techniques that lose simplicity in calculations by making assumptions more flexible and broadening the scope of CTT. There exist two problems in CTT that do not occur in IRT. First, CTT measurements are not invariant, which means that you cannot compare the scores of different tests of an individual, as they are not measured on the same scale, and second, the absence of invariance of the test means that the difficulty and reliability of the test depends on the sample.

There exist several types of IRT models. From a very general perspective a model can be dichotomous or polytomous, depending on the scale used in a test. In a dichotomous test, the coded responses are only 1 and 0, corresponding to correct or incorrect responses. However, polytomous models are useful when there is an ordinal (or graded) order with three or more categories. Polytomous models are useful to measure latent traits from surveys designed with this objective. This is the case in this research. Furthermore, IRT models can be unidimensional, if the measurement instrument is designed to measure a unique latent trait. Alternatively, the model must be multidimensional. In this research, financial capital is considered a unidimensional latent trait, so unidimensional polytomous models may be useful in our approach. Even though the unidimensionality of the latent trait is theoretically assumed, the expert must always verify that the measurement instrument measures one construct. According to Reckase (2009), the basic assumptions of IRT models are:

1. the location of an examinee, on the scale of measurement of the latent trait, does not change during the test;
2. the characteristics of the items remain constant in any situation in which the test is presented: the items are independent form the examinees that parameters such as the difficulty of the item do not change, even under the study of different representative samples;
3. the response of a person to an item is independent of his/her response to another item, which implies that the solution to one item does not provide information to respond to other items;
4. the response of a person to an item is not related to the responses of other people to that same item;

5. the relationship between the probability of answering in a particular category of an item and the location of individuals on the trait scale can be represented with a continuous mathematical function;
6. the probability of responding in high categories of an item increases according to latent trait increases; thus, for any item, the probability of a response in high categories is an increasing function of the latent trait.

In this work, we use unidimensional polytomous IRT models. In these models, the items have more than one category ordered or not, as the Likert or nominal scales. Some of them are the graded model, the partial credit model, and the nominal model. Such models provide more trait information than dichotomous ones. Furthermore, tests built with polytomous items are less costly and time-consuming to apply, which can have a positive effect on examinees (Ostini & Nering, 2006, pp. 7-8). This section will focus on ordinal-type response models, as they are the most relevant to the type of data treated here.

As mentioned above, the applications of the IRT models are few in economics. However, some research has shown their applicability in measuring human development (Morán & Álvarez, 2001), inequality, poverty, and welfare (Deutsch, J., Silber, J., Xu, Y., & Wan, G. 2020), multidimensional poverty (Fusco & Dickes, 2008), financial risk (Caviezel, V., Bertoli Basrsott, L., & Lozza, S. O., 2011), organizational innovation (Wongtada, & Rice, 2008), and managerial ability (Schellhorn, C., 2013).

Classical approach parameters estimation

The first methods for estimating parameters in IRT assume a known ability or latent trait. This process is called quantal response bioassay (QRB; Lawley, 1943; Finney, 1944). The fundamental idea is to assume the existence of groups of examinees with known latent skill scores located across the entire scale of the trait and allowing correct and incorrect response proportions to be formed within each group. Another approach similar to QRB is to assume that the parameters of the items are known and the latent traits unknown. This estimation process is frequently used in adaptive computerized tests as some language proficiency texts, which have calibrated items parameters and focus on trait calculation (Baker & Kim, 2004; Reckase, 2009). Commonly, estimates of item parameters and predictions of latent traits are required at the same time. For this reason, the joint maximum likelihood estimation method was introduced. The technique consists of estimating at the same time the parameters of items and predicting the latent traits of individuals. In 1968, Birnbaum proposed the basic concepts of this paradigm (Baker & Kim, 2004, p. 18). The model has two fundamental assumptions: 1) the response of the items is independent of each other, and 2) the response vectors of individuals are independent from each other. Baker and Kim (2004, p. 108) identify some problems in the application of this paradigm: the estimation of the parameters of the items can be complex in some IRT models because likelihood equations may not converge if initial values are set too far from optimal values. Moreover, others verified that the estimates of this method are not consistent with the increase in sample size (Baker & Kim, 2004, p. 157; Neyman & Scott, 1948).

To overcome these issues, Bock and Lieberman (1970) proposed the algorithm called item parameter estimation via marginal maximum likelihood, which provides consistent estimators when faced with an increase the sample size. However, the method only worked with very small sets of items. Afterwards, Bock and Aitkin (1981) implemented the Expectation-Maximizationalgorithm (EM) as reformulation to Bock and Lieberman (1970) making it more efficient computationally. In addition, the EM algorithm could be applied to real test sizes. The latter method assumes that the distribution of the latent trait is a standard Gaussian distribution, which requires a technique of numerical methods to calculate integrals, such as the Hermite-Gauss quadrature, with the limitation that it only works when the distribution is normal. For this reason, Bayesian hierarchical methods may be a good alternative for estimating parameters when the latent trait cannot be assumed to be normal.

The Bayesian approach relies on the Bayes theorem, which combines the probability obtained from the likelihood function based on observed data, with prior information on the distribution of parameters (Baker & Kim, 2004, p. 179). This approach considers all parameters to be random variables, contrary to the classical approach which assumes that parameters are fixed but unknown. From this perspective, there are two types of parameters: interest and nuisance. The former are the ones with which

the researcher wishes to make an inference, while the latter are – as their name indicates – noise or nuisance parameters that will not be subject to analysis.

H: The latent variable "financial capital" has a skew normal distribution that can cause its estimation to be biased if it is done by a traditional method that a priori assumes it is normality.

RESEARCH METHODOLOGY

The hierarchical Bayesian gradual response model with asymmetric normal trait distribution (HBGRM ASN) has a categorical response function (CRF) defined as:

$$P\left[u_{ij} = g\middle|\theta_j, \xi\right] = logit^{-1}(\eta_{g-1}) - logit^{-1}(\eta_g) \quad (1)$$

in which $P\left[u_{ij} = g\middle|\theta_j, \xi\right]$ is the probability that respondent j answers category g at the item i, given the ability θ_j and the parameter vector of item ξ. $logit^{-1}(\eta_{g-1}) = (1 + e^{-\eta_{g-1}})^{-1}, \eta_{g-1} = (\alpha_i * \theta_j - \alpha_i * \beta_{i,g-1})$ and $logit^{-1}(\eta_g) = (1 + e^{-\eta_g})^{-1}, \eta_g = (\alpha_i * \theta_j - \alpha_i * \beta_{i,g})$. These expressions form cumulative category response functions (CCRF) of logistic distribution. Figure 1 shows the change of the CCRF for an item with five categories in which $\alpha = 1$ and values of $\beta = (-2, -1, 0.7, 2)$.

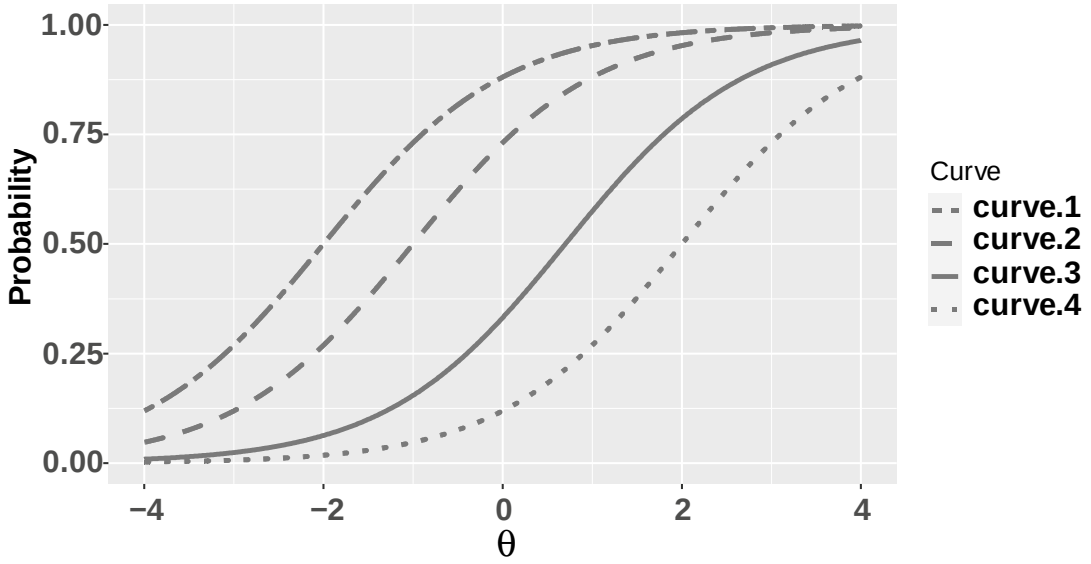


Figure 1. Cumulated categorical response function
Source: own elaboration of Reckase (2009).

We can interpret α_i as the discrimination parameter of item i and $\beta_{i,g}$ which represents the upper cut point for the category g of item i, also known as difficulty parameters; $\beta_{i,g} = \beta_{i,1,\ldots,}\beta_{i,k-1} \in \mathrm{R}^{k-1}$, ordered $\beta_{i,g} < \beta_{i,g+1,}$. One must assume the extreme cases of $\beta_{i,0} = -\infty$ and $\beta_{i,k+1} = \infty$, which implies that $logit^{-1}(\eta_0) = 1$ and $logit^{-1}(\eta_{k+1}) = 0$. K ∈ N, with $k > 2$ representing the number of categories of the item i, in the following way $g \in \{1,\ldots,k\}$. So that $P\left[u_{ij} = g\middle|\theta_j, \xi\right]$ can assume different expressions, such as

$$\left[u_{ij} = g\middle|\theta_j, \xi\right]\begin{cases} 1 - (1 + e^{-\eta 1})^{-1} & si \quad g = 1, \\ (1 + e^{-\eta_{g-1}})^{-1} - (1 + e^{-\eta_g})^{-1} & si 1 < g < k, y, \text{(4-4)} \\ (1 + e^{-\eta_{g-1}})^{-1} & si \quad g = k, \end{cases} \quad (2)$$

The above equation represents the CRF of the logistic model graded for the homogeneous case. The CRFs corresponding to the CCRFs in Figure 1 are shown in Figure 2.

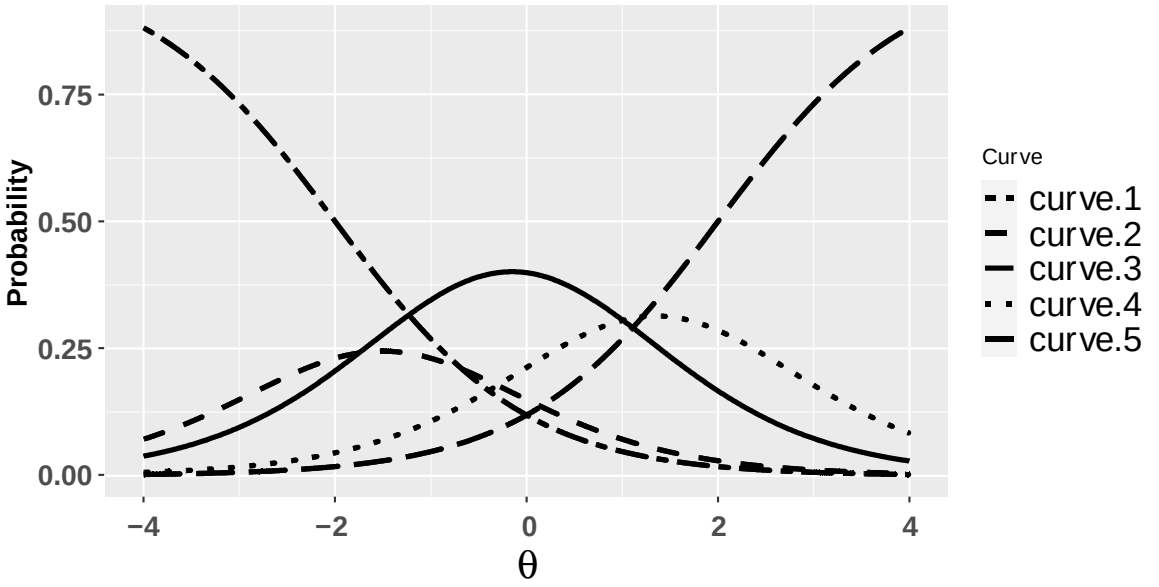


Figure 2. Categorical response function for items with five options
Source: own elaboration of Reckase (2009).

Figure 2 shows how the probability of responding to option 1 (represented by curve 1) is inversely proportional to the trait, opposite to the probability of responding to category 5 (represented by curve 5), which is directly related to the value of the trait. Note that the highest point of the probability of response for each item occurs at different points on the trait scale. For example, category 3 has a higher probability of response for traits close to zero, different from category 2 which has the highest probability for traits close to -2, this characteristic is linked to the information provided by each category. The Bayesian hierarchical model assumes prior distributions for parameters and hyperparameters. Consequently, the prior densities assigned here are:

$$\begin{aligned} \theta_j &\sim SN(0,1,\rho), \\ \rho &\sim N(0,1), \\ \alpha_i &\sim N(0,5), \\ \beta_{ig} &\sim N\left(\mu_{beta_{ig}}, \sigma_{beta_{ig}}\right), \\ \mu_{beta} &\sim N(0,1), \\ \sigma_{beta} &\sim Cauchy(0,2). \end{aligned} \tag{3}$$

For the prior distribution of the latent traitθ_j a skew normal distribution of Azzalini (1985) is assumed, the scale and location parameters are fixed in order to guarantee the model's identifiability. The parameter ρ is the hyperparameter of asymmetry normal distribution and standard normal distribution is assumed. The skew normal distribution is assumed since it is the one that best fits in a first inspection of the empirical laten trait (see Attachment A). This parameter is the centre of attention in this model because its significance depends on the success of this proposal on the classical model with normal distribution. Restrictions are imposed by truncation of the discrimination parameter α_i at 0 for the monotonicity of the CRF and the hyperparameter σ_{beta} because it is a deviation.

Data

The data in this article were taken from the joint project of the Industrial University of Santander and a Santander financial institution, whose main interest in that research was to measure the levels of psychological, financial, physical, social, and human capital among microentrepreneurs of the MAB. In that research, the calculation of the level of capital was based on the principal component analysis (PCA) technique, which has advantages due to broad existing documentation and the ease of its computational application. However, PCA is based on a decomposition of the covariance matrix of the items assuming that these are of a continuous nature, characteristics that are not met by most surveys measured using Likert-type categorical scales. These limitations were overcome with the IRT models, such as the one proposed here.

The analysed microenterprises have little productive capacity (neighbourhood stores, small clothing, and footwear factories, etc.), they lack organizational structure, accounting books, or bank credit history. Most workers belong to the same family, which is why they are known in Colombia as *famiempresas* (family businesses). This level of informality makes it difficult to access bank loans, forcing them to take out informal loans with individuals. Therefore, formal credit agencies in Colombia have chosen to evaluate the risk of non-payment together with the owner's family, since it is assumed that their strengths and weaknesses will be transmitted to their companies. Therefore, several survey type instruments have been developed to measure the financial capital that commonly – in larger companies – would be measured using the financial statements. The application of the proposed model will be done with data from the financial capital module of 384 microentrepreneurs. The underlying latent trait was assumed to be asymmetric, due to its strong relationship with the income distribution, which in developing countries usually presents large asymmetries.

The construct of financial capital was made up of eight polytomous ordinal items that measured the financial response capacity of the family to obtain liquidity and face business and family activities. The original survey consisted of 77 dichotomous questions recoded into polytomous items. To achieve this objective, different methods were applied, including principal component analysis (PCA), cluster analysis, and expert judgment. Details of the process are available in the article by Rangel Quiñonez and Yáñes Canal (2018).The final instrument version can be consulted at the end of this document in attachment B.

Parameters estimation of the proposed model was implemented in the STAN language version 2.2.0, together with the Rstan package of the programming language R (coding details available in Rangel, 2019). Stan is a new Bayesian statistics programming language written in C++, which provides statistical inference of parameters through Markov Monte Carlo strings such as the *No-U-Turn samplers*. The Stan language can be used in other languages such as Python, R, Matlab, Mathematics, Julia, and Stata, and it runs under Windows, Mac OS, and Linux operating systems by using interfaces built into each of them (Luo & Jiao, 2018).

RESULTS AND DISCUSSION

The results obtained from the implementation of the model show that the highest discrimination parameters α_i were those corresponding to items 1, 5 and 7, as opposed to the lowest alphas of items 3, 4 and 8. The Rhat in all cases was 1, which evidences good convergence of the parameters, and similarly the ratio $\frac{n_{eff}}{N} > 0.001$ – in which N is the number of interactions – for this case equal to 4000, it evidences a good Markov chain. None of the 95% credibility intervals contains 0. This is an indicator of good model specification.

The calculation of the difficulty parameter requires the division of the $\beta_{i,g}$ calculation by Stan by the discrimination parameter α_i. Table 2 presents the true values of the $\beta_{i,g}$. The lowest average of the estimated parameters for betas was $\beta_{3,1} = -6.49$ and the highest was $\beta_{3,5} = 12.89$. The closeness of the cut points parameters in a single item, suggests that category unification is possible. These parameters had good $Rhat \approx 1$ values and $\frac{n_{eff}}{N} > 0.001$, also no credibility intervals contain 0.

Table 1. Descriptive statistics of discrimination parameters

α_i	μ	5%	25%	50%	75%	95%
α_1	4.01	2.46	3.17	3.81	4.66	6.17
α_2	0.71	0.40	0.58	0.70	0.83	1.04
α_3	0.45	0.17	0.33	0.45	0.56	0.74
α_4	0.70	0.38	0.57	0.69	0.82	1.03
α_5	1.91	1.34	1.65	1.88	2.14	2.59
α_6	0.72	0.39	0.59	0.72	0.86	1.08
α_7	3.43	1.20	2.29	3.23	4.35	6.33
α_8	0.52	0.15	0.35	0.50	0.66	0.93

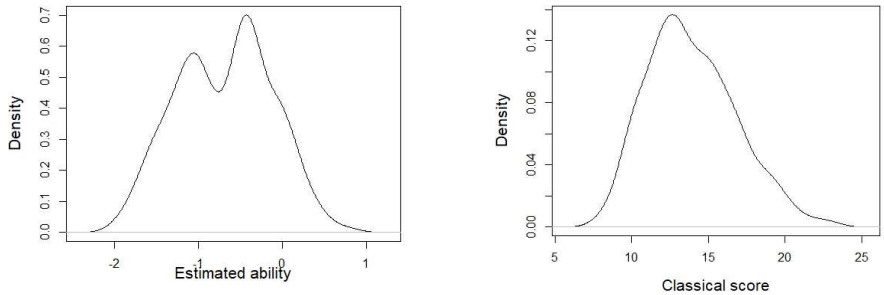
Source: own study.

Table 2. Difficulty parameters βi,g

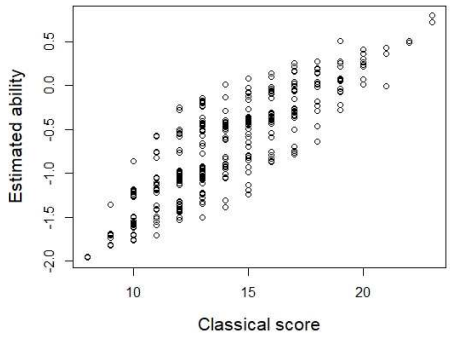
ITEM	$\beta_{i,1}$	$\beta_{i,2}$	$\beta_{i,3}$	$\beta_{i,4}$	$\beta_{i,5}$
1	2.29	2.95	X	X	x
2	1.39	5.36	x	X	X
3	-3.94	0.47	0.51	X	X
4	-1.07	3.46	4.14	X	X
5	-0.27	-0.18	0.34	X	X
6	-1.71	0.83	2.56	x	x
7	-1.54	1.34	4.03	6.96	x
8	-6.49	-0.09	5.38	8.69	12.89

Source: own study.

Figure 3 presents a scatter plot between the classical *test* scores (sum scores of financial capital) and the averages of the individual parameters, showing the existing linear relationship, corroborated by a Pearson's correlation coefficient equal to 0.85. Estimated density and classical score functions are also shown, both cases show positive asymmetry.



(a) θj estimates (b) Classic score



(c) Classic score and estimated θj

Figure 3. Comparison between the latent trait distribution of the IRT model and the distribution of the classical score

Source: own elaboration.

Descriptive statistics of the latent trait shows that the average of θ_j for financial capital assume the skew normal trait is 0.599, the minimum is -1.961, and the maximum is 0.796. On the other hand, the minimum 0.999 and the maximum 1.009 in the Rhat for the$\theta_j$parameters reaffirms the good convergence since the average and the median are close to 1. The estimated values of the hyperparameters are shown below.

Table 3. Descriptive statistics of the estimation of the hyperparameters

Hyperparameter	μ	5%	25%	50%	75%	95%	*n _eff*	Rhat
ρ	-1.90	-2.88	-2.27	-1.87	-1.50	-1.04	338	1.01
μ_θ	1.20	0.38	0.87	1.20	1.52	1.99	3073	1.00
σ_θ	2.55	1.94	2.25	2.51	2.80	3.32	4130	1.00

Source: own study.

Special attention deserves parameter $\rho = -1.9$ since it is the estimated asymmetry of the density function of the latent trait. This indicates that the asymmetry parameter is significant as the credibility interval does not contain zero. To corroborate this result, we require a Bayesian hypothesis test of the simulations of hyperparameter ρ.

Parameters comparison estimated by the asymmetric model with the normal model

With the idea of verifying changes in the magnitudes of the parameters estimated under the assumptions of asymmetry and normality, we prepared point plots to verify overestimates or underestimates of these parameters. Figure 4 shows the difference between the parameters estimated with skew normal distribution and the parameters estimated with standard normal distribution. The horizontal line at zero of the ordered axes is taken as a reference to observe the changes in the estimate. The discrimination parameters (α_i) do not present large changes in six items, but items 3 and 5 are underestimated when estimated with the assumption of normality. The difficulty parameters (β_i)present a moderate overestimation at the cut points of the first six items and a relevant overestimation at the cut-off points of items 7 and 8.Moreover, the individuals´ parameters show a marked overestimation at the moment of estimation by means of the normal models instead of the asymmetric model.

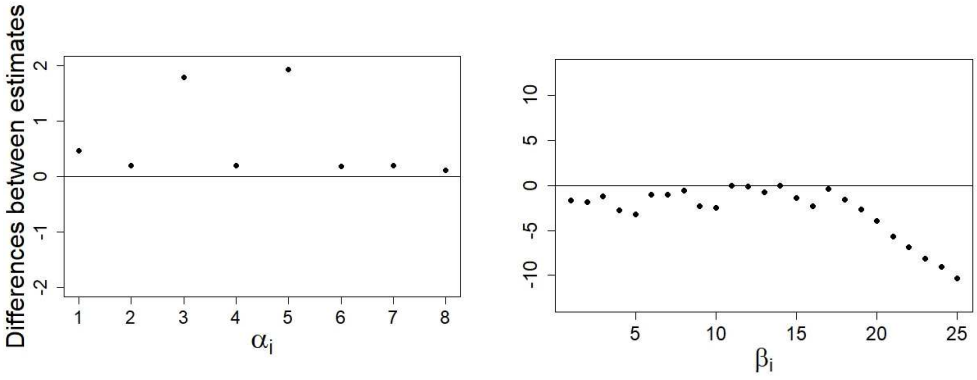
Now, to contrast the suitability of the model, the information criterion *efficient approximate leave-one out cross validation-loo* of the software package loo R was used (Vehtari, Gelman, Gabry, & Yao, 2019).

Table 4. Information criterion Loo

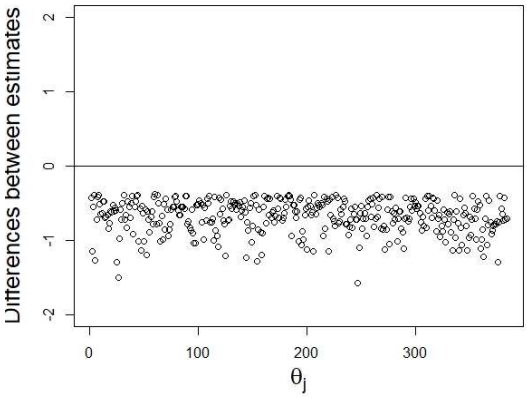
	Skew Model	Normal Model
Loo	5408.400	5420.400

Source: own study.

Table 4 shows that the best model is skew normal because it has less information criteria. To support the above result the difference of the likelihood and the standard error was calculated with the *loo_compare* function of the R-stan package. The comparison results are $elpd\_diff = -6.0$ with $\mathrm{SE} = 1.7$, which indicate that the first model fits better the data. This case corresponds to the skew model (Vehtari *et al*., 2019, p. 6).



(a) Differences from the estimates of the α_i (b) Differences from the estimates of theβ_i



(c) Differences from $_{\vartheta j}$ estimates

Figure 4. Difference between parameters α_i, $\beta_i$and $\theta_j$estimated under skew normal and normal distribution
Source: own elaboration.

CONCLUSIONS

This research emerged from the frequent need of economists to measure latent or unobservable variables, so it is introduced to the item response theory as an alternative to the limited tools usually used in economics. In this article, we outline the main models of IRT by highlighting their different uses and theoretical assumptions. Perhaps the most restrictive assumption is that of the normality of the latent trait since a large part of economics variables are asymmetric. For this reason, we proposed an alternative for estimating a graded IRT model that relaxes this assumption. The application here exposed is made to obtain formal measures of Financial Capital. In common practice, the results of surveys to measure Financial Capital are treated trivially and without any mathematical rigor by financial institutions when they conduct credit studies of their clients. For example, ratings are taken as real numbers – which in fact is a categorical measure – without a comparable metric since the score depends on the construct between entities. The approximation used in Attachment B suggested that the measured trait was not symmetric, so the hypothesis of normality did not seem adequate and should therefore be treated with an asymmetric distribution by selecting the skew normal distribution (Azzalini,1985) as suitable for this problem. The technical part reported that at the time, there was no software available that implemented – from the classical approach – the polytomous TRI models with asymmetric normal distribution as an alternative to the problem, which is the solution the Bayesian approach. With the help of STAN, a probabilistic programming language, considered the gold standard in the industry today, a hierarchical Bayesian model of gradual response with distribution of the skew normal trait

was built. We concluded that the skew model presents an improvement in the Bayesian Loo information criterion compared to the normal model. This reaffirms what Xu and Jia (2011, p. 15) found when assuring that the asymmetric normal distribution presents advantages with respect to the normal model of a 2pl model, when the distribution is extremely asymmetric or presents multimodality, which is something that cannot be rejected by the data in this article. Thus, the statement of Xu and Jia (2011) can be extended to the polytomous case with the findings of this paper: the mean value of the skew parameter ρ estimated by MRJBRG ASN is -1.9, which is significant since its credibility interval does not contain zero, corroborated by the Bayesian hypothesis test.

Let us note that if zero were contained, the asymmetric normal distribution would be equal to the normal distribution, leaving the preference of the proposed model over the normal model unsupported. All the parameters of discrimination are significant, the largest average value is α_3 corresponding to question 1 (financial savings or investment service or product), and the one with the least discrimination is α_8 (ability to pay through the financial sector). This indicates that small changes in the latent trait produce large changes in the probability of answering a category in question 3 – as opposed to question 8 – while items with α_i close to 1 are preferable and indicate a smooth discrimination not as abrupt as items 3 and 4. In the same manner, all the difficulty parameters are significant as it can be verified that items 1, 3, 4, and 8 have some β_{ig} close together: item 1 could group categories b and c; items 3 and 4 could group categories c and d; and for item 8 it is suggested to join categories d and e. The estimation of these parameters can be used for the validation of the construction, thus replacing the more used confirmatory and exploratory factorial analysis. When comparing the Loo statistic of the asymmetric and normal model, it is concluded that the asymmetric model is better than the normal model. Which begs the question: What is the change of the parameters under normal estimation? We observed that in the α_i, there appeared an underestimation by the normal model, especially in items 3 and 5, opposed to the overestimation of the β_{ig}, particularly in the items with more categories (7 and 8), finally in the person parameters θ_j that were overestimated in the normal model.

This leads us to the conclusion that the normal model – when applied to the data of financial capital – overestimates this variable that is linked to the payment capacity of family businesses, causing banks to take an incorrect signal from the entrepreneurs. Thus, the normal model would classify entrepreneurs with high risk of non-payment as companies subject to credit. This can be seen in the median of the latent trait in the asymmetric model (-0.59), which is negative and lower compared to the median of the trait in the standard model (0.02), indicating that the standard model gives half of the family businesses a positive trait compared to the asymmetric standard model, which gives half of the family businesses a score greater than or equal to -0.59. Let us note that we observed the sensitivity of the significance of the asymmetry parameter ρ to changes in the priori distribution of the parameter α_i within the tests conducted for the construction of this model, since when an informative priori such as $\alpha_i \sim N(0,1)$ was included, it meant that ρ was not significant. Contrary to what happened with the non-informative priori of $\alpha_i \sim N(0,5)$. Thus, future research should focus on: 1) verifying the impact of the a priori distributions of the parameters, especially the discrimination parameter in the Bayesian approach and 2) performing simulation to verify consistency in the results of the Bayesian model.

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Appendix A:

The skew normal distribution function Azzalini (1985) can be described as proportional to the product of the density function times the cumulative function of the normal distribution:

$$SN(x) = 2\frac{1}{\sigma\sqrt{2\pi}}e^{-\left(\frac{x-\mu}{\sigma\sqrt{2}}\right)^2}\frac{1}{2}Erfc\left(-\rho\frac{x-\mu}{\sigma\sqrt{2}}\right),$$

then,

$$SN(x) = \frac{1}{\sigma\sqrt{2\pi}}e^{-\left(\frac{x-\mu}{\sigma\sqrt{2}}\right)^2}Erfc\left(-\rho\frac{x-\mu}{\sigma\sqrt{2}}\right),$$

in which ρ is the asymmetry parameter, μ is the location parameter, σ the scale parameter and x is the value of the random variable. It is understandable that if $\rho = 0$ then $Erfc = 1$ colluding to normal distribution.

Adjusting the distribution to the latent trait

To verify the unidimensional nature of the construction is applied a Principal Component Analysis (PCA) on the eight items.

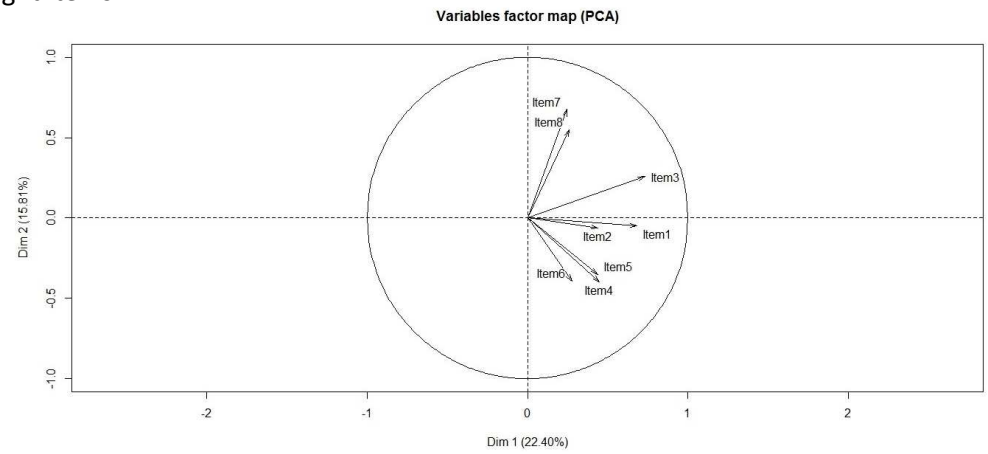


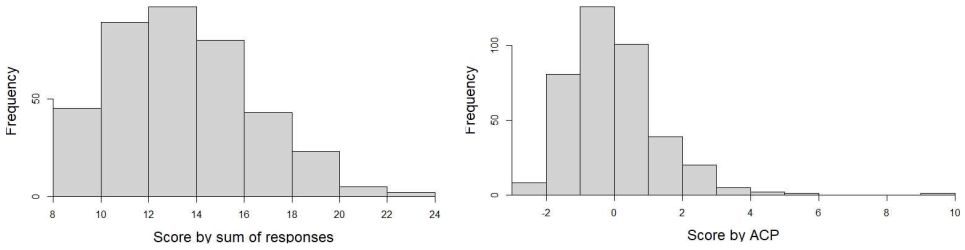
Figure A-1. PCA for Financial Capital
Source: own elaboration.

Table A-1. Own values of the 8 items of the construct

Variable	Eigenvalues	Percentage of variance	Percentage of accumulated variance
comp 1	1.75	21.91	21.91
comp 2	1.18	14.78	36.70
comp 3	1.09	13.59	50.29

Source: own study.

In the previous Figure A-1 it is evident that the eight items have only one direction that would support the unidimensionality of the construct, Table A-1 debates this conclusion by presenting the values of the eight components, which affirms that at least three dimensions exist. This is not surprising since the original questionnaire had 77 questions, so one of the previous works to this investigation was the selection and conformation of the financial capital construct. However, these data serve as an example of the use of the algorithm proposed here for economic issues. With the above exceptions, the financial capital score is calculated by means of the sum of the items' responses and, on the other hand, by means of the respondents' projections in the first component of the PCA.



