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Deepening the dialogue on SME business performance: Are there nonlinear effects as well?

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ABSTRACT

Studies analyzing the business performance of small and medium-sized enterprises are high in number and importance. Throughout the years, a vast number of variables have been introduced to explain what causes the observed difference in the business performance of small and medium-sized enterprises. However, many previous studies looked at only linear effects of such variables, while neglecting potential non-linear aspects. This study tried to fill that gap in the literature by using both linear and quadratic effects of well-established variables in the literature. By using linear regression on a sample of 245 small and medium-sized enterprises, this study reports that entrepreneurial experience has a significant quadratic effect, while gender has a significant linear effect on business performance. Based on the employed methodology and results, limitations of this study and avenues for future research were outlined.

Keywords: entrepreneurship, SME, business performance

1. INTRODUCTION

Entrepreneurship plays an important role in national and regional economic development, and this role has been widely studied from various perspectives since the original contributions from Schumperter (1934). The hypothesis that innovative entrepreneurship influences economic development has been spelled-out in many scientific studies (Müller, 2016). Findings of such sort give extra weight to research on the antecedents of entrepreneurial business performance because the results have multiplying effects for various economic actors, not only the primary subjects of the research, namely entrepreneurs. Pushing such important research forward was the primary motivation for writing this paper. By looking at the research conducted on entrepreneurial business performance, one can see that the majority of research examined only linear effects of the proposed relations between selected variables. There are reasons to suspect that in many cases such relations will not hold and that the examination of non-linear effects is needed (Pierce and Aguinis, 2013). Herein lies the main contribution of this study. In other words, this paper examined the classical factors that were used to explain the business performance of small and medium-sized enterprises (SMEs) from a linear and non-linear aspect to achieve a more nuanced view and explain some tensions that were found in the literature. Research questions can be specified as:

RQ1: What factors have a linear effect on SME business performance?

RQ2: What factors have a non-linear effect on SME business performance?

To answer these research questions, multiple linear regression was utilized on data from an online survey was sent to SMEs from Croatia. The results from the regression analysis show that gender had a significant linear effect on business performance, that is male-owned SMEs had higher business performance than female-owned SMEs. Furthermore, entrepreneurial experience had a non-linear impact on business performance. More specifically, this effect is upward U-shaped. Other factors were not significant predictors of business performance. The structure of the article is as follows. The next section presents a literature review and the developed hypotheses. Section three displays the used methodology, while section four shows the results of the analysis. Lastly, section five gives the concluding remarks.

2. LITERATURE REVIEW

Entrepreneurial experience

The first antecedent of SME performance that will be analyzed is entrepreneurial experience. Entrepreneurial experience is a part of the human capital construct that supports the creation of economic value that is acquired through numerous and diverse experiences. More specifically, it is the part of the human capital investment (alongside for instance education that will be discussed later in the paper) rather than the outcome of investment in human capital (such as a defined set of skills) (Becker, 1964). Whether or not this aspect of human capital has any relation with business performance has been studied extensively. In the early years of entrepreneurial scientific research. For instance, Stuart and Abetti (1990) discovered a positive correlation of entrepreneurial experience with firm performance and MacMillan et al. (1985) found that venture capitalists regard entrepreneurial experience as a significant factor when predicting firm performance. One way of explaining these findings is to postulate that novice and inexperienced entrepreneurs have a hard time generalizing insights from previous experiences. Because they do not grasp the full complexity of the entrepreneurial situation (Simon, 1978), novice and inexperienced entrepreneurs inaccurately interpret the present circumstances in light of limited previous experience (Levitt and March, 1988) which leads to suboptimal solutions (Mazur, 1994). As more research was done through the upcoming years, more elaborated reasons were given the explain the importance of entrepreneurial experience, and causal methods were mostly utilized instead of correlation analyses. One notion has been particularly important in this strand of research, and that is that learning is rightly obtained by experience. In other words, scholars have put forward the notion that learning-by-doing is an essential part of a successful entrepreneurial journey (Baum et al., 2011; Minniti and Bygrave, 2001). By way of this process, entrepreneurs are more alert to entrepreneurial opportunities (Westhead et al., 2005) and have a better understanding of causal effects between various entities (Cressy, 1992) that ultimately leads to the procurement of valuable resources (Gompers et al., 2010). Furthermore, more entrepreneurial experience leads to more sophisticated business planning procedures (Burke et al., 2010) and outcomes which in turn has a positive effect on business performance (Kraus et al., 2008). Taking all the arguments together, Hypothesis 1 is stated as follows.

