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The Intercultural SMEs` Entrepreneurship Archetype: a Multilayer Perceptron Analysis

Abstract

This study examines the intercultural archetype entrepreneurship phenomenon of SMEs operating in Albania through the engagement of financial and social drivers. The effect size analysis and the Multilayer Perceptron Artificial Neural Networks (MLP-ANNs) use a dataset containing 120 SMEs referring to 2020-2021. The MLP-ANN model examines the SMEs` entrepreneurship archetype measured by the equity origin indicator that classifies the national, foreign, and joint-venture businesses. The data show that national businesses tend to consider a portfolio diversification approach. Thus, they delegate *business administration issues to skilled professionals who prefer to maintain high liquidity and long-term debt levels. The foreign business's managerial style coincides with the local one but is handled in less aggressive tones and is more focused on specific goals/activities. In joint-venture businesses, instead, the owners are directly involved in management issues by assuming a more conservative approach mainly focused on short-term and fixed assets.*

Keywords: SMEs` archetype, financial and social entrepreneurship drivers, input-output models, SMEs` market strategy, SMEs` intercultural business management approach

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1. INTRODUCTION

Since the fall of the communist regime in the early 90s' when the country opened toward international exchange, small and medium-sized enterprises (SMEs) have been the engine of Albania's economic progress. Thus, examining their entrepreneurship archetype is a fundamental reason to understand what happens in these organizations and how to run and improve them (Schein, 1992).

The 2021 Statistical Register of SMEs (SRS, 2021) shows that they mainly operate in the production of services (above 65%) rather than in the production of goods (35%).

Trade activities are the core of the service businesses category. They accounted for 23.2% of overall SMEs in 2021 compared to 25% in 2020. It is worth also mentioning that 94% of the service producers are micro-businesses, 5% are small, and only 1% are medium-sized businesses. The same situation persists even for the producers of goods: 95% of businesses are micro, 3.49% are small, and 0.0168% are medium-sized businesses. Albanian-owned businesses constitute 96%, the joint-venture (foreign and Albanian businesses) are approximately 1%, and foreign-origin businesses represent about 3% of SMEs operating in the country. About 64.8% of foreign and joint venture businesses' equity originated from the European Union (EU), while 35.2% of businesses have a non-EU equity origin. Businesses with owners or co-owners of Italian and Greek origin represent 52.8% of total foreign and joint-venture businesses.

Foreign equity businesses, in general, turn out to be micro-businesses. In the micro-business family, 55.8% are represented by EU-originated equity versus 32% of non-EU-originated equity. In addition, the EU-originated equity businesses and those outside the EU account for 3.8% of active enterprises newly registered during 2019 compared to 3.9% in 2018. Small businesses are partitioned as follows: 6% are EU-originated equity businesses versus 2% of non-EU, and in medium-sized businesses, 3% are EU businesses versus 1% of non-EU-originated equity. According to the theory of strategy (Meyer et al., 1993), these intercultural entrepreneurship configurations represent business strategy or archetype that can be described as a combination of multiple dimensions rather than a function of a single dimension. This study analyses the SMEs' intercultural entrepreneurship archetype that helps understand and explore domestic market opportunities. There are only a few studies on this topic (Miles & Snow, 1978; Miller & Friesen, 1978), but it still represents a promising approach.

The need for more research on this topic in the domestic market is one of the reasons for undertaking this study. Usually, the existing financial capital approaches are related to business characteristics such as liquidity, operational efficiency, leverage, and growth management processes (Abimbola & Kolawole, 2017; Hyz. et al., 2017; Juan García-Teruel & Martinez-Solano, 2007; Ekanem, 2010; Nobanee et al., 2011; Michaelas et al., 1999; Hall et. al., 2000; Esperança et al., 2003; Vieira & Novo, 2010). Thus, this work focuses on the domain of SMEs and depicts financial and social influences that help explain their strategic archetype. In the following, we also refer to the affecting social capital (organizations` behavioral philosophy) elements such as administrator gender, business ownership and ownership gender (Mueller & Thomas, 2001; Van Vuuren & Pretorius, 2003; Stewart et al., 2003; Gomez-Mejia et al., 2001; Schulze et al., 2003; Brandstätter, 1997; Rauch & Frese, 2007; Zhao & Seibert, 2006; Caliendo et al., 2011b; Krauss et al., 2005).

This study first uses effect size analysis to identify the differences between SMEs` entrepreneurship, measured by the equity origins variable, and to understand the structure of the SMEs` archetype in an intercultural context. This variable can be one of the three different entrepreneurship archetypes such as national (totally owned by Albanian owners), foreign (totally owned by foreign citizens belonging to the EU area or not), and joint-venture (at least one of the owners is a foreigner belonging to EU area or not). The effect size analysis sheds light on the financial and social domain variables where the size effect is more pronounced considering businesses' equity origins. The statistics used for the analysis is Cohen's **d** effect size at a 95% confidence level. The results obtained from Co-

hen's d-effect size are further analyzed in the second stage of this research. An Artificial Neural Network (ANN) is designed and implemented to perform a neuro-economics analysis to examine SME's strategic archetype.