(a) Score by sum of responses (b) Score by ACP

Figure A-2. Histograms of construct scores
Source: own elaboration.

As shown in Figure A-2, the scores by the two methods show positive asymmetry. Therefore, we proceed to look for the best distribution that fits them.

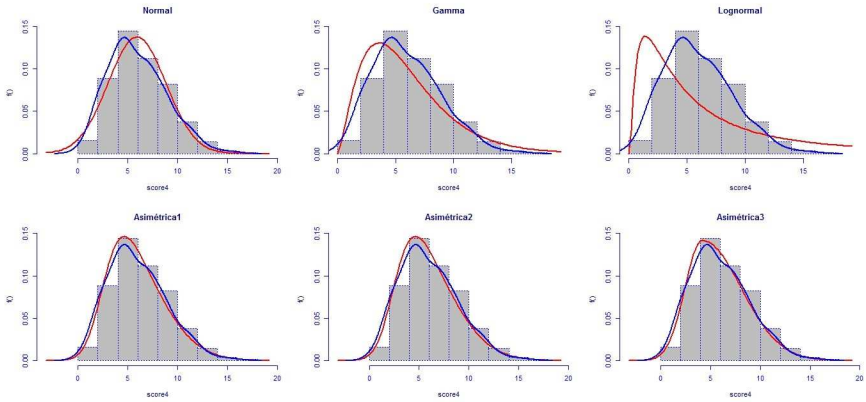


Figure A-3. Adjusting various density functions to the histogram of construct scores
Source: own elaboration.

Figure A-3 shows the score by the classic method and different settings by means of the Gamlss package of the R software. The red curve on the histogram represents the empirical distribution and the blue curve the distribution adjusted according to the distributions: normal, gamma, lognormal, and asymmetric 1, 2, and 3. As you can see the asymmetric distribution 1 fits very well to the classical score.

Appendix B:

To facilitate the programming, the questions of the construct have been organized in an ascending way.

1) Capability of earning income from the sale of company assets:
   a) had not obtained income in the last month from sales of machinery or equipment;
   b) had obtained income one time;
   c) had obtained income two times.

2) Family's ability to receive income from real estate as urban, agricultural, or recreational property:
   a) had not obtained income in the last month from real estate;
   b) had obtained income two times;
   c) had obtained income three times.

3) The degree of financial savings or investment service or product:
   a) lack of financial savings;
   b) having savings accounts, current accounts, and programmed savings;
   c) having current savings, programmed savings and communal savings accounts;
   d) having shares, term deposit certificates, and savings accounts.

4) The degree of insurance of the family and the business:
   a) do not have insurance;
   b) basic insurance such as funeral, life, or debtor's insurance in the case of having a credit;
   c) in addition to having basic insurance have some of the intermediate insurance such as insurance against theft, earthquake insurance, home insurance, car insurance and unemployment;
   d) have basic life and death insurance for the debtor along with housing, fire and earthquake insurance, insuring the most asset of family members, the home.

5) The kind of indebtedness of the family:
   a) do not have loans;
   b) informal loans such as "drop-by-drop" loans, loans with pawnbrokers, and trust companies;
   c) having loans with friends, suppliers, educational loans, car loans, and loans with NGOs or foundations;
   d) loans with banks.

6) Measures the level of family benefits:
   a) less than or equal to 600 000 COP;
   b) more than 600 000 COP but less than or equal to 1 200 000 COP;
   c) more than 1 200 000 COP but less than or equal to 2 400 000 COP;
   d) more than or equal to 2 400 001 COP.

7) The ability of family businesses to earn extra income different from the profits of the main business:
   a) have no extra income;
   b) one extra;
   c) two extra;
   d) three extra;
   e) four extra.

The sources of income that were investigated were: income from the work activity of family members, income from alimony, income from money contributed by family members who are resident or not in the country, income from old age or disability pensions, income from businesses other than the one surveyed, income from deposits, income from stock gains, income from the sale of business machinery, income from the sale of household goods, income from donations other than to the government or from family members, income from family subsidies, and income from state subsidies.

8) The capacity of family businesses to make payments by means of the financial sector:
   a) do not use means of payment from the financial sector;
   b) one means;
   c) two means;
   d) three means;
   e) four means;
   f) five means.

The means of payment considered for this classification were: credit card, debit card, automatic account payment, transfer of funds via the Internet and telephone, prepaid card, factoring, and other.

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Conflict of Interest

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Impact of market orientation on competitiveness: Analysis of internationalized medium-sized and large enterprises

Miklós Stocker, Lídia Várkonyi

ABSTRACT

Objective: The objective of this article is to identify the impact of market orientation and its elements on company competitiveness of internationalized medium-sized and large enterprises present in Central Eastern Europe and Western Europe in the period of economic growth.

Research Design & Methods: Quantitative large sample statistical analysis was conducted on a sample of Hungarian internationalized medium-sized and large enterprises (n=119). Data was obtained by the survey method, the MKTOR scale was implemented in the survey and financial data was also included. The sample is representative for size, and the sample size is larger than required. Factor analysis was used to determine the components of market orientation, regression analysis was used to test the hypotheses, and Chi-square test was used to determine differences in the elements of customer orientation.

Findings: Market orientation influences the competitiveness of internationalized medium-sized and large enterprises present in Central Eastern Europe and Western Europe. Among the components of market orientation, competitor orientation had the most significant and most powerful impact on competitiveness and on market performance as well. Interfunctional coordination had significant impact on adaptivity and operationality. However, customer orientation did not have significant impact on either competitiveness or its elements because customer orientation became a threshold capability of the internationalized medium-sized and large enterprises present in Central Eastern Europe and Western Europe.

Implications & Recommendations: Executive managers of internationalized medium-sized and large enterprises should focus on competitor orientation if they wish to increase their competitiveness and market performance, while maintaining their companies' high level of customer orientation. If managers want to increase their companies' adaptivity and operationality, they should also focus on interfunctional coordination procedures.

Contribution & Value Added: The main contribution of the article is that customer orientation is a threshold capability of internationalized medium-sized and large enterprises. Moreover, we prove that market orientation and especially competitor orientation increases the competitiveness of internationalized medium-sized and large companies.

Article type:	research article
Keywords:	company competitiveness; market orientation; competitor orientation; medium-sized and large enterprises; MKTOR scale
JEL codes:	M16, F23, L10

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INTRODUCTION

Market orientation and competitiveness are very important topics for executive managers of internationalized enterprises. Especially if the company is present in several markets, market orientation could determine the success of companies, whereas competitive advantage and competitiveness of enterprises are very important goals not only for executives but also for owners and shareholders.

Competitiveness can be considered on supranational, national, regional, or firm level as well. In this article we concentrate on the company level.

This research focuses on internationalized companies; more precisely, on the companies with exporting activities, which is usually the result of a certain level of development, while being the least risky form of internationalization and, for most companies, the only form (Daszkiewicz & Wach, 2012; Wach, 2017). The rationale behind the choice is that exporting companies usually perform better than players who stick to their domestic market only because of self-selection, learning by exporting or both (Bernard & Jensen, 1999; Merino, Monreal-Pérez, & Sánchez-Marín, 2012; Stocker, 2014; Kazai Ónodi, 2014; Szerb, Márkus, & Csapi, 2015; Czakó, Juhász, & Reszegi, 2016; Stocker, 2016; Stocker, 2019).

This study examines medium-sized and large enterprises as these companies are much more under-researched than small and medium-sized enterprises, which contributes to the originality of our article. In the empirical part of the study, we use the well-established enterprise competitiveness survey, which allows our sample to be representative for the size of internationalized medium-sized and large enterprises. Moreover, our sample size is larger than the theoretically expected sample size, which makes our results generalizable.

The broad research question of this article focuses on how market orientation and its components influence company competitiveness and its elements.

In the literature review section, we will overview the existing literature of competitiveness and market orientation, along with previous results of empirical research conducted in the field, so as to construct our hypotheses. The research methodology part will present the population, the sample, the relevant variables and their operationalization, and the statistical methods used to test the hypothesis. To identify the components of market orientation, we conducted factor analysis and calculated several multiple linear regressions with the approved factors so as to test the hypotheses. Our results were then compared with the previous similar results in the existing literature as we will describe in the conclusion at the end of the article, along with limitations and further research opportunities.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Competitiveness is an essential topic about business enterprises. Companies strive to become more competitive as they want to perform better than their competitors. Firm competitiveness is defined as follows:

> Firm competitiveness is a capability of a firm to sustainably fulfil its double purpose: meeting customer requirements at profit. This capability is realized through offering on the market goods and services which customers value higher than those offered by competitors. Achieving competitiveness requires the firm's continuing adaptation to changing social and economic norms and conditions (Chikán, 2008, pp. 24-25).

Firm-level competitiveness is strongly connected with competitive advantage, which is very important for companies as it is associated with above average profitability. According to Barney (2001), "a firm is said to have a competitive advantage when it is engaging in activities that increase its efficiency or effectiveness in ways that competing firms are not, regardless of whether those other firms are in a particular firm's industry." (pp. 48) The importance of the competitive advantage is underpinned by the fact that – in contrary to past research – competitive advantage is considered the primary source of profit differences between firms, instead of industrial effects of external environment (Grant, 1991; Rumelt, 1991).

Competitiveness as a topic is well discussed in Central and Eastern Europe, not only on the corporate level but also on the national and supranational levels. The Global Competitiveness Index is a frequently used measure, but Doyle and Perez-Alaniz (2017) suggest that there is a need for a Sustainability Adjusted Global Competitiveness Index (SGCI) to comprehensively measure sustainable development and sustainable competitiveness in a cross-country context, considering the environmental and social aspects beside the economic ones. The SGCI is constructed of the dimensions of basic conditions, efficiency enhancers, and innovation conditions. Liu (2017) complements this with a different approach, by stating that country-, industry-, and firm-level competitiveness remain strongly related, not to mention their macro- and microeconomic determinants.

Company competitiveness index

Schmuck (2009) created a questionnaire-based competitiveness index to measure company excellence, which includes variables on research and development, change of target markets, adaptation to changes, rate of marketing budget, participation in strategic alliances, and workforce fluctuation. Schmuck tested the index on 199 organizations, which included companies, local government organizations, and non-governmental organizations.

Laufente, Szerb and Rideg (2016) created a firm-level competitiveness index (CI) based on 10 mutually dependent pillars: human capital, product, domestic market, networks, technology, decision making, strategy, marketing, internationalization, and online presence. This index is widely used in the literature by Laufente, Leiva, Moreno-Gómez and Szerb (2020), Márkus and Rideg (2021), Carmona and Gomes (2021), Lányi, Hornyák and Kruzslicz (2021), Dvoulety and Blazková (2021), among others.

In order to measure firm-level competitiveness, Chikán (2006) developed the Company Competitiveness Index (CCI), which is constituted of capabilities, operationality (O), adaptivity (A), and market performance (MP), as we present in Figure 1 below. Operationality is constituted of costs and prices, quality, time, flexibility and service indicators, while adaptivity consists of market relations, human preparedness, and organisational responsiveness measures. Market performance is measured by return on sales (ROS) and market share, both relative to industry average. The logic behind the index can be expressed with the formula (1), which means, that the "measure of competitiveness is the proportion of the combined degree of Operationality and Adaptability recognized by the market" (Chikán, 2006, pp. 44).

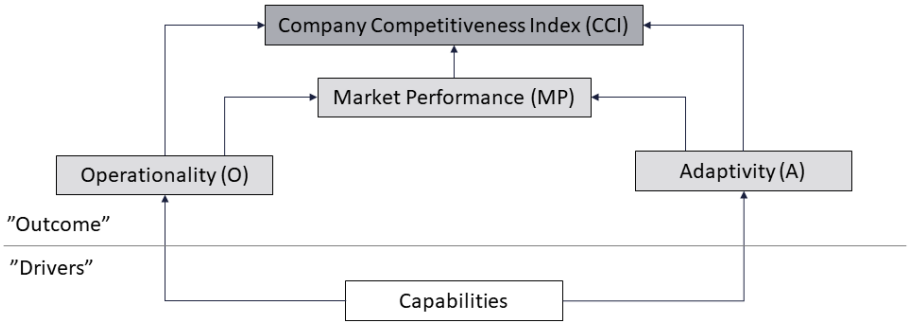

Figure 1. Construction of the Company Competitiveness Index
Source: own elaboration based on Chikán (2006).

$$CCI = (O + A) \times MP \quad (1)$$

The CCI model was tested on a sample of hundreds of Hungarian firms and proved to be a statistically adequate measure of firm-level competitiveness. Since performance indicators are already incorporated in the index, we may consider it a higher-level demonstrator of success (Chikán, 2006; Losonci & Borsos, 2015; Chikán, Czakó, Kiss-Dobronyi & Losonci, 2022). In this article, we will use the CCI to measure company competitiveness.

Market orientation and measurement

Market orientation was a vaguely used concept until in the 1990s the need for a more concrete exploration arose and some measurement approaches were developed. Most research (Chao & Spillan, 2010; Dubihlela & Dhurup, 2015; Hussain, Ismail, & Akhtar, 2015; Mahmoud, 2011; Mokhtar, Yusoff, & Ahmad, 2014; Nurhilalia, Rahman, Mahlia, Jusni, & Aditya, 2019; Udriyah, Tham, & Azam, 2019) build on either of the MARKOR scale proposed by Kohli and Jaworski (1990) or the MKTOR scale developed by Narver and Slater (1990).

Kohli and Jaworski (1990, p. 6) consider market orientation to be the implementation of the marketing concept, which refers to "the organization-wide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organization-wide responsiveness to it." The MARKOR scale measures these aspects.

The other widely used measurement approach was developed by Narver and Slater (1990). They identify three behavioural components that constitute market orientation: customer orientation, competitor orientation, and interfunctional coordination. Moreover, they propose two decision criteria – long-term focus and profitability – which later studies excluded from the model. Their measurement scale is referred to as MKTOR.

Oczkowski and Farrell (1998) suggest that MKTOR is a better indicator than MARKOR for explaining variances in business performance, while Cano, Carrillat, and Jaramillo (2004) found that market orientation has a stronger effect on business performance when measured with the MARKOR rather than the MKTOR scale. Farrell and Oczkowski (1997) draw attention to problems regarding the validity of both scales and propose excluding some questions. Kiss, Szakály, and Kovács (2020) also argue that some items should be excluded from the MKTOR scale.

Hult, Ketchen, and Slater (2005) found positive connection between each of the market orientation measurement approaches (MKTOR, MARKOR) and responsiveness, which then showed a positive relation to performance, although no direct link could be found between either of them and performance. The authors emphasise that the scales represent different antecedents of performance, so instead of choosing one over the other, both of the two concepts and broader models should be used, so linking market orientation directly to performance can be avoided.

Kohli and Jaworski (1990) propose that business performance is a consequence of market orientation, moderated by supply- and demand-side factors: market turbulence and competition have a positive impact on business performance while technological turbulence and the general economic state have a negative one. Pursuing market orientation is only worthwhile when the results outweigh the (often significant amount of) invested resources. Especially because to achieve the desired performance effects, the quality of market orientation needs to be ensured through the quality of market intelligence and the execution of the marketing plan. Since it requires certain capabilities and resources that are not easily acquired, market orientation can be a source of sustainable competitive advantage, which agrees with the model proposed by Hult *et al.* (2005).

Ketchen, Hult and Slater (2007) state that market orientation and customer orientation should not be interpreted on one continuum but as elements of a two-dimensional approach along the axes of propensity to satisfy customer needs in the present and in the future. From a different viewpoint, Ferrell, Gonzalez-Padron, Hult, and Maignan, (2010) explain the contrast between market orientation and stakeholder orientation by arguing that while the first one only indirectly considers the stakeholders alongside customers and competitors, the latter does not have a general priority order and is rather situation-dependent. Nonetheless, the authors identify an overlap between the two in the positive relationship between market orientation behaviours and stakeholder orientation as responsible behaviours towards stakeholders. In line with the concept introduced by Ferrell *et al.* (2010), Vaitoonkiat and Charoensukmongkol (2020) demonstrate evidence that not only customer and competitor orientation but also employee orientation have a significant positive effect on performance but shareholder orientation does not.

Export market orientation can be viewed as the market orientation concept applied to the export market(s), although a strong market orientation on a firm's domestic market does not determine the same level of capability on the export market by default (Cadogan, Paul, Salminen, Puumalainen, & Sundqvist, 2001). A widely used operationalization of the indicator is proposed by Cadogan, Diamantopoulos, and Mortanges (1999), who employ an adjusted version of the MARKOR scale (Kohli, Jaworski, & Kumar, 1993) to the export context, while also using the original Narver and Slater (1990) market orientation scale, among other instruments. Several studies found evidence for a significant relationship between export market orientation and export performance of SMEs (Abiodun & Mahmood, 2015; Acikdilli, Mintu-Wimsatt, Kara, & Spillan, 2020; Singh & Mahmood, 2013), other for their indirect relationship (Pascucci, Bartoloni, & Gregori, 2016), still other discovered no connection between the two elements (Acosta, Crespo, & Agudo, 2018; Godwin Ahimbisibwe, & Abaho, 2013).

Based on the meta-analysis conducted by Cano *et al.* (2004), we may say that country is not a moderator of the relationship between market orientation and business performance, and neither gross domestic product (GDP) nor human development index (HDI) have a significant effect on the relationship. Furthermore, they found that culture (individualism/collectivism) does not impact the relationship

between market orientation and performance, which agrees with the findings of Deshpande, Farley, and Webster (2000). The latter imply, that the results of analyses on the relationship between market orientation and performance can be generalized across countries of varying GDP, HDI, and culture.

Raju, Lonial, and Crum (2011) highlight the differences in the role of market orientation for larger firms and SMEs. These differences may come for example from higher level of innovativeness, customer contact, and output flexibility in the case of SMEs. The authors suggest that the relationship between market orientation and performance can be generally stronger in the case of SMEs than in that of large corporations. At the time of the study by Hooley *et al.* (2000), both examined economies of Hungary and Poland just started their transition towards a market-driven setting, so their results may differ from today's. The sector and the market type (consumer vs industrial, services vs manufacturing, fast moving vs durables) were not found to be differentiating factors on the level of market orientation. On the other hand, small yet significant differences appeared in terms of firm size: smaller companies demonstrated a slightly higher level of market orientation.

Gyulavári, Csepeti, and Nagy (2012) in the frames of the previous round of enterprise competitiveness survey assessed the relationship between market orientation and company competitiveness in times of recession using cluster analysis. They found that the better the performance of companies, the higher the level of their market orientation (and its dimensions), while significant differences can only be identified in certain cases, thus limiting generalizable conclusions. When examining the effect of market orientation on the various performance indicators, the authors revealed that competitor orientation impacted most of the studied entities, then interfunctional coordination, while customer orientation only had a significant effect on one of them.

According to the past theoretical constructs and empirical results, this article will investigate the relationship between market orientation and company competitiveness. As SMEs-related research already abounds in the literature, this article focuses on medium-sized and large enterprises. We propose the following hypotheses for the investigation:

H1: Market orientation positively impacts firm-level competitiveness of medium-sized and large internationalized companies.

H1a: Customer orientation positively impacts firm-level competitiveness of medium-sized and large internationalized companies.

H1b: Competitor orientation positively impacts firm-level competitiveness of medium-sized and large internationalized companies.

H1c: Interfunctional coordination positively impacts firm-level competitiveness of medium-sized and large internationalized companies.

RESEARCH METHODOLOGY

The empirical part of this study was based on quantitative methods. We conducted the enterprise competitiveness survey (ECS) in Hungary in 2019 for the sixth time (after 1996, 1999, 2004, 2009, and 2013), in which the questionnaire consisted of four separate sections to record the perceptions of executive level managers in fields of general management, sales and marketing, operations and production, and finances. The perception database was complemented with companies' financial data from 2013-2018. This period showed significant growth. Hungarian GDP increased from 30 290 billion HUF in 2013 to 43 350 billion HUF in 2018 (Hungarian Central Statistical Office; HCSO, 2021a), which means 7.43% of nominal CAGR (Compounded Annual Growth Rate) and 3.96% CAGR without price effect.

Population, sample, and data collection

The population of the study was Hungarian medium-sized and large enterprises, but since Cano *et al.* (2004) proved that the country of origin is not a differentiation factor for the relationship between market orientation and performance, we view our sample as one of internationalized companies present in Central Eastern European and Western European countries.

The established ECS questionnaire was revised by area experts and the actual questionnaires were finalized in the summer of 2018. Data collection was managed by TÁRKI Zrt. between October 2018 and July 2019. The company contacted more than 2 000 enterprises, from which 234 answered the questionnaires later fed to the perception database. The financial data of the companies was attached to the perception database from Bisnode database. In the phase of data validation, several companies had to be excluded as they showed strange financial traits or activities, or they had severely missing financial data. After data validation, 209 companies remained in the ECS sample (Chikán, Czakó, Demeter & Losonci, 2019).

The ECS sample had to focus on medium-sized and large enterprises, which already conducted business in foreign markets at the time of the study. The most important foreign markets of these companies were located in either Western Europe or Central Eastern Europe. The final sample consisted of n=119 companies. Table 1 shows the population and the sample. According to the HCSO (2021b), in 2018 there were 2545 medium-sized and 690 large companies in Hungary that conducted export. We used 2018 as point of reference as that is the final year from which we have financial data about the companies in the sample.

According to the HCSO (2021c), the number of registered enterprises in Hungary was 521,003 on 31 December 2018, from which 37 562 (HCSO, 2021b) was conducting export, which means 7.2% of Hungarian enterprises were exporting at the time. To determine the ideal (expected) sampling size, we used the Cochran formula (Cochran, 1963 quoted in Israel, 1992) with 95% confidence level:

$$n_0 = \frac{Z^2 \times p \times q}{e^2} \quad (2)$$

In the formula, Z=1.96, p=0.072 (7.2% export), q=0.928 (92.8% do not export), and e=0.05 (significance level). According to the formula, the expected sample size n_0 was 103 companies.

As the proportion of medium-sized and large companies in the population (79% and 21%) and in the sample (76% and 24%) were very similar – and the sample size (n=119) was even larger than the expected sample size (n_0=103) – the results of the research were representative for Hungarian medium-sized and large internationalized enterprises.

Table 1. Number of companies in the population and the sample

Companies conducting export in 2018	**Hungary**		**ECS Sample**	
Type of companies	**Number**	**Proportion**	**Number**	**Proportion**
Exporter medium enterprises	2 545	79%	90	76%
Exporter large enterprises	690	21%	29	24%
Sum	3 235	100%	119	100%

Source: own elaboration of data from the HCSO (2021a).

Statistical methods

Calculation of the components of market orientation was based on factor analysis. First, we conducted an exploratory factor analysis to test the related items in the questionnaire. Then, based on its results, we created a modified factor model. To test the hypotheses, we conducted several linear regression analyses to identify the impact of market orientation and its components on the company competitiveness index and its components. Regression analysis was conducted with the enter method and the missing variables were excluded listwise. There was no autocorrelation, which was tested with Durbin-Watson test, and no multicollinearity issue under the variables, which was checked with the Pearson correlation coefficient. The Chi-squared test was used to determine whether there was difference in customer orientation according to size (Landau & Everitt, 2003).

All statistical calculations were made in IBM SPSS Statistics 25, and Microsoft Excel (from Microsoft Office 365 ProPlus) was applied for other calculations. The significance level was set at $p < 0.05$.

Variable operationalization

The ECS consisted of more than 1 300 perception variables and more than 1 300 financial variables. The company competitiveness index (CCI) was calculated after Chikán (2006). Market orientation was measured with the MKTOR scale. The variable k12 in the sales and marketing questionnaire (answered by the sales or marketing directors of the companies) consisted of questions very similar to the MKTOR scale. We complemented it with variable v35e, which assessed knowledge sharing inside the company and which was clearly related to the interfunctional coordination component of the MKTOR scale.

As Farrell and Oczkowski (1997) and Kiss *et al.* (2020) suggest, the MKTOR scale items should be validated and some items should be excluded, so we conducted an exploratory factor analysis. According to the exploratory factor analysis, the originally selected 10 variables were not ideal for creating the factors of market orientation. Therefore, two variables were excluded to create the ideal factor model, which we present in Table 2 below.

Table 2. Updated factor model of marketing orientation

Survey question included in the factor model	Components of Market Orientation		
	Competitor Orientation	Customer Orientation	Interfunctional Coordination
My company is better at customer value creation than its competitors.	0.537	**0.609**	0.338
Customer engagement is more important to my company than to competitors.	0.339	**0.765**	-0.130
My company responds to customer needs more efficiently than its competitors.	0.257	**0.665**	0.104
My company responds to competitors' moves faster than the other competitors.	**0.807**	0.301	0.078
My company better follows the movements of competitors than the other players on the market.	**0.872**	0.171	0.216
My company understands the industry competition better than other players on the market.	**0.815**	0.275	0.039
The corporate culture supports cooperation among business units.	-0.085	0.544	**0.655**
The company uses a tool to help employees share knowledge.	0.264	-0.098	**0.824**

Source: own elaboration in SPSS.

The factor model's Kaiser-Meyer-Olkin test for sampling adequacy was 0.785, significance – 0.000, explained variance – 72.798%, and both anti-image matrices satisfy the requirements. Thus, the factor model proved adequate, and all questions/variables belong to the expected components of market orientation.

RESULTS AND DISCUSSION

The results of the regression models can be seen in Table 3 below. According to the results, the competitiveness of internationalized companies is indeed influenced by market orientation. In our analysis, market orientation has a significant impact on company competitiveness index, along with operationality and adaptivity. However, it is interesting to see that market orientation's influence on market performance emerged as significant only on $p < 0.1$ level, which was higher than our $p < 0.05$ threshold. Still, in the simple linear regression model, competitor orientation also significantly influenced market performance.

The results in Table 3 show that market orientation of medium-sized and large internationalized companies have a positive significant impact on company competitiveness index. Although the explanatory power of the model is rather low (R^2=0.100), the relationship was found as expected,

which supports hypothesis H1. Market orientation significantly influences the operationality and adaptivity elements of company competitiveness index as well, however it does not have a significant impact on market performance.

Table 3. Regression models

Variable / Measure	Company Competitiveness Index (CCI)	Operationality (O)	Adaptivity (A)	Market Performance (MP)	Market Performance (MP) simple regression
const.	27.831***	3.696***	3.714***	3.731***	3.733***
Competitor Orientation	1.499*	0.035	0.060	0.155*	0.155*
Customer Orientation	0.903	0.047	0.078	0.070	–
Interfunctional Coordination	0.988	0.135**	0.148**	-0.07	–
R^2	**0.100**	**0.116**	**0.119**	**0.074**	**0.061**
F statistics	3.221 p = 0.027*	3.902 p = 0.011*	4.12 p = 0.01**	2.32 p = 0.081.	5.807 p = 0.018*
Durbin-Watson	1.949	1.838	2.115	2.013	2.058

Significant codes: 0 '***' 0.01 '**' 0.05 '*' 0.1 '.'
Source: own elaboration in SPSS.

As we break down market orientation to its components, competitor orientation of medium-sized and large internationalized companies emerges as significantly (p=0.024) impacting the company competitiveness index, which supports H1b hypothesis. The results also show that one-point increase in competitor orientation increases company competitiveness by 1.499 points. It means that internationalized companies should pay significant attention to competitor orientation as it increases their competitiveness significantly with positive elasticity. Competitor orientation impacts market performance significantly (p=0.018) as well, but does not have significant influence in itself on other elements of competitiveness (adaptivity and operationality).

On the other hand, the interfunctional coordination of medium-sized and large internationalized companies does not have significant influence on company competitiveness index and, therefore, we have to reject hypothesis H1c. Noteworthy, however, is that interfunctional coordination has a significant positive impact on some components of company competitiveness index, namely adaptivity and operationality.

Customer orientation of medium-sized and large internationalized companies did not have significant influence either on company competitiveness index or on any of its components, so we must reject hypothesis H1a. This result is very unexpected, as this relationship is usually taken for granted in most business and marketing handbooks. To understand this issue better, we examined the questions that composed the customer orientation factor. Figure 2 shows the descriptive statistics of the items.

We can see in Figure 2 that mean, median, and mode values of customer orientation components are very high, and their standard deviation or variance are very low (5 means absolutely agree, 4 means agree). According to these results, we can see that customer orientation cannot be a differentiating factor on the competitiveness of internationalized medium-sized and large enterprises, as it seems these companies already established a very high level of customer orientation. Therefore, customer orientation appears to be a threshold capability of internationalized medium-sized and large enterprises as its high implementation is a prerequisite to become an internationalized medium or large enterprise.

According to the customer orientation of medium-sized and large internationalized companies, size does not matter at all as there is no significant relationship between company size and any components of customer orientation (accordingly Chi square p=0.553, p=0.956, p=0.465).

Afsharghasemi, Zain, Sambasivan, and Imm (2013) found that the level of market orientation has a positive impact on competitive advantage, while competitive advantage has a positive impact on internationalization, and the level of market orientation has a positive impact on internationalization, which agrees with our results of market orientation's positive influence on company competitiveness.

The results of Udriyah *et al.* (2019) show that market orientation positively impact competitive advantage and business performance. Moreover, they found that competitive advantage has a positive impact on business performance. Our results only partly confirm these findings as – although we also

found the positive impact of market orientation on competitiveness – the positive impact on market performance was not significant on $p < 0.05$ level, and we only found the competitor orientation component's impact significant on market performance.

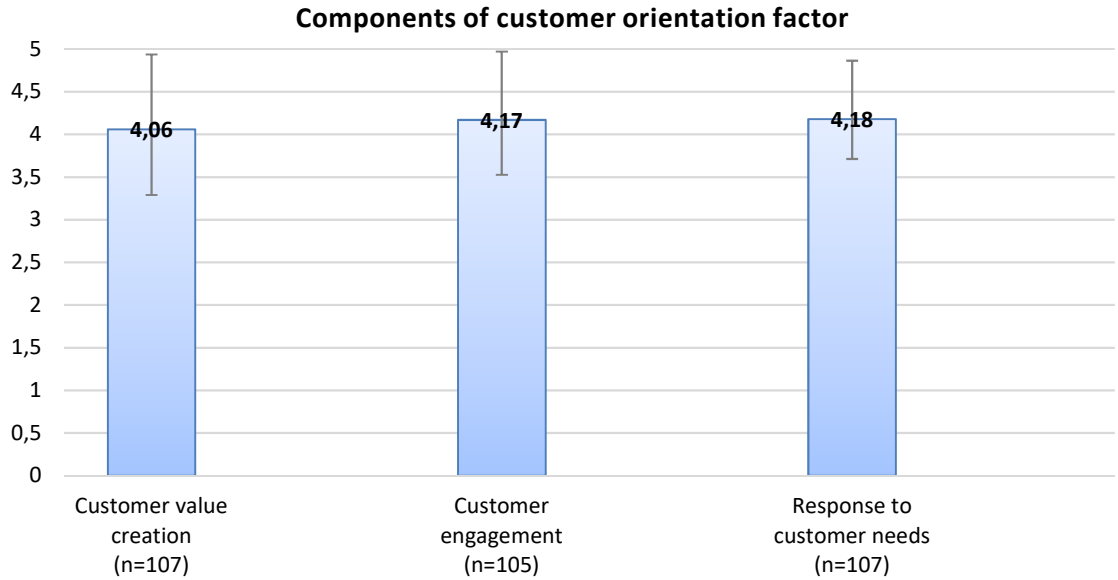

Figure 2. Components of customer orientation factor
Source: own elaboration in SPSS.

Several studies like those by Chao and Spillan (2010), Hussain *et al.* (2015), Kara, Spillan, and DeShields (2005), Mokhtar *et al*. (2014), and Nurhilalia *et al.* (2019) assessed elements of market orientation and their impact on business performance. Their results are mostly heterogenous, but in general, in these studies show that some elements of market orientation has a positive impact on business performance and some do not. In our investigation, although market orientation's impact on market performance proved insignificant, competitor orientation in itself had a significant positive impact on market performance.

Schweiger, Stettler, Baldauf, and Zamudio (2019) and Laukkanen, Nagy, Hirvonen, Reijonen, and Pasanen (2013) investigate strategic orientations of firms, and they examined entrepreneurial orientation together with market orientation as the other main strategic orientation. Among the attributes of entrepreneurial orientation dimensions, Wach (2015) lists predicting future market changes and opportunity identification and creation for the proactiveness dimension and competitive advantage, alongside aggressive posturing relative to competitors for the competitive aggressiveness dimension. Furthermore, Akbar, Khan, Wadood, and Bin Bon (2020) suggest that deep understanding of trends and market demands is essential for entrepreneurial orientation. These represent a strong coherence with customer and competitor orientations, so we may assume that in these research streams appear several connections or underlying similar assumptions. According to our results, competitor orientation significantly influences competitiveness and market performance as well.

Soniewicki and Paliszkiewicz (2019) discovered that firms with more intensive knowledge management processes can achieve higher levels of competitiveness, while Wijaya and Suasih (2020) found that through competitive advantage, knowledge management has a significant positive effect on business performance as well. Although we did not investigate deeper the applied knowledge management practices, one part of the interfunctional coordination factor focused on how much the company uses tool(s) for knowledge sharing, which definitely is an element of knowledge management practices or processes. However, our results show that interfunctional coordination did not have significant influence neither on market performance or competitiveness, although it had a significant positive impact on operationality and adaptivity.