Hypothesis 1: Entrepreneurial experience has a positive effect on business performance.

Age of the firm

The age of the firm has also been elaborately studied in the entrepreneurship field. As was the case with entrepreneurial experience, learning processes play a key role in explaining the positive effects of the age of the firm on business performance (Stinchcombe, 1965). Learning mechanisms, which can improve over time, can decipher the benefits and drawbacks of various parts of a functioning firm as well opportunities and barriers in the external environment (Bahk and Gort, 1993). In addition, the mission or the identity can crystalize and be more apparent as business operations continue (Jovanovic, 1982). Further arguments can be made that the more the business matures the overall performance will be better. One such argument, which is frequently used in the scientific literature is the liability of newness. Younger firms are faced with specific challenges that older firms do not have to resolve and those problems are what cause failure in younger firms. For example, entrepreneurs regularly have to make business decisions that will significantly affect the future operations of the firm. Since younger firms do not have the experience and formal infrastructure to handle complex decisionmaking processes (Bantel, 1998), there is too much burden on the cognitive abilities of the solo entrepreneur or the entrepreneurial team. The results of this problem are substandard business decisions. Liability of newness can also hamper the ability of younger firms to bring in more financial resources because financial institutions do not have the confidence to invest in such firms (Rafiq et al., 2016). Furthermore, younger firms have no or have very limited ability to exploit economies of scale (Barrett and Mayson, 2007) and are less efficient in operations than older firms (Nguyen et al., 2015). From all of the above, Hypothesis 2 follows. Hypothesis 2: The age of the firm has a positive effect on business performance.

Age of the entrepreneur

The age of the entrepreneurs is likewise a well-studied variable in the business performance context and many reasons can be provided that show that older entrepreneurs should have a business advantage in comparison to young entrepreneurs. Firstly, the age of an entrepreneur can be considered as part of the pool of human capital factors (Becker, 1962). Given their age, older entrepreneurs are more likely to have higher levels of relevant experience which gives them the ability to better access relevant business information, better process the gathered information, and make valid business decisions (Wiersema and Bantel, 1992). Lack of knowledge and information processing hinders the ability of younger entrepreneurs to carry out innovative activities (Azoulay et al., 2019). Ultimately, all of this can lead to more business success for older entrepreneurs (Gielnik et al., 2018). They are also more likely to avoid common cognitive biases. In other words, older entrepreneurs are less prone to overconfidence (Forbes, 2005) which enables them to assess their abilities more objectively (Baron et al., 2016). The importance of networking can be outlined as another advantage of older entrepreneurs. Social capital is very important for conducting business (Stam et al., 2014) and older entrepreneurs are better suited to take extract value from such capital (Baucus and Human, 1995). Lastly, older entrepreneurs have more access to funding opportunities. For instance, young entrepreneurs have problems getting bank loans because they do not have a long bank history, if they have it at all, and they do not have sufficient collateral (Rector et al., 2016). From the preceding discussion, Hypothesis 3 is formulated.

Hypothesis 3: The age of the entrepreneur has a positive effect on business performance.

Gender

Current entrepreneurial research has greatly improved our understanding of the specific circumstances that women face when founding and running their own ventures. Unfortunately, this research has uncovered numerous obstacles for women in an entrepreneurial setting which causes their ventures to have lower business performance than their male counterparts. One reason is that women have a harder time getting financial resources for their firms. Generally, women have lower access to external financing (Carter and Rosa, 1998) and more specifically lower access to bank credits (Coleman, 2007; Watson, 2002). When getting bank loans, women are obligated to put more collateral to obtain a loan (Coleman, 2000). What is even more troubling is that there are strong indications that the reason for lower access to these funds is caused by discrimination in the internal procedures of the financial institutions (Fay and Williams, 1993). Next, women tend to establish their ventures in lower-profit industries (Loscocco and Robinson, 1991). Female-owned enterprises mostly operate in retail and service industries (Bates, 1995; Du Rietz and Henrekson, 2000). Furthermore, female entrepreneurs differ from male entrepreneurs in the reasons for becoming entrepreneurs. Women enter into entrepreneurship to gain non-monetary benefits, such as independence (Carter et al., 2003). This does not imply that women entrepreneurs do not want to achieve high profits, but that high profits sometimes are not the primary goal. This statement is also evident from the fact that women see entrepreneurship as means to spend more time at home and improve family relations (Parasuraman and Simmers, 2001). The importance of the balance between family and work for women entrepreneurs stems also from the finding that women entrepreneurs prefer ventures that can be managed from their homes (Fasci and Valdez, 1998). Lastly, women have higher risk aversion levels (Jianakoplos and Bernasek, 1998) which can cause them to underinvest in innovative projects. In conjunction, Hypothesis 4 is stated as follows.