Based on a Multilayer Perceptron (MLP), the artificial neural network (ANN) examines the entrepreneurship archetype against the equity origins variable. It specifies in detail the neural steps in the decision-making process, whether social or financial, in a particular entrepreneurship archetype. In supervised learning, the MLP class of neural networks manages a set of training samples to infer a classifier to predict a correct output value. The MLP model analyses the ordinary and numerical variables' outcomes and their observed nonlinearities using a hidden layer with one unit. The results confirm that the overall percentage of incorrect predictions in the testing and training sample composition is approximately 3 percent. This assessment demonstrates that the model is statistically valid.

This research contributes to the existing literature in three ways. First, a neuro-economics analysis is performed to understand the SMEs` entrepreneurship archetype, representing this study's novelty. Second, an empirical approach addresses strategic entrepreneurship management in national, foreign, and joint-venture businesses' equity origins operating in Albania. Third, based on the results of the empirical research, a description of the relevant elements is performed to derive valuable insights for theoretical and practical purposes.

The remainder of the paper is structured conventionally. Section 2 discusses the existing literature on financial and social capital approaches. Section Data and Method describes the research data collection and measurement process. The section Empirical Findings presents the results of this analysis. The Discussion section presents the obtained results, and the last section, Conclusions, shows the study's findings.

2. LITERATURE FRAMEWORK

The archetype phenomenon in SMEs is mainly explored in two dimensions: financial and social. Various studies in the research community (Abimbola & Kolawole, 2017; Jensen, 1986; Myers, 1984; and Myers & Majluf, 1984), to name a few, have identified as the most relevant aspects of the financial dimensions the liquidity, operational efficiency, leverage, and growth management processes. They have also demonstrated that SMEs operating in developing countries perceive these kinds of financial dimensions as a good indicator of the strength or weakness of related managerial processes independently of sectoral affiliation.

Researchers have examined how financial dimensions interact to define a strategic business perspective. For instance, a positive relationship exists between liquidity (cash management, inventory turnover, and trade credit practices) and profitability by concluding that SMEs` efficiency and sustainability mainly depend on well-known working capital management practices (Abimbola & Kolawole, 2017).

Interestingly, the study of Hyz. et al. (2017), analyzing the impact of working capital on a firm's profitability, shows the opposite. The authors provide evidence of a significant negative relationship between gross operating income and the number of accounts receivable days, inventories, and accounts payable.

Other significant controversial empirical results exist regarding the relationship between working capital management and SMEs` profitability (Juan García-Teruel & Martinez-Solano, 2007; Ekanem, 2010; Nobanee et al., 2011; Keets & Çam, 2015). It is widely acknowledged that due to liquidity shortages, SMEs are obligated to implement various debt practices. In this context, the study of Mazzarol et al. (2015) explains that their debt management process generally involves two distinct processes: making financing decisions and defining the level of working capital.

The study of Mazzarol et al. (2015) first explains what occurs when financing sources such as debt, retained profits/earnings, and owner funds are identified in the form of equity. Studies demonstrate how the appropriate mixture of cash flows in these cases boosts profitability (Jensen, 1986; Myers, 1984; Myers & Majluf,

1984). Other findings (Tauringana et al., 2013; OECD, 2004) reconfirm that small firms can convert stock into cash faster by selling more and collecting receivables faster. Thus, SMEs can generate more capital to run the operations and notably reduce debt levels. Furthermore, it is shown that the debt financing strategy significantly differs between SMEs due to the varying motives that may be present also among their owners and managers (Michaelas et al., 1999; Vieira & Novo, 2010). The exact influence of debt financing on a firm's profitability is ambiguous (a positive correlation is provided by Michaelas et al., 1999; Esperança et al., 2003) studies, while Hall et al. (2000) and Vieira & Novo (2010) find a negative correlation).

The extensive research work developed on this topic by Michaelas et al. (1999); Hall et al. (2000), Esperança et al. (2003); Vieira & Novo (2010) affirms that SMEs should have a positive relationship between size and long-term debts, but a negative one with short-term ones. The research of Frank & Goyal (2009) also reveals that leverage is increased with non-debt tax shields, fixed assets, firm size, and growth opportunities. These studies also show a decrease in profitability, research and development expenditures, advertising expenditures, uniqueness of the product, and volatility.

Other authors (Bradley et al., 1984) suggested that SMEs' relative leverage rankings are retained over time. In other words, firms in the earlier stages may apply specific strategies that differ through the different phases of their life cycles. The same study shows that a stronger positive correlation between the firm's age and performance is observed in younger firms. Dittmar and Duchin (2016), Baker & Wurgler (2002) and Faulkender (2002) studies show that the exact correlation is weaker in older firms. The interaction between these relevant financial aspects is dynamic and should be the basis for entrepreneurs properly implementing of strategies.

The second most important aspect related to the existing literature is the entrepreneurship social vision in the business culture (Mueller & Thomas, 2001; Van Vuuren & Pretorius, 2003; Stewart et al., 2003). The social vision of entrepreneurship in doing business is considered to be society's shared values, beliefs, and norms. Therefore, it represents an important contextual factor, collectively programming and affecting entrepreneurship in a given community, ethnic group, region, or country that generates even differences across national and regional boundaries (Wiewel & Hunter, 1985).