CONCLUSIONS

Market orientation of internationalized medium-sized and large enterprises present in Central Eastern Europe and Western Europe influences their competitiveness. Among the components of market orientation, competitor orientation had the most significant and most powerful impact on competitiveness and market performance. Interfunctional coordination shows significant influence on adaptivity and operationality. However, customer orientation did not have a significant impact on either competitiveness or its elements because customer orientation became a threshold capability of internationalized medium-sized and large enterprises present in Central Eastern Europe and in Western Europe.

According to the empirical results, both H1 and H1b hypotheses have been supported, as market orientation and competitor orientation had a significant positive impact on firm-level competitiveness of medium-sized and large internationalized companies. The H1a hypothesis was rejected as there was no significant relationship between customer orientation and firm-level competitiveness. The H1c hypothesis was also rejected as there was no significant relationship between interfunctional coordination and firm-level competitiveness, although interfunctional coordination did show a significant positive impact on adaptivity and operationality.

Therefore, Executive managers of internationalized medium-sized and large enterprises should focus on competitor orientation if they would like to increase their competitiveness and market performance, while they should maintain their companies' high level of customer orientation. If managers would like to increase their companies' adaptivity and operationality, they should also focus on interfunctional coordination procedures.

Executive managers of the companies that wish to internationalize should build a high customer orientation first as it seems to be the entry criterion, later they can also focus on competitor orientation and interfunctional coordination.

Policy-makers should emphasize that customer orientation is just the beginning; if companies reach a high level of customer orientation, they can increase their competitiveness with competitor orientation. Therefore, if domestic medium-sized and large enterprises or internationalized small and medium-sized enterprises would like to become successful internationalized medium-sized and large enterprises, they should focus on their competitor orientation.

This research focused on medium-sized and large internationalized enterprises in Central Eastern Europe and in Western Europe, so its limitation is that it is not generalizable to small and medium-sized enterprises. However, small and medium-sized enterprises and their market orientation are a well-researched topic, so these limitations are not too strong. The period covered by the survey showed stable economic growth period, which can be identified as another limitation of the results. Further limitation is that the detailed decomposition of the sample into industries or strategy types cannot be made as sample sizes would become too small.

Future research should investigate these companies' market orientation and competitiveness, along with market success and survival in the long term, with panel data. Another direction could be the comparison of MLEs with SMEs, with the focus on highlighting size-related differences. Interesting future research area would be to retest the country-of-origin generalizability finding of Cano *et al.* (2004). Finally, another research direction will be the impact of market orientation and its elements on competitiveness in turbulent times, especially which market orientation elements contributed to the resilience of companies and which did not. Focusing on a selected industry can be also identified as a future research direction.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Exploring the institutional pressures that affect international new ventures

Jurgita Butkeviciene, Jurgita Sekliuckiene

ABSTRACT

Objective: This article aims to identify the link between institutional pressures and strategic responses of international new ventures (INVs).

Research Design & Methods: This article reviews and theoretically synthesises extensive literature from the institutional and international entrepreneurship theories. The discussion leads to the formulation of four research propositions.

Findings: The relationship between institutions and entrepreneurial firms' activities remains lacking in relevant research. Thus, given the constraints of INVs, the suggested propositions assist in identifying the nature of the institutional pressures exerted on entrepreneurial firms. Through the breakdown of the institutional pressure determinants, three groups of pressures are discussed. The text suggests that coercive, normative, and mimetic pressures evoke more active strategic responses of INVs, as internationally oriented, entrepreneurial, technology-driven firms. The institutions and INVs strategic responses may have a bidirectional relationship. At the same time, legitimacy constraints to INVs may involve more than one scenario of how the INVs behave, which converts to a set of various responses to institutions, which lead to embedded relationships with institutions.

Implications & Recommendations: The formulated research propositions illuminate numerous practical implications, leading to future research agendas. Researchers studying international entrepreneurship and entrepreneurs will benefit from reflecting on the proposed framework's dimensions and interactions. International new ventures need to legitimise themselves in various institutional environments. However, they can be active partners in forming their institutional context through progressive involvement. Another input is aimed at policymakers looking to shape the institutional environment.

Contribution & Value Added: The theoretical contribution of this article lies in its introduction of a set of research propositions that explain the relationship between the institutional pressures and strategic responses of INVs and set a future research directions. The value-added consists in exploring institutional pressures that lead to more active responses of INVs because of entrepreneurial firms' specifics and emphasising the role of INVS in the building of institutions.

Article type: conceptual article

Keywords: Institutional pressures; Strategic responses; International new ventures

JEL codes: M13, M48, L26

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INTRODUCTION

Both businesses and institutions are now undergoing a profound transformation due to the changes in the economic, technological, and socio-political environment (Ahlstrom, Arregle, Hitt, Qian, Ma, & Faems, 2020). Digital technologies and disruptive innovations, the increased velocity of markets, and the emergence of new business models have led to a shifting business environment (Ebert & Duarte, 2018; Latoszek, 2021). While some of these institutional factors are specific to the contexts

and others are universal (Sadeghi, Nkongolo-Bakenda, Anderson, & Dana, 2019), they affect international entrepreneurs from the stage of opportunity recognition till the internationalisation and embeddedness in multiple contexts.

The home country's institutional environment provides the premise for an international new ventures'(INVs) country-specific advantages, and together with internal managerial and organizational factors, they impact international entrepreneurship strategies and performance (Rask & Servais, 2015). Institutions are vital to providing stability and reducing uncertainties as they are the fundamental structures for economic activity (Lawrence, Phillips, & Tracey, 2012). Institutional environment affects entrepreneurial behaviour (Welter, 2005), impacts international entrepreneurship process and models (Rask & Servais, 2015), and sustains economic growth (Acemoglu, Johnson, and Robinson, 2005). This article focuses on entrepreneurial INVs, characterised by 'innovative, proactive, and risk-taking behaviour across borders' (McDougal & Oviatt, 2000, p. 903). On average, these firms internationalise within three years from their incorporation and export at least 25% of total sales (Knight & Liesch, 2016). Their entrepreneurial mindset technological readiness, international growth orientation, focus on unique resources (Cavusgil & Knight, 2015), networking (Torkkeli, Puumalainen, Saarenketo, & Kuivalainen, 2012), and experiential learning (Bunz, Casulli, Jones, & Bausch, 2017) make them vital in the fast-changing environment characterised by fast adaptability and tolerance to risks and uncertainties. International new ventures often originate from technology-driven industries and are defined by innovative products and services, which allow them to reach global audiences through low-cost delivery and information methods (Rask & Servais, 2015; Sekliuckiene, Pisoni, Onetti, Cannone, & Matiusinaite, 2017). Moreover, scholars identify that international entrepreneurship is critical for emerging or transition economies (Meyer, 2019), and the topic is especially relevant for firms from Central and Eastern European (CEE) countries due to their historical institutional differences and resource constraints (Nowinski & Rialp, 2013; Solesvik, 2019).

Previous research (Oliver, 1991) analyses firms' strategic responses to institutional constraints and the effects of institutional pressures based on causal determinants. Greenwood, Raynard, Kodeih, Micelotta, and Lounsbury (2011) discuss firms' strategic responses in plural institutional logics and emphasised that the ability of an organization's voice to be heard is linked to its level of influence and resources. Doh *et al.* (2017) further focus on the international business responses to address institutional voids. However, numerous studies examine the multinational enterprises' (MNEs) response to the institutional environment (Oliver, 1991; Kostova & Roth, 2002) and do not focus much on the INVs. Elert and Henrekson's (2017) study already revealed the significance of the bidirectional relationship of institutions and entrepreneurship by emphasising that entrepreneurs may significantly influence institutions and drive institutional change. Moreover, Khalilov and Yi's (2020) empirical results from OECD countries have proved the importance of a bidirectional relationship between regulatory institutions and entrepreneurs to alter institutions and stimulate economic growth. This has further stressed the need for research to clarify the reciprocal relationship between institutions and entrepreneurship.

Specifically in the context of INVs, the external institutional environment's role in international entrepreneurship was analysed through the integration of institutional and international entrepreneurship theories in the conceptual article by Szyliowicz and Galvin (2010). Building on the neo-institutional theory and Scott's three institutional pillars, they reveal the need for the application of institutional theory in international entrepreneurship and suggest future research directions towards the clarification of processes and relations between institutions and firm-level international entrepreneurship by emphasising that 'this relationship is not unidirectional' (Szyliowicz & Galvin, 2010, p. 325).

The prior conceptualisation and empirical evidence indicate that despite the growing understanding of the relationship between firms and their home country institutions, the influence of technologically innovative and digitally determined international entrepreneurship progresses (Welter 2005; Hinings *et al.,* 2018). Moreover, the strategic responses of INVs to institutional pressures could significantly contribute to the analysis of institutional work because INVs could act as active co-creators of their institutional environments (Szyliowicz & Galvin, 2010; Elert & Henrekson, 2017). In an uncertain landscape with rapid technological development and government capacity constraints (Smolka & Heu-

gens, 2020), policymakers and regulators demand input from INVs in the process of developing sustainable and favourable legal and normative frames. Therefore, the changing business landscape and shifting institutional arrangements create the need to understand how INVs and policymakers can jointly co-create new regulatory, normative, or cognitive frameworks (Ozcan & Gurses, 2018; Smolka *et al.,* 2020). Thus, to fill this gap, we foreground the following research questions:

RQ1: How do institutional pressures affect strategic responses of INVs?

RQ2: How do INVs react to institutional pressures?

This article aims to identify the link between institutional pressures and active strategic responses of international new ventures. The article is organized as follows. First, we provide literature review regarding institutional pressures and INVs strategic responses. Second, we draw from the literature review the available institutional factors, pressures, and entrepreneurial firms' strategic responses to develop the conceptual framework. Then, the research propositions explaining the link between institutional pressures and strategic responses of INVs are defined. The final section discusses the theoretical and practical implications and suggestions for future research.

RESEARCH METHODOLOGY

The paper is established on a synthetic literature review to explore the research questions "How do institutional pressures affect strategic responses of INVs? How do INVs react to institutional pressures?". We conducted a theoretical study using the institutional and international entrepreneurship theories to contribute to the research conversation set by previous scholars (Szyliowicz & Galvin, 2010; Elert & Henrekson, 2017; Greenwood *et al.*, 2017).

A methodological synthetic literature review framework was followed by the recommendations of Schirmer (2018), and the use of this methodological choice was inspired by Naumann (2017) and Benazzouz (2019). This methodological choice allowed us to analyse copious material and create new theoretical perspectives by evaluation and rigorous integration of previous studies within the research fields. As the synthetic literature review was conducted, a multi-step process was followed as suggested by Tranfield, Denyer, and Smart (2003): planning the review, conducting the review, and finally reporting the findings. We undertook the following research steps.

We started the research process from planning the research and defining the research protocol. The search criteria involved terms (("strategic response*") OR ("institutional pressure")) AND ("international new venture*" OR "international entrepreneur*" OR "born global*" OR "global start*up*" OR "*tech")) in the titles and abstracts of articles.

Next, we selected the main online data bases – Web of Science and Science Direct – which are two of the most used databases for academic research. In addition, as suggested by research in the entrepreneurship domain by Cao and Shi (2020), we included peer-reviewed articles and sources from Google Scholar. This allowed us to avoid academic bias (Briner & Denyer, 2012) and was reasoned by the novelty of the bi-directional relationship of INV and home country institutions, which requires further contextualization to reveal their distinctive features and suggest ideas for future empirical research (Greenwood *et al.*, 2017; Smolka *et al.,* 2020). In addition, we found that the responses of INVs to institutional pressures mainly consist of case-base analysis useful for practitioners and government; therefore, such reports were included to fulfil the intention to heed all valuable contributions. In addition, we limited our research to articles published in 1994-2020, since it is generally accepted that the term 'international new ventures' emerged from a definition by Oviatt and McDougall (1994). This search allowed us to identify 412 articles in total. The eligibility criteria for inclusion were both theoretical and empirical articles.

We limited the institutional analysis to the neo-institutional theory approach and chose Scott's (2008) approach explaining institutions via the framework of three pillars: regulative, normative, and cognitive as relevant to the previous research conversation. Then, we continued the analysis through international entrepreneurship lenses. The preliminary review justified the need for a more

consolidated understanding of the institutional pressures affecting the INVs phenomenon in the institutional and international entrepreneurship literature.

After the review screening of titles and abstracts by junior and senior scholars, we excluded the duplicated studies (16) and articles lacking theoretical focus on INVs' pressure-response mechanism (351). This resulted in detail analysis of only 45 papers, as we chose to focus on the minority of papers that actually presented relevance to the topic.

Table 1. The synthetic literature review sources

Data bases	Keywords
Web of Science (13)	((((“strategic response*”) OR (“institutional pressure”)) AND ((“international new venture*” OR “international entrepreneur*” OR “born global*” OR “global start*up*” OR “*tech”)))). Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI.
Science Direct (360)	((“strategic response”) OR (“institutional pressure”)) AND ((“international new venture” OR “international entrepreneur” OR “born global” OR “global startup” OR “tech”)).
Google Scholar (30)	((“strategic response”) OR (“institutional pressure”)) AND ((“interna-tional new venture” OR “international entrepreneur” OR “born glob-al” OR “global startup” OR “tech”)).
Google Scholar snowball (9)	“strategic response”, “institutional pressure”, “international new venture”, “in-ternational entrepreneur”, “born global”, “global startup”, “tech”

Source: own study.

The link between institutions and strategic responses was identified by emphasising the typologies of entrepreneurial firms' strategic responses concept. We have chosen Elert and Henrekson's (2017; 2020) entrepreneurial firms' strategic responses typology, which is adapted from Oliver's (1991) framework but specifically emphasises the bidirectional relationship of entrepreneurship and institutions. To conclude, the literature review of was conducted to synthesise the literature and develop the conceptual framework of institutional pressures affecting strategic responses of INVs. As a result, we developed a set of propositions for empirical studies as a finding and future direction.

LITERATURE REVIEW

Institutions and institutional pressures

Institutional and international business theories affirm that the institutional environment influences the international firm's activities in home and host environments (Rask & Servais, 2015) and the quality of institutions is essential for the firms' internationalisation and growth (Cheng & Yu, 2012, Dorozynski, Dobrowolska, & Kuna-Marszalek, 2020). The institutional environment also affects entrepreneurship (Elert & Henrekson, 2017; Bag & Omrane, 2021), however, for the different extent in different countries considering their level of development (Khaki & Akin, 2020), governance quality and informal relations spread (Digdowiseiso & Sugiyanto, 2021; Mishchuk *et al*., 2020), peculiarities of labor supply (Bilan *et al*., 2020). Excessive institutional pressures may draw entrepreneurs' focus to short-term daily business problems instead of business planning in the long run (Welter, 2005) and even limit their participation in domestic economic activity (Mair & Marti 2009).

The institutional theory remains the dominant theory to explain organizations' relations to their environment (Suddaby *et al.,* 2010, Aksom & Tymchenko, 2020). Institutions define social reality by the rules, a taken-for-granted social and cultural meaning system (Scott 2014, Urbano, Aparicio, & Audretsch, 2019). However, the primary nature of institutions is to provide stable structures framed by 'regulative, normative and culture-cognitive elements' (Scott, 2008, p. 428) and control 'reducing uncertainty and effort' (Cuervo-Cazurra *et al.*, 2019, p. 154). Coercive pressures are applied to firms by all forms of regulations to conform to the laws (Scott, 2001). Legal codes establish laws and rules, but they also control and impose sanctions to influence firms' future behaviour. Legislative authorities create and interpret these legal mandates, and later administrative agencies establish rules of practice. Normative pressures

are based on collective sense-making, values, and beliefs expressed by compliance to norms, standards, or collective expectations. Recently, some scholars suggested that firms also meet the technological institutional pressures (Hoed & Vergragt, 2004), which are characterised as certain rules and routines when new technologies or solutions are designed and developed. However, they have a characteristic of normative pillar (Baruta, 2018) and therefore will not be analysed separately. Effects of mimetic pressures are significant for INVs in creating legitimacy in unfamiliar and uncertain environments and are represented by already established practices and appropriate behaviours (Welt, 2005).

However, firms' legitimacy constraints can be overcome by digital INVs (Sohns & Wojcik, 2020). As an illustration, international digital entrepreneurs who operate in an EU Single market enjoy free movement of services (Sohns & Wojcik, 2020), but new innovative business still meet institutional constrains, e.g. INVs in peer-to-peer lending. Peer-to-peer lending firms experience multiple institutional pressures with diverse institutional voids and imperfections, which may affect their responses and therefore stimulate lagging institutional change (Ahern, 2018). Moreover, institutional imperfections evoke different international entrepreneurs' behaviours that vary even in the same industry and country (Brenesa, Ciravegna, & Pichardo, 2019). Walter (2005) emphasises that growth-oriented and more experienced entrepreneurs use more circumspect and short-term responses to deal with institutional pressures in such environments.

To summarise, the different types of institutional pressures challenge the behaviour of international entrepreneurs. Elert and Henrekson (2017) reveal that coercive pressures from inefficient regulatory institutions affect rule-breaking entrepreneurs, which tend to create alternative arrangements to the conditions, limiting their profitable business, which may affect the institutional change. The normative institutional pressures constrain the entrepreneurs' behaviour how business is done, but on the other hand, creates opportunities for entrepreneurs to intermediate and fill these voids. Deviations in cognitive institutions and perception about what is acceptable may motivate international entrepreneurs in their home market to change both regulative and normative institutions (McCloskey, 2016).

Strategic responses to institutional pressures

Institutional pressures shape the behaviour of INVs. However, entrepreneurial firms develop various strategic responses to meet these institutional pressures, according to the institutional contexts, constituencies, expectations, and environment dynamic (Clemens & Douglas, 2005; Williams & Spielmann, 2019). Scholars analyse firms' different strategic responses to institutional pressures to understand their response mechanisms. For example, Oliver (1991) reveals that firm's decision to choose a specific strategic response: 'acquiescence, compromise, avoidance, defiance or manipulation' (p.151), which vary from passive to active, depends on multiple institutional antecedents: 'cause, constituents, content, control, and context' (p. 160); however, she suggests that the organizations must not blindly conform to institutional pressures but respond depending on the pressure strength and organizational will.

Doh, Rodrigues, Saka-Helmhout and Makhija (2017) have categorize strategic options implemented by organizations into three main sections: a) adaptation – adjusting the business model to local conditions by switching external intermediaries to the internalisation of functions; b) modification – shaping or altering these conditions; c) avoidance – ending operating in such environment altogether. However, most studies focus on analysing adaptation strategy, which show how firms' diversification or business groups' internal markets might help firms adapt to or abide by institutional voids (Fisman & Khanna, 2004; Elango & Pattniak, 2007).

The relationship between institutions and entrepreneurial firms' activities lack relevant research, with few studies exploring theoretical relationships (Hwang & Powell, 2005; Cheng & Yu, 2012). In addition, a few studies show how institutions support entrepreneurial activity and how entrepreneurial firms change and build new supportive institutions (Khalilov & Yi, 2021).

As a result, Elert and Henrekson (2017, 2020) try to apply entrepreneurship theory and focus specifically on the bidirectional relationship of entrepreneurship and institutions. The entrepreneurs' strategic responses are based on Oliver's (1991) framework; however, similarly to the Doh *et al.*, (2017) study, the entrepreneurial responses to institutions have been merged into three

groups: a) abide, b) alter, or c) evade; these can be either productive or destructive to cope with institutional pressures (see Table 2).

Abide strategic responses are used to pursue a business opportunity by conforming to the prevailing institutions. Alter responses are used to provide a new local public good or lobby for entry in previously closed markets. Evade responses are used to avoid regulations through a new contractual form. Interestingly, institutional compliance does not preclude institutional evolution, but those firms, who abide, tend to strengthen institutions, particularly informal ones, such as codes of conduct and traditions. All three responses can be either productive or destructive.

Table 2. Typology of entrepreneurial responses to institutions

Strategic responses/ Type of entrepreneurship	Abide	Alter	Evade
Productive	'Pursue a business opportunity within prevailing institutions.'	'Provide a new local public good, private security firms.'	'Sidestep stifling labor market regulations through a new contractual form.'
Unproductive	'Sue competitors for a share of their profit. Rogue states; the rivalry between warlords.'	'Lobby for a new regulation to protect on the industry. Repeal property rights to plunder a wealthy group.'	'Bribe a government official to obtain a contract. Illegal syndicates.'

Source: own elaboration based on Elert and Henrekson (2017, p. 207).

THEORY DEVELOPMENT AND DISCUSSION

To explore the institutional pressures affecting strategic responses of INVs based on the literature review, we developed a conceptual framework (see Figure 1). We argue that there are relationships between institutions and entrepreneurial firms' activities and INVs, as entrepreneurial and internationally active firms, more actively respond to their home country institutional pressures – such as coercive, normative, and mimetic – than other types of firms (e.g. multinationals). We ground our arguments based on the below literature. Oliver's (1991) typology is mainly employed to analyse the strategic responses of multinationals, which hold specific power and resources to their response. Thus, scholars show mixed findings regarding the relationship between firm size and strategic response. Goodstein's (1994) findings reveal that large organizations tend to fear public attention and use more passive strategies due to inertia and more bureaucratic and rigid structures compared to SMEs. We support the idea that entrepreneurial INVs, which in today's context exhibit entrepreneurial behaviour and more important intangible resources and capabilities, tend to be more proactive and can employ more active strategic responses to respond to institutional constraints which they are facing and co-create institutions (Elert & Henrekson, 2020). Moreover, by their nature, institutions create stable systems and work to keep the stability. Therefore, the entrepreneurial behaviour confronts the stability-seeking institutional behaviour and may create tension between articulated support from the regulative or normative institutions to the negative perception by the perspective of cognitive institutions (Sadeghi *et al.*, 2019).

According to the conceptual framework, *coercive pressures* affect firms' strategic responses. Home country context and industry conditions and entrepreneurs' confidence appear in the literature as critical factors for the internationalisation of INVs (Oviatt & McDoughal, 1994, Nowinski & Rialp, 2013), which pushes them into a risky and uncertain international environment after their inception. The international entrepreneur is characterised by the ability to cope with uncertainty in response to environmental change (Bula, 2012).

Clemens, Bamford, and Douglas (2008) prove that irrespective of firm size, when future events are challenging to predict, firms tend to engage with regulators and change processes to avoid or dampen external restrictions and therefore use more active strategic responses. In turn, a study by Luo (2005) suggests that the home country's regulatory environment determines the internationalisation dynamics of newly established international firms and that macro-level factors, such as a country's well-es-

tablished institutional arrangements, highly support the development of new international firms. Gancarczyk (2019) suggests that context has a moderating effect on entrepreneurial firms' growth and profitability. In the context of international firms, the home institutions exert coercive pressures by regulating the legacy of new business models, licensing the activity, providing availability of human resources or public technological infrastructure.

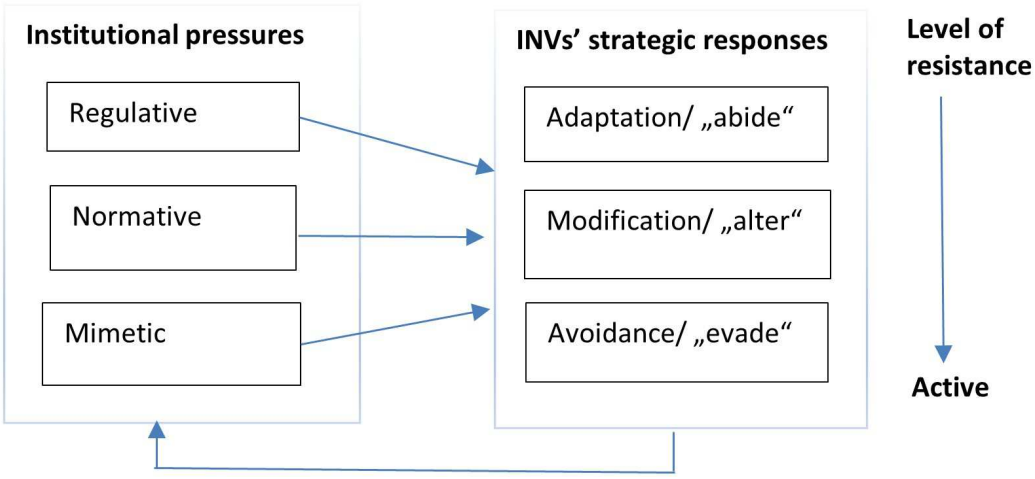

Figure 1. Framework of home-country institutional pressures affecting strategic responses of INVs
Source: own elaboration.

Coercive pressure intensity influences entrepreneurial firms' nature, so that high-regulation environments see less productive entrepreneurship than low-regulation environments (Baumol, 1996). However, the lack of institutional arrangements and proper regulation may provide a temporary regulation-free environment for entrepreneurs. Still, it affects entrepreneurs so that they cannot quickly legitimise and protect their business (Bruton, Ahlstrom, & Li, 2010). Lobo, Fernandes, Ferreira, and Peris-Ortiz (2020) identify the role of the institutional pressure strength in the home institutional environment, which affects international market expansion and may even lead to radical internationalisation decisions.

Smolka's and Heugen's (2020) recent work reveals that if regulatory institutions are unable to evaluate novel technologies, the active response to the institutional constraints allows entrepreneurs to explain and adjust the regulations of radical technological changes. The legitimised novel business models in the home country and supported business growth capabilities allow even the smallest companies to develop new products and services to reach out to customers and suppliers worldwide. In turn, this positively impacts country competitiveness and economic growth (Elert & Henrekson, 2020). Therefore, increased public pressure for governments to regulate newly emerging fields also relates to the legitimacy of novel high-growth entrepreneurial ventures. Local governments' financial and capacity constraints require proactive interactions; therefore, it reveals the salience of coercive pressures and firms' strategic response to alter existing institutions.

Coercive institutional pressures from home country institutions affects the legitimisation of INVs activities, especially their operations, used technologies, and business model innovations. There are several issues related to the specificity of INVs shareholders. Scholars (Rao, Chandy, & Prabhu, 2008) confirm that new ventures legitimacy could be established by creating associations with appointed entities and internal or external associations to the existing firm. Habitual international entrepreneurs could gain legitimacy by forming alliances with already established firms or clients (Rao, Chandy, & Prabhu, 2008). By their experience, associations, and networks in the home institutional environment, habitual entrepreneurs might respond differently than novice entrepreneurs to coercive pressure. Moreover, if institutional pressures are more substantial, firms use less active strategies to respond to these pressures (Etherington & Richardson, 1994). Thus, we suggest that as a result of the contextual

environment and related to uncertainty, coercive pressure determines the active INV strategic response; therefore, this discussion leads to the following proposition.

Proposition 1: Coercive pressures resulting from the contextual environment evoke more active strategic responses of INVs.

Interconnectedness during the digital transformation is reflected in the need for novel institutional arrangements, characterised by related technologies or modules to form alliances and run digital enterprises at a lower cost (Hinings *et al.,* 2018), represented by *normative pressures* for a business to facilitate transactions. As an essential part of the entrepreneurial system, institutions influence entrepreneurial activity, but both entrepreneurship and institutions interact and co-evolve.

Durand, Hawn, and Ioannou (2019) reveal that a firm internal mechanism to respond to normative pressures are dependent on two factors: issue salience, which is characterised by 'the degree to which a stakeholder issue resonates with and is prioritised by management' (Bundy, Shropshire, & Buchholtz, 2013, p. 353), and the perceived cost and benefit of the resource mobilisation to respond to the normative pressure. International new ventures are affected by normative pressures, and changes in normative institutions, related to collective beliefs and norms, are related to customer pressures and firms' liability of foreignness and newness (Zahra, 2005). Customers' communities that are virtual and offline may demonstrate different purchase and experience preferences. However, virtual communities are more geographically dispersed and specialised based on a more dynamic network of relationships and the absence of physical contact (Dambrin & Valck, 2007). These communities are more highly engaged, and they stimulate the trial and adoption of new products and services and change the normative institutions with new norms in society. Therefore, due to digital transformation, INVs compete globally for customer experience and thus participate in changing the behaviour of both virtual and offline communities (Dambrin & Valck, 2007). Moreover, the normative pressure for sustainability forces INVs to generate new product and services and achieve profitability and growth, along with a reduced environmental impact, communities support, and improved quality of life (Wijethilake, Munir, & Appuhami, 2017).

International new ventures experience normative pressures especially in critical events or crises based on government and community norms and beliefs to secure business. It was noted that during the Covid-19 pandemic, technology-intensive INVs in some cases received unequal support compared to well-established firms in traditional sectors due to the focus on maintaining employment and avoiding bankruptcies (Kuckertz *et al.*, 2020), even despite the fact that entrepreneurial new ventures from novel knowledge-intensive industries will shape the future of the economy. In times of crises, nationwide programs were often not reachable for newly established INVs due to the set of multiple and challenging to reach criteria.

Moreover, depending on the growth path and timing, INVs receive support from governmental institutions, but on a particular stage an INV might be sold to a foreign company and lose its existence as an independent firm (Kuivalainen *et al.*, 2015). Therefore, normative pressures arise from the home country constituents, especially in small market economies, and relate to firm support's questionable objective (Sekliuckiene *et al.*, 2017; Torkkeli *et al.,* 2017). Therefore, we propose the following:

Proposition 2: Normative pressures related to customer experience and the liability of newness and foreignness evoke more active strategic responses of INVs.

The institutional theory acknowledges the importance of culture-cognitive elements and the role of entrepreneurs' behaviour to which they respond by mimetic pressures (Welter, 2005). Ingram and Teigland (2013) discussed cultural barriers to establish cognitive legitimacy for ICT entrepreneurs in the crowdfunding area. Lewis *et al.* (2020) specified culture-cognitive legitimacy constraints for crowdfunding platforms and the influences of political factors. These examples show that when innovative international entrepreneurs bring new activities into an existing business environment, they develop cognitive legitimacy and an image as trustworthy partners (Aldrich & Baker, 2001) and, therefore, actively respond to mimetic pressures. For instance, the acceptance or perceived threat

of blockchain technology strongly depends on various stakeholders' cognitive constraints. (Wardrop, Zhang, Rau, & Gray, 2015).

Moreover, Fox, Clohessy, van der Werff, Rosati, and Lynn (2021) analyse how diverse entrepreneurs proactively respond to cognitive constraints and use different techniques to build cognitive legitimacy. They reveal that when regulatory decisions are lagging, the proactive participation of entrepreneurs contributes to understanding and interpreting this complex innovative technology and mobilizing the market for institutional changes and adoption. However, Tracey, Dalpiaz, and Phillips (2018) emphasise different active entrepreneurs' strategic responses in addressing cognitive legitimacy pressures in new business activity authentication work; however, they reveal that the response may vary depending on the firm's maturity or what is known as the 'legitimacy threshold.' Moreover, firms' proactiveness and willingness to participate in this institutional change also depend on their innovativeness and cognitive dimension (Durand, Hawn, & Ioannou, 2019). Therefore, we present the following proposition:

Proposition 3: Mimetic pressures for innovative entrepreneurial activities evoke more active strategic responses of INVs.

Recent digital international research revealed that INVs are challenged to cope with institutional pressures from multiple sources. For example, a study of the financial services industry (Knight & Wojcik, 2020; Sohns & Wojcik, 2020) shows that innovative INVs in the financial services industry – fintech firms – need to gain legitimacy due to the liability of newness and the liability of foreignness, while at the same time, they fit into a novel institutional environment (Ahern, 2018). Moreover, the unified regulatory regime exerted by the countries within the European Union offers a unified regulatory regime, which under the current single market directives and the availability of passporting allow for unrestricted financial services for payments and alternative financing to access the markets. Even then, they still face different institutional pressures related to the diverse implementation and acceptance of the directives under the national law and regulatory arbitrage (Ahern, 2018; Chen, Kavuri, & Milne, 2019).

Moreover, the entrepreneurial orientation of INVs provides continuous engagement in risk-taking, innovative, and proactive behaviours, which influences their performance (Hoskisson, Covin, Volberda, & Johnson, 2011). International new ventures' dynamic capabilities and flexibility foster the recombination of legitimising, leveraging, and launching capabilities (Grøgaard, Colman, & Stensaker, 2019). International new ventures can manage environmental complexity and – by being engaged in multiple markets – gain experience and knowledge that can help develop institutions' effective development (Li, Cui, & Lu, 2018). Therefore, we explain that legitimacy constraints to innovative INVs may involve more than one scenario for how the INVs behave, which converts to complex and multiple responses to institutions.

Moreover, when entrepreneurial firms seek access to information about the market and resources, both of which constitute uncertainty, it is necessary to construct potent relational capital that would trigger embedded relationships (Hitt *et al.,* 2020). Firms must display information exchange and trust between partners, including institutional partners. Small entrepreneurial firms usually maintain embedded relationships (Narooz & Child, 2017). For example, a relationship with financial firms creates more access to financial funds, while such a relationship with suppliers creates access to other resources that diminish uncertainties for the firm. What is more, the mentioned relationships' advocacy with governmental entities (institutions) extends information about the formal institutions responsible for regulations, changes, or other ways to impact the legitimacy of the firms. All the mentioned relationships with different stakeholders increase the legitimacy of the firms and reduce uncertainty.