Hypothesis 4: Male-owned firms will have higher business performance than female-owned firms.

Education level

The last variable that will be analyzed is the education level of the entrepreneur. Alongside the entrepreneurial experience and age of the entrepreneur, education is also considered part of the human capital theory (Becker, 1964). This is important for this study because it provides the first reason why higher education levels should lead to higher business performance. According to human capital theory, individuals demand or try to achieve reimbursements for investments in themselves. Therefore, entrepreneurs with higher education levels more

eagerly strive to accomplish higher business performance measures (Cassar, 2006). Besides the postulates of human capital theory, more direct reasons for the better business performance of higher educated entrepreneurs can be found in the scientific literature. Entrepreneurs are not constrained in their business activities as are formal employees. Therefore, they can more freely align the direction that they want to business to evolve with their acquired education outlook (Van Praag et al., 2013). In addition, higher education levels help to improve general skills that help the entrepreneur to run the business more efficiently and effectively, such as communication and teamwork. Higher education also causes entrepreneurs to better fine-tune many critical aspects of their business (Sinha, 1996). Moreover, the process of resource gathering is more painless for higher educated entrepreneurs given it influences their managerial skills (Soriano and Castrogiovanni, 2012). Finally, education affects the cognitive states of entrepreneurs. What is meant by the previous statement is that education can increase an important antecedent of business performance, the self-confidence of the entrepreneur (Jiménez et al., 2015). The discourse above leads to Hypothesis 5.

Hypothesis 5: The education level of the entrepreneur has a positive effect on business performance.

Non-linear effects

Curvilinearity is a phenomenon that occurs in various business disciplines but that has not received enough scientific attention. The basic idea is that at some point in many relations between variables the benefits will outweigh the costs of utilizing an antecedent variable resulting in positive/negative effects on higher/lower levels or in positive/negative effects on middle levels (Pierce and Aguinis, 2013). The benefit of this postulate is that non-linear relations can help explain why some research detected the opposite signs of the effects of all factors that were previously displayed. For instance, the more entrepreneurial experience can harm business performance (e. g. Tornikoski and Newbert, 2007). One logic behind those results is that failure, as an integral part of the learning-by-doing process, can hamper the possibilities of gathering valuable resources (Hsu, 2007). As for the age of the firm, there is theoretical and empirical evidence that younger firms have higher business performance. Older firms can experience organizational inertia because high-ranking individuals do not challenge common beliefs, investment projects with higher risks are not taken and there is overdependence on established procedures (Finkelstein and Hambrick, 1990). The third variable of consideration is the age of the entrepreneur as there is evidence that younger entrepreneurs have advantages over older entrepreneurs. Older entrepreneurs have a harder time developing technical skills and comprehending new business ideas (Gist et al., 1988; Hambrick and Mason, 1984). Older entrepreneurs also have a lower tolerance for risk (Vroom and Pahl, 1971) which can lead to less innovative business activities. Gender and education were excluded from this analysis because of the nature of those variables. Three hypotheses flow from this analysis.

Hypothesis 6: Entrepreneurial experience has a non-linear effect on business performance.

Hypothesis 7: The age of the firm has a non-linear effect on business performance.

Hypothesis 8: The age of the entrepreneur has a non-linear effect on business performance.

3. METHODOLOGY

The data for this study was gathered by using an online questionnaire that was distributed to SMEs operating in Croatia. Entrepreneurs that managed an SME filled out the survey in 2020. The total number of responses was 245. All the questions were answered by the entrepreneurs because of the restrictive nature of the online survey. Therefore, there was no issue with the missing values. The next step consisted of checking for unengaged respondents. Since none of the entrepreneurs filled out the questionnaire below the estimated minimum required time, no surveys were excluded. With regards to the operationalization of variables, *entrepreneurial experience (ENEX)* has been conceptualized in many ways. It can refer to the number of ventures that the person has founded, the number of years that the person has been an entrepreneur in all firms during his/her lifespan, or the number of years that the person has been an entrepreneur in the current firm (Burke et al., 2018).