Gomez-Mejia et al. (2001) and Schulze et al. (2003) research explain how problems like entrenched ownership gender and asymmetric altruism within the SMEs may create difficulties while describing that generally, they face agency cost problems when a division exists between owners and stakeholders. In addition, Schulze et al. (2003) demonstrate how the existence of conflicts may paralyze SMEs to make decisions that threaten their survival. Furthermore, (Poza et al., 2004) state that agency problems between owners and managers tend to be insignificant in SMEs because the managers are the companies' owners most of the time.

The entrenched ownership from a socioculturalal viewpoint is examined using the relationship between gender personality traits and entrepreneurship goals (Brandstätter, 1997; Rauch & Frese, 2007; Zhao & Seibert, 2006; or Caliendo et al., 2011b). In this context, Rauch et al. (2009) research added that enterprise success depends even on the owner's risk attitude, where risk could be a personality characteristic. It is well-accepted that risk is relevant in SMEs operating in developing countries (e.g., Krauss et al., 2005). There is no consensus in the literature regarding the number of risks. Also, it is widely accepted that the ability to create social networks helps in successful business management. Social interaction is considered a prerequisite for business development. It is commonly accepted that women face more gender-specific obstacles in business progress due to their socio-psychological reasons, country culture, etc. There are also additional factors to consider independent of gender concerning entrepreneurship attributed to industry, entrepreneurial experience, household and family, skills, and knowledge. Furthermore, the empirical shreds of evidence have shown that the personal characteristics of the owner, such as education, age, and gender, matter as well

(Fajnzylber et al., 2006; Masakure et al., 2008; McPherson, 1996; Mead & Liedholm, 1998; Vijverberg, 1991a).

Various models are explored in the research ground by considering both financial and social aspects analyzed and, in the meantime, assuming a multi-level approach concerning archetype phenomenon. Recently, neuro-economics research fields have been considered better for exploring entrepreneurship archetype drivers. Thus, a study from Hubert (2010) referring to various empirical results (Camerer et al., 2005; Kenning & Plassmann, 2005; Sanfey et al., 2006) explains how the transdisciplinary context in the field supports traditional economics research by especially considering the somatic theory that influences the entrepreneurship decision making archetype.

Reimann & Bechara (2010) have extensively studied the somatic theory. Their work is considered the original work on the matter. Their study describes the somatic marker framework as a neurological theory of the decision-making process that specifically details the different neural steps (i.e. expectation, conflict monitoring, gains, losses, and error detection) that occur inside the "business brain" before the execution of an archetype decision. Anyway, these results are not easily comprehensive. This lack of comprehension is attributed to the fact that they are focused on the complex decision-making phenomenon. The complex decision cases are characteristics of those SMEs in the start-up phase, where entrepreneurship is also involved in the management process. The different neural steps (i.e., expectations, gains, and losses) are impossible to separate and evaluate.

This research is the first effort to study the intercultural archetype phenomenon concerning SMEs in the Albanian market. It provides a detailed analysis of SMEs' culture, aiming at producing valuable insights that could be useful to the Albanian economy. It explores variables about SMEs` liquidity, operational efficiency, leverage, growth management processes, ownership structure, and gender and administration gender, aiming to ensure a holistic approach.

3. DATA AND METHOD

3.1. Data

The Economic Commission of Albanian Parliament, during a session in 2009, made some amendments to the Law "On Small and Medium Enterprises" no. 10042 dated 22.12.2008, for some changes and additions to Law No.8957, dated.17.10.2002.

According to the new law, SMEs operating in the country are classified as micro, small, and medium enterprises, referring to headcounts and annual turnover. Thus, micro-businesses are considered SMEs having less than nine headcounts and an annual turnover of less than 10 million Albanian Lek (ALL). Small businesses are SMEs with 10-49 headcounts and less than 50 million in ALL annual turnover. Medium businesses are SMEs with 50-249 headcounts and less than 250 million ALL annual turnover.

Our research study uses a sample containing 120 SMEs` data about 2020-2021 referring to the National Registration Centre (NRC) and Credit Registry of Bank of Albania (CRBA) databases. The central part of SMEs' social domain elaborated data is retrieved from the National Registration Centre. Only the borrowers' status records are retrieved from Bank of Albania Credit Registry. Besides, all the financial data used in our analysis refer to the National Registration Centre data (see Table 1).

The sample used in this study comprises SMEs operating in the service sector (25%), trade (25%), construction (25%), and the production sector (25%). Approximately 81.67% of SMEs in the sample are national, 12.5% are foreign, 5.83% are joint-venture businesses, and all have more than two years of activity.

The analyzed data of social origin (see Table 1) emphasize the organization's behavioral philosophy built from the SMEs operating in the Albanian business environment. The elements defining an organization's behavioral philosophy considered in this study are Administrator Gender, Business Ownership, Ownership Gender, and Borrowers' Status.