Moreover, in institutional voids in the shape of transparency and accessibility, entrepreneurial firms tend to join networking channels. Thus, there is an adverse relationship between the dependence of entrepreneurial firms on institutions and the asymmetry of power (Narooz & Child, 2017). Moreover, scholars found that the INVs' international success often depends on their successful collaboration with existing MNEs for global expansion. However, the primary source of market resistance to entrepreneurs comes from market incumbents, who form normative and cognitive dimensions and

may attack INVs indirectly by maintaining strong connections to critical institutions that restrict new products or new technologies offered by entrepreneurs (Aldrich *et al.,* 2001). This resistance could be extreme in regulated markets, in which various institutional actors have the power to protect incumbents by expressing coercive pressures (Gurses *et al.,* 2015). Moreover, the nature of strategic responses of entrepreneurial firms varies depending on the firms' characteristics, such as size, age, product specialisation and the nature and structure of their networks (Sohns & Wójcik, 2020).

Thus, the active response to institutional pressures from innovative international entrepreneurs can lead to institutional change but might combine multiple reactions if they are unwilling to join forces with other actors (Elert & Henrekson, 2020). Thus, we formulate the following:

Proposition 4: Evoked by embedded relationships with institutions, INVs' strategic responses to institutional pressures might involve multiple responses, combining adaptation, modification, and avoidance.

CONCLUSIONS

The progress in the institutional environment is salient for any government, especially ones that undergo a profound environmental and technological transformation (Ahlstrom *et al.,* 2020; Głodowska *et al*., 2016). Moreover, INVs operate in various institutional environments. Therefore, by their active involvement in domestic institutional change, they could be an effective and welcomed partner to alter the institutional environment (Smolka *et al.,* 2020; Khalilov & Yi, 2021). However, we trust that firms' proactiveness and willingness to participate depend on institutional pressures, firm response mechanisms, and related constraints. We now see that the most analysed studies are exploratory and focus on one country studies. Thus, there is a lack of theory building and analysis between institutions pressures and INV responses and the level of resistance.

Our first proposition emphasises the role of the contextual environment in INVs' active responses, specifically uncertainty and legitimacy constraints. This supports the findings by Clemens and Douglas (2005); however, it focuses more on the salience of coercive pressure for legitimacy constraints for high-growth INV in novel industries. Our second proposition is related to normative pressures, which suggests that collective expectations, norms, and beliefs for sustainability evoke more active strategic responses of INVs to alter the normative institutions. The previously mentioned scholars (Khalilov & Yi, 2021) identified a unidirectional relationship; however, the INVs inherit different resources and capabilities, which we assert may allow their different behaviour (Cavusgil, & Knight, 2015). The third proposition is related to the effect of mimetic pressure; therefore, we argue that INV involved in innovative entrepreneurial activities evoke a more active strategic response to change the culture-cognitive institution. Finally, the fourth proposition suggests that embedded relationships with institutions evoke multiple responses to cope with diverse pressures.

Future research should address the deeper empirical analysis of bidirectional relations between institutional pressures and INVs' strategic responses in different contexts of Khalilov and Yi (2021), who tested the bidirectional relations of regulative, normative, and cognitive institutions and entrepreneurship and found the only regulative relationship is bidirectional. However, other authors (Lobo *et al.*, 2020) state that it depends on the country context. Moreover, the results of Sohns and Wójcik's (2020) study show that political uncertainty and institutional change can trigger firms' responses, which have the potential for modification. Thus, we call for research in terms of assessment of various contexts and bidirectional relations to contribute to theory development.

Moreover, future research should examine the role of preconditions for institutional pressure intensity in institutions – such as cause, constituency, content, control, and context determinants (Oliver, 1991) – meaning INVs' strategic response relationship. Moreover, scholars should consider how these determinants influence institutional change. After all, our literature review showed that the decision of small or medium-sized enterprises to internationalise involves institutional change, especially in response to external pressures in the home country (Lobo *et al.,* 2020).

The third suggested future research stream is related to our fourth proposition, that INVs' strategic responses to institutional pressures might involve multiple responses related to the level of resistance.

The contextualisation of existing institutions and INVs' nature can become valuable dimensions that help us to understand the level of resistance (abide, alter, evade). According to Boutinot and Mangematin (2013), some actors do not conform completely to existing institutions but rather 'surf' on them: they adopt institutional rules and conventions to their own benefit.

From the theoretical perspective, our research contributes to the theory development of the interdisciplinary approach to institutions and INVs and their mutual relationship. We discussed that the nature of institutional pressures provokes active strategic responses among INVs, which differ from multinational corporations and traditional SMEs by their specifics and different set of resources, capabilities, and entrepreneurial orientation. However, our literature review supports findings that firms' strategic responses depend on the institutional context and nature of pressure exerted on them (Durand, Hawn, & Ioannou, 2019). Therefore, our article contributes to the body of knowledge by presenting theoretical propositions and by suggesting future research directions.

Practical implications indicate that investigation into the relationship between institutional pressures and strategic responses of INVs may help policymakers to shape the institutional environment. This would help to produce more proactive institutional entrepreneurs and support institutional coevolution in a manner corresponding to rapid environmental and technological change.

This research exhibits some limitations. We suggest a proposition for future empirical testing focused on the analysis of entrepreneurial and innovative INVs, which operate in an institutional environment with institutional voids. After all, they acknowledge that the industry may impact the type of responses, as Clemens and Douglas (2005) note in their study. We expect that the outcome of this article will lead to further development of the international entrepreneurship field.

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Meta-analysis of determinants of venture capital activity

Adel Dalal

ABSTRACT

Objective: The objective of the article is to quantitatively systematise the existing literature on country-level venture capital (VC) activity and find the sources of discrepancy in previous studies.

Research Design & Methods: This article collects studies that focus on venture investments across countries. I retrieved 840 estimates reported in 30 studies and analysed them using meta-analysis methods. The average effect sizes were estimated and corrected for publication bias. Then, I controlled for 24 aspects of study design and data in order to find the cause of differences in the primary results.

Findings: The findings suggest that the average effect of the studied determinants of VC activity is positive and significant. Technological opportunities, macroeconomic conditions and financial market development show the highest effect which confirms the previous research. The choice of data source influences the results in a systematic way, while model specification does not affect the reported coefficients. The results showed that drivers of VC in developed and developing countries do not differ significantly, the same finding is obtained for various stages of VC.

Implications & Recommendations: The analysis of existing literature delineates the research agenda for further enhancing the institutional, technological, and macroeconomic descendants of VC. It revealed that informal institutions have been studied scarcely and deserve more attention in future research. The findings show that VC is not heterogeneous across the stages of investment which is important for venture fund management. By scrutinizing different aspects of model design and data samples I provide methodological recommendations for further research.

Contribution & Value Added: To my knowledge, this is the first meta-analysis of VC determinants. The research method allowed to quantitatively summarise previous studies and detect the between-study differences. This article collects all the coefficients of VC drivers that have been reported up to date while previous literature reviews focused on some limited sets of variables. The article contributes to existing theory by answering the questions regarding VC heterogeneity.

Article type: research article

Keywords: venture capital; literature review; meta-analysis; publication bias

JEL codes: G24, L26, O50

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INTRODUCTION

The year of 2018 impressed with record figures of venture capital (VC) invested worldwide at over 250 billion USD (KPMG, 2018). In 2020, the market remained strong, defying concerns of a potential slowdown due to the pandemic. While the USA continue driving global VC, Asia ranks second in investment levels, raising nearly twice the amount European VC-backed companies did (21.1 bln USD versus 12.1 bln USD) in the third quarter of 2020 (KPMG, 2020). The academic literature stresses the importance of a vibrant VC market. Lerner and Tag (2013) emphasize that the ability of VC investors to overcome information asymmetries and provide capital to innovative business boosts economic growth. Allen (2012) summarizes the positive effect of VC on welfare. Popov and Roosenboom (2013) and Popov (2014) find that VC increases the rate of new business creation.

A growing number of studies answer questions regarding the VC industry's evolution and mounting investments. However, the evidence across studies is inconclusive, which creates obstacles in their interpretation and theory-building. Considering extant VC literature reviews, we observe an evolution from mostly descriptive works to structured articles with more thorough sample building. Apart from some prominent surveys published recently (Wallmeroth *et al.*, 2018; Devigne *et al.*, 2018; Tykvová, 2018; Hahn *et al.*, 2019; Grilli *et al.*, 2019), most reviews fail to detect inconsistencies in primary studies. Although reviews have evolved from descriptive to structured articles, the majority utilize qualitative methods, while quantitative research of VC literature remains scarce.

The novelty of this article is that it provides a quantitative analysis of previous studies on VC determinants across countries. Given the sufficient volume of cross-country research meta-analysis was used as a method, which, to my knowledge, is the first meta-analysis in this discipline. By combining data from individual studies, I calculate effect sizes on a greater sample and correct it for publication bias, which allows for more precise estimates of underlying relationships (Glass, 1976). Meta-regression analysis provides statistical evidence on the causes of the variation in results in primary studies, which could not be done in a qualitative literature review. This study also covers all determinants of the VC market activity that were analysed before, while former reviews focus on specific drivers. Moreover, I have included the most recent studies, many of which have not been used in earlier reviews.

Previous surveys detect methodological issues in VC research. Tykvová (2018) argues that different results may be obtained from different proxies and econometric methodologies. Data source may also introduce a statistical bias due to differences in definitions of VC across countries (Devigne *et al.*, 2018). Other issues include heterogeneity of investors and cyclicality of the VC industry, which may introduce biases in panel data analysis (Manigart & Wright, 2013; Drover *et al.*, 2017; Grilli *et al.*, 2019). In general, authors argue that more comparative and replicative studies with independent datasets are needed to enhance accumulated knowledge (Cumming & Vismara, 2017; Drover *et al.*, 2017).

This meta-analysis addresses the aforementioned methodological issues. In the meta-regression, I will control for data sources and econometric models used in each primary study to see if they influence the effect values. Similarly, the stage of VC investments is used as a moderator variable to provide evidence on the heterogeneity of investors since many authors defined it as an open question in VC research. To shed light on the possible influence of institutional context, I differentiate between samples of developed and emerging countries utilised in primary studies.

This article has several research objectives. Firstly, it systematizes the empirical evidence on the determinants of VC activity. I conduct a keyword search in the main databases and complement it with a manual search in references, which yielded a comprehensive set of studies produced to date. Secondly, I analyse VC determinants using combined datasets, which significantly decreases sampling error and provides an overall reliability which is unavailable from any single study alone. It also helps to cover all variables that were studied in the existing literature. The result of the analysis are mean effect sizes of each variable corrected for heteroskedasticity and publication bias. The third objective is to observe factors influencing the variation of coefficients across studies. In order to do so, I run a meta-regression on the characteristics of articles in the sample. These moderators include data characteristics and methodology. While previous literature reviews critically appraise the current state of the literature, this study reports the statistical evidence on existing gaps.

The remainder of this article will be organized as follows. Firstly, I will review the previous literature on country determinants of VC and formulate hypotheses. Then, I will present how the sample was collected and discuss the meta-analysis methodology. The next part will cover effect sizes that have been obtained and the results of meta-regression analysis. In conclusion, I will discuss the limitations of the study and propose avenues for future research.

LITERATURE REVIEW

There is an ongoing academic endeavour in determining the effects of country characteristics on VC activity. The modern stream of literature on VC investments applies a supply and demand model initially

developed by Black and Gilson (1998) and Gompers and Lerner (1999). Studies propose a wide range of supply-side and demand-side variables that may influence the volume of VC investment in a country.

This review considers all variables found in the existing literature. I also added variables that have been overlooked by the previous literature reviews, which include the country's FDI, along with the annual volume of trade and exports. As most variables considered in primary studies are proxies for a handful of underlying factors, I grouped them into meta-categories. These meta-categories follow the classification of Grilli *et al.* (2019) and consist of three main clusters: 1) institutions (formal and informal); 2) technological opportunities; 3) macroeconomic conditions. In the next subsections, I consider each category and build relevant hypotheses.

Formal Institutions

Institutions in the form of two groups, formal and informal, were introduced by North (1990). Formal institutions are particularly important in managing the risks of venture investing. High levels of uncertainty in the VC environment, coupled with potential information asymmetry between investors and entrepreneurs, force venture capitalists to regularly utilise risk mitigation mechanisms. The efficiency of such mechanisms is dependent upon well-functioning formal institutions. Formal institutions were abundantly studied in VC literature. They may be categorized in regulatory conditions (including fiscal policy and labour markets), government quality, and financial markets.

The role of the legal environment in mitigating risks was established in the extant research (Lerner & Schoar, 2005; Armour & Cumming, 2006; Hazarika *et al.*, 2009; Cumming *et al.*, 2010; Aggarwal & Goodell, 2014). States with relatively low or unreliable investor protection (i.e. civil law countries) develop smaller VC markets in comparison to common law countries. Protection of investor rights and disclosure requirements aim to reduce information asymmetries and opportunistic behaviour among involved parties (Grilli *et al.*, 2018; Jeng & Wells, 2000; Cumming *et al.*, 2016). An availability of contract instruments, such as convertible bonds and limited partnership contracts, improves the governance of entrepreneurial firms (Cumming, 2011). With regard to fiscal policy, previous studies show that low corporate tax results in higher returns for venture capitalists, while reduced capital gains tax produces profits for equity type of investing, benefiting both VC managers and entrepreneurs (Armour & Cumming, 2006; Popov & Roosenboom, 2013). An empirical analysis concludes that high tax rates seem to be one of the major obstacles for venture industry growth in Europe (Grilli *et al.*, 2018). The labour market rigidity shows influence on the demand side of the VC industry. The strict labour regulation is seen to increase costs for young firms and lower the entrepreneurial base, as was concluded by the majority of existing studies (e.g., Jeng & Wells, 2000; Cumming, 2011; Bonini & Alkan, 2012) with some exceptions (Grilli *et al.*, 2018).

In order to enforce the aforementioned regulatory tools, a high level of governance is needed. The existing studies provide evidence on the role of government in cross-country variation of VC. The impact of government quality holds for both global (Li & Zahra, 2012) and European context (Grilli *et al.*, 2018).

Financial market development is one of the most studied formal institutions. It comprises of domestic stock market capitalization, exit markets size, and performance of stock indexes. The category is considered as a determinant of the supply side of VC market. The ability to realize gains through exits is critical to VC funds as it generates a return for limited partners and increases the chance of future funds. However, the existing literature does not provide clear evidence on the impact for different stages of VC. Among the first to distinguish between different VC stages were Jeng and Wells (2000). Their model shows the positive impact of IPO market volume on the activity of late-stage VC. Later, Bonini and Alkan (2012) highlight the positive role of IPOs on early-stage deals. Schertler (2003) and Cumming (2014) show the positive effect of stock market capitalization on early-stage investments, while Félix *et al.* (2013) observe the significance of this variable only for later stages. Regarding geographical context, the mergers and acquisitions (M&A) volume has a bigger influence in Europe, in which the initial public offering (IPO) market is less vibrant (Félix *et al.*, 2013; Grilli *et al.*, 2018).

H1: Developed formal institutions – proxied by high investors legal protection, low taxation, flexible labour market, high government quality, and developed financial market – have a positive effect on a country's volume of VC investments.

Informal institutions

Compared to formal institutions, informal institutions were overlooked in academic literature. They describe characteristics of individuals and refer to the demand side of the VC market. Modern research highlights the role of entrepreneurship, which represents country-level entrepreneurialism, social capital or trust, uncertainty avoidance, individualism, and power distance (Hain *et al.,* 2016). Drover *et al.* (2017) focus on informal institutions confirming they can shape VC investment patterns. The informal attributes, such as social networking, play an important role (Masiak *et al.*, 2020), especially elevated in weak legal environments (Ahlstrom & Bruton, 2006; Lingelbach, 2015). The cross-country variation in the levels of entrepreneurship is an important factor in VC investments (Romain & van Pottelsberghe, 2004), yet the effect of entrepreneurship may be mediated by other institutional variables. Wessendorf *et al.* (2020) demonstrate the importance of entrepreneurial spirit on the firm level.

With the increasing internationalization of VC, more studies focus on cultural distance and trust, but the findings are inconclusive. Nahata *et al.* (2014) showed that cultural distance positively affects VC success, Li *et al.* (2014) found the opposite effect. There is a negative relationship between trust and exit pay-out, but more sophisticated venture capitalists tend to invest more in low trust countries (Bottazzi *et al.*, 2016).

H2: Developed informal institutions, including entrepreneurship, individualism, trust, and low uncertainty avoidance, have a positive effect on a country's volume of VC investments.

Technological opportunities and macroeconomic conditions

A large body of literature considers the link between innovation and VC. There are various proxies for technological opportunities across academic works such as patents, public and private R&D expenditures, and R&D capital stock. Recent studies proxy technological opportunities with innovation index (e.g., Sargon & Katircioğlu, 2019). The use of proxy seems to affect the results. It was shown that innovation boosts venture investment activity in European high-income countries. Ning *et al.* (2019) show the positive impact of patent creation on VC industry growth. At the same time, Grilli *et al.* (2018) find a negative correlation between private R&D investments and VC activity. Authors explain the negative relationship with the choice of the measure used. Namely, the more funds private companies invest in R&D, the less they might be interested in start-ups as a source of technological innovation, which reduces the volume of acquisitions, one of the key VC exit mechanisms. In general, technology is a booster for the business creation and demand for VC.

H3: A high level of technological opportunities, measured by the volume of R&D, patents creation, and innovations, has a positive effect on a country's amount of VC investments.

The GDP growth rate is the most studied driver of VC, but the empirical evidence on its significance is mixed (e.g. Jeng & Wells, 2000; Black & Gilson, 1998; Hain *et al.*, 2016). Many studies show a procyclical nature of VC market with an increasing volume of investments in times of economic expansion (e.g., Jeng & Wells, 2000; Ning *et al.*, 2019). At the same time, Sargon and Katircioğlu (2019) do not find any significant effect of this variable in European countries. Mustafa and Mazhar (2020) show that GDP growth along with inflation rate are influential in the Indian VC market.

H4: Favourable macroeconomic conditions, including a growth of GDP and volume of trade, have a positive effect on a country's volume of VC investments.

RESEARCH METHODOLOGY

Data selection

The collection of data and research methodology was implemented with the compliance of reporting guidelines for meta-analysis in economics (Havranek *et al.*, 2020).

As the first step, a key word search was completed in Web of Science and Scopus databases and Google Scholar search engine. I used the combination of keywords that were selected in order to

exhaustively cover my research hypotheses. The process of building the search inquiry and all key words are presented in Table 1.

Table 1. Keyword search strategy

Main keyword	venture	capital	determinants	institution
Synonyms	private equity	investments	growth	market
		funding	country	exit
		activity	structure	IPO
		finance	analysis	regulation
			empirical	entrepreneurship
				disclosure
				corruption
				macro
				GDP

Source: own study.

The date of the last search was 12.10.2020. No limits were set for the year of publication, database indexes, and publication status; anonymous records were excluded. Along with a keyword search, I scanned reference lists of included studies or relevant reviews. This procedure helped to ensure a more complete coverage of the topic by accounting for the variability of scholarly works.

In the second step, articles were evaluated according to eligibility criteria in line with the research hypotheses. After the screening of abstracts and checking for the availability of the full texts, 167 unique contributions were assessed following the inclusion rules from Table 2.

Table 2. Eligibility criteria for selected studies

No.	Criteria	Description
1.	Dependent variable	Dependent variable is country-level venture investments across all stages of VC.
2.	Empirical study	Empirical study provides concrete evidence on the relationship between variables.
3.	Data	Statistical coefficients, number of observations, standard errors (SE) or t-statistics are reported.

Source: own study.

The first criterion specified the country-wide scope of the study and a definition of dependent variable. In order to comply with my research objectives, I excluded works that do not distinguish between VC and private equity funds. In order to draw valid conclusions on the phenomenon under investigation, I limited the sample to empirical studies. The last criterion specified that the empirical articles report statistics that can be converted into effects sizes that include beta coefficients, SE or t-statistics and number of observations. As a result, 30 primary articles were selected, which yielded 840 observations for the meta-analysis.

Research methods

Coefficient estimates and SE were collected from the primary studies. Given the broad set of proxies in the selected articles, it is worthwhile to recalculate them to a common metric. I transformed the adjusted estimates into partial correlation coefficients (PCC) following the Equation 1. The choice of PCC was driven by the wide use of the coefficient in recent meta-analysis studies (Irsova & Havranek, 2013) and the nature of variables under study. According to Stanley and Doucouliagos (2012), PCC is a unitless estimation of the size and direction of the association between two factors holding other variables constant.

$$PCC = \frac{t}{\sqrt{t^2+df}} \quad (1)$$

where:

PCC_i - is an effect size measured by partial correlation coefficient;

t - is the t-statistic of the coefficient from primary study;

df - is the degrees of freedom collected from primary study.

Next, effect sizes were corrected for the presence of publication bias. Publication bias is identified as a tendency of authors to report statistically significant results that support widely accepted theory (Stanley & Doucouliagos, 2012). In order to quantify the degree of observed reporting bias, I employed the FAT-PET analysis shown in Equation 2. Funnel-asymmetry test (FAT) is based on hypothesis that effect sizes are independent of their SE in the absence of publication bias. The precision effect test (PET) indicates the effect beyond the publication bias.

$$PCC_i = \beta_o + \beta_1 SE(PCC_i) + \varepsilon_i \quad (2)$$

where:

PCC_i - is the effect size;

$SE(PCC_i)$ - is the SE of the effect size.

Equation 3 was estimated using OLS with clustered SE and weighted least squares (WLS). Stanley and Doucouliagos (2015) demonstrated that WLS provides superior estimates compared to fixed effect and random effects models when there is publication bias or small sample, which is the case in this study. In WLS, studies are weighted by the inverse SE of PCCs, assuming lower SE indicates more precise findings. Following the trend in meta-analysis, I collected estimates from all specifications in each study. As argued by Havranek *et al.* (2020) the omission of some specifications in the studies leads to arbitrary selection bias, while averaging of reported estimates discards a lot of information. Therefore, some articles presented a high number of coefficients, which may result in overweighting particular studies. To address this problem, I ran another WLS weighted by an inverse number of estimates in primary study (Astakhov *et al.*, 2019; Zigraiova & Havranek, 2016).

The final research objective was to observe factors influencing the variation of findings across primary studies. Although articles included in the sample had similar research questions, they varied in study designs that may have affected reported results. The presence of heterogeneity in economic research and its impact on estimated effects was confirmed by Stanley and Doucouliagos (2012). In the case of VC studies, the observed heterogeneity may stem from sample characteristics, model used, a measure of VC activity (dependent variable) and VC drivers (independent variables). To account for possible disparity, I ran a meta-regression based on FAT-PET Equation 3.

$$PCC_i = \beta_o + \beta_1 SE(PCC_i) + \beta_k \sum_{i=1}^{n} X_{ki} + \varepsilon_i \quad (3)$$

where:

$SE(PCC_i)$ - is the SE of the effect size;

X_{ki} - is the vector of mediator variables.

Table 3 provides an overview of mediator variables with their definitions and statistics. The obtained characteristics were transformed to dummy variables and divided in four groups: sample, model, dependent variable (DV), and VC driver.

The sample characteristics include dummies for the samples of developed countries (OECD members). The structure of VC market and the degree of institutional quality differ greatly between developed and developing states which can affect the results. Model characteristics capture regression model design. Most frequently used are GLS, OLS, fixed effects (FE), random effects (RE) and instrumental variables (IV). Other methods are used as a dummy reference. Moreover, I coded the measures of VC activity and whether it was scaled to GDP or population of the country. To control for the measure of VC driver in the study, I introduced ten dummy variables. Among them there were three macroeconomic determinants, (*gdp, trade,* and *unemployment*) and technological opportunities (*tech*). Fiscal policy, labour markets, other regulatory institutions, government quality, and financial markets represented formal institutions, while informal institutions were summarized in the variable *informal*. Publication characteristics were not included since the final sample consisted of studies taken from peer-reviewed journals.

Table 3. Definition and summary statistics of variables

Moderator variable	Definition	Obs	Mean	Std
Effect size	Effect size	840	0.111	0.213
Standard error	SE of the effect size	840	0.085	0.039
Sample characteristics				
Panel	=1 if panel data used	809	0.105	0.206
Time-series	=1 if time-series data used (reference)	31	0.262	0.314
Time dummy	=1 if time dummy was used	208	0.086	0.128
EVCA	=1 if European VC Association is used as a data source	430	0.085	0.159
TR	=1 if Thomson Reuters is used as a data source	359	0.118	0.222
Other	=1 if other data source is used (reference)	51	0.280	0.394
Developed	=1 if only developed countries are included in sample	537	0.108	0.200
Global	=1 if developed and developing countries are included in sample (reference)	303	0.115	0.235
Model characteristics				
GLS	=1 if estimation method is GLS	40	0.142	0.157
OLS	=1 if estimation method is OLS	137	0.188	0.280
FE	=1 if estimation method is fixed effects	329	0.101	0.220
RE	=1 if estimation method is random effects	254	0.084	0.159
IV	=1 if estimation method is instrumental variables	35	0.076	0.140
Other	=1 if other estimation method is used (reference)	45	0.094	0.234
DV characteristics				
Scaled	=1 if DV is scaled to GDP or population	626	0.103	0.213
VC investments	=1 if DV is VC investments	576	0.112	0.241
VC funds raised	=1 if DV is new VC funds raised	79	0.067	0.110
Early VC investments	=1 if DV is early-stage VC investments	172	0.131	0.125
Late VC investments	=1 if DV is late-stage VC investments	8	0.076	0.175
Other	=1 if DV is another measure (reference)	5	-0.031	0.334
VC driver				
Fiscal	=1 if fiscal incentives are used as a VC driver	82	0.018	0.240
Labour	=1 if fluidity of labour markets is used as a VC driver	23	0.053	0.103
Other regulatory	=1 if other regulatory institutions are used as a VC driver	67	0.016	0.145
Government	=1 if governmental quality is used as a VC driver	64	0.100	0.131
Fin. Market	=1 if financial market conditions are used as a VC driver	194	0.133	0.218
Informal	=1 if informal institutions are used as a VC driver	34	0.146	0.191
Tech	=1 if technological opportunities are used as a VC driver	142	0.197	0.217
GDP	=1 if GDP is used as a VC driver	177	0.126	0.225
Trade	=1 if trade is used as a VC driver	22	0.148	0.163
Unemployment	=1 if unemployment rate is used as a VC driver (reference)	35	-0.044	0.149

Source: own elaboration in Stata.

RESULTS AND DISCUSSION

The obtained mean effect sizes of VC drivers taken from 30 studies are summarised in Table 4. Hadi's (1992) multivariate outlier method was applied to filter effect sizes and SE. The procedure identified nine outliers, resulting in 831 observations in the general sample. Column 1 presents unweighted means measured by OLS with SE clustered at the study level. Columns 2 and 3 depict means weighted by the study's precision (inverse SE) and inverse number of estimates collected per study, respectively.

All means are above zero indicating a direct association between country characteristics and the volume of VC investments. Technological opportunities, which present patents creation and R&D sector of the country, show the highest effect on VC activity, which is consistent with previous research (Sargon & Katircioğlu, 2019; Ning *et al.*, 2019). Doucouliagos (2011) provides guidelines for the magnitude of effects in meta-analysis. The partial correlation coefficient (PCC) below 0.07 is considered negligible, between 0.07 and 0.17 shows a small effect, the range from 0.17 to 0.33 displays a moderate effect, and coefficients above 0.33 have a strong effect on dependent variable. In the meta-analysis technological opportunities exhibit the moderate effect, while other variables have the small effect on VC volume. There are no variables whose PCCs fall below 0.07.

Table 4. Estimates of the country characteristics effect sizes

Variable	OLS (unweighted)	WLS (precision)	WLS (estimates)	Obs
All variables	0.106***	0.102***	0.105***	831
All institutions	0.077***	0.085***	0.078***	458
Formal institutions	0.072***	0.078***	0.076***	424
Financial market conditions	0.104***	0.096***	0.102***	187
Macroeconomic variables	0.134***	0.110***	0.155***	198
Technological opportunities	0.190***	0.177***	0.163***	138

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.
Source: own elaboration in Stata.

Following the methodology, the next step was to correct estimates for publication bias (see Table 5). The significant coefficient for SE shows the presence of selective reporting, while the intercept was the corrected underlying mean size. Column 1 presents the baseline OLS result of regressing coefficients of country characteristics on their SE. Column 2 shows the findings of WLS specification when the precision is used as the weight. Similarly, column 3 summarizes the results of WLS model weighted by inverse number of estimates per study.

The FAT-PET analysis supports the positive effect of country characteristics after adjusting for reporting bias. All models present the significant values for intercept for general sample and groups of institutions. The results show the negative publication bias for these variables, and at the same time, the corrected effect is higher than in Table 4. Similar results are obtained for financial markets, technological, and macroeconomic characteristics. Interestingly, WLS provides no evidence of selective reporting for these variables. Overall, there is a positive underlying relation between all country specific factors considered in the literature and VC activity. To evaluate the extent of selectivity, Doucouliagos and Stanley (2013) developed guidelines, in which substantial bias lies in the range between 1 and 2. Thus, the presented evidence points to moderate publication bias shown by OLS and WLS estimators. Moreover, studies tend to underestimate the positive effect size of a country's institutional development, which was shown to be more pronounced than is commonly argued.

Previously, I scrutinized the literature and discussed the discrepancy in the existing studies' results. The final objective is to explore what drives this heterogeneity by testing the characteristics of the articles with meta-regression. Table 6 reports the results of meta-regression with all variables described in Table 3. The random effects multi-level (REML) model was tested to be the most appropriate.

Table 5. FAT-PET estimates for country characteristics effect sizes

FAT-PET	OLS	WLS (Precision)	WLS (Estimates)	Obs
All variables				
SE (reporting bias)	-0.204	0.201	-0.757	831
	(0.429)	(0.479)	(0.002)	
Constant (corrected effect)	0.123	0.089	0.171	
	(0.000)	(0.001)	(0.000)	
Institutions				
SE (reporting bias)	-0.650	-0.366	-0.866	458
	(0.022)	(0.326)	(0.001)	
Constant (corrected effect)	0.135	0.110	0.155	
	(0.000)	(0.002)	(0.000)	
Formal institutions				
SE (reporting bias)	-0.581	-0.271	-0.827	424
	(0.016)	(0.395)	(0.000)	
Constant (corrected effect)	0.125	0.097	0.150	
	(0.000)	(0.010)	(0.000)	
Financial market conditions				
SE (reporting bias)	0.121	0.429	-0.238	187
	(0.778)	(0.341)	(0.569)	
Constant (corrected effect)	0.094	0.067	0.123	
	(0.012)	(0.004)	(0.001)	
Macroeconomic variables				
SE (reporting bias)	0.479	1.141	0.316	198
	(0.328)	(0.023)	(0.740)	
Constant (corrected effect)	0.096	0.045	0.130	
	(0.035)	(0.041)	(0.068)	
Technological opportunities				
SE (reporting bias)	0.550	0.822	0.881	138
	(0.126)	(0.057)	(0.188)	
Constant (corrected effect)	0.140	0.116	0.089	
	(0.001)	(0.005)	(0.120)	

Notes: *p*-values are indicated in the brackets
Source: own elaboration in Stata.

As for study characteristics, it shows that the data source affects the results. It can be explained by the difference in the definitions of VC across data sources. Thomson Reuters (TR) and EVCA have negative coefficients, which means that the use of other sources such as local VC associations may inflate the obtained estimates. This concern was raised in previous studies. Cumming (2014) showed that the use of different datasets may lead to contradictory findings. The literature review by Devigne *et al.* (2018) highlights the inconsistency in definitions of VC across countries. Venture capital is cyclical, which is supported by the significant time dummy. The studies that control for the observed period show lower effect sizes.

There is no difference in the effect of VC drivers between developed and developing countries. In developed countries investors pay the same attention to country specific factors as in emerging countries. This is a surprising result, since recent studies focus on the differences across countries. Tykvová (2018) and Grilli *et al.* (2019) call heterogeneity within VC one of the hot topics in current scientific discussion. The lack of heterogeneity of determinants among countries may be explained by the growing internationalization of VC. Funds have developed versatile policies that they apply to different countries. This trend is reflected in a mounting number of articles on cross-border VC (Devigne *et al.*, 2018; Tykvová, 2018).

Table 6. Meta-regression analysis of moderator variables

	REML	*p*-value	CI	
Sample characteristics				
Panel	-0.015	0.751	-0.110	0.079
Time dummy	-0.086	0.000	-0.128	-0.045
EVCA	-0.173	0.000	-0.237	-0.108
TR	-0.115	0.001	-0.185	-0.044
Developed	-0.001	0.980	-0.060	0.059
Model characteristics				
GLS	0.113	0.020	0.018	0.207
OLS	0.054	0.148	-0.019	0.126
FE	-0.020	0.559	-0.086	0.047
RE	0.015	0.652	-0.051	0.081
IV	0.007	0.886	-0.085	0.098
DV characteristics				
Scaled	-0.026	0.231	-0.069	0.017
VC investments	0.088	0.338	-0.092	0.268
VC funds raised	0.055	0.561	-0.130	0.240
early-stage VC	0.104	0.262	-0.078	0.286
late-stage VC	0.170	0.138	-0.055	0.395
VC driver characteristics				
Fiscal	0.043	0.288	-0.036	0.123
Labour	0.057	0.278	-0.046	0.160
Other regulatory	0.054	0.189	-0.027	0.135
Government	0.142	0.000	0.063	0.221
Fin. Market	0.139	0.000	0.069	0.208
Informal	0.172	0.000	0.082	0.262
Tech	0.205	0.000	0.133	0.278
GDP	0.144	0.000	0.074	0.214
Trade	0.143	0.006	0.041	0.246
constant	0.079	0.469	-0.135	0.294

Source: own elaboration in Stata.