For this study, entrepreneurial experience is measured using the total number of years the person has been an entrepreneur (including time spent in other firms besides the current firm). The next three variables are more or less straightforward. *Age of the firm (FIAG)* reflects the time that has passed since the founding of the firm, *age of the entrepreneur (ENAG)* is the variable that tells how old is the entrepreneur, and *gender (GEND)* is a dummy variable that has a value of 1 if the entrepreneur is male and has a value of 0 if the entrepreneur is female. *Education (EDUC)* was measured on a scale of 1-8 in line with the Croatian qualification framework. Lastly, the content of the entrepreneurs with their *profit margin (PERF)*, in comparison to the competition, on a scale1-5 was used to approximate business performance.

4. RESULTS

The descriptive statistics of the variables can be found in Table 1.

Table 1. Descriptive statistics of variables

	VIF	Mean	Std. Dev.	Min.	Max.
PERF	-	3,526	1,051	1	5
ENEX	1,98	14,697	9,329	0	43
FIAG	1,13	19,689	14,154	0	130
ENAG	1,95	48,159	10,138	26	75
GEND	1,04	0,673	0,469	0	1
EDUC	1,01	6,138	1,658	1	8

Source: Compiled by the author

To test the mentioned hypotheses, multiple linear regression with robust standard errors was employed. But before proceeding to the results, diagnostic tests were performed. Variance inflation factors (VIF) of all the variables were below 5, shown in Table 1, meaning that there were no issues of multicollinearity. Also, the Ramsey Reset test (F=0,57, p-value=0,632) showed no signs of omitted variables. The correlation matrix is displayed in Table 2 and the results of the model are in Table 3.

Table 2. Correlation matrix

	PERF	ENEX	FIAG	ENAG	GEND	EDUC
PERF	-					
ENEX	-0,129**	-				
FIAG	-0,067	0,308***	-			
ENAG	-0,1346**	0,685***	0,316***	-		
GEND	0,092	0,158***	0,081	0,032	-	
EDUC	0,061	-0,025	-0,029	-0,001	-0,057	-

Source: Compiled by the author.

Table following on the next page

^{***} means significant at 1% level, ** means significant at 5% level, * means significant at 10% level.

Table 3. Regression results (dependent variable: PERF)

	(1)	(2)
ENEX	-0,105	0,075***
	(0,011)	(0,025)
FIAG	-0,001	0,007
	(0,005)	(0,011)
ENAG	-0,006	-0,011
	(0,009)	(0,009)
GEND	$0,257^{*}$	0,281**
	(0,145)	(0,142)
EDUC	0,041	0,041
	(0,041)	(0,039)
$ENEX^2$		-0,002***
	-	(0,000)
$FIAG^2$		-0,001
	-	(0,001)
$ENAG^2$		0,000
	-	(0,000)
R^2	0,032	0,094
N	245	245

Source: Compiled by the author

The results from Table 3 show that the linear effect of entrepreneurial experience is not statistically significant leading to the rejection of Hypothesis 1. However, in the second model, both the linear and the quadratic effect were statistically significant so Hypothesis 6 is accepted. Given that the linear effect is positive and that the quadratic effect is negative, entrepreneurial experience has an upward inverted U-shaped effect on business performance. Next, firm age had no significant linear or quadratic effect entailing the rejection of Hypothesis 2 and 7. The same holds for entrepreneurial age, meaning that Hypotheses 3 and 8 are also rejected. Another variable had non-significant effects on business performance, namely education levels. Therefore, Hypothesis 5 is rejected. Lastly, gender had proven to be a significant antecedent of business performance in both models. Accordingly, Hypothesis 4 is accepted.

5. CONCLUSION

This study tried to explain the business performance of SMEs using a standard linear approach and supplement it with a non-linear analysis as well. Firstly, a literature review of all the used factors was presented to support eight hypotheses. These hypotheses were tested using a methodology that was described after the literature review. Afterward, the results of the regression analyses were reported that were carried out on a sample of 245 firms. From these results, it follows that entrepreneurial experience had an upward sloping U-shaped effect on business. The second significant variable is gender. Male-owned firms had higher levels of business performance than their female counterparts. In contrast to entrepreneurial experience, this result is adverse because this points to the existence of many structural obstacles that women entrepreneurs encounter during their entrepreneurial careers. As is the case in any scientific research, there were limitations. The nature of the sample data was cross-sectional, meaning that higher-order causality could have been established using longitudinal data. Second, some scarcity is present in the number of utilized variables in the regression analysis. Therefore, there is the possibility that not all causal effects were controlled for. Finally, future research could improve on this study and expand our understanding of SME business performance.

^{***} means significant at 1% level, ** means significant at 5% level, * means significant at 10% level.

Future studies could analyze other non-linear effects, such as cubic effects, to provide an even more detailed outlook of this topic. Other authors could also test broaden the model by employing various moderating and mediating effects.

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