Table 1: Research Variables Summary

		Variable	Measurement	Abbrev
	Social domain	*Administrator Gender*	*Administrator´s gender (female-0, male-1 and mixed genders-2)*	*AG*
		Business Ownership	*Business owner (administrator -0 or no administrator-1)*	*BO*
		Equity Origin	*Business equity origin (national-0, foreign-1 and joint-venture-2)*	*EO*
		Ownership Gender	*Ownership gender (female-0, male-1 and mixed gender ownership-2)*	*OG*
		Borrower Status	*Borrower Status (non-performing + 30 due days-0 /performing 0-29 due days-1)*	*BS*
Financial domain	*Liquidity indicator*	*Current assets*	*Short term assets/Short term debts*	*CA*
		Inventory	*End of year inventory*	*INV*
		Short term assets	*Cash+ trade securities portfolio+ receivable accounts + inventory*	*STA*
		Short term debts	*Payable accounts, short term loans*	*STD*
	Operational efficiency indicators	*Gross profit margin*	*Gross profit/Net sales*	*GPM*
		Net profit margin	*Net profit/Net sales*	*NPM*
		Assets turnover	*(Net profit + interest expenses)/Average equity*	*AT*
		Return on equity	*Net profit/Average equity*	*ROE*
	Leverage indicators	*Long term debt/ equity ratio*	*Long term debt/equity ratio*	*LTDER*
		Interest coverage ratio	*Earnings before interest and taxes / Interest expenses*	*ICR*
		Total Leverage ratio	*Total debts/Total assets*	*LEV*
		Long term debts	*End of year long term debts*	*LTD*
	Growth indicators	*Business size*	*Ln(total assets)*	*BoS*
		Age of firm	*Analysis period-Business registration period (start-up: 0-5Years/0; growth: (6-15Years/1;maturity:>15Years/2)*	*FA*
		Return on assets	*Net profit/Average assets*	*ROA*

Source: Authors elaborations using NRC and CRBA databases

The analyzed financial data referring to the SMEs` liquidity are current assets, inventory, and short-term assets/debts. The ones about SMEs` operational efficiency are gross profit margin, net profit margin, assets turnover, and return on equity. The SMEs` leverage data are long-term debts, long-term debts/equity ratio, total leverage ratio, and interest coverage ratio. The growth data are the firm's age, return on assets, and business size. These data are used to study the implemented business management practices.

To determine the entrepreneurship archetype related to SMEs` equity origins (such as national, foreign, and joint venture), data from both domains (financial and social) are used. The SPSS 20

(SPSS Inc., Chicago, IL), the version for Windows, is the statistical program used in this study.

3.2. Data Analyses

Initially, the organization's behavioral and financial variables effect size is calculated to capture the differences between national, foreign, and joint-venture SME businesses. The statistic used for this purpose is Cohen's **d** effect size at a 95% confidence level (Cohen et al., 2003).

The effect size is calculated for all different businesses' equity origins. The obtained results show the domain variables where the size effect is more relevant.

The next step is designing and implementing an artificial neural network based on a Multilayer Perceptron (MLP). The MLP examines the entrepreneurship archetype on behalf of the equity origins variable (EO).

The EO variable is classified into three different entrepreneurship archetypes. The first archetype is national (totally owned by Albanian owners).

The second archetype is foreign (totally owned by foreign citizens of the EU area or not).

The third archetype is referred to as a joint venture (at least one of the owners is a foreigner from the EU area or not).

The MLP model is used to map sets of input data on a set of appropriate outputs (Nabney, 2004; Reimann & Bechara, 2010). This approach made possible the examination of intercultural beliefs, efforts, and implemented business social strategies concerning SMEs operating in Albania. The following section presents differences in intercultural SMEs' archetypes calculated based on the results obtained through MLP network.

3.3. Empirical Findings - Effect Size Analysis

The first step of the analysis evaluates the effect size of social and financial data in national, foreign, and joint-venture SME businesses at a 95% confidence level (see Table 2).

As shown in Table 2, referring to social domain data, it can be stated that the effect size between SMEs` equity origin groups (national, foreign, and joint venture) and administrator's gender is medium (average Cohen's d=0.44).

The one between business ownership and borrowers' status is small (average Cohen's d=0.313 and 0.287, respectively). At the same time, the one of ownership's gender is large (average Cohen's d=0.7783).

This research uses the equity origin (EO) as a variable to examine SMEs` entrepreneurship archetype classified as national (totally owned by Albanian owners), foreign (totally owned by foreign citizens of EU area or not), and joint-venture businesses (at least one of the owners is a foreigner of EU area or not) using a Multilayer Perceptron Neural Networks analysis (MLP-ANNs). The financial domain variables evidence the presence of small and very small effect size between the SMEs` equity origin groups even though it is not statistically significant (i.e., Cohen's d/liquidity area=0.18; Cohen's d/growth area=0.23; Cohen's d/operational efficiency area=0.25; Cohen's d/ leverage area =0.35). These results point out the existence of differences in an intercultural business archetype context, and at the same time, these differences are statistically insignificant. Thus, there is a need to use a more complex examination model to evaluate the SMEs` archetype adequately.