The use of a particular econometric estimator does not affect the results of the study. However, the methodological advances are required to allow for causal interpretations of VC drivers and control for mediation effects in studied variables. The obtained result may be altered, as the number of studies increases that uses IV and other, more sophisticated methods.

There is no significant difference between the VC drivers' effect on early-stage versus late-stage VC investments. The finding argues that VC is not heterogeneous across stages. The result may be affected by the issue of defining the stage of VC. Early-stage deals are not always disclosed and may be underrepresented in VC databases (Devigne *et al.*, 2018). Firstly, the level of disclosure in developing countries is generally lower. Secondly, the use of angel investing as an alternative to VC for early-stage deals is increased in weak legal environments (Cumming & Zhang, 2019).

As discussed in the theory section, the choice of the VC determinant impacts the findings. This result is consistent with the initial FAT-PET estimation, in which technological opportunities show the largest significant effect. Surprisingly, informal institutions show the second highest effect. The positive effect is also observed for the variable trade, which represents the openness of the economy. This variable was quantitatively analysed in the literature review for the first time. The positive significant effect of GDP, financial market conditions and government quality supports the findings of previous studies.

CONCLUSIONS

This article provides a thorough overview of produced results on the dynamics of VC development, and it statistically explains the causes of disparity in findings. The article collects 30 studies that shed light on how country characteristics can shape the VC market. The main research hypotheses were verified. Macroeconomic variables and technological opportunities positively affect the VC volume. Institutional variables are also important in venture market.

A methodological limitation is that meta-analysis can only correct the estimates provided by researchers. If all estimates are biased, then the meta-result will be biased as well. Furthermore, the effect of macroeconomic conditions is not one-sided. While GDP is one of the drivers of VC, venture market fosters business creation and welfare (Allen, 2012; Popov & Roosenboom, 2013; Popov, 2014). The methodology used by the articles in this study may not capture the underlying causal relationships. Another concern is the limited number of studies, especially those considering informal institutions and developing countries.

Based on the reviewed literature, I wish to highlight several venues for future research. The number of studies on different VC drivers remains uneven for informal institutions, which are overlooked. Currently, there is a lack of proxies for cultural attitudes, which are particularly important for international investments (Devigne *et al.*, 2018) and may be important for shaping VC policy (Grilli *et al.,* 2019). Future research should focus on this matter, as informal institutions presented significant effects in meta-regression. The articles that used data from developing countries appeared quite recently in VC discussion, much more research is needed to study processes in developing context (Drover *et al.,* 2017). Among the reasons are the low quality of data and immature VC markets in those regions. Replicating studies on different databases was suggested in previous literature reviews (e.g. Tykvová, 2018) as a mean to verify obtained results. The meta-analysis may be replicated with an enriched database in the future. The newest approaches that combine quantitative and qualitative analysis of previous literature (e.g. qualitative meta-analysis) may be especially helpful. There is a number of studies conducted on the firm level. An interaction between country-level and firm-level VC drivers is one of the prominent venues for future research. As mentioned above, methodological advances are required for capturing the complex relationships among institutional variables. The call for altering methodological tools already appeared in reviews by Drover *et al.* (2017) and Devigne *et al.* (2018).

The findings of this article should interest academics. It is important to control for the time period as VC is cyclical and may vary across different sample periods. Given the inconsistency of VC definitions, the international data sources are preferrable. Researchers should be very careful in defining dependent variables, especially when it comes to scaling it to GDP or population, since it may invert country VC rankings (Cumming, 2011).

The results may be also useful for practitioners and innovation policy. The increasing internationalization of VC calls for investors' attention towards institutional characteristics across countries. Legal framework and cultural distance may increase the severity of the agency problem and costs for venture capitalists. Decision-making can be altered according to macroeconomic conditions and institutional variables of a region, in which the portfolio company is domiciled. Policymakers should draw more attention to the factors that were found to be significant in VC investments. Policy should focus not only on direct antecedents of VC like technology but also enhance government quality, reduce trade restrictions, and grow financial markets. Moreover, the shaping of informal institutions may become a new way for policymakers to foster national VC markets and encourage foreign capital inflow.

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Conflict of Interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Entrepreneurial social identities and nascent entrepreneurial behaviour: Mediating role of entrepreneurial self-efficacy

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ABSTRACT

Objective: The objective of this article is to investigate the influence of entrepreneurial social identities (Darwinian, missionary, and communitarian) on nascent entrepreneurial behaviour with the mediating effect of entrepreneurial self-efficacy.

Research Design & Methods: The study is based on a research sample of 455 students from public sector universities of Punjab, Pakistan. The survey questionnaire was developed along with PLS-SEM partial least squares structural equation modelling technique to examine the research model and hypotheses.

Findings: The findings indicate that (Darwinian, missionary, and communitarian) social identities are positively and significantly related to nascent entrepreneurial behaviour. The results also show that entrepreneurial self-efficacy is a key mediator that affects the relationship between social identities and nascent entrepreneurial behaviour.

Implications & Recommendations: The findings have important practical and academic implications for both universities and policymakers to foster student's entrepreneurial social identities and develop an entrepreneurial nascent behaviour to become an entrepreneur.

Contribution & Value Added: This study is the first attempt that contributes to the field of social psychology and entrepreneurship by taking the entrepreneurial self-efficacy as a mediator and investigates the influence of entrepreneurial social identities (Darwinian, missionary, communitarian) on nascent entrepreneurial behaviour among students in Pakistan.

Article type:	research article
Keywords:	entrepreneurial social identities; Darwinian; missionary; communitarian; entrepreneurial self-efficacy; nascent entrepreneurial behaviour
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INTRODUCTION

Scholars around the world acknowledge the fact that entrepreneurship provides the freedom to individuals to start their businesses, fulfil their dreams, and satisfy needs to become entrepreneurs (Boudreaux *et al.*, 2019). The association between an entrepreneur's identity and nascent entrepreneurial behaviour has received little attention in social psychology and entrepreneurship (Brändle *et al.*, 2018; Lundqvist *et al.*, 2015). Nascent entrepreneurial behaviour includes goal-oriented actions or decisions of an entrepreneur (Feng & Chen, 2020). Falck *et al.* (2012) indicate that future researchers can incorporate the different entrepreneurial traits like attitudes and goals to predict entrepreneurial social identity's effects on nascent entrepreneurial behaviour. Several studies explain that entrepreneurial identity is an influential and vital factor in an entrepreneur's decisions and behaviours (Farmer *et al.*, 2011; Hoang & Gimeno,

2010; Matlay *et al.*, 2013). However, very limited research scrutinizes social identities in the context of entrepreneurship and nascent entrepreneurial behaviour (Alsos *et al.*, 2016).

Various studies discuss the role of the theory of planned behaviour (Karimi, 2020) and the theory of alertness to examine entrepreneurial intentions and actions (Cai *et al.*, 2021; Li, Murad, Shahzad, *et al.*, 2020), and findings of these studies, not explain than the 35% of the total variance in entrepreneurial behavioural models (Li, Murad, Ashraf, *et al.*, 2020; Neneh, 2019). Although there have been numerous studes of social identities, untouched grey areas linger (Brändle *et al.*, 2018; Fauchart & Gruber, 2011). Therefore, we should discuss the role of social identities in nascent entrepreneurial behaviour. The use of social identities assists the individuals in understanding and describing the heterogeneous actions used for starting a new business (Pan *et al.*, 2019).

Hand *et al.* (2020) suggest that entrepreneurial self-efficacy plays a vital role in the field of entrepreneurship research (Multon *et al.*, 1991). Therefore, individuals must experience entrepreneurial self-efficacy, which supports them to perform better in uncertain environment situations. Furthermore, several studies highlight the importance of entrepreneurial self-efficacy in the domain of entrepreneurship (de la Cruz *et al.*, 2018; Gabrielsson & Politis, 2011). Entrepreneurial self-efficacy defined as a judgment of one's ability to achieve a certain level of performance.

There are three types of entrepreneurial identities explained by prior researchers in the literature: Darwinian, missionary, and communitarian (de la Cruz *et al.*, 2018; Fauchart & Gruber, 2011). According to Khazami *et al.* (2020), the Darwinian identity refers to the classic business person, whose primary objective is to build a successful business and to focus on company growth. Missionary identity highlights the importance of social goals, in which a firm can play the role of an agent to change society (Brändle *et al.*, 2018). Communitarian identity intensely encourages the individual forcefully with products or services (Alsos *et al.*, 2016).

This study findings will enhance the existing literature from different perspectives. This study extends research on entrepreneurial social identities in the decision-making process and ways of handling nascent entrepreneurial behaviour (Brändle *et al.*, 2018; Farmer *et al.*, 2011). The analysis of this link may offer evidence on how specific entrepreneurial identity establishes a nascent entrepreneurial behaviour in its initial years (Alsos *et al.*, 2016). Secondly, this study provides an extension to the empirical model (Fauchart & Gruber, 2011) and contributes to the relationship between nascent entrepreneurial behaviour and entrepreneurial identity.

Furthermore, we advance the literature on entrepreneurial self-efficacy (Hand *et al.*, 2020; Multon *et al.*, 1991); as suggest Brändle *et al.* (2018), a few empirical studies highlight the indirect relationship between entrepreneurial identity and nascent entrepreneurial behaviour. Thirdly, building on survey data, the objective of this study was to identify the impact of social identities on how different entrepreneurial identities influence nascent entrepreneurial behaviour. Previous researchers do not test the relationship between entrepreneurial identity types and nascent entrepreneurial behaviour in the context of the Pakistani student sample. Thus, to fill this gap, this study is testing the empirical model to identify the influence of entrepreneurial social identities with the mediating role of entrepreneurial self-efficacy on nascent entrepreneurial behaviour. Furthermore, this study applied the structural equation modelling (SEM) technique to measure the student entrepreneurial behaviour.

The study proceeds as follows. The next section reviews the subject literature. The third section explains the materials and methods, while the fourth section describes the results and data analysis. The fifth section discusses findings, and the last section concludes the article with practical implications and limitations.

LITERATURE REVIEW

Social Identities and Nascent Entrepreneurial Behaviour

Social identities are associated with different types of entrepreneurial identities, which discuss the necessary social motivation of individuals and their self-evaluation to start a new business (Gruber & MacMillan, 2017; Sieger *et al.*, 2016). Researchers argue that social identity is gained from social

memberships, and the individual describes him/herself as a social member of a group (Werthes *et al.*, 2018). Fauchart and Gruber (2011) propose three types of social identities: Darwinian, missionary, and communitarian. These social identities come from the social identity theory, which engages in the making of social relationships among individuals in terms of personal and symbolic interaction (Hoang & Gimeno, 2010).

The Darwinian identity describes the 'classic business person' whose primary objective is to start a strong, successful business (Alsos *et al.*, 2016). An individual with a Darwinian identity focuses on assuring business success through strong ideas. Numerous scholars explain that entrepreneurs with a 'Darwinian identity' to focus on generating profit for the firm (de la Cruz *et al.*, 2018). Moreover, Darwinian individuals have a professional approach and skills to manage their firms according to stable business ethics (Mmbaga *et al.*, 2020). Thus, entrepreneurs with a Darwinian identity approach are more likely to establish profitable firms and achieve better performance. Therefore, we posit the following hypothesis:

H1a: Darwinian identity has a significant and positive effect on nascent entrepreneurial behaviour.

Missionary identity means an entrepreneur shows a strong belief own firm and work for a change in an aspect of society and community (Sieger *et al.*, 2016). Scholars argue that missionary identity encourages building a cause and acting responsibly (Ashforth *et al.*, 2008; Fauchart & Gruber, 2011). Entrepreneurs with the missionary identity view their firms as platforms to pursue economic and societal goals (Wagenschwanz, 2021). Therefore, the missionary identity helps entrepreneurs improve the new business activities besides competition, which ultimately forms a significant role (Farmer *et al.*, 2011). Based on the existing literature, we argue that social identity helps entrepreneurs to recognize and describe the heterogeneity of business behaviour in the formation of starting a new business venture and that venture orientation to its outcomes. Thus, the following hypothesis is suggested:

H1b: Missionary identity has a significant and positive effect on nascent entrepreneurial behaviour.

Communitarian identity means that an entrepreneur engages in the services and products that will contribute to the community and social activities (Sieger *et al.*, 2016). Researchers explain that entrepreneurs with communitarian identities are usually engaged in community development (Alsos *et al.*, 2016; Fauchart & Gruber, 2011). Communitarian identity creates awareness among individuals through a product or activity and encourages different people to their ideas (Hoang & Gimeno, 2010). Thus, entrepreneurs with a greater communitarian identity level are more likely to contribute to the community and its development. Based on this discussion, we propose:

H1c: Communitarian identity positively impacts nascent entrepreneurial behaviour.

Social Identities and Entrepreneurial Self-Efficacy

Darwinian identity is established in the free market economies. Therefore, it offers better chances to entrepreneurs with this identity to see environmental opportunities for their new business ventures (Mathias & Williams, 2017). Brändle *et al.* (2018) suggest that Darwinian entrepreneurs need more motivation to develop their entrepreneurial self-efficacy. Farmer *et al.* (2011) explain that the higher the level of Darwinian identity, the less likely they are to experience negative emotions should they only work for their community. Thus, based on the discussion, we argue that individuals with Darwinian identity perceive a high level of entrepreneurial self-efficacy to become entrepreneurs and improve their business performance:

H2a: Darwinian identity has a significant and positive effect on entrepreneurial self-efficacy.

In turn, entrepreneurs with the missionary identity engage in improving community justice, preserving the natural environment, and developing the society into a better place to live (Żur, 2020). Researchers explain that missionary entrepreneurs are less likely to experience enactive mastery, in the beginning by establishing a process of their business ventures, and therefore may doubt the level of their entrepreneurial self-efficacy (Davidsson & Honig, 2003). Prior studies argue that entrepreneurs who have a high level of missionary identity successfully change the world thanks to their

better understating of society (Alsos *et al.*, 2016; de la Cruz *et al.*, 2018). Thus, based on this discussion, this study suggested that:

H2b: Missionary identity has a significant and positive effect on entrepreneurial self-efficacy.

Moreover, communitarian entrepreneurs can experience enactive mastery before they engage in the formation process because they use their prior knowledge to make a product or service (Hand *et al.*, 2020). Communitarian entrepreneurs are responsible for the community and always work to better the community (Nielsen & Lassen, 2012). Therefore, entrepreneurs with a low level of entrepreneurial self-efficacy have emotional anxiety and disappoint the group of people they identify with; on the other hand, entrepreneurs who have a high level of entrepreneurial self-efficacy are perceived as more prone to establish a social community. Thus, we posit that:

H2c: Communitarian identity positively impacts entrepreneurial self-efficacy.

The Mediating Role of Entrepreneurial Self-Efficacy

Entrepreneurial self-efficacy refers to an individual's beliefs regarding the ability to identify and exploit opportunities in the process of starting a new business (Hand *et al.*, 2020). The indirect relationship between social identities and entrepreneurial self-efficacy on business performance was never empirically in the literature. Prior studies examine the direct influence of social identities on entrepreneurial self-efficacy and nascent entrepreneurial behaviour (Alsos *et al.*, 2016; Brändle *et al.*, 2018). Moreover, an entrepreneur's social identity affects the opportunities which identify, exploit, and evaluate decisions regarding firm performance (Fauchart & Gruber, 2011). Thus, we posit that:

H3a: Entrepreneurial self-efficacy positively mediates the relationship between Darwinian identity and nascent entrepreneurial behaviour.

H3b: Entrepreneurial self-efficacy positively mediates the relationship between missionary identity and nascent entrepreneurial behaviour.

H3c: Entrepreneurial self-efficacy positively mediates the relationship between communitarian identity and nascent entrepreneurial behaviour.

Entrepreneurial Self-Efficacy and Nascent Entrepreneurial Behaviour

Entrepreneurial self-efficacy is the awareness of entrepreneurs' confidence in their abilities for starting a new business (Li, Murad, Shahzad, *et al.*, 2020). Prior studies argue that entrepreneurial self-efficacy empirically links to nascent entrepreneurial behaviour (Alsos *et al.*, 2016; Brändle *et al.*, 2018). According to Gieure *et al.* (2020) entrepreneurial behaviour refers to the capacity or knowledge about a firm's constituent elements. According to the social learning theory, entrepreneurial self-efficacy can lead to task-specific outcomes (Barbosa *et al.*, 2007). Entrepreneurs with entrepreneurial self-efficacy hold a strong belief in their skills to achieve tasks in entrepreneurial and performance domains (Drnovšek *et al.*, 2010).

Furthermore, Sequeira *et al.* (2007) examined a survey study on entrepreneurial self-efficacy and nascent behaviour to find a positive and significant relationship. Similarly, Brändle *et al.* (2018) found that entrepreneurial self-efficacy strongly influences newly created business firms. Thus, the above suggest that entrepreneurs with more confidence in their abilities accomplish entrepreneurial activities and more skillfully lead their businesses to achieve maximum performance (Hechavarria *et al.*, 2012; Hopp & Stephan, 2012). Hence, we propose the following hypothesis:

H4: Entrepreneurial self-efficacy positively relates to nascent entrepreneurial behaviour.

Figure 1 below proposes the theoretical model in the study for social identities, entrepreneurial self-efficacy, and nascent entrepreneurial behaviour.

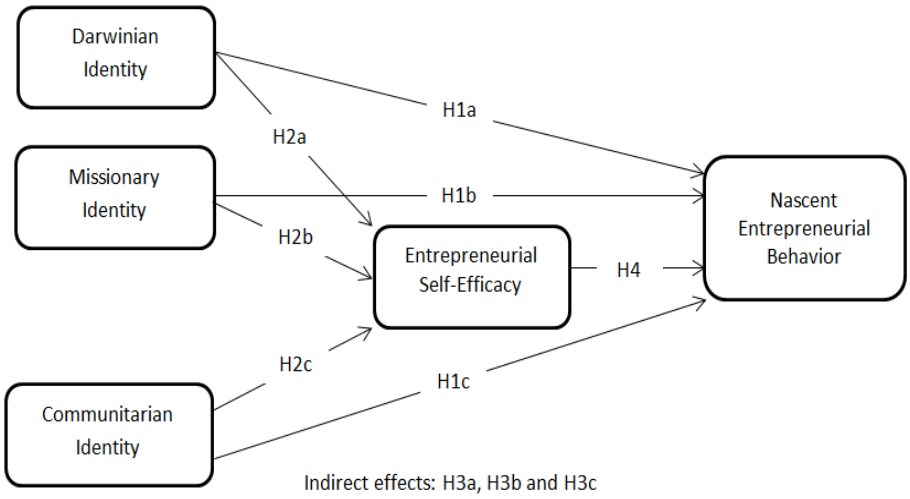

Figure 1. Conceptual model
Source: own elaboration.

RESEARCH METHODOLOGY

Sample and Data Collection

The data were retrieved from public sector university students in big cities of the province of Punjab in Pakistan: Faisalabad, Multan, and Lahore. These cities were selected because students from all over Punjab came there to complete their studies. The target population of the study were students of business, engineering, and IT departments. The total population of students was approximately 3200. According to Krejcie and Morgan (1970), if the study population exceeds 3000, the minimum sample size of 500 should suffice. Moreover, based on valid scales, we formulated a questionnaire for pilot testing 50 respondents from the mentioned communities.

The results of pilot testing were satisfactory. We assured respondents that the data they gave us will be only used for academic purposes. Furthermore, 550 paper-pencil surveys were distributed among students using a non-probability sampling technique. The original questionnaire was in the English language because in Pakistan English is the official teaching language in secondary and higher education, so the survey questions were written in English. A total of 455 responses were gathered with an 82.72% rate. Among the valid responses, 260 (57.1%) were done by men and 195 (42.9%) by women. The age ranged 18-40 years, and the most frequent age ranged 18-25 years (52.7%). There were 44.4% undergraduate, 38.2% graduate, and 17.4% PhD students. Moreover, most students (34.7%) belonged to business administration departments. Lastly, 57.1% of participants were interested in starting a new business.

Measures

Darwinian Identity

We assessed the Darwinian identity with five measurement items from previous research on social identities, using five-point Likert scales (Sieger *et al.*, 2016). A sample item was 'I will create my firm in order to advance my career in the business world.'

Communitarian Identity

We used five items of the communitarian identity scale using five-point Likert anchors. This scale was developed and verified by prior researchers (Alsos *et al.*, 2016; Sieger *et al.*, 2016). A sample item was 'I will create my firm in order to play a proactive role in shaping the activities of a group of people with which I strongly identify.'

Missionary Identity

To assess missionary identity, we applied five measurement items based on existing studies, using a five-point Likert scale (de la Cruz *et al.*, 2018; Sieger *et al.*, 2016). A sample item was 'I will create my firm in order to play a proactive role in changing how the world operates.'

Entrepreneurial Self-Efficacy

To measure entrepreneurial self-efficacy we applied four items on five-point Likert scales from previous research (Zhao *et al.*, 2005). A sample item was 'I am convinced that I can successfully create new products.'

Nascent Entrepreneurial Behavioural

To assess nascent entrepreneurial behaviour, we used ten items on five-point Likert scales from a prior study (Li, Murad, Shahzad, *et al.*, 2020). A sample item was 'I have written a business plan.'

RESULTS AND DISCUSSION

The results were analysed in the Smart-PLS software using partial least squares structural education modelling (PLS-SEM), which allows one to analyse direct and indirect mediation and moderation among constructs (Hair *et al.*, 2011). This software is also known as the silver bullet for social science researchers (Asim *et al.*, 2019; Hair *et al.*, 2011; Ringle *et al.*, 2020).

Common Method Bias and Multi-Collinearity Issue

We applied Harman's single factor test to check for the issue of common method bias in the data. The factor analysis findings indicated that the first factor explained 30.51% of the total variance, which was less than 50% of the total variance. Thus, there was no common method bias. Furthermore, a multicollinearity test was performed using the method suggested by Aiken *et al.* (1991), which posits that outer variance inflation factor (VIF) should be less than 5 (considered excellent). Thus, the values of VIF were shown in Table 1, and they indicated that all the values were acceptable and under the cut-off value of 5.

Measurement Model

For the measurement model analysis, reliability and validity tests were performed on the data. To assess the reliability of the constructs we used Cronbach's alpha (α) and composite reliability (CR). According to Henseler *et al.* (2015), the values of (α) should be >0.70, and the value of CR should be >0.80. As indicated in Table 1, the values for (α) and CR were higher than the threshold value of 0.70. Moreover, convergent validity was also evaluated using the average variance extracted (AVE) values. Table 1 results showed that the values of AVE exceeded the cut-off value of 0.50. Thus, this study achieved satisfactory results in reliability and validity analysis.

Table 1. Measurement model

Constructs	Loadings	Cronbach's Alpha (CA)	Composite Reliability (CR)	Average Variance Extracted (AVE)	Variance Inflation Factors (VIF)
Darwinian Identity		**0.925**	**0.944**	**0.771**	
DAR 1: I will create my firm in order to advance my career in the business world.	0.942				4.888
DAR 2: As a firm founder, it will be very important to me to operate my firm on the basis of solid management practices.	0.925				4.741
DAR 3: As a firm founder, it will be very important to me to have thoroughly analysed the financial prospects of my business.	0.911				4.003

Constructs	Loadings	Cronbach's Alpha (CA)	Composite Reliability (CR)	Average Variance Extracted (AVE)	Variance Inflation Factors (VIF)
DAR 4: When managing my firm, it will be very important to me to have a strong focus on what my firm can achieve vis-à-vis the competition.	0.864				2.721
DAR 5: When managing my firm, it will be very important to me to establish a strong competitive advantage and significantly outperform other firms in my domain.	0.912				4.038
Missionary Identity		**0.930**	**0.947**	**0.783**	
MIS 1: I will create my firm in order to play a proactive role in changing how the world operates.	0.835				2.205
MIS 2: As a firm founder, it will be very important to me to be a highly responsible citizen of our world.	0.857				2.524
MIS 3: As a firm founder, it will be very important to me to make the world a 'better place' (e.g. by pursuing social justice, protecting the environment).	0.916				4.515
MIS 4: When managing my firm, it will be very important to me to have a strong focus on what the firm is able to achieve for society-at-large.	0.906				4.075
MIS 5: When managing my firm, it will be very important to me to convince others that private firms are indeed able to address the type of societal challenges that my firm addresses (e.g. social justice, environmental protection).	0.908				4.096
Communitarian Identity		**0.925**	**0.944**	**0.771**	
COM 1: I will create my firm in order to solve a specific problem for a group of people that I strongly identify with (e.g. friends, colleagues, club, community).	0.851				2.640
COM 2: I will create my firm in order to play a proactive role in shaping the activities of a group of people that I strongly identify with.	0.818				2.432
COM 3: As a firm founder, it will be very important to me to provide a product/service that is useful to a group of people that I strongly identify with (e.g. friends, colleagues, club, community).	0.876				2.986
COM 4: When managing my firm, it will be very important to me to have a strong focus on a group of people that I strongly identify with (e.g. friends, colleagues, club, community).	0.929				4.512
COM 5: When managing my firm, it will be very important to me to support and advance a group of people that I strongly identify with (e.g. friends, colleagues, club, community).	0.913				4.167
Entrepreneurial Self-Efficacy		**0.934**	**0.953**	**0.834**	
ESE 1: I am convinced that I can successfully discover new business opportunities.	0.910				3.459
ESE 2: I am convinced that I can successfully create new products.	0.893				3.108
ESE 3: I am convinced that I can think creatively.	0.920				5.673
ESE 4: I am convinced that I can successfully commercialize ideas.	0.929				4.116
Nascent Entrepreneurial Behaviour		**0.937**	**0.946**	**0.639**	

Constructs	Loadings	Cronbach's Alpha (CA)	Composite Reliability (CR)	Average Variance Extracted (AVE)	Variance Inflation Factors (VIF)
NEB 1: I have discussed a product or business idea with potential customers.	0.745				2.157
NEB 2: I have collected information about markets and competitors.	0.772				2.681
NEB 3: I have written a business plan.	0.804				3.098
NEB 4: I have started product/service development.	0.830				2.670
NEB 5: I have started marketing or promotion efforts.	0.801				2.051
NEB 6: I have purchased material, equipment, or machinery for the business.	0.750				3.083
NEB 7: I attempted to obtain external funding.	0.826				3.361
NEB 8: I have applied for a patent, copyright, or trademark.	0.859				2.796
NEB 9: I have registered the company.	0.834				2.146
NEB 10: I have sold product or service.	0.765				2.539

Note: DAR= Darwinian Identity, MIS= Missionary Identity, COM= Communitarian Identity, ESE= Entrepreneurial Self-Efficacy, NEB= Nascent Entrepreneurial Behaviour.
Source: own study.

Moreover, to assess the discriminant validity, we used widely accepted criteria of Fornell and Larcker (1981) and Heterotrait-Monotrait Ratio HTMT. The results of the discriminant validity were shown in Tables 2 and 3. As per Henseler *et al.*'s (2015) criteria, square root of the average variance extracted (AVE) is called discriminant validity, and the values under the AVE were correlations. According to Henseler *et al.* (2015), the criteria values of HTMT should be less than 0.85. Thus, as we observed that the maximum achieved HTMT value was 0.507, all the constructs were meeting the standard for discriminant validity.

Table 2. Fornell-Larcker criterion

Variables	COM	DAR	ESE	MIS	NEB
COM	**0.878**				
DAR	0.374***	**0.911**			
ESE	0.409***	0.478***	**0.913**		
MIS	0.311***	0.404***	0.383***	**0.885**	
NEB	0.382***	0.392***	0.460***	0.419***	**0.799**

*** Significant ($p < 0.001$).
Note: DAR= Darwinian Identity, MIS= Missionary Identity, COM= Communitarian Identity, ESE= Entrepreneurial Self-Efficacy, NEB= Nascent Entrepreneurial Behaviour. Values with diagonal are the square root of the average variance extracted (AVE). Values under diagonals are correlations.
Source: own study.

Table 3. Heterotrait-monotrait ratio (HTMT)

Variables	COM	DAR	ESE	MIS	NEB
COM					
DAR	0.398				
ESE	0.437	0.507			
MIS	0.334	0.427	0.410		
NEB	0.401	0.413	0.488	0.447	

Note: DAR= Darwinian Identity, MIS= Missionary Identity, COM= Communitarian Identity, ESE= Entrepreneurial Self-Efficacy, NEB= Nascent Entrepreneurial Behaviour.
Source: own study.

Structural Model

The structural model was analysed using the 5000 bootstrapping method with the help of the Smart-PLS software. The fitness of the structural model was assessed by the standardized root mean square residual (SRMR) value. According to Henseler *et al.* (2015), a good model must have a <0.08 value of SRMR. As the result of the structural model SRMR was 0.045, our model proved absolute fitness. Moreover, to assess the values of R^2 and Q^2 we used the recommendation by Chin (1998) regarding the desired R^2 and Q^2 values, which should be greater than 0.1 or zero. In Figure 2 and Table 4, structural model results show that all the values of R^2 and Q^2 were acceptable and exceeded the suggested benchmark of 0.1. Furthermore, the values of R^2 explained a 31.7% variance in entrepreneurial self-efficacy and 31.9% in nascent entrepreneurial behaviour. According to the existing research findings, studies on entrepreneurial intention-behaviour models explained only 10-30% variance in the structural model analysis (Li, Murad, Ashraf, *et al.*, 2020; Li, Murad, Shahzad, *et al.*, 2020; Neneh, 2019).

Table 4. R^2 and Q^2

Variables	R Square	Q^2
ESE	0.317	0.175
NEB	0.319	0.221

Note: ESE= Entrepreneurial Self-Efficacy, NEB= Nascent Entrepreneurial Behaviour.
Source: own study.

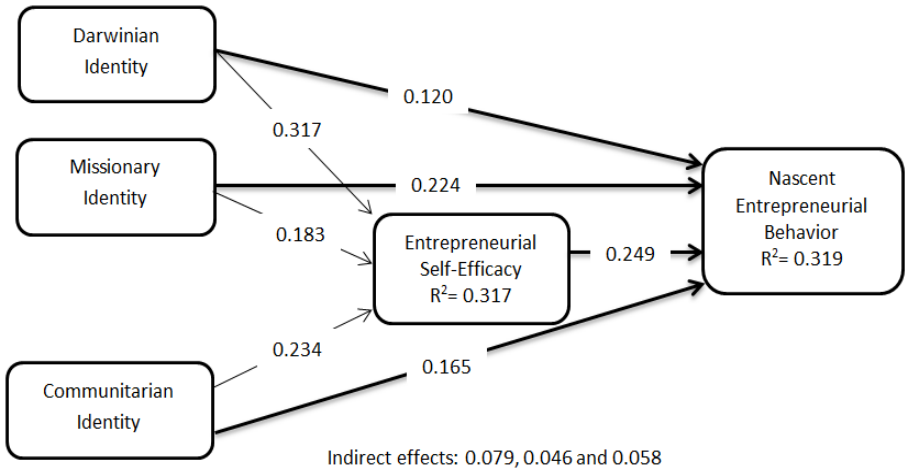

Figure 1. Structural model
Source: own elaboration.

Furthermore, the results of all hypotheses were positively and significantly related to the nascent entrepreneurial behaviour model. The significant results of bootstrapping were shown in Table 5. The findings of H1a, H1b, and H1c showed that Darwinian, communitarian, and missionary social identities have a positive and significant influence on nascent entrepreneurial behavioural (Darwinian β=0.120, t=2.467, *p*=0.014; missionary β= 0.224, t=5.300, *p*= 0.000; communitarian β=0.165, t=3.328, *p*=0.001). Therefore, H1a, H1b, and H1c were accepted. Moreover, the results of H2a, H2b, and H2c indicated that Darwinian, communitarian, and missionary social identities have a positive and significant impact on entrepreneurial self-efficacy (Darwinian β=0.317, t=5.800, *p*=0.000; missionary β= 0.183, t=4.355, *p*= 0.000; communitarian β=0.234, t=4.417, *p*=0.000). Hence, H2a, H2b, and H2c were supported. Furthermore, the findings of H4 revealed that entrepreneurial self-efficacy has a positive and significant effect on nascent entrepreneurial behaviour (β=0.249, t= 4.146, *p*= 0.000). Thus, H4 was supported.

To assess the indirect effects regarding hypotheses H3a, H3b, and H3c, we predicted that entrepreneurial self-efficacy mediates in the relationship between Darwinian, communitarian, missionary identities, along with nascent entrepreneurial behaviour. Table 6 findings show that entrepreneurial self-effi-

cacy has positive and significant indirect effects on Darwinian identity (β= 0.079, t=3.045, *p*= 0.002), missionary identity (β= 0.046, t=2.813, *p*= 0.005), and communitarian identity (β=0.058, t=3.151, *p*= 0.002), along with nascent entrepreneurial behaviour. Furthermore, to evaluate the full/partial mediation effects, we followed variance accounted for (VAF) criteria suggested by Sarstedt *et al.* (2017). According to these criteria, if the value of VAF is >0.10 and <0.80, it explains the partial mediation, and if the value of VAF is >0.80, it shows full mediation. Table 7 indicated that the values of VAF were >0.10 and <0.80, hence representing partial mediation effects. Accordingly, H3a, H3b, and H3c were also accepted.