The MLP-ANNs are computational models that can model complex relationships (Nabney, 2004, p.149) between inputs (independent variables) and outputs (dependent variables). The computational model means the development of a model which can give impetus to complex economic research (Sanfey et al., 2006; Hubert, 2010). In this research study, the MLP-ANN model analyses the multi-level relationship between SMEs' social and financial variables (input/independent variables) vis-a-vis three different entrepreneurship archetypes (output/dependent variables measured by equity origin variable). It calculates the ordinary and

Table 2: Effect Size Analysis Results

			Businesses Equity Origin (National-0; Foreign-1; Joint- venture-2)		
			Cohen's d Effect size (0,1)	*Cohen's d Effect size (1,2)*	*Cohen's d Effect size (0,2)*
Financial domain	*Social domain*	*Administrator's gender (F; M; Mix)*	*(-0.34, p-value : 0.211)*	*(0.66, p-value : 0.06)*	*(0.32, p-value : 0.39)*
		Business ownership (Adm; Nadm)	*(0.25, p-value : 0.364)*	*(-0.47, p-value : 0.26)*	*(-0.22, p-value : 0.54)*
		Ownership gender (F;M;Mix)	*(-0.295, p-value : 0.27)*	*(-0.87, p-value : 0.045)*	*(-1.17, p-value : 0.001)*
		Borrowers' status (NP; P)	*(0.366, p-value : 0.193)*	*(-0.43, p-value : 0.39)*	*(-0.067, p-value : 0.84)*
	Liquidity indicators	*Current assets*	*(0.13, p-value : 0.62)*	*(-0.33, p-value : 0.39)*	*(-0.20, p-value : 0.59)*
		Inventory	*(0.13, p-value : 0.66)*	*(0.09, p-value : 0.18)*	*(0.22, p-value : 0.56)*
		Short-term assets	*(0.10, p-value : 0.72)*	*(0.02, p-value : 0.37)*	*(0.12, p-value : 0.75)*
		Short-term debts	*(0.09, p-value : 0.75)*	*(0.03, p-value : 0.20)*	*(0.13, p-value : 0.74)*
	Operational efficiency indicators	*Gross profit margin*	*(-0.67, p-value : 0.02)*	*(0.67, p-value : 0.40)*	*(-0.005, p-value : 0.98)*
		Net profit margin	*(0.22, p-value : 0.45)*	*(-0.20, p-value : 0.62)*	*(0.022, p-value : 0.95)*
		Assets turnover	*(0.055, p-value : 0.85)*	*(0.05, p-value : 0.55)*	*(0.10, p-value : 0.78)*
		Return on equity	*(0.12, p-value : 0.69)*	*(-0.013, p-value : 0.20)*	*(0.11, p-value : 0.78)*
	Leverage indicators	*Long-term debt/ equity ratio*	*(-0.1, p-value : 0.73)*	*(0.22, p-value : 0.55)*	*(0.12, p-value : 0.73)*
		Interest coverage ratio	*(-0.92, p-value : 0.001)*	*(0.91, p-value : 0.34)*	*(-0.007, p-value : 0.26)*
		Total leverage ratio	*(0.19, p-value : 0.50)*	*(-0.08, p-value : 0.55)*	*(0.12, p-value : 0.75)*
		Long-term debts	*(0.066, p-value : 0.82)*	*(0.17, p-value : 0.19)*	*(0.24, p-value : 0.53)*
	Growth indicators	*Firm age (STU;GR;-MAT)*	*(-0.082, p-value : 0.77)*	*(-0.46, p-value : 0.33)*	*(-0.54, p-value : 0.11)*
		Return on assets	*(-0.076, p-value : 0.79)*	*(0.009, p-value : 0.81)*	*(-0.067, p-value : 0.86)*
		Business Size	*(-0.39, p-value : 0.17)*	*(0.19, p-value : 0.57)*	*(-0.21, p-value : 0.57)*

Source: Authors elaborations concerning the effect size of social and financial data in national, foreign, and joint-venture SME businesses

numerical variables' outcomes and observed nonlinearities using a hidden layer with one unit. In supervised learning, the MLP class of neural networks manages a set of training samples that are used to infer a classifier to predict a correct output value (Sanfey et al., 2006; Hubert, 2010). Thus, the used MLP-ANNs model confirms that the overall percentage of incorrect predictions in the testing and training sample composition is about 3%. This demonstrates that the model is statistically valid at a 95% confidence level.

As shown in Table 3, the receiver operating characteristic curve analysis (the ROC **curve)** proves that the output of national and foreign equity businesses is reasonably classified (ROC areas=0.683 and 0.588, respectively). Meanwhile, the output classification in joint-venture equity origin businesses is very good (ROC area =0.782).

Table 3: The Receiver Operating Characteristic Data

ROC curve areas data	**Equity origin: national**	**Equity origin: foreign**	**Equity origin: joint- venture**
	0.683	*0.588*	*0.782*

Source: Authors elaborations concerning the receiver operating characteristic data pertaining to national, foreign, and joint-venture SME businesses

The MLP hidden layer activation function is the hyperbolic tangent, while the final activation function is the softmax function. The statistics report that the SMEs' social domain variables with the highest normalized impact on business archetypes are AG mixed, BS performing, OG female, OG mixed, BS non-performing, BO no-administrator, and AG female. Also, referring to SMEs` financial aspects, those with the highest normalized impact on business archetype are NPM, GPM (operational efficiency area), LEV, LTDER (leverage area), and INV, CA, STD (liquidity area). It can also be highlighted that all the variables considered in the analysis have a statistically significant impact on SMEs` archetype.

4. DISCUSSION

The effect size analysis measured by Cohen's d statistic estimates the effect size of social and financial data in national, foreign, and joint-venture SME businesses at a 95% confidence level. These results produced some valid preliminary outcomes concerning examining SMEs` archetypes. Thus, in the social domain, Cohen`s d statistics demonstrate that the effect size of administration gender (Cohen's d=0.66), business ownership (Cohen's d=0.47), and borrower's status (Cohen's d=0.43) is more pronounced when comparing foreign to joint-venture equity businesses. A large effect size is present in ownership gender (Cohen's d=0.87) when comparing foreign to joint-venture businesses. Meanwhile, a very large effect size of ownership gender (Cohen's d=1.17) is found when comparing national and joint-venture businesses. These effect sizes are also statistically significant at a 95% confidence level.

The effect size analysis in the financial domain demonstrated that the most relevant effect sizes in each of the SMEs analyzed aspects are: interest coverage ratio (Cohen's d=0.61)-leverage; gross profit margin (Cohen's d=0.45)-operational efficiency; firm age (Cohen's d=0.36)-growth; inventory (Cohen's d=0.15)- liquidity. The statistics show that foreign businesses operate through higher interest coverage ratios than national and joint-venture businesses. The same logic could be applied to the gross profit margin problem (see Table 2). The effect size calculation applied to liquidity revealed that national businesses operate with higher inventories than foreign and joint-venture businesses. In addition, the growth aspect shows that the age of firms` effect size is mainly present in joint-venture businesses.

This research is novel because it extends the depth of effect size analysis by implementing a Multilayer Perceptron neural network model (MLP).

The MLP is used to accurately analyze a multi-level relationship between social and financial capital domains as a function of SMEs` archetype. The MLP classifier shows that among social domain analyzed data, the ones who influence more the national SMEs` management style are

- the administration gender (female: 0.179; male: 0.363),
- the business ownership in cases when it is divided from administration issues (0.156),
- ownership gender (female: 0.417; male: 0.037), and
- the business classification in non-performing status (0.181).

The financial indicators that affect the management style of more national businesses are INV (0.390), STD (0.375), and CA (0.233), which are in

Table 4: The MLP Model Parameter Estimates

	Input variables	Values	Input variables	Values	Input variables	Values
Input Layer	*CA*	*0.233*	*STA*	*-0.114*	*Firms` age : grown*	*0.735*
	GPM	*-0.68*	*STD*	*0.345*	*Firms` age : matured*	*-0.335*
	NPM	*-0.042*	*LTD*	*0.287*	*OG female*	*0.417*
	AT	*-0.52*	*AG female*	*0.179*	*OG male*	*0.037*
	LTDER	*-0.774*	*AG male*	*0.363*	*OG mixed*	*-0.926*
	ICR	*0.585*	*AG mixed*	*-0.351*	*BS non-perfoming*	*0.181*
	LEV	*-0.266*	*BO administrator*	*-0.259*	*BS perfoming*	*-0.143*
	BoS	*-0.4*	*BO non-administrator*	*0.156*	*ROE*	*-0.159*
	INV	*0.39*	*Firms` age : start-up*	*-0.292*	*ROA*	*-0.041*
	Equity origin: national	**Equity origin: foreign**	**Equity origin: joint- venture**			
Output Layer	*1.103*	*0.302*	*-0.723*			

Source: Authors elaborations concerning the multilayer perceptron parameter estimates related to national, foreign, and joint-venture SME businesses

the liquidity area; ICR (0.585) and LTD (0.287), which are in the leverage area; and firm age in grown status (0.735), which is in the growth area.

Data show that maintaining of all the previously mentioned financial indicators at high levels plays a decisive role in the national entrepreneurship archetype. The vice versa can also be confirmed; maintaining financial indicators at low levels will negatively affect national SMEs` management style.

Table 4 shows that foreign and national SMEs have similar management styles.

The only exception is that the same predictive factors (social and financial) preserve a lower impact on foreign SMEs` management style. In the case of joint-venture SMEs` management style, it can be stated that administration gender (mixed cases: 0.351), ownership-based administration (0.259), mixed ownership (0.926) as well as businesses in performing status (0.143) are the variables that have a significant impact. The financial indicators that influence joint-venture SMEs` management style are STA (0.114)-liquidity area, GPM (0.68), NPM (0.042), AT (0.52), ROE (0.159)-operational efficiency area; LTDER (0.774) and LEV (0.266)-leverage area; BoS (0.4), ROA (0.04), age of firm in matured (0.335) and start-up phases (0.292)-growth area. Meanwhile, maintaining the rest of the social and financial domain data at high levels negatively impacts joint-venture SMEs` management style.

5. CONCLUSION

This study aims to analyze the SMEs' intercultural archetype management process by engaging their social and financial drivers. This study refers to the 2020-2021 on a sample of 120 SMEs operating in Albania. Based on a Multilayer Perceptron (MLP) analysis, the designed and im-

plemented artificial neural network produces good outcomes in determining the SMEs' archetype. This process considers the intercultural beliefs/strategies used in national, foreign, and joint-venture equity origins management styles.