Table 5. Direct effects

Hypotheses	Relationships	β	t	*p*
H1a	**DAR -> NEB**	0.120	2.467	0.014
H1b	**MIS -> NEB**	0.224	5.300	0.000
H1c	**COM -> NEB**	0.165	3.328	0.001
H2a	**DAR -> ESE**	0.317	5.800	0.000
H2b	**MIS -> ESE**	0.183	4.355	0.000
H2c	**COM -> ESE**	0.234	4.417	0.000
H4	**ESE -> NEB**	0.249	4.146	0.000

*** Significant (*p*< 0.001).
Note: DAR= Darwinian Identity, MIS= Missionary Identity, COM= Communitarian Identity, ESE= Entrepreneurial Self-Efficacy, NEB= Nascent Entrepreneurial Behaviour.
Source: own study.

Table 6. Indirect effects and mediation analysis

Hypotheses	Relationships	β	t	*p*
H3a	**DAR -> ESE -> NEB**	0.079	3.045	0.002
H3b	**MIS -> ESE -> NEB**	0.046	2.813	0.005
H3c	**COM -> ESE -> NEB**	0.058	3.045	0.002

*** Significant (*p*< 0.001).
Note: DAR= Darwinian Identity, MIS= Missionary Identity, COM= Communitarian Identity, ESE= Entrepreneurial Self-Efficacy, NEB= Nascent Entrepreneurial Behaviour.
Source: own study.

Table 7. Mediation analysis (ESE as mediator)

Independent Variables	Direct Effects	Indirect Effects	Total Effects	VAF Range	Mediation	Dependent Variable
DIS	0.120	0.079	0.199	39%	Partial Mediation	NES
MIS	0.224	0.046	0.270	17%	Partial Mediation	NES
COM	0.165	0.058	0.223	26%	Partial Mediation	NES

Note: DAR= Darwinian Identity, MIS= Missionary Identity, COM= Communitarian Identity, ESE= Entrepreneurial Self-Efficacy, NEB= Nascent Entrepreneurial Behaviour.
Source: own study.

Discussion

This study offers a significant contribution in the field of social psychology and entrepreneurship. Firstly, this study identifies the role of an entrepreneur's social identity on nascent entrepreneurial behaviour and confirms that each entrepreneur's social identity has a positive and significant influence on nascent entrepreneurial behaviour. Secondly, the study findings indicate that entrepreneurial self-efficacy is a positive driver of social identity and translates entrepreneurial actions into reality. Moreover, the results show that Darwinian, communitarian, and missionary identities have a positive and significant influence on entrepreneurial self-efficacy and nascent entrepreneurial behaviour. This result agrees with prior studies on social identities and entrepreneurship in the context of Asian and European studies (Brändle *et al.*, 2018; Crudu, 2019; Hand *et al.*, 2020). According to Fauchart and Gruber (2011), Darwinian, communitarian, and missionary identities play an important role in the development of new business ventures, and entrepreneurs with a high level of social

identities are more likely to establish a strong and successful business by providing an authentic product and services to their communities (Zygmunt, 2018).

Furthermore, our findings indicate that entrepreneurial self-efficacy has a positive and significant effect on nascent entrepreneurial behaviour. This result is consistent with existing literature (Drnovšek *et al.*, 2010; Schmutzler *et al.*, 2019), which finds that entrepreneurs with a high level of entrepreneurial self-efficacy are more likely to perform a certain level of tasks and are more interested in starting new businesses. Moreover, our findings show that entrepreneurial self-efficacy partially mediates the relationship between social identities and nascent entrepreneurial behaviour. This result allows us to conclude that entrepreneurs with Darwinian, communitarian, and missionary identities start by using entrepreneurial self-efficacy in decisions related to new business development processes. Moreover, our results broaden the entrepreneurial self-efficacy literature by investigating how nascent entrepreneurs' association with social identities influences their self-efficacy. Without entrepreneurial self-efficacy, individuals do not motivate stronger perceptions of entrepreneurial action. Several studies argue that individuals with a high level of self-efficacy are more active and inclined to pursue a career in entrepreneurship (Hopp & Stephan, 2012; Obschonka *et al.*, 2015). However, entrepreneurs with Darwinian, communitarian, and missionary identities are more likely to feel capable of their entrepreneurial abilities. Entrepreneurs with a low level of entrepreneurial self-efficacy are less competent to handle community issues in order to make the world a 'better place.'

CONCLUSIONS

This study examines the influence that entrepreneurial social identities – Darwinian, communitarian, and missionary – have on nascent entrepreneurial behaviour, with the mediating role of entrepreneurial self-efficacy. This study contributes to the field of social psychology and entrepreneurship. The findings show that Darwinian, missionary, and communitarian identities have a positive and significant impact on entrepreneurial self-efficacy and nascent entrepreneurial behaviour. Several studies argue that entrepreneurial social identity is an important factor in entrepreneurs' actions (Alsos *et al.*, 2016; de la Cruz *et al.*, 2018), and limited empirical studies tackle social identity in the context of nascent entrepreneurial behaviour among students. Therefore, this study specifically focuses on the nascent entrepreneurial behaviour of students who want to become entrepreneurs through employing entrepreneurial social identities.

This study offers practical implications for researchers, practitioners, and educationalists. Firstly, our results show the importance of identifying the differences in entrepreneurs' goals linked to new business development. These differences indicate that policy-makers and advisors pursuing high-quality new firms should not assume that all entrepreneurs are generally encouraged by profits and behave accordingly. Instead, the structure for motivating entrepreneurs varies depending on the situation. Therefore, the actions for entrepreneurial setup are the most rational activity that depends on the social identity of the entrepreneurs containing him/her motives. Secondly, our findings enable us to suggest future outlines of training in entrepreneurship that foster the use of social identities in decision-making and new firm development. Entrepreneurial self-efficacy might be considered a means for developing entrepreneurial intentions among entrepreneurs, but also for attaining maximum business growth.

Moreover, our study might enhance the willpower of each type of social identity to think and take action so as to forest preeminent behaviours and accomplish goals. Thirdly, several literature studies offer implications for conducting training programs on supporting entrepreneurs to develop their new business concepts and related business strategies. However, entrepreneurial social identity is such a significant element in the entrepreneurial process that platforms would take advantage from attending more to identifying potential entrepreneurs by entrepreneurial social identities and searching for their authentic entrepreneurial identities – such as Darwinian, communitarian, and missionary – in unison with the idea and business development process for an individual to pursue a career in entrepreneurship.

This study has several limitations. Firstly, this study's nature is cross-sectional ass data was gathered using a self-administered survey from the public sector universities of Punjab, Pakistan, with a low sample

size. We suggest that future researchers conduct longitudinal research on entrepreneurial social identities and causation processes to examine entrepreneurial/firm performance. Secondly, our results are based on the idea of Fauchart and Gruber (2011) who use three social entrepreneurial identities – Darwinian, communitarian, and missionary – which representing only one way of distinguishing between different identity types. Future research might consider hybrid identities to investigate nascent behaviour and firm performance. Thirdly, we found that the three social identities had a significant impact on nascent entrepreneurial behaviour. Thus, future research should examine the influence of role identity, human entrepreneurial identity, and family business identity on nascent entrepreneurial behaviour.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The role of mindfulness and perceived social support in promoting students' social entrepreneurial intention

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ABSTRACT

Objective: This study aims to demonstrate the positive relationships between mindfulness, perceived social support, and social entrepreneurship intention (SEI) using the theory of planned behaviour (TPB).

Research Design & Methods: This study surveyed 525 students who have been taking social entrepreneurship courses of non-profit organizations in Vietnam. Data was collected through a pre-designed questionnaire at Google Form from August to October 2020 and analysed by structural equation modelling to verify the research model and hypotheses.

Findings: The research confirmed the positive relationships between mindfulness, perceived social support, and social entrepreneurial intention (SEI). Among them, the role of mindfulness is the most important, because its impact on SEI is the strongest. This study has also shown that the components of the theory of planned behaviour have an intermediary role to strengthen the relationships in the research model.

Implications & Recommendations: This study confirms the need to include mindfulness courses when training future social entrepreneurs to help them for acquiring the right attitudes and forming social entrepreneurial intentions.

Contribution & Value Added: This study found that practicing mindfulness drastically changes entrepreneurs' attitudes towards social entrepreneurship. In contrast, perceived social support makes these entrepreneurs display a higher level of self-efficacy in forming social entrepreneurial intentions.

Article type: research article

Keywords: social entrepreneurial intention; mindfulness; perceived social support; attitude; self-efficacy

JEL codes: D9, L26, L31

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INTRODUCTION

The rapid economic growth and globalization make the process of urbanization, as well as income differentiation, quicker and have left gaps in society (Bourguignon, 2018; Tchamyou, 2020). In addition, non-traditional security factors, natural disasters, epidemics, and climate change with unpredictable happenings have had heavy impact on the production and life of many classes of the population, especially among vulnerable ones (Durante *et al.*, 2017; Guzman & Oviedo, 2018; Musterd *et al.*, 2017). Hence, social enterprises have emerged as a fill-in gap that governments and commercial enterprises could fill (Hamby *et al.*, 2017; Kickul & Lyons, 2020). Social enterprises, established to provide economic services and social assistance, as well as to promote social change, have existed in various forms throughout history (Morales *et al.*, 2021). However, governments and scientists have paid little attention to it, especially in transitioning markets.

Social entrepreneurs, founders of social enterprises, pursue social missions (Muñoz & Kimmitt, 2019) and try to solve social problems through innovative solutions (Ip *et al.*, 2018; Tiwari *et al.*, 2017a;

Zaremohzzabieh *et al.*, 2019). Social entrepreneurs have provided creative business models that positively handle society's problems and fill gaps in national social welfare programs (Nicholls, 2010). Therefore, many countries have been supporting the development of generations of social entrepreneurs. Academically, understanding how an individual forms of social entrepreneurial intention (SEI) has become an important research goal (Kruse, 2020).

According to Dees (1998), the essence of social entrepreneurship is pursuing a dual mission: creating social and economic value and being an agent of change. This mission makes social entrepreneurship more challenging than ordinary ones (Austin *et al.*, 2006). Therefore, social enterpreneurs need distinct personality traits that motivate them for pursuing this difficult choice (Hsu & Wang, 2019; Nga & Shamuganathan, 2010; Smith & Woodworth, 2012; Stephan & Drencheva, 2017). However, to be a social entrepreneur, individuals need more than possessing a social personality because they still have to secure the business finances (Berbegal-Mirabent *et al.*, 2021; Mair & Noboa, 2006).

According to Plaskoff (2012), mindfulness may be a solution to this problem. Besides, in addition to increasing awareness of business opportunities, practicing mindfulness increases compassion, which turns into taking more ethical decisions regarding others (Kelly & Dorian, 2017). Thus, mindfulness is a precondition for creating motivation for a person to become a social entrepreneur. Wach and Głodowska (2021) argue that research on entrepreneurial traits is still in the developing stage. The addition of mindfulness in the SEI model offers the novelty of exploration for the personal trait of social entrepreneurs. This brings an innovative aspect to the research of the characteristics of social entrepreneurs, which is focused on the Big five model (Bernardino *et al.*, 2018; Tran & Von Korflesch, 2016). On the other hand, Ip *et al.* (2018) stated that perceived social support is the antecedent for SEI. Recent empirical studies on SEI show that perceived social support is a factor that receives much attention (Hockerts, 2017; Lacap *et al.*, 2018; Politis *et al.*, 2016). Luc *et al.* (2019) confirms that perceived social support is one of the factors that are often added to research models on SEI. Bacq and Janssen (2011) argue that understanding local social influence is very important in the research of social entrepreneurship. However, a comparison between mindfulness and perceived social support about SEI has not been done before.

In social psychology research, the models of behavioural intention have been successfully used to predict future behaviour for both managers and policymakers (Wach & Wojciechowski, 2016), in which the theory of planned behaviour (TPB) is often used for studying on SEI (Luc *et al.*, 2019). The objective of this study is to explore the impacts of mindfulness and perceived social support on SEI by applying the TPB model. From this result, we propose ideas for universities to help them come up with appropriate policies for the development of new generations of social entrepreneurs. On the other hand, this study was also conducted to supplement prior research on the attributes of social entrepreneurs. The objective was achieved via an exploratory study that focused on identifying the essential factors that explain the process of forming SEI.

The structure of the article includes five sections. The first section is the introduction to the research problem. In the second section, the literature review is presented. The third section discusses the design of the research and the methodology. In the fourth section, we present and discuss the results. The last section of the article draws conclusions about the contributions of this study to theory and practice.

LITERATURE REVIEW

Social entrepreneurial intention

Shaw and Carter (2007) argue that social entrepreneurship brings value to a community by using resources creatively. Bosch-Badia *et al.* (2015) agree that social entrepreneurship involves entrepreneurship with the determination to achieve positive social transformation social entrepreneurship takes many different forms, including starting, or transforming existing business, or collaborating with others (Short *et al.*, 2009). So, the definitions clearly state that social entrepreneurship is a process of creating social value based on business principles. Driven by self-motivators, social enterprises look for opportunities that can make social value by doing social changes or responding to social needs. (Zahra *et al.*, 2009).

As the role of social entrepreneurs becomes more important in socio-economics, academic interest in their SEI has also increased (Krueger *et al.*, 2000). Behavioural intention theories are used to explain why entrepreneurs plan to establish a business or organization before they look for opportunities (Wang *et al.*, 2016). According to Bosma *et al.* (2016), SEI relates to any type of activity, planning, or idea with specific social, environmental, or community goals. These activities may include providing services or training to people with disabilities, activities for decreasing pollution or waste, organizing community groups (Bosma *et al.*, 2016).

Thus, an individual's SEI is a fine indicator for the start-up of social businesses and also an emerging field of interest for scientists. Researchers have suggested different factors influence SEI such as big five traits (Aure, 2018; Hsu & Wang, 2019; Ip *et al.*, 2018; Nga & Shamuganathan, 2010), entrepreneurial personalities (Liu *et al.*, 2020; Politis *et al.*, 2016), social personalities (Bacq & Alt, 2018; McMullen & Bergman, 2017; Miller *et al.*, 2012), cognitive factors (Kedmenec *et al.*, 2015; Tiwari *et al.*, 2017a), work requirements and education (Shumate *et al.*, 2014). Researchers emphasize that these factors indirectly affect the intentions of individuals by influencing their attitudes (Krueger & Kickul, 2006). Therefore, social entrepreneurship is a multi-step process, in which intention has been seen as the first step and should be considered cautiously (Bacq *et al.*, 2016; Dacin *et al.*, 2010; Hockerts, 2017). However, Ziegler (2011) finds that the prerequisites for motivating individuals to become social entrepreneurs have not been fully explored. Especially in a country with an emerging economy like Vietnam, where many problems need to be solved to both develop the economy and make life and society better. Hence, the research in this field will help solve these problems that arise in society.

Theory of planned behaviour (TPB)

Ajzen (1991) presents TPB as an improvement to the theory of reasoned action (Ajzen & Fishbein, 1980). The TPB theory has been used in various research to assess human behaviours in different relationships. For TPB, behavioural intention is the key predictor that makes it easier to measure and evaluate behaviour. In TPB, factors that can influence planned behaviour are the subjective norm, perceived behavioural control, and attitude towards behaviour. The TPB has demonstrated its ability to anticipate and interpret human behaviour in specific situations based on the assumption that human intention is the subject of a motivational state that encourages behaviour (Fayolle & Liñán, 2014; Sharahiley, 2020; Tiwari *et al.*, 2017a). Researchers often apply the adjusted TPB model with the substitution or addition of appropriate variables according to each research context for helping to better explain behaviours (Alzubaidi *et al.*, 2021; Munir *et al.*, 2019; Shneor & Munim, 2019). However, the relationship between subjective norm and SEI has not been confirmed in many studies (Kruse *et al.*, 2019; Luc, 2018; Politis *et al.*, 2016). Therefore, this factor is not studied in this article.

Attitude towards behaviour (ATB) is the degree to which the individual likes or dislikes the outcomes that the behaviour produces (Ajzen, 1991). In the context of social entrepreneurship, Kruse *et al.* (2021) argue that attitude is an assessment of the action. As such, a negative or positive evaluation of the activity reduces or enhances the likelihood of it being executed. Based on the student perspective, ATB is the degree to which students desire or do not desire to make social entrepreneurship behaviours (Lukman *et al.*, 2021). Many researchers have found a positive link between individuals who aspire to be a social entrepreneur and SEI (Ernst, 2011; Luc, 2018; Politis *et al.*, 2016). Hence, our first hypothesis is:

H1: Attitude towards behaviour (ATB) has a positive effect on social entrepreneurial intention (SEI).

Perceived behaviour control refers to an individual's perception of the ability to perform a particular behaviour (Ajzen, 1991). A high level of perceived behavioural control increases endeavour, determination, and intention to commit to the behaviour (Ajzen, 2002). However, perceived behaviour control can be replaced by self-efficacy (SEF) when explaining behavioural intentions (Armitage & Conner, 2001). Wach and Bilan (2021) argue that these two concepts are equivalent and interchangeable. SEF is considered as a set of competencies of beliefs as seen from the social cognitive perspective (Bandura, 1993). In the context of social entrepreneurship, SEF is defined as an individual's perception of their ability for contributing to social change in finding solutions for social problems (Hockerts, 2017). When people have

strong SEF in SEI, they are ready to face external obstacles. Since social issues are often quite complex, they pose psychological barriers for potential social entrepreneurs. As a result, SEF can help reduce these barriers to SEI (Hockerts, 2017). The above arguments lead to the following two hypotheses:

H2: Self-efficacy (SEF) has a positive impact on social entrepreneurial intention (SEI).

H3: Self-efficacy (SEF) has a positive impact on attitude towards behaviour (ATB).

Perceived social support

Perceived social support (PSS) is defined as interactions or relationships of society that make real support or set individuals up in a system that is supposed to provide care or to create a feeling of belonging to a valued community group (Hobfoll, 1988). Social support theory explains that the support received from interpersonal relationships has a positive influence on how an individual responds to stress or life changes. According to Hockerts (2015), in the context of social entrepreneurship, perceived social support is how individuals perceive the degree to which they will be supported by those in their network. Individuals will be impacted by the extent to which they will receive support and assistance in their efforts from people in their networks. Perceived social support also reflects the extent to which individuals believe access to investments is possible when they establish a social enterprise (Nga & Shamuganathan, 2010).

The support of the close environment (relative, trustworthy and influential person) makes people believe that they are more likely to be suitable and viable for a business career (Liñán & Chen, 2009). Nowiński *et al.* (2020) have demonstrated that there is a positive relationship between PSS and entrepreneurial intention mediated by TPB components such as ATB and SEF. The above arguments suggest PSS's role is related to the concepts of social entrepreneurship in limited resource environments, as often happens in developing countries (Desa & Basu, 2013). Therefore, t he next research hypotheses are:

H4: Perceived social support (PSS) has a positive effect on social entrepreneurial intention (SEI).

H5: Perceived social support (PSS) has a positive effect on attitude towards behaviour (ATB).

H6: Perceived social support (PSS) has a positive effect on self-efficacy (SEF).

Mindfulness

Mindfulness (MFN) has been studied by researchers in a variety of circumstances, such as psychology, health, business, education, meditation, and social sciences (Brown & Ryan, 2003; Chatzisarantis & Hagger, 2007; Dimidjian & Segal, 2015; Langer & Moldoveanu, 2000; Ngo *et al.*, 2016; Rahl *et al.*, 2017). Across fields of research, MFN is often described as the focus on or attention on the present moment, and following the feeling of curiosity, openness, and acceptance (Brown & Ryan, 2003; Langer, 1989; Sternberg, 2000). In these studies, there are important implications that we may improve our MFN level through exercise (Baer, 2003); and that it may enhance work efficiency in volatile decision-making environments (Dane, 2011).

Mindfulness disposition is a characteristic that indicates the degree to which a person pays attention to or is aware of what is happening in the present moment (Brown & Ryan, 2003). While research shows that dispositional or trait mindfulness can be magnified through repeated practice or reverting to the state of mindfulness (Kiken *et al.*, 2015), this article focuses on MFN as an orientation, regardless of mindfulness practice or not. In entrepreneurship, MFN can help explain how entrepreneurs anticipate and take advantage of opportunities that others may not (Capel, 2014; Rerup, 2005). High levels of MFN can promote entrepreneurial behaviour through increased flexibility in awareness of situations (Gelderen *et al.*, 2019). These are the important prerequisites for an individual to increase SEI. In traditional business, previous studies have demonstrated a link between MFN and start-up intention (Caliendo *et al.*, 2014; Frese & Gielnik, 2014; Gelderen *et al.*, 2019; Rerup, 2005). Although, Gelderen *et al.* (2019) declare that individuals with lower levels of mindfulness were more likely to take entrepreneurial action than higher mindful ones, but they also found that individuals with a high level of mindfulness when they have decided to start a business will take more action, even more drastic, if they have business experience. This also makes sense when explaining SEI as entrepreneurs must have consideration and understanding before deciding to enter this field. Therefore, MFN is expected to play an important role in SEI.

Individuals with high dispositional mindfulness have a deeper awareness and attention to everyday happenings (Dane & Brummel, 2014). Awareness and clarity of mind also increase people's ability to think more positively (Kabat-Zinn, 1990). Mindfulness creates increased awareness by taking a multi-dimensional approach and allowing the entrepreneur to see things from the other person's point of view, which makes more empathy and leads to more compassionate and ethical decisions. This is the premise for pursuing the mission of creating and maintaining social value. Miller *et al.* (2012) demonstrated a link between compassion and social entrepreneurship outcomes, and increased mindfulness has been shown to raise levels of it (McCollum & Gehart, 2010). In addition, if individuals are characterized by a high MFN level, then they also have more compassion than those who display a low MFN level (Hunter & McCormick, 2008). It exhibits a strong orientation towards taking care of others (Good *et al.*, 2016). According to Good *et al.* (2016), MFN increases prosocial behaviours, so it also helps potential entrepreneurs increase attitudes towards SEI.

Moreover, s cientists report that person with a high rank of MFN tends to be more willing to face challenges (Feldman *et al.*, 2007), which has a positive influence on SEF, while it reduces the propensity to procrastinate (Howell & Buro, 2011). MFN has been shown to promote more adaptation to situations (Vago & David, 2012). In addition, Keye and Pidgeon (2013) provide recent empirical evidence supporting a positive relationship between MFN and SEF. Following the above arguments, we formulated the last hypotheses:

H7: Mindfulness (MFN) has a positive impact on Social entrepreneurial intention (SEI).

H8: Mindfulness (MFN) has a positive impact on Attitude towards behaviour (ATB).

H9: Mindfulness (MFN) has a positive impact on Self-efficacy (SEF).

From the above research hypotheses, we propose the following research model (Figure 1).

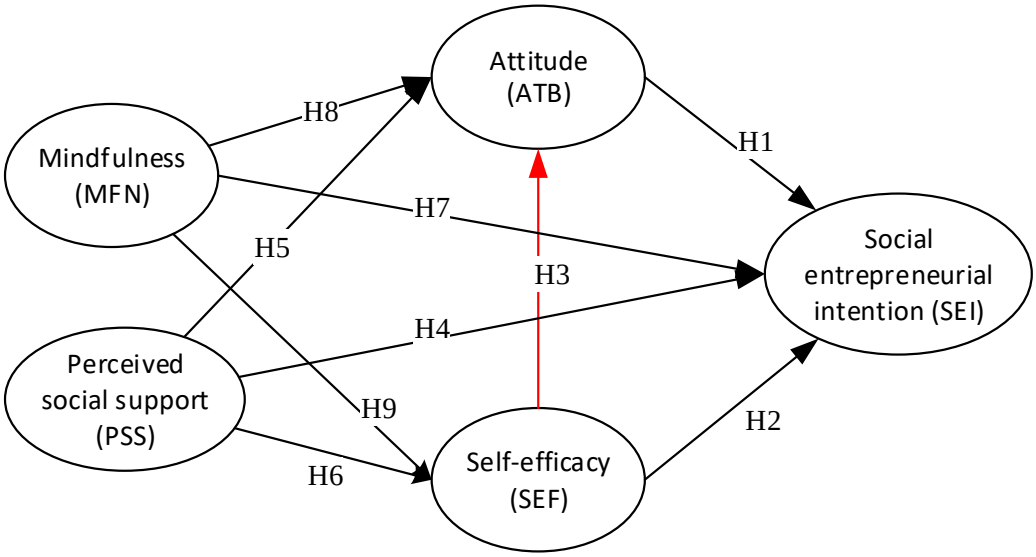

Figure 1. Conceptual framework
Source: own elaboration.

RESEARCH METHODOLOGY

Sampling method and data collection

The survey subjects in this article are students who had attended various programs organized by the Supporting Social Enterprise Community (SSEC) and the Centre for Social Initiatives Promotion (CSIP). Both CSIP and SSEC are prominent non-profit organizations in promoting social entrepreneurship in Vietnam. The researchers recommend targeting young people because they are more conscious of their careers and because of the perception that social entrepreneurship is linked with youth (Bosma

et al., 2016; Hockerts, 2017; Nga & Shamuganathan, 2010; Tiwari *et al.*, 2017a). The survey participants were students selected by the convenience sampling method.

We collected data using an electronic survey method delivered through Google Forms. The survey was conducted between August 2020 and November 2020. There were 525 valid questionnaires (no missing value) for analysis. In which, the number of male students participating in the survey is 250 (accounting for 47.6%). In Table 1., the vast majority of them are students majoring in Economics (accounting for 67.8%) and in their first year (accounting for 42.1%).

Table 1. Demographic statistics

Variables	Values	Frequency	Percent (%)
Gender	Male	250	47.6
	Female	275	52.4
Academic year	Year 1	221	42.1
	Year 2	121	23.0
	Year 3	115	21.9
	Year 4 and more	68	13.0
Training sector	Engineering sector	110	21.0
	Economic sector	356	67.8
	Sociological sector	59	11.2

Source: own study.

Measurement

The questionnaire is commonly used to collect data in advanced scientific studies. This article uses seven -point Likert scales, where one means “strongly disagree” and seven “strongly agree.” The scales of research concepts are inherited from previous studies. Specifically, the scales of SEF and PSS are inherited from Hockerts (2017) with three items for each scale. The scales of ATB (five items) and SEI (six items) were designed from the study of Liñán and Chen (2009), while the MFN scale was borrowed from the study of Brown and Ryan (2003) with 15 items. To ensure that the respondents have a correct understanding of social entrepreneurship, the explanation of the definition of social entrepreneurship is provided in the introduction of the questionnaire.

We applied SPSS and AMOS 24 software to analyze the collected data. The research hypotheses were verified by structural equation modelling (SEM) according to Anderson and Gerbing’s (1988) process. In the first step, confirmatory factor analysis (CFA) was applied to evaluate construct validity and goodness-of-fit. Hair *et al.* (2010) said that the construct validity is assessed by the following criteria:

- Standardized regression weight (Factor loading) must not be less than 0.7.
- Average variance extracted (AVE) should be 0.5 or greater to achieve convergence.
- The square root of the AVE should not be less than the inter-correlation between two concepts to provide the discriminant validity.
- The reliability indices such as Cronbach’s α (CA) or composite reliability (CR) should not be less than 0.7 to demonstrate the internal consistency of the scales.

Then, we assessed the goodness-of-fit to compare the similarity between the observed and estimated covariance matrices (Hair *et al.*, 2010). The model fit is tested through criteria such as Chi-square/degree of freedom (χ2/df), GFI, TLI, CFI, NFI, RMR, and RMSEA. In the second step, we applied the SEM technique. Then, we tested the hypotheses through the evaluation of the path coefficients (beta). Moreover, the impact intensity of the relationships between the research concepts is also checked in this step.

RESULTS AND DISCUSSION

Confirmatory factor analysis

Construct validity is performed to assess whether a construct's scale adequately measures the intended concept (O'Leary-Kelly & Vokurka, 1998). The results of Table 2 show that the internal consistency of the scales is guaranteed when the CA and CR values do not fall below the "cut-off" value of 0.7 (the minimum value of both CR and CA is 0.841 on the scale of PSS). The AVEs are also satisfactory when the lowest value is 0.540 (of the MFN scale). At the same time, the factor loadings are also between 0.702 and 0.846. Thus, the scales in this study have got convergent validity.

Table 2. Construct validity

Variables	CR	CA	AVE	Factor Loading	MFN	SEI	ATB	PSS	SEF
MFN	0.946	0.946	0.540	0.707-0.800	**0.735**				
SEI	0.922	0.922	0.663	0.778-0.846	*0.593****	**0.815**			
ATB	0.862	0.863	0.557	0.702-0.826	*0.558****	*0.727****	**0.746**		
PSS	0.841	0.841	0.638	0.783-0.820	*0.607****	*0.589****	*0.525****	**0.799**	
SEF	0.842	0.841	0.640	0.774-0.836	*0.530****	*0.595****	*0.483****	*0.577****	**0.800**

Significant codes: *** $p < 0.001$.
Source: own study.

On the other hand, the discriminant validity also should be satisfied. As discussed in the previous section, the square root of the AVE of a concept must not be lower than the correlations of that concept with others in the model. Those square root values (in bold) are all greater than their intercorrelations (in italics), which means that the scales achieve discriminant validity. So, the construct validity has been verified (See Table 2).

Hair *et al.* (2010) stated that the goodness-of-fit evaluates the difference between the estimated model and the actual values. The goodness-of-fit measures calculated through AMOS 24 software show that they met the requirements (s ee Table 3). This means that the collected data is fitted with the predictions of the estimated model. Thus, after evaluating the CFA, the data are suitable for SEM analysis.

Table 3. Goodness-of-fit

Criteria	Values	Cut-off	Sources
χ^2/df	1.785	< 3	Hu and Bentler (1999)
GFI	0.909	> 0.9	
TLI	0.962	> 0.9	
CFI	0.966	> 0.95	
NFI	0.925	> 0.9	
RMR	0.054	< 0.08	Taylor *et al.* (1993)
RMSEA	0.039	< 0.08	

Source: own study.

Structural model assessment and discussions

According to Figure 2 and Table 4, the path coefficients are all positive. This means that the above research hypotheses are all accepted. Specifically, ATB had the strongest effect on SEI (β = 0.487), while SEF had a weaker effect (β = 0.221). This is surprising as it contrasts with the results of Tiwari *et al.* (2017b). It can be explained by the fact that SEI is a new concept in Vietnam. Vietnam is a Southeast Asian country, with a culture that pursues stability. According to Hofstede (1993), people of this culture often tend to resist unknown situations. Therefore, Vietnamese students are not confident about becoming social entrepreneurs.

The results also show that the standardized direct effects of MFN and PSS on SEI are quite small with β coefficients of 0.154 and 0.139, respectively (See Table 4). However, in Table 5, the results have demonstrated the intermediate effects of TPB components. Specifically, through ATB and SEF, the in-

direct effects of MFN and PSS on SEI have β of 0.292 and 0.241. That is why the total effects of MFN and PSS on SEI are stronger than the direct effect of SEF on SEI (with β of 0.446 and 0.380, respectively).

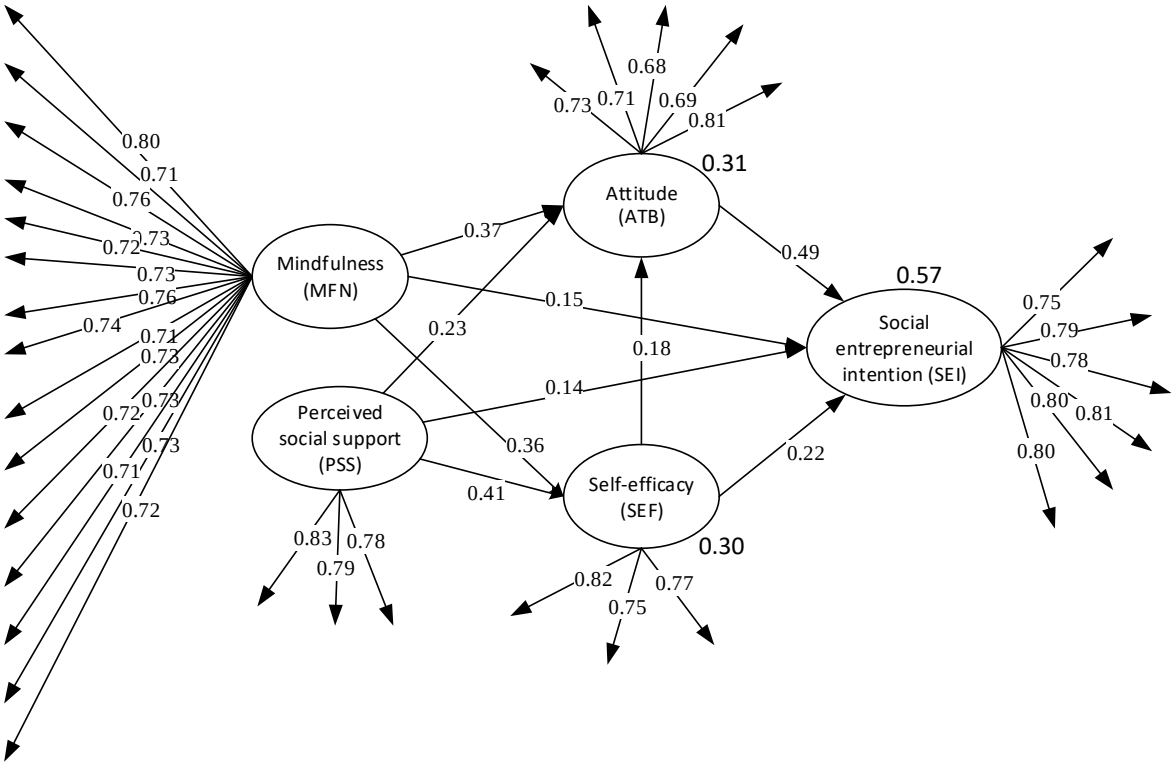

Figure 2. Structural model
Source: own elaboration.

Table 4. Hypothesis testing

Hypothesis			Path coefficients	S.E.	C.R.	p-value	Results
SEF	<---	MFN	0.356	0.045	7.670	***	Accepted
SEF	<---	PSS	0.413	0.048	8.289	***	Accepted
ATB	<---	MFN	0.373	0.049	7.459	***	Accepted
ATB	<---	PSS	0.232	0.051	4.374	***	Accepted
ATB	<---	SEF	0.180	0.058	3.122	0.002	Accepted
SEI	<---	MFN	0.154	0.042	3.621	***	Accepted
SEI	<---	PSS	0.139	0.044	3.146	0.002	Accepted
SEI	<---	ATB	0.487	0.052	9.674	***	Accepted
SEI	<---	SEF	0.221	0.049	4.596	***	Accepted

Significant codes: *** $p < 0.001$.
Source: own study.

Another finding of this study was the effects of MFN and PSS on components of TPB. The MFN is found to have a stronger impact on respondents' attitudes towards social enterprises (β = 0.437) than their SEF (β = 0.307). This shows that practicing mindfulness will help people have a more positive attitude towards the community (Kelly & Dorian, 2017). In contrast, PSS helps people increase their confidence when deciding to become social entrepreneurs. Indeed, Liñán and Chen (2009) suggest that people are more confident in their behaviour when they are supported by the external environment. Therefore, PSS has a more important role than MFN in enhancing the SEF of potential social entrepreneurs (β = 0.413 > 0.356).

Thus, the research results confirm the role of MFN and PSS in SEI formation, in which MFN has the greatest impact (See Table 5). This result confirms Plaskoff's (2012) statement about using mindfulness to explain social entrepreneurship as a way of integrating heart and mind; as well as affirming mindfulness as an important personality trait of SEI (Chinchilla & Garcia, 2017). This is one of the first empirical studies on the relationship between MFN and SEI. It is a necessary complement to studies on the characteristics of social entrepreneurs, which have been centred around the Big five model (Bernardino *et al.*, 2018; Tran & Von Korflesch, 2016).

Table 5. Standardized indirect and total effects

Variables	PSS	MFN	SEF	ATB
SEF	0.413*** *0*	0.356*** *0*		
ATB	0.307*** *0.074*	0.437*** *0.064*	0.180* *0*	
SEI	0.380* *0.241*	0.446*** *0.292*	0.309*** *0.088*	0.487*** *0*

Significant codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Italics number: Indirect effect
Normal number: Total effect
Source: own study.

Thus, the research results confirm the role of MFN and PSS in SEI formation, in which MFN has the greatest impact (See Table 5). This result confirms Plaskoff's (2012) statement about using mindfulness to explain social entrepreneurship as a way of integrating heart and mind; as well as affirming mindfulness as an important personality trait of SEI (Chinchilla & Garcia, 2017). This is one of the first empirical studies on the relationship between MFN and SEI. It is a necessary complement to studies on the characteristics of social entrepreneurs, which have been centred around the Big five model (Bernardino *et al.*, 2018; Tran & Von Korflesch, 2016).

CONCLUSIONS

This article has completed the research objective of finding out the positive relationship of MFN, PSS with SEI of students in Vietnam. On the other hand, this research also demonstrated a significant mediating effect of TPB model components in the above relationships.

From the research results, we suggest the following for university leaders and policymakers. Firstly, mindfulness plays an important role in shaping the SEI of potential entrepreneurs. The practice of mindfulness should receive more attention from policymakers and training institutions to help individuals gain a more favourable view of social enterprises. Baer (2003) suggests that mindfulness can be enhanced through practice. Therefore, this training helps students improve their attitudes towards social problems and thereby enhance their SEI.

Secondly, the relationship between PSS and SEI has the weakest correlation, but social support plays an important role in students' self-efficacy (See table 5). Therefore, having policies to support students will help them gain more confidence in their intention to become an entrepreneur (Nowiński *et al.*, 2020). According to Desa and Basu (2013), in areas where other support resources are lacking, such as in Vietnam, receiving support from both the university and the government increases student's motivation in terms of their chosen social careers.

Due to the selection of survey subjects and due to financial constraints, this study has some limitations. Firstly, this research studied SEI from the students' perspectives. Although young people are fit for research on social entrepreneurship (Bosma *et al.*, 2016), next studies should extend the research model testing to other survey subjects. This helps prove the research model is suitable for different subjects. Secondly, the data collection was conducted in only one country, making the results of the study not general. The expansion of model testing in other countries deserves the attention of

further studies. On the other hand, the convenience sampling method has low reliability. Further studies should use probabilistic sampling methods to obtain more representative survey samples. Finally, scientists should evaluate the mediation of demographic factors in the model's relationships such as comparisons between students of different disciplines, or between students who have attended mindfulness courses with people who have not, and so on.

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Young consumer perception towards family firms: Relationship building and gender

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ABSTRACT

Objective: The objective of the article is to investigate young consumer perception of family firms (FFs) used in the process of relationship building. It also stresses the importance of gender roles within this representative group.

Research Design & Methods: Following a literature review, a quantitative survey on a statistically representative random-cluster sample of 237 Generation Z consumers was conducted in the latter half of 2017 in Poland. The computer-assisted web interviewing method was used, and factor analysis was applied.

Findings: Results indicate that young consumers perceived FFs as reliable, long-term businesses with a human-centred approach to clients. Tradition was the attribute that distinguished FFs on the market. Gender differences played an important role in the perception of FFs.

Implications & Recommendations: Further research should consider the influencing factors for families from external influencers. This research initiates the process of influencing young customers and can lead to a model development that would describe the specifics of Generation Z in FFs.

Contribution & Value Added: The study should be considered a framework for identifying ways to achieve competitive advantage of family-owned companies. From a practical perspective, this is an important implication for FFs' owners and marketing managers who have noticed a growing concern of an aging target population.

Article type: research article

Keywords: family business; SMEs; CAWI method; consumer habit; Poland

JEL codes: D12, D22, M21

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INTRODUCTION

As the backbone of the world economic system, family firms (FFs) make up an essential contribution to the economies of many countries (Beck, 2016). According to Litz (1995) and Jawed (2016) of all the business establishments from around the world more than 95% are family-run. The majority of them are found in the United States of America and Western Europe. As such, specifics of doing business – communication and relationship building with consumers from different cultural contexts (Binz Astrachan *et al.*, 2019) – merits the examination of long-lasting relational constructs of FFs with buyers in an Eastern European backdrop (*i.e.* where the tradition of family-owned businesses is rather new). The situation of FFs in Poland changed after 1989, with the onset of the political system's transformation and profound economic changes. From this moment, an explosion of new family businesses was visible (Wroblewska-Kazakin, 2014). Currently, the buyers of products and services offered by FFs are middle-aged and elderly people. Therefore, it seems necessary for them to focus their attention on the group of younger consumers, especially Generation Z that in 2020 represented 25.5% of Poland's population (Eurostat, 2020). Two important metrics frame this notion: the numeric value of the segment and attitude to consume a high amount of goods and services (Jaciow, 2015).

Based on market observations, FFs in Poland do not specifically concentrate on young consumers or address a clear marketing message to them (Bednarz *et al.*, 2017). Since people belonging to this segment differ from older consumers, their needs, behaviours, and ways of communication regarding FFs require a broader investigation. As a result, companies would be better able to transform Generation Z representatives from potential to active customers. Moreover, a bountiful amount of literature reveals not only age but also gender as a significant factor in influencing consumer perception and behaviour towards companies and their products (Ndubisi, 2006, 2007; Guclu, 2016, Hess *et al.*, 2016). Research into gender perception further necessitates the identification processes used to assist FFs in Poland via relationship building and communication effectiveness with this audience. The article considerations the theory of relationship building (*i.e.* a field of relationship marketing) with a particular emphasis on commitment-trust theory (Morgan *et al.*, 1994). On the one hand, the article seeks to investigate young consumer perception of FFs using the process of relationship building; on the other hand, the text wishes to stress the importance of gender roles within this representative group. Exploratory research questions are considered in the methodology and are posed as the basis for the research. At length, the study could be considered a framework to identify ways to achieve competitive advantage of FFs in unfavourable conditions of an aging society and group targeting of consumers. Owners and leaders of companies must be prepared for continuous transformation and change, as they should adopt their products and communication message to specific generations.

The article first provides a literature review that examines relationship building between companies and customers – then expanding into a conceptual framework, research methodology used to develop the study, results, and a discussion that elucidates on the findings and positioning of key strengths exploitation, summarized by a conclusions section that focuses on the research opportunities and limitations.

LITERATURE REVIEW

Relationships between companies and customers

Strong rivalry among business entities on the market strives to build long-term relationships with buyers. This is the basis of relationship marketing, a contemporary paradigm in marketing literature dating back to the 1980s. Morgan *et al.* (1994) define relationship marketing as 'all marketing activities directed towards establishing, developing and maintaining successful relational exchanges' (p. 22). As proposed by Gupta *et al.* (2012), relationship marketing focuses on: (1) attracting, maintaining, and enhancing relationships between firms and customers; (2) creating, communicating, and delivering value to customers; (3) enhancing mutual economic value at a reduced cost; and (4) developing and maintaining successful relational exchanges. Murphy *et al.* (2007) conclude that 'due to its inclusiveness and long-term orientation, the relationship marketing paradigm is a unique construct for analysing the marketing process' (p. 39). Murphy *et al.* (2007) also identify in the literature a number of virtues associated with relationship marketing: honesty, fairness, benevolence, integrity, reliability, commitment, and trust. These are the building blocks of any long-term partnership; however, three of them – trust, commitment, and diligence – are key connectors with relationship marketing.

Ndubisi *et al.* (2018) provides a summary of the earliest works on the concept and lists several theoretical perspectives that were applied towards the understanding of firm-customer relationships, namely the commitment-trust perspective, relational norms perspective, dependence perspective, transaction cost economics perspective, social network theory, game theory, political economy perspective, knowledge-based view of the firm, and dynamic capability perspective. This article will focus on the commitment-trust theory as the root source of relationships since 'trust and commitment [act] as hallmarks' (Ndubisi *et al.*, 2018, p. 927) in terms of satisfaction. Solomon *et al.* (2001) underline that trust results from dialogue, which they describe as conversations about trust. Trust stimulates the communication that makes commitments possible (Murphy *et al.*, 2007). Companies try to attract new customers to buy goods and services by offering special or even unique attributes important to buyers. Building long-term, strong relationships is advantageous both for the company and customer since they are mutually satisfying and beneficial. Throughout Eastern Europe, the transformation processes dating back to the early

1990s has seen a continual and sharp growth in the number of FFs (Wroblewska-Kazakin, 2014). In Poland, the family-based nature of companies is generally not highlighted in marketing communication activities. The reason for this behaviour is a lack of awareness and conviction (Leszczewska *et al.*, 2017) that family ownership and management are powerful enough and can be perceived as a positive message in relation to stakeholders, especially with customers. As a result, there is a significant gap in communication of FFs in the marketplace. This gap should be seen as an opportunity for family-owned businesses to build a powerful marketing message. It is important since FFs can benefit from informing their customers that they are family-run business. Researchers from different countries emphasize that promoting the family origin of a company, its unique history, identity, and inimitable values causes positive differentiations and associations among stakeholders, especially in comparison with non-family entities (Botero *et al.*, 2010; Carrigan *et al.*, 2008; Orth *et al.*, 2009; Zellweger *et al.*, 2010; Alonso *et al.* 2018). This approach contributes to building a distinct family and corporate reputation, and it can trigger a certain set of associations (e.g. a branding message (Barroso Martínez *et al*., 2019; Binz Astrachan *et al.*, 2018) by distinguishing FFs from their non-family competitors in terms of product influence by developing a unique and sustained competitive advantage (Binz Astrachan *et al.*, 2013).

Potentially successful communicative means, such as branding messages, can favour the market share of FFs. At present, FFs in Poland are associated with a high level of confidence, offering high quality products and services (Marjański, 2015; Dacko-Pikiewicz, 2019). Products and services should be used as the main carrier of brand identity – inclusive of the communication message of long-lasting family tradition as a guarantee of high quality (Wielsma *et al.*, 2019). Zanon *et al.* (2019) indicate that FFs often focus on building strong social ties and close relationships with stakeholders, consumers in particular. Cooper *et al.* (2005) even declare that 'relationships are at the heart of family business' (p.242). Customers generally perceive FFs as traditional, trustworthy, credible, and consumer-oriented, but also social and fair (Carrigan *et al.*, 2008; Cooper *et al.* 2005). Family businesses evoke positive associations and a sense of authenticity and reliability. The flexibility and adaptability to dynamic changes in accordance with market conditions make FFs more survival-oriented since they possess a sense of responsibility for the family, employees, and the local community in which they operate (Wach, 2020). This cause and effect often position FFs as more ethical than non-family companies (Leszczewska *et al.*, 2017), which increases customer intention to engage in long-term relationships that can positively affect their loyalty, purchase frequency and word-of-mouth advertisement. The owners and leaders of FFs in Poland now face a serious problem related to generational change. The change is twofold. On the one hand, there is a generational challenge of passing down company management (*i.e.* the duality of being a part of the family and member of the firm). On the other, there is a clear problem regarding the aging of current customers and planning for the specificity and expectation of younger buyers. These two changes in direction require an attention to detail that must consider relationship building via different mentality, system of values, and communication (Aragón-Amonarriz *et al.*, 2019). All FFs face this process of succession and are obliged to focus their attention on not losing existing customers while attracting representatives of younger generations. When a young manager (successor) takes over an FF, a number of difficulties emerge due to the possible lack of generational understanding, contacts (network), and experience.

Conceptual development: Segment of young consumers

The segment of so-called young consumers is the subject studies and analyses. They are a forward-looking and attractive group for companies as potential buyers. This article understands young consumers as representatives of Generation Z, also called Generation M (multitasking) or the net generation (Angus, 2018; Kilian *et al.*, 2012; Gentilviso *et al.*, 2019) who are people born after 1993 (Turner, 2015). The most indicated paths of research, in relation to this segment of the population, are twofold: consumers and employees (Anantatmula *et al.*, 2012; Zhang *et al.*, 2017; Soares *et al.*, 2017). As such, representatives of young consumers are people born in times of the dynamic growth of the Internet services and related communication technologies, *e.g.* video chat (Parry *et al.*, 2019). This segment of the population has been exposed to this innovative change since birth. The Internet is part of Generation Z's natural environment, and it is essential for efficient functioning (Parry *et al.*, 2019). In almost every area of life, they use technology and digital media; they function efficiently in the global village

that allows them to confidently communicate with persons from all over the world. They are very active users of social media which is where they share information about their lives (Bilgihan *et al.*, 2014; Bravo *et al.* 2006; Jovevski and Vasilevski, 2019). They are demanding as consumers, searching for information about products and making purchases online (Danaher *et al*., 2011; Triantafillidou *et al.*, 2018; Gentilviso *et al.*, 2019). They are well-educated, energetic, competitive, curious, and ready to develop further, which undoubtedly makes them self-confident (Luttrell *et al.*, 2016).

Gender: A differential variable

Gender is perceived as a significant moderating variable especially in research associated with consumer behaviour and management (Rosener, 1990; Powell *et al.*, 1997; Lim *et al.* 2014; Fernández, 2015). For the purpose of this study, the importance of gender captures consumer decisions, relationship building and online communication, social platforms and online shopping – all vital for Generation Z. Results from a number of studies show that gender is an imperative factor in the trust building mechanisms in social media (Nadkarni *et al.*, 2012; Sun *et al.*, 2018). Generally, women use social platforms more often than men for communication and information gathering (Nadkarni *et al.*, 2012). Lim *et al.* (2014) also emphasize the women tend to use social media to communicate with friends, while men use it for shopping or expressing opinion. This situation is most probably connected with the fact that women are less risk-oriented than men and appreciate the ability to respond appropriately to information and posts appearing online (See-To *et al.*, 2014). Sun *et al.* (2018) explore the trust building mechanisms (*i.e.* institution- and transference-based trust building) in social media in relation to gender differences. They prove that the 'regulatory effectiveness affects competence- and character-based trust and these impacts are stronger for men than for women' (Sun *et al.*, 2018, p. 498). As a result, competence-based trust is more significant for men, while character-based trust is more pronounced among women. In fact, Bergagna *et al.* (2018) state that women spend more time daily on Facebook than men. They argue that this connection correlates with the tendency for women to be more socially interactive. Moreover, women are more successful in expressing themselves, establishing communication and recognizing various stimulators (Guclu, 2016; Polce-Lynch *et al.*, 1998). Investigations of gender differences in the area of entrepreneurial potential of younger people find, in a general sense, stronger personal competencies among women than among men. Women perform better than men when searching for data and information, both when committing to a work contract and when achieving business (high-quality work) objectives (Lazányi, 2014).

Conceptual framework

Based on the literature, we may delineate the characteristic of FFs and young consumers. However, we found no scientific articles that describe the process of and how to build relationships between FFs and young consumers. This gap is a significant challenge for FFs to inform younger generations about their business, unique history, inimitable identity, and values that are core elements in building sustainable competitive advantage (Cooper *et al.*, 2005; Zanon *et al.*, 2019), distinctive to non-family competitors (Binz Astrachan *et al.*, 2013; Binz Astrachan *et al.*, 2018). This can be used by FFs to create the well-adapted concept of communicative messages (Bartosik-Purgat, 2019b; Florenthal, 2019), keeping in mind that characteristics (*i.e.* young consumers and potential differences between the genders) affect relationship building, trust, and commitment regarding the future of FFs (Aragón-Amonarriz *et al.*, 2019; Murphy *et al.*, 2007; Ndubisi *et al.*, 2018; Morgan *et al.*, 1994; Moorman *et al.*, 1992). Based on the literature, we propose the below conceptual framework (Figure 1).

In support of the framework, we developed three research questions and two hypotheses to provide for the research gaps.

RQ1: How young customers perceive FFs?

RQ2: What significant attributes young consumers expect of FFs for building long-lasting relation-ships?

RQ3: What is the significance of gender in the perception of FFs?

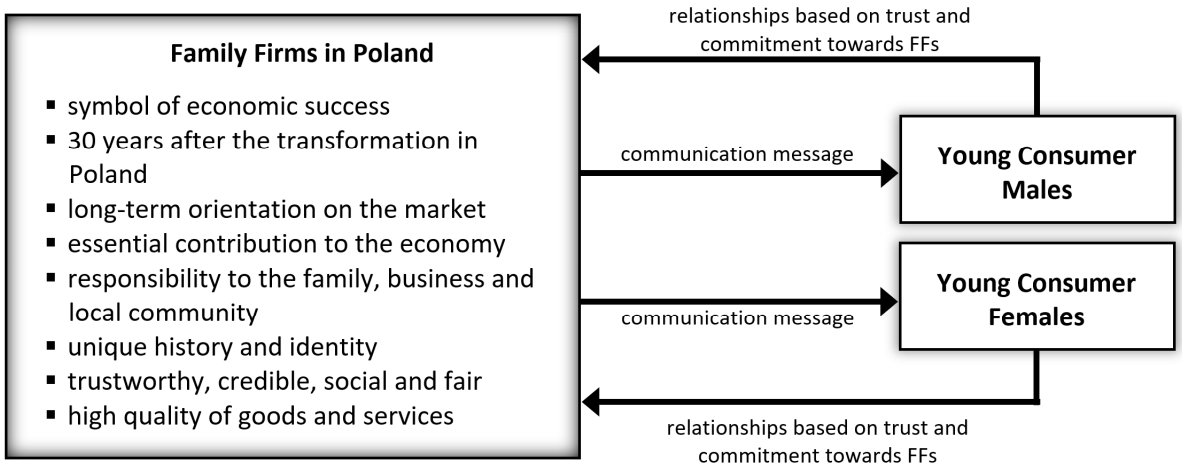

Figure 1. Conceptual framework
Source: own elaboration.

The hypotheses were formulated based on the literature review. Firstly, young consumers are demanding, self-confident, curious, and searching for information about products on the Internet (Danaher *et al.*, 2011; Triantafillidou *et al.*, 2018; Gentilviso *et al.*, 2019; Luttrell *et al.*, 2016). Secondly, competence-based trust is more significant for men (Sun *et al*., 2018). Therefore, we posti that:

H1: Young customers tend to perceive FFs as dependable suppliers of goods and services of decent to high quality.

H2: Young men have a more positive association with FFs than young women.

RESEARCH METHODOLOGY

Sample Data

In order to answer and test our research questions, we prepared a questionnaire-based survey to gather the data needed to identify a set of attributes specific to FFs in Poland and assess the importance of building relationships with Generation Z consumers. A quantitative survey using a statistically representative random-cluster sample of 1091 consumers was conducted in January 2018 in Poland. A computer-assisted web interviewing (CAWI) method was applied with the support of an external company, ABM Marketing Research Agency based in Warsaw, Poland. The sample reflected statistics on age, gender, and place of residence by using nationwide population multivariate distribution from Statistics Poland. Just over a quarter of the sample (26%) was a sub-segment of young buyers aged 16-25 (273 respondents), which was utilized as our representative sample. We used the online survey (with three filters). The statistical significance level was $\alpha = 0.05$ and the measurement error equalled 2.97% (Table 1).

Table 1. Demographic characteristics of the Generation Z respondents

Characteristics	Frequency	Percentage (%)
Female	135	49.45
Male	138	50.55
Total	273	100

Source: own study.

To prepare the questions and answers for the questionnaire, we conducted qualitative research in three stages. First, a critical analysis of the literature was conducted in preparation for the expert interviews. Second, latent participant observation was used as a research method (i.e. between May and June

2017) where 40 customers were observed and randomly chosen in natural surrounding (e.g. retail outlets). From these customers, observational notes were taken from ten FF locations in which product purchases were categorized to understand everyday buyer behaviour. Third, individual in-depth semi-structured interviews were conducted (i.e. between July and October 2017) in order to identify buyer knowledge, emotions and purchasing decisions respective of FFs. Eight respondents (i.e. three women and five men) belonging to Generation Z (i.e. the convenient sample) were tested. As a key result, 14 attributes associated with FFs as well as six statements were identified. To assess the degree of compliance of the respondents, a five-point Likert scale was applied, where: 5=strongly agree; 4=rather agree; 3=neither agree nor disagree; 2=rather disagree; 1=strongly disagree. Finally, before the quantitative survey, a pilot CAWI study of 30 respondents was conducted in order to check for adequacy and intelligibility.

RESULTS AND DISCUSSION

First, an exploratory factor analysis was conducted to determine the perception of FFs by using young generation data from the survey. Second, a two-sample t-test for a difference in mean was calculated to compare responses for gender regarding their associations with FFs and preferences regarding individual products (Table 2). From the survey results, two questions in particular were applied to develop a set of tabular results: question 6 (What do you associate with FFs?) and question 11 (Please point out how much you agree or disagree with the following statements about FFs in Poland). These questions correlated with RQ1 by focusing on how respondents perceived family-owned businesses in Poland. Examining the set of responses of young consumers, three factors (1-3) have been identified and interpreted as positive (Factor 1), negative (Factor 2), and neutral (Factor 3). The features that made up the positive Factor 1 (28%) for building relationships between FFs and young consumers included reliability, passing on the FF from generation to generation, operating on the market for a long time, Polish origin of products, tradition, a 'human' approach to clients, high quality of products and careful workmanship, and finally, the fact that FFs are good for the local community. These results lead to the conclusion that young consumers perceive family businesses as dependable suppliers of goods and services of decent and high quality, thus confirming H1. The negative Factor 2 (11%) featured three points: the possibility of incompatibilities of the family owning the FF, underinvestment, and nepotism. The neutral factor Factor 3 (13%) – which can be defined as a neutral attitude of respondents to FFs – included statements such as: FFs must be supported because they pay taxes in Poland, Poles lack awareness about supporting Polish capital, FFs should promote the fact that they are family-owned, and customers are willing to be informed that a FF produced a product. Young consumers that did not conform to any one of the three factors equalled 48%.

In terms of RQ2, the identified features could be extracted from the positive Factor 1 in Table 2, including: high quality products and careful workmanship (0.81), tradition (0.78), 'human' approach to the client (0.78), and reliability (0.75). For young consumers, the information that products are Polish and homemade and the fact that FFs are good for the local community are also important (0.72). Moreover, young buyers further emphasized that family businesses developed from generation to generation (0.71), and thus, they maintained a long presence on the market (0.68). In terms of gender, we determined differences in the perception of FFs between men and women (Table 3). The positive features of FFs for young men showed a strong correlation towards companies being managed by family members and that goods and services are slightly more expensive. These associations go together with men's belief in the reliability of goods and services offered by FFs. In turn, women focused their on organic products offered by FFs.

In order to expand the analysis, we looked at the similarities and differences in the perception of FFs by gender to examine RQ3. We conducted a two-sample t-test for a difference in mean for question 6 of the survey. The results showed that men more strongly than women associate FFs with reliability, business development from generation to generation, operating on the market for a long time, tradition, and a 'human' approach to clients. Moreover, women more than men positioned the key problem associated with FFs with an incompatibility in the family core. For the remaining features of FFs, the differences in their association by gender were not statistically significant. The results indicated that

Table 2. Factor analysis of the perception of FFs by young consumers aged 16-25†

Respondents aged 16-25	All			Men			Women		
Variables characterizing perception of FFs	Fa. 1	Fa. 2	Fa. 3	Fa. 1	Fa. 2	Fa. 3	Fa. 1	Fa. 2	Fa. 3
Reliability	**0.75**	-0.04	0.19	**0.80**	0.01	0.17	**0.70**	-0.09	0.19
Relations, family managed	0.52	0.05	0.15	**0.72**	-0.05	0.14	0.20	0.12	0.43
Generational business practice	**0.71**	0.02	0.09	**0.75**	0.00	0.01	0.58	0.08	0.35
Long term operation	**0.68**	-0.04	-0.05	0.63	0.07	0.08	**0.71**	-0.07	-0.10
Organically made products	0.63	0.07	0.07	0.60	0.28	0.14	**0.71**	-0.13	-0.06
Goods, services more expensive	0.45	0.40	-0.01	**0.65**	0.33	-0.04	0.19	0.45	0.19
Polish, homemade products	**0.72**	0.04	0.23	**0.69**	0.16	0.15	**0.73**	-0.05	0.34
Tradition	**0.78**	-0.08	0.22	**0.79**	-0.07	0.10	**0.77**	-0.08	0.34
Internal family business problems, incompatibility	-0.05	**0.76**	-0.11	0.03	**0.75**	-0.09	-0.10	**0.75**	-0.15
Underinvestment	-0.04	**0.77**	0.06	-0.03	**0.77**	0.02	-0.02	**0.75**	0.01
Nepotism, favouring of the family	0.04	**0.78**	-0.12	0.12	**0.74**	-0.09	-0.04	**0.79**	-0.10
'Human' approach to customers	**0.78**	0.00	0.19	**0.72**	0.02	0.26	**0.83**	0.04	0.17
High quality products and craftmanship	**0.81**	0.01	0.10	**0.82**	0.04	0.07	**0.81**	0.04	0.15
Good for local community development	**0.72**	0.00	0.24	**0.71**	-0.04	0.21	**0.74**	0.02	0.29
FFs must be supported because they pay taxes in Poland	0.30	-0.09	**0.78**	0.26	-0.11	**0.74**	0.31	-0.09	**0.76**
Poles are not aware of supporting Polish capital	-0.02	0.09	**0.66**	0.02	0.08	0.64	-0.06	0.00	0.63
FFs support each other and cooperate closely with each other	0.39	-0.02	0.14	0.19	0.14	0.28	0.61	-0.10	-0.03
FFs promote they are family owned	0.15	-0.12	**0.77**	0.07	-0.17	**0.70**	0.21	-0.09	**0.80**
When shopping, people should know that the product comes from FF	0.27	0.02	**0.74**	0.24	0.09	**0.75**	0.25	-0.05	**0.72**
FF products are generally purchased by older clientele	-0.02	0.47	0.22	0.01	0.52	0.32	-0.02	0.34	0.02
Eigenvalues	5.67	2.20	2.57	5.87	2.29	2.46	5.51	2.16	2.91
Share of explained variance	0.28	0.11	0.13	0.29	0.11	0.12	0.28	0.11	0.15

† Varimax method used

Source: own elaboration with Statistica.

Table 3. Associations of young consumers aged 16-25 with FFs†

What do you associate with FFs?	Mean for men	Mean for women	Stat. t	p-value H_A: $\mu_M \neq \mu_F$	p-value H_A: $\mu_M < \mu_F$	p-value H_A: $\mu_M > \mu_F$
Reliability	3.52	3.30	2.16	**0.032**	0.984	**0.016**
Relations, managed by family members	3.81	3.86	-0.45	0.655	0.328	0.672
Passes from generation to generation	3.99	3.83	1.41	0.161	0.920	**0.080**
Operates on the market for a long time	3.44	3.15	2.34	**0.020**	0.990	**0.010**
Organic products	3.10	3.05	0.43	0.666	0.667	0.333
Goods, services slightly more expensive	3.44	3.50	-0.58	0.562	0.281	0.719
Polish, homely products	3.48	3.50	-0.15	0.877	0.438	0.562
Tradition	3.93	3.63	2.76	**0.006**	0.997	**0.003**
With problems (incompatibilities in the family)	2.52	2.71	-1.52	0.130	**0.065**	0.935
Underinvested	2.78	2.84	-0.55	0.580	0.290	0.710
Nepotism (favouring family members)	3.03	3.19	-1.18	0.240	0.120	0.880
'Human' approach to the client	3.60	3.41	1.74	**0.082**	0.959	**0.041**
High quality products, careful workmanship	3.44	3.30	1.23	0.219	0.891	0.109
Good for the local community	3.59	3.56	0.26	0.796	0.602	0.398

† Means for genders and results of two-sample t-test for a difference in mean

Source: own elaboration with the R environment.

men perceive family businesses better than women, which supports hypothesis H2. The results for RQ3 considered gender difference sensitivity of producers for the sector in which FFs operated. We conducted a two-sample t-test to calculate the difference in mean for question 1 (While buying products from the following categories, do you pay attention to the manufacturer or brand owner?) (Table 4). It turned out that men pay

more attention to the manufacturer and brand owner than women. In particular, statistically significant differences concerned the following products: food, clothing and footwear, toys and supplies for children, cosmetics, but also gastronomy and catering.

Table 4. Importance of the manufacturer brands of products and services from separate categories of people aged 16-25†

While buying products from the following categories, do you pay attention to the manufacturer/brand owner?	Mean for men	Mean for women	Stat. t	p-value H_A: $\mu_M \neq \mu_F$	p-value H_A: $\mu_M < \mu_F$	p-value H_A: $\mu_M > \mu_F$
Food products	4.21	3.93	2.56	**0.011**	0.994	**0.006**
Clothing, footwear	4.19	3.94	2.16	**0.032**	0.984	**0.016**
Toys and supplies for children	4.10	3.68	2.55	**0.011**	0.994	**0.006**
Furniture, interior items	3.61	3.77	-1.12	0.263	0.131	0.869
Construction, renovation, transport services *etc.*	4.27	4.08	1.24	0.216	0.892	0.108
Craft services, *e.g.* optician, hairdresser, watchmaker	3.90	3.72	1.23	0.220	0.890	0.110
Cosmetics	4.43	3.74	6.06	**0.000**	1.000	**0.000**
Hotel services, guest houses, agritourism	4.04	3.92	0.73	0.465	0.767	0.233
Gastronomy, catering	4.08	3.79	2.23	**0.027**	0.987	**0.013**

† Means for gender and results of two-sample t-test for a difference in mean
Source: own elaboration with the R environment.

Results obtained from the research clearly confirmed that Generation Z consumers notice the distinct role of FFs, which combined three elements: long-term orientation on the market, family ownership (firm development from generation to generation), and commitment to the local community (Aragón-Amonarriz *et al.*, 2019; Deloitte, 2019; Wach, 2020). Conclusions from the literature indicated that FFs generally do not engage in formal customer relationship management initiatives (Cooper *et al.*, 2005; Miller *et al.*, 2001). This situation seems to be worse in Poland where FFs do not emphasize their family nature in marketing communication due to the lack of awareness or conviction (Leszczewska *et al.*, 2017). This significant gap should be treated as a great opportunity for family-owned businesses to build powerful messages addressed to different segments of society. Specifically, the need to develop a communicative message to young people is vital for the prospect of future buyers in Poland (Eurostat, 2020). Our findings demonstrate that young consumers, aged 16-25, have a strong positive approach towards FFs. Even though young consumers are generally sceptical, doubting, and distrustful, they treat FFs as reliable partners (Nikodemska-Wolowik *et al.*, 2019; Marjanski, 2015) and as more customer-oriented than non-family businesses (Cooper *et al.*, 2005). Generation Z consumers clearly stated that while shopping, it was worth knowing that products that originate from family-owned companies should be advertised as such – as they would view this message positively (Alonso Dos Santos *et al.* 2020).