The study shows that national SMEs` management style mainly prefers male administrators rather than female administrators. Also, the study shows more female business owners than males. In both cases, the business management process is performed by skilled professionals. Commonly, many business administrators act as if they were in a nonperforming status. They intentionally delay the loan installment reimbursement, trying to exploit all the market opportunities.

From a financial viewpoint, national businesses prefer maintaining high liquidity levels (i.e., inventories, short-term assets/debts). At the same time, these national businesses try to have high liquidity levels by having long-term debts. These practices are expensive as they cost high interest rates. This managerial style is a typical preference of national SMEs in terms of grown status. Foreign SMEs and national businesses have a similar management style. They pursue the same behavioral and financial goals, but foreign SMEs adopt a less aggressive approach. Liquidity and leverage are also a priority for foreign SMEs, but they are less dependent on them. The same could be said regarding the behavioral aspects.

The data show that the joint-venture management style is mainly characterized by mixed administration and ownership structures where the owners run the business alone. The owners of these businesses are careful to fulfill duties on time by operating in performing status referring to the loan payment schedule. These businesses pay special attention to the long-term leverage management process regarding the equity return issue. They used to manage equity through net profit increase, seeking slow and guaranteed growth progress. The most important aspects of joint-venture management are the assets and liquidity components. Mature and start-up firms mainly adopt this management style.

From a theoretical and practical viewpoint, the study finds that national businesses adopt a dynamic management style by acting as risk-takers. Their financial management style favors high liquidity levels used for transactions and savings motives, making it a valuable strategy considering that some SMEs may face difficulty assuring loans. Thus, they opt for long-term debts. National businesses know market culture subtleties better; they hire skillful administrators to overcome potential business difficulties. Thus, they are more inclined towards a portfolio diversification approach to increase profitability.

From a social viewpoint, the data show that businesses administered/owned by women do not face any gender-specific obstacles. The country's culture, favors male-administered and woman–owned businesses as the preferred option. In addition, it is observed that when a separation line exists between ownership and administration, a higher performance target is established, which serves as a control mechanism.

Foreign businesses have a similar management style as national businesses but a more balanced one. They also trust the administration process for skilled male and female professionals. They keep the liquidity level under tighter control as they are focused on specific business goals/activities. This financial philosophy could be justified by foreign businesses' difficulties in ensuring local loans. Their loan applications are often rejected because of the difficulty of providing local collateral. Foreign businesses have generally opted for a local administration and foreign ownership. This option suits the local administration better as foreigners might need more confidence in the local market.

Joint-venture businesses use another approach. They prefer a mix of administration and ownership as this philosophy assures a better decision-making process; the owners are directly involved in management issues. From a financial viewpoint, they operate with fewer short-term and fixed assets. They maintain a lower net profit margin and long-term debt usage as well. The difference between joint-venture and national/foreign businesses is their philosophy of equal access to the male/female gender in administration and ownership positions. Gender equality is the backbone of this archetype.

In conclusion, this research points out new insights concerning financial and social policies adopted by SMEs operating in Albania. These policies take into consideration SMEs` strategic archetype of entrepreneurship. These findings might be helpful for national and foreign investors/managers operating in the country. They are also relevant from an economic policy perspective as SMEs represent the country's economic progress engine.

For future research, it would be valuable to broaden the scope of analysis to include other Balkan countries or developing markets with similar economic and cultural characteristics. Conducting comparative studies across these regions could enhance the generalizability of the findings and provide deeper insights into regional or country-specific dynamics and contextual factors that influence the phenomena under investigation. Such an approach would contribute to a more comprehensive understanding of the underlying mechanisms and facilitate the development of tailored policy implications.

References

Abimbola, O. A., & Kolawole, O. A. (2017). Effect of working capital management practices on the performance of small and medium enterprises in Oyo state, Nigeria. *Asian journal of economics, business and accounting*, 3(4), 1-8. DOI: 10.9734/AJEBA/2017/35237

Baker, M., & Wurgler, J. (2002). Market timing and capital structure. *The journal of finance*, 57(1), 1-32.

Bradley, M., Jarrell, G. A., & Kim, E. H. (1984). On the existence of an optimal capital structure: Theory and evidence. *The journal of finance*, 39 (3).

Brandstätter, H. (1997). Becoming an entrepreneur—a question of personality structure?. *Journal of economic psychology*, 18(2-3), 157-177. DOI: 10.1016/S0167-4870(97)00003-2

Caliendo, M., Fossen, F., & Kritikos, A. S. (2014). Personality characteristics and the decisions to become and stay self-employed. *Small Business Economics*, 42(4),787-814.

Camerer, C., Loewenstein, G., & Prelec, D. (2005). Neuroeconomics: How neuroscience can inform economics. *Journal of economic Literature*, 43(1), 9-64.