Moreover, the research conducted by Alonso Dos Santos *et al.* (2020) indicates that the 'family attribute' increases trust and purchase interest among consumers. As such, the 'family nature' of FFs can become a fundamental and exceptional resource thanks to their unique and inimitable history and identity (Binz Astrachan *et al.*, 2018). These arguments can be used to develop exclusive and sustained competitive advantage and differentiation (Binz Astrachan *et al.*, 2013; Shen &-Tikoo, 2020; Lude & Prügl, 2018). However, others clearly stress that the distinct communication of this fact is still strongly needed (Shen & Tikoo, 2020). As such, key attributes based on the findings should be used while preparing a communication message. Firstly, FFs should highlight Polish and homemade products of high quality and careful workmanship, together with their tradition and reliability (Wielsma *et al.*, 2019; Zanon *et al.*, 2019). In Poland, the trend of returning to tradition has been clearly visible for several years now, which is especially visible in the food sector, in which natural ingredients, traditional recipes, and own production methods are welcome and even expected (Nikodemska-Wolowik & Bednarz, 2019; Nikodemska-Wołowik *et al.*, 2020). Moreover, young buyer attention is also attracted to the special 'human' approach to customer care. This is often found in FFs that operate on the market for

a long-time and develop from generation to generation, thus creating a customer-friendly association (Cooper *et al.*, 2005). As a result, FFs should also stress their care for and embeddedness in the local community. Young men are linked to information about relationships internally managed within the community at large. This can be stressed by buyers who accept goods and services at a slightly higher price than usual (Carrigan *et al.*, 2008). In sum, the above attributes should be treated by recipients as added value to the FF brand message (Binz Astrachan *et al.*, 2019).

CONCLUSIONS

At the community level, the research could be extended to external influencers like peers, friends, and the mass media since they also play a fundamental role in the process of influencing young customers. The expectations of young people regarding products and brands change more frequently than changes in general skills and attitudes (Moore-Shay *et al.*, 1988). An appropriately long viewed research perspective should be adopted to notice these changes. The combination of all external influencers may lead researchers to an in-depth scientific model that describes the specifics of the Generation Z segment, one useful also in relation to FFs. Incidentally, this may have a theoretical implication both for theoreticians and practitioners, especially in the context of building trust and commitment. We should not overlook the fact that FFs are also associated with nepotism, internal struggles (*e.g.* incompatibility issues in the family), and underinvestment. These negative connotations were identified only by a small number of respondents; however, it would be valuable to further explore the reasons for these opinions so as to understand their sources. Another issue that was not investigated was the question of how to communicate with young buyers. Communication with young buyers can happen via various channels (*i.e.* directly or indirectly), media, and devices because young people are active users of social media (Bilgihan *et al.*, 2014; Zhang *et al.*, 2017) and new communication technologies that were always present in their lives (Parry *et al.*, 2019; Bartosik-Purgat, 2019a). Thus, we should concentrate on interactivity as the main feature of attracting young buyers, giving them the ability to respond quickly, send feedback, and express opinion (Andersen, 2001). This manner of communication will help FFs to build relationship, trust, and commitment with young buyers (Balaji *et al.*, 2016; Hänninen *et al.*, 2017), which will in turn significantly expand the research area and provide a fuller picture for FFs' development.

While the study provides useful insights about perception of FFs by Generation Z consumers, the study limitations include the relatively small study sample specific to Generation Z. Expanding the sample size and redefining young consumers to include Generation Y would be a noteworthy adjustment of our study, as it would allow for comparative findings between the two segments since portions of Generation Y will soon begin to start having families and children of their own (Kvidahl, 2015). Finally, it would be interesting to determine and describe any differences between these two segments and to evaluate gender differences in correlation to age since a sixteen- and twenty-five-year-old can have very different views and needs. To further strengthen the methodology, future research should define additional characteristics in terms of relationships based on trust and commitment towards FFs. Consumer behaviour research can differ depending on such definitional differences. However, exceptional and favourable conditions should not allow FFs to feel overly comfortable. Family businesses must recognize well in advance that younger generations will also demand improved service and product development, along with an efficient offer and communication message addressed directly to them. Only such an awareness will allow FFs to gain and consolidate market share and competitive advantage.

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Talented enough to be a business leader? An alternative approach to entrepreneurs' traits

Przemysław Zbierowski, Milena Gojny-Zbierowska

ABSTRACT

Objective: The objective of the article is to identify character strengths that contribute to one's success at various stages of the development of an entrepreneurial venture: opportunity recognition, the refinement of business concept, resource acquisition, survival, and growth.

Research Design & Methods: The article is conceptual in nature. We propose a framework of character strengths and stages of development of the entrepreneurial venture, which is based on an exhaustive literature review.

Findings: The article proposes that different character strengths contribute to one's success at various stages of venture development: curiosity, creativity, open-mindedness, and hope at the stage of opportunity recognition; bravery, integrity, love of learning, social intelligence, and kindness at the stage of refinement of business concept and resource acquisition; persistence, self-regulation, zest, humour, leadership, teamwork, and fairness at the stage of survival and growth. Moreover, We propose that perspective allows entrepreneurs to accumulate experience and recognize and exploit further opportunities.

Implications & Recommendations: The study has implications mainly for entrepreneurs (recommendation for higher self-awareness) and investors (investment in entrepreneur's strength bundled with investment in the business).

Contribution & Value Added: This study adds to the understanding of mechanisms through which personal differences influence entrepreneurial actions and their outcomes. It adds to our understanding of specific entrepreneurship phenomena like entrepreneurial alertness or business planning. Thirdly, it contributes to the understanding not only of market entry but also of pre-entry and post-entry phenomena.

Article type: conceptual article

Keywords: entrepreneurial process; talents; traits; VIA; character strengths

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INTRODUCTION

Entrepreneurship is undoubtedly important for economy and society (Meyer & Krüger, 2021). If we agree with Shane and Venkataraman (2000) that entrepreneurship is the identification and exploitation of business opportunities within the individual-opportunity nexus, then how important is the 'individual' in that dyad? This question was posed decades ago but was later abandoned due to the false assumption that personality research could not offer anything useful (Gartner, 1988; Aldrich, 1999). However, during the last decade we have experienced a renaissance of research on entrepreneurs' personality (Frese & Gielnik, 2014; Castellanos & George, 2020; Tshikovhi, Dziike, & Moyo, 2021; Wardana, Narmaditya, Wibowo, Fitriana, Saraswati, & Indriani, 2021). The rekindled scholarly interest in the matter was caused by the more fine-tuned approach to traits, which separated high and low matches by taking into consideration proximal and distal traits – and by more sophisticated methods of investigation. The research effort

resulted in the discovery of a set of personality drivers of business activity. Nevertheless, Frese and Gielnik (2014) indicate two missing links. First is the possible mediator between personality traits (distal and proximal) and entrepreneurship outcomes. Second is the difference in importance of various traits at stages of entrepreneurial activity: opportunity identification, the refinement of business concept and resource acquisition, survival and growth. We address these suggestions by indicating positive psychology-based construct of character and signature strengths as drivers of entrepreneurial behaviour. Therefore, the main question of this article is: Which character strengths contribute to entrepreneurship at various stages of venture development? The main purpose of this article is to identify those strengths based on literature review and scarce empirical evidence.

This study contributes to the literature in entrepreneurship in a couple of ways. First, it adds to the understanding of mechanisms through which personal differences influence entrepreneurial actions and their outcomes, as suggested by Mischel and Shoda (1998). We do it by considering a number of talents and their possible contribution to business activities. Second, as suggested by Frese and Gielnik (2014), this study adds to the understanding of specific entrepreneurship phenomena like entrepreneurial alertness or business planning. Third, it contributes to our understanding of not only market entry but also some pre-entry and post-entry phenomena (Levie & Autio, 2011). Finally, the article contributes to the broader literature on the use of signature strengths by analyzing the potential effect of certain character strengths on the entrepreneurial process.

The article is conceptual in nature, and it is structured in the following way. After presenting the method of the investigation, we present the theoretical foundations of using the category of strength in psychology and management research. Taking the person-entrepreneurship perspective, we begin by referring to research on personality of entrepreneurs. Then, we turn to even more proximal traits of entrepreneurs: their talents and strengths. We present the framework of virtues and character strengths so as to turn to considerations of their role in entrepreneurship, and education plays a very crucial role in this process (Solesvik, 2019; Rodríguez-Castro & Aparicio, 2021). The essential part of the article lies in the conceptual framework of the contribution of strengths at various stages of venture development. The article concludes with practical implications, study limitations, and future research directions.

RESEARCH METHODOLOGY

This article is conceptual in nature. Due to the very limited number of studies in this area, the applied method was exhaustive literature review. We used a variety of search methods (Web of Science, Ebsco, Google Scholar) to identify the scholarly publications related to the possession and use of strengths by entrepreneurs. We used search words ‘strength,’ ‘character strength,’ ‘entrepreneur,’ ‘business owner,’ and related terms. Then, we filtered and excluded the publications that related to ‘strength of the character’ rather th an to ‘character strength.’ This search yielded only a very limited number of articles. Therefore, no selection criteria were applied. Below, we scrutinise all scholarly publications that refer to entrepreneurs’ strengths.

LITERATURE REVIEW AND THEORY DEVELOPMENT

Character strengths as proximal personality traits

Most studies that consider the role of personality traits in entrepreneurial behaviour and success/growth concentrate on general personality traits (Wach & Głodowska, 2021), mostly dimensions of personality frameworks such as ‘Big Five’ (‘distal variables’); some take into consideration specific traits such as self-efficacy, achievement motivation, proactiveness, risk propensity (often considered together with ‘Big Five’ as ‘Big Five+’), innovativeness, stress tolerance, and autonomy or locus of control (‘proximal variables’) as explained by Rauch and Frese (2007); creativity as a personality trait is rarely studied in entrepreneurship research. Specific traits might lead to more specific processes, while proximal individual differences are closer to behaviour and more powerful predictors of behaviour than distal individual differences (Rauch & Frese, 2000; 2007). Moreover, Rauch and Frese (2007) propose a framework in which

proximal variables (specific traits) result from distal variables (the Big Five dimensions). Their study further unpacks the mechanism through which personality affects entrepreneurial activity. Therefore, character strengths replace "goals, growth goals, visions and action strategies" presented in the model by Rauch and Frese (2007) as mediators between proximal (specific) personality traits, along with business creation and success. Rauch and Frese (2007) suggest that variables that are even more proximal to behaviour (such as processes related to personality: cognitive, or self-regulatory processes) than specific personality traits might lead to even stronger relationships. The application of character strengths framework to 'personality of entrepreneurship' research might bring the benefit of a more fine-grained understanding of the effect of personality on entrepreneurial actions and their results. In this vein, signature strengths would be even closer to behaviour than 'proximal variables.'

We consider character strengths as talents and place 'strengths of the character' in the vicinity of possible approaches to talents (natural preconditions, mastering the capability, engagement and motivation, strengths of character; Heslin *et al*., 2005; Pfeffer & Sutton, 2006; Nijs *et al.,* 2014). However, there are a few approaches to strengths of character. Miglianico *et al.* (2020) compare three leading frameworks of strengths: Buckingham's and Clifton's (2001) StrengthsFinder with 34 strengths, Peterson's and Seligman's (2004) character strengths with 24 strengths grouped within 6 virtues, and Linley's (2008) Strengths Profile with 60 strengths. The most widespread Peterson and Seligman's (2004) framework offers a number of measures ranging from 72 to 240 items with Cronbach's alpha estimates ranging from 0.62 to 0.90 (0.75 to 0.90 for the 240-item scale). Furthermore, Peterson (2006) maps character strengths in a two-dimensional space according to their origin in either heart or mind, along with a focus on self or others. The farther apart the two strengths are, the less likely the same person habitually shows both of them.

Allow us to highlight three features of character strengths. First, there is a consensus that strengths are naturally present within individuals. Some authors suggest that signature strengths are anchored in neural networks, which would explain the ease with which they are used by a person and the sense of authenticity and energy resulting from their use (Buckingham & Clifton, 2001; Linley, 2008). Second, while strengths are relatively stable, they fluctuate and can be developed continuously over the course of a lifetime (Biswas-Diener, 2006; Park *et al.*, 2006). However, some authors claim that strengths fulfil the criterion of personality trait raised by Rauch and Frese (2007), Buckingham and Clifton, (2001) and Linley (2008). We may at least posit that strengths are grounded in personality, and individuals with different personalities use different strengths (Bakker *et al.*, 2019). Third, levels of character strengths vary across countries as cultural institutions that encourage strengths and virtues are identified in many different cultures (Biswas-Diener, 2006).

The framework of character strengths is grounded in positive psychology, which is the scientific study of what is best in people and of characteristics and conditions of life that contribute to good life (Seligman & Csikszentmihalyi, 2000). Peterson and Seligman (2004) propose a framework of twenty-four character strengths (e.g. appreciation of beauty and excellence, perseverance, love, hope, zest) grouped within six virtues (wisdom and knowledge, courage, humanity, justice, temperance, and transcendence) based on works in various areas (religion, philosophy, psychology, culture). Character strengths are then defined as positively valued trait-like individual differences with demonstrable generality across different situations and stability across time (Peterson & Seligman, 2004). Strengths are ways of displaying virtues, e.g. courage can be achieved by the display of perseverance (goal orientation, overcoming of obstacles, finishing what is started), bravery (facing fears, overcoming challenges and adversity, standing up for what is right, not shrinking in the face of pain or inner tension or turmoil), honesty (high integrity and authenticity, telling truth even when it hurts, presenting to others in a sincere way, taking responsibility for actions), and zest (enthusiasm toward life, high energy and activation, using one's energy to the fullest degree). The framework is known under the name of Values in Action (VIA) classification. Character strengths that are the personally highest strengths are defined as "signature strengths." Seligman states that using signature strengths "leads to more positive emotions, more meaning, more accomplishment, and better relationships" (2011, p. 24). A full framework of virtues and character strengths is presented in Table 1 below.

Table 1. Virtues and character strengths: a theoretical model

Transcendence	Temperance	Justice	Humanity	Courage	Wisdom
Appreciation of beauty & excellence	Forgiveness & mercy	Teamwork	Love	Bravery	Creativity
Spirituality	Humility & modesty	Fairness	Kindness	Persistence	Curiosity
Gratitude	Prudence	Leadership	Social intelligence	Integrity	Open-mindedness
Hope	Self-regulation	–	–	Zest	Love of learning
Humour	–	–	–	–	Perspective

Source: own elaboration based on Peterson and Seligman (2004).

Results of the literature review on strengths use at the workplace indicate that strengths use is associated with job satisfaction, work engagement, well-being, and work performance (Miglianico *et al.*, 2020). However, most literature to date focuses on strengths development interventions rather than on strengths possession and use as such. Earlier reviews (Quinlan *et al.*, 2012; Ghielen *et al*., 2017; Coppola et al., 2018) focus on strengths development interventions studies conducted mainly with experimental and quasi-experimental designs. They find that such interventions positively influence various measures of well-being (e.g. positive affect, life satisfaction, depression), vitality, flow, passion and engagement at work, job outcomes (e.g. work performance, work engagement, lower level of absenteeism), personal growth initiative and group outcomes (e.g., information sharing, class cohesion). The effect of strengths use on work performance and well-being is explained by various theories including the broaden-and-build theory (Fredrickson, 2001) and the self-determination theory (Ryan & Deci, 2000). Forest *et al*. (2012) prove that the explanation (and mediator) of the effect of strengths use on well-being is harmonious passion.

Moreover, strengths use is associated to the sense of meaning at work (Harzer & Ruch, 2013; Littman-Ovadia *et al*., 2017; Littman-Ovadia & Steger, 2010; Nagy et al., 2021), satisfaction and pleasure (Harzer & Ruch, 2013), positive affect such as joy, pride, or enthusiasm (Cable *et al*., 2015; Littman-Ovadia *et al*., 2017), the cognitive component of life satisfaction (Dubreuil *et al*., 2016), satisfaction with environment for talents development (Oliinyk *et al.*, 2021), cultural constituents of the social capital restoring (Kaasa, 2019) and well-being (Meyers & Von Woerkom, 2017). Heintz and Ruch (2019) attempt to study which specific strengths (in Peterson and Seligman's 2004 framework) refer most strongly to job satisfaction. Their study shows that – similar to life satisfaction – zest, hope, curiosity, love, and gratitude – and emotional strengths in general – refer most strongly to overall job satisfaction. The relationship of the strengths to job satisfaction differs depending on occupation and age.

Strengths in entrepreneurship research

In this section we present the results of review of literature of character strengths of entrepreneurs. Due to the very limited number of studies in this field the method we applied was exhaustive literature review.

The empirical attempts to bridge the positive psychology and entrepreneurship domains by determining which character strengths are most strongly linked to entrepreneurship are very rare and raise more questions than they answer. In his study of 420 undergraduate and 250 MBA students, Hmieleski (2008) applies the Values in Action (VIA) scale to measure signature strengths, along with entrepreneurial intention and entrepreneurial alertness. Hmieleski concludes that the results failed to uncover a global relationship of specific character strengths with entrepreneurial intentions and alertness. However, some relationships were found with the sample split by sex. For men, there was a significant positive relationship between virtues of wisdom and knowledge (Hmieleski inappropriately names them "character strengths") with entrepreneurial intention and alertness. For women, the relationship between those variables was negative and highly significant. Among women the relationship between the virtue of justice and entrepreneurial intention and alertness was significant and positive, while among men the same relationship was negative and highly significant. Differences in gender percep-

tion of values of work and entrepreneurial can be significant, however, sometimes they have not relevant evaluation by society due to the gender discrimination in economic relations (Bilan *et al.*, 2020; Fernández Puente & Sánchez-Sánchez, 2021).

The results of the study conducted on a sample of 200 entrepreneurs and expert advisors to entrepreneurs by Worrell (2009) indicate that entrepreneurs show a unique blend of character strengths. The top five character strengths for entrepreneurs in his sample are: authenticity, leadership, fairness, gratitude, and zest. Moreover, Worrell claims that the above is not just a list most common strengths but a set that spreads across various areas of the map proposed by Peterson (2006; see below). The framework proposed by Peterson spans between two dimensions: heart-mind; focus on self and focus on others. Heart strengths refer to emotional states, while mind strengths are more intellectual in nature. Focus on self and on others reflects either interpersonal or intrapersonal nature of a strength. The top five character strengths for entrepreneurs are evenly divided between the heart and the mind sides of this diagram. Interestingly, they are skewed towards a focus on others, as opposed to a focus on self. Surprisingly, some character strengths commonly associated with entrepreneurial action – such as creativity – did not score high in Worrell's results. In fact, creativity was one of the bottom five entrepreneurs' character strengths. However, some note that Worrell used the VIA Brief Inventory of Strengths, which uses only one item to measure each strength.

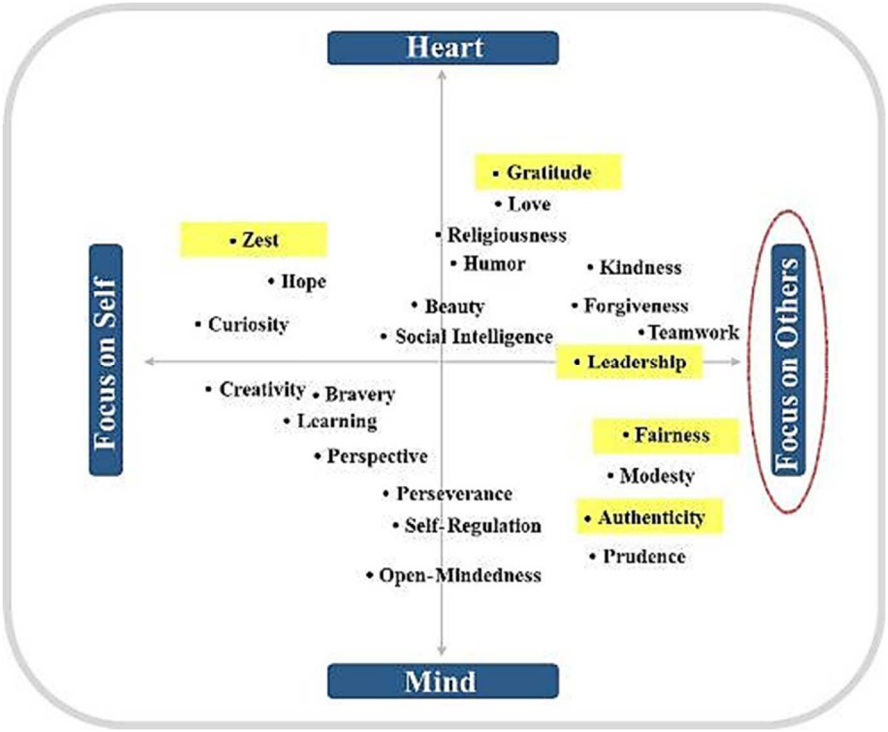

Figure 1. Character strengths of entrepreneur
Source: Worrell (2009, p. 15).

Moreover, Worrell studies the consistency of interest and persistence of interest: grit. Grit captures perseverance and passion for long-term goals: working strenuously toward challenges, maintaining effort and interest over years despite failure, adversity, and plateaus in progress (Duckworth *et al.*, 2007). In comparison to the general population, entrepreneurs score high on grit and exceptionally high on persistence of effort.

Both of the above articles shed some light on character strengths of entrepreneurs, but they are laden with serious limitations. First of all, in both cases the sample has a convenient character. Hmieleski (2008) studies students and Worrell (2009) samples 33 entrepreneurs and 174 expert advisors to entrepreneurs. The justification for the latter choice is that expert advisors may have more knowledge on character strengths of entrepreneurs, plus their opinion is not burdened by

limitations of self-assessment. Moreover, all of the studied entrepreneurs were CEOs of successful companies and all of them were male. Secondly, Hmieleski focuses on relationships between virtues and entrepreneurship instead of relationships between individual character strengths and entrepreneurship. As virtues are aggregates of 3-5 character strengths, the application of that method limits interpretative opportunities. Finally, Hmieleski measures entrepreneurial intentions and alertness, instead of actual entrepreneurial action.

More recently, using the approach of person-entrepreneurship fit, Hmieleski and Sheppard (2019) studied the effect of strengths of creativity and teamwork on subjective well-being and performance of female and male entrepreneurs. The choice of those particular two strengths based on (positive) expectancy violation theory. Results show advantages of creativity (agentic strength) for women and teamwork (communal strength) for men in achieving high levels of subjective well-being and new venture performance. That effect is mediated by perceptions of person-work fit.

Some of the previous research concerns entrepreneurship-related behaviour at the workplace. Lee *et al.* (2016) suggest that developing strengths leads to finding more creative solutions to problems. Dubreuil *et al.* (2014) claim that this approach influences better adaptation to change. Moreover, results suggest that these relations are often mediated by positive emotions and engagement (Lavy & Littman-Ovaida, 2017; Littman-Ovadia *et al*., 2017; Van Woerkom & Meyers, 2015; Novak et al, 2021). The topic of strengths and talents of entrepreneurs has been also a matter of broader research unrelated to the particular framework of virtues, character, and signature strengths (Waters-Sobkowiak *et al.*, 2018; Harris, 2019; Moayedfar & Chafi, 2019; Pauli & Pocztowski, 2019; Dissanayake, 2020).

Some authors use character strengths at collective level as predictors of cognitions and behaviours. For instance, Park and Peterson (2010) find that urban-level "head strengths" (intellectual and self-focused strengths such as curiosity and creativity) predict creativity and innovativeness, and generally that urban-level character strengths predict voting style. Similarly, on urban level, Ebert *et al.* (2019) study courage as an antecedent of business creation and survival. Park, Peterson, and Seligman (2006) and McGrath (2014) point to high consistency in character strengths across countries but also to the fact that some of the character strengths show some across-country variance and within-country consistence. Also Hofstede and McCrae (2004) confirm the appropriateness of using country-level personality-based measures as they find that mean personality scores from 33 countries are significantly and substantially correlated with culture dimension scores.

Strengths at stages of venture development

As entrepreneurial process is a multi-stage one (McMullen & Shepherd, 2006), the important question is: Which strengths contribute to the success of the entrepreneur at various stages of the entrepreneurial process: opportunity identification, refinement of business concept and resource acquisition, survival and growth? Each of the stages is characterized by specific activities, so we may assume that entrepreneurs equipped with different strengths might be more or less effective at each of them. Even though some of the strengths are important at all stages of venture development, we try to attribute each strength to only one stage for clarity.

At the stage of opportunity recognition, the important strengths are primarily those grouped within the virtue of 'wisdom.' Baron and Ensley (2006) and Baron (2006) argue that the recognition of new business opportunities often involves pattern recognition: the cognitive process through which individuals identify meaningful patterns in complex arrays of events or trends. This process is facilitated by open-mindedness: the ability to look at the world from various perspectives. However, first of all, the starting point for opportunity recognition is entrepreneurial alertness which involves three elements: scanning and searching, association and connection, evaluation and judgment (Tang *et al*., 2012; Ganacarczyk & Ujwary-Gil, 2021; Wach, Głodowska & Maciejewski, 2022). We argue that the strength necessary for entrepreneurial alertness to exist is curiosity, and specifically interest in the outside world as it allows one to explore it for new opportunities. This is supported by some authors who introduce the concept of entrepreneurial curiosity (Jeraj & Antoncic, 2013).

As Sarasvathy *et al.* (2003) point out, opportunity may have different forms and involves processes of recognition, discovery, and creation. We argue that for the last type of opportunity the strength of crea-

tivity is especially important. It allows one to propose novel and useful solutions, products, and services. For the opportunity to be recognized and used, the necessary strength is hope, which allows one to create a positive image of the future and perception of the feasibility of a task. Therefore, we argue that:

Proposition 1: Curiosity, creativity, open-mindedness, and hope are the strengths that contribute to successful opportunity recognition.

Hope is the strength that might allow entrepreneurs to transit from the stage of opportunity recognition to refinement of business concept and resource acquisition. Especially the component of hope – namely a willingness to find multiple ways to exploit the opportunity – takes part in the transition. Moreover, hope allows for the internalization of the capacity of using an opportunity. Furthermore, opportunity exploitation involves the willingness to take risks, which corresponds to the strength of bravery as there is strong evidence that entrepreneurs tend to underestimate risk compared to managers (Palich & Bagby, 1995; Dankiewicz *et al*., 2020).

From the perspective of person-entrepreneurship fit, it is important that the activity that a business owner undertakes is aligned with personality. This is where the strength of integrity comes into play. An entrepreneur must be aware of own personal characteristics and must assure that they are reflected in the venture. The process of the refinement of business concept is obviously dynamic and involves rapid learning by the business owner. Therefore, the strength of the love of learning is critical for its success as it allows one to absorb the necessary knowledge and skills and iterate the business concept so as to grasp it masterfully.

For the process of resource acquisition, the strengths that are especially relevant are those related to building social capital: social intelligence and kindness. They allow one to build social relations that might be then used to acquire resources necessary for the exploitation of an opportunity (Nieto & González-Álvarez, 2016). Social intelligence allows one to adjust to social situations and various stakeholders. Kindness facilitates building relationships based on reciprocity. Therefore, we argue that:

Proposition 2: Bravery, integrity, the love of learning, social intelligence, and kindness are the strengths that contribute to the successful refinement of business concept and resource acquisition.

At the stage of survival and growth, the strengths that are the most relevant for success are persistence, self-regulation, humour, zest, and the strengths grouped under the virtue of humanity: teamwork, fairness, and leadership. Persistence allows one to keep going when with a goal in mind even in the face of obstacles. It also helps one to finish what one started. Self-regulation refers to persistence and helps us to manage our vices and habits. It is also useful in negotiations as it allows us to stay calm under pressure an manage impulses and emotions. Zest is useful for staying enthusiastic towards a business activity and being energetic and activated. Zesty entrepreneurs use their energy to the fullest degree.

Managing a business is also a social process, so humanity-related strengths are critical for the success. Leadership and fairness are necessary to manage employees, while teamwork is particularly useful in business partnerships. Finally, as entrepreneurs themselves claim, humour is quite important in daily business practice (Lin, Li, & Han, 2018). It allows one to cope with stress and sometimes is the last resort in the face of adversity. Taking the above into consideration, we propose that:

Proposition 3: Persistence, self-regulation, zest, humour, leadership, teamwork, and fairness are the strengths that contribute to the survival and growth of entrepreneurial ventures.

As Baron and Ensley (2006) empirically prove, the experience that entrepreneurs gain allows them for better recognition of opportunities. We argue that the strength facilitating that process is perspective or, more specifically, the ability to use experience to link seemingly unrelated events. This way, through perspective and experience, entrepreneurs can close the cycle and build an upward spiral of increasingly effective opportunity recognition, refinement of business concept and resource acquisition, along with survival and growth. Therefore, we argue that perspective is the strength that allows entrepreneurs to accumulate the entrepreneurial experience and to become successful serial or portfolio entrepreneurs:

Proposition 4: Perspective contributes to the successful opening of multiple cycles of entrepreneurial processes.

CONCLUSIONS

In this article we attempted to conceptually extend the understanding of the effect of personality traits on success in running a business at various stages of venture development. We sought to attribute the character strengths that are most helpful in opportunity recognition, the creation of business model and resource acquisition, along with daily business practice. In effect, our study produced a framework of character strengths and stages of venture development. However, we must address here why the framework does not consider some character strengths present in the literature. First of all, entrepreneurs are characterized by low level of most of the strengths grouped under the virtue of temperance: forgiveness, modesty, and prudence. There is evidence that very often business owners are overconfident (Koellinger *et al.,* 2007). Second, there is strong evidence that they are not prudent and underestimate risks (Palich & Bagby, 1995). Other strengths that are absent from the framework are those grouped within the virtue of transcendence: gratitude, appreciation of beauty, excellence, and spirituality. These strengths do not strongly link to any of the stages of venture development, although there is some evidence that spirituality might be generally important to running a business (Ganzin, Islam, & Suddaby, 2019).

Notably, the diversity of entrepreneurs, opportunities, and actions demands further consideration. For instance, various personalities might derive more or less benefit from various forms of business planning. Therefore, a question arises regarding the role of planning in utilizing signature strengths. Do entrepreneurs with various signature strengths derive different benefits (or suffer from disadvantages) of various forms of business planning? This would require us to ask about business planning and its forms. In this regard, Frese *et al.* (2000) differentiate "complete planning," "critical point planning," "opportunistic strategy," and "reactive approach." Moreover, in the research of the predictive role of personality on entrepreneurial behaviour, we must consider the situational parameters which are known to increase the predictive power of traits (Magnusson & Endler, 1977). This could include the need for relationships with customers that e.g. could require a high degree of kindness. Such a situational approach is necessary to consider the relevance of character strengths.

Moreover, Rauch and Frese (2007) suggest that the effects of personality on success (or performance) might not be linear. This might also concern character strengths. The abundance of such strengths as kindness or even creativity might damage the performance of entrepreneurial venture due to the lack of assertiveness (high kindness) or creation of products/services that are so novel that they become unusable (high creativity). Thus, the 'too much of a good thing' rule might also apply to entrepreneurs' strengths.

Regarding policy implications, some studies indicate that the important impact of strengths use on work outcomes is created by organizational support for strengths use through a greater reliance on personal strengths (Stander *et al.*, 2014; Van Woerkom *et al*., 2016). Translating it to entrepreneurial work, the question arises regarding country-level support for the use of particular strengths related to running a business. This area should be considered by policymakers who create programs that support entrepreneurship at the country level.

At the individual level the investigation provides practical implications and recommendations for entrepreneurial job crafting. What is critical in this respect is entrepreneurs' self-awareness about their talents. The next step is adjusting to various stages, circumstances, and social settings (having a business partner, help from relatives, funding by business angels or venture capital). Then, the situation of business partnership requires the identification of strengths of each partner and a conscious process of sharing business activities among them based on their talents structure. A strength-based approach may also be used in investment decisions, while in more institutional setting – by business angels and venture capitalists. They might want to assess investees' talents and their fit with the funded venture, but they might also be interested in investment in strengths of an entrepreneur bundled with investment in a business. Finally, important practical implications could be formulated for education in entrepreneurship on various stages. It is as important to enhance the self-awareness of future entrepreneurs as teaching them specific skills in running a business. Therefore, the education of entrepreneurship should be at least partly focused on self-reflection on talents and personality, including character strengths.

The article has some limitations. As it does not include any empirical investigation, the propositions are of purely theoretical nature. Moreover, the lack of the literature entrepreneurs' strengths disallows a more precise identification of the relevance of certain strengths' possession and use at particular stages of venture development. Finally, the propositions formulated above share the limitations of the framework of strengths that was designed to capture general public strengths and not those of entrepreneurs.

To sum up, we argue that using the above framework of character strengths in entrepreneurship research can progress the debate on entrepreneurs' traits and their use in business. Moreover, the framework's application opens future research opportunities by the possible application of new research methods. For instance, a large share of research on character strengths is intervention-based. Interventions regarding entrepreneurs are more difficult than those regarding employees or managers, but results might be more than interesting. Another venue for the future research might lie in relating the strengths to more well-grounded aspects of personality that could disclose the stability of entrepreneurs' signature strengths. Finally, instead of just analysing the possession of certain strengths, the investigation of strengths use in day-to-day setting might uncover some short-term consequences of the application of particular signature strengths by specific types of entrepreneurs in tasks they perform.

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