Cohn, L. D., & Becker, B. J. (2003). How meta-analysis increases statistical power. *Psychological methods*, 8(3), 243. DOI : 10.1037/1082-989X.8.3.243

Dittmar, A., & Duchin, R. (2016). Looking in the rearview mirror: The effect of managers' professional experience on corporate financial policy. *The Review of Financial Studies*, 29(3), 565-602. DOI: 10.1093/rfs/hhv051

Ekanem, I. (2010). Liquidity management in small firms: a learning perspective. *Journal of Small Business and Enterprise Development*, 17(1), 123-138. DOI: 10.1108/14626001011019161

Esperança, P. J., Matias Gama, A. P., & Azzim Gulamhussen, M. (2003). Corporate debt policy of small firms: an empirical (re) examination. *Journal of Small Business and Enterprise Development*, 10(1), 62-80. DOI: 10.1108/14626000310461213

Fajnzylber, P., Maloney, W., & Rojas, G. M. (2006). Microenterprise dynamics in developing countries: How similar are they to those in the industrialized world? Evidence from Mexico. *The World Bank Economic Review*, 20(3), 389–419. DOI: 10.1093/wber/lhl005

Faulkender, M. W. (2002, March). Cash holdings among small businesses. Available at: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=eaec72c22abf922df18b920cf5d5fd967ceac64f. DOI:10.2139/ssrn.305179

Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: which factors are reliably important?. *Financial management*, 38(1), 1-37. DOI: 10.1111/j.1755-053X.2009.01026.x

García-Teruel, J.P., & Martinez-Solano, P. (2007). Effects of working capital management on SME profitability. *International Journal of managerial finance*, 3(2), 164-177. DOI:10.1108/17439130710738718

Gomez-Mejia, L. R., Nunez-Nickel, M., & Gutierrez, I. (2001). The role of family ties in agency contracts. *Academy of management Journal*, 44(1), 81-95. DOI:10.5465/3069338

Hall, G., Hutchinson, P., & Michaelas, N. (2000). Industry effects on the determinants of unquoted SMEs' capital structure. *International journal of the economics of business*, 7(3), 297-312. DOI: 10.1080/13571510050197203

Hubert, M. (2010). Does neuroeconomics give new impetus to economic and consumer research?, *Journal of Economic Psychology*, 31(5), 812-817. DOI:10.1016/j.joep.2010.03.009

Hyz, A., Stavroulakis, D., & Kalandonis, P. (2017). Management of working capital–the Achilles heel of small and medium enterprises (SMEs). The case of Greece. *Central European Review of Economics & Finance*, 18(2), 5-18.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American economic review*, 76(2), 323-329.

Kenning, P., & Plassmann, H. (2005). NeuroEconomics: An overview from an economic perspective. *Brain Research Bulletin*, 67, 343–354. DOI:10.1016/j.brainresbull.2005.07.006

Krauss, S. I., Frese, M., Friedrich, C., & Unger, J. M. (2005). Entrepreneurial orientation: A psychological model of success among southern African small business owners. *European journal of work and organizational psychology*, 14(3), 315-344. DOI: 10.1080/13594320500170227

Masakure, O., Cranfield, J., & Henson, S. (2008). The financial performance of non-farm microenterprises in Ghana. *World Development*, 36(12), 2733-2762. DOI:10.1016/j.worlddev.2007.12.005

Mazzarol, T., Reboud, S., & Clark, D. (2015). The financial management practices of small to medium enterprises. In 28th Annual SEAANZ Conference Proceedings 2015 (pp. 1-22). Available at: https://cemi.com.au/sites/all/publications/SEAANZ-2015-Mazzarol-Reboud-Clark.pdf

McPherson, M. A. (1996). Growth of micro and small enterprises in southern Africa. *Journal of development economics*, 48(2), 253-277. DOI:10.1016/j.worlddev.2007.12.005

Mead, D. C., & Liedholm, C. (1998). The dynamics of micro and small enterprises in developing countries. *World development*, 26(1), 61-74. DOI: 10.1016/S0305-750X(97)10010-9

Meyer, A. D., Tsui, A. S., & Hinings, C. R. (1993). Configurational approaches to organizational analysis. *Academy of Management journal*, 36(6), 1175-1195. DOI: 10.5465/256809

Michaelas, N., Chittenden, F., & Poutziouris, P. (1999). Financial policy and capital structure choice in UK SMEs: Empirical evidence from company panel data. *Small business economics*, 12(2), 113-130.

Mueller, S. L., & Thomas, A. S. (2001). Culture and entrepreneurial potential: A nine country study of locus of control and innovativeness. *Journal of business venturing*, 16(1), 51-75. DOI:10.1016/S0883-9026(99)00039-7

Myers, S. C. (1984). The Capital Structure Puzzle. *Journal of Finance*, 39(3), 574-592.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of financial economics*, 13(2), 187-221. DOI: 10.1016/0304-405X(84)90023-0

Nabney, I. (Eds). (2004). *NETLAB: algorithms for pattern recognition*. London, England: Springer Science & Business Media.

Nobanee, H., Abdullatif, M., & AlHajjar, M. (2011). Cash conversion cycle and firm's performance of Japanese firms. *Asian Review of Accounting*, 19(2), 147-156. DOI:10.1108/13217341111181078

OECD (2004). Financing Innovative SMEs in a Global Economy, Istanbul Turkey 3-5 June, Organization for Economic Cooperation and Development. Available at: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=948fa2e5248348a443dd3c1cf369267c381826f8

On Small and Medium Enterprises Law 2009 (c.10042) Tirana: QPZ.

Poza, E. J., Hanlon, S., & Kishida, R. (2004). Does the family business interaction factor represent a resource or a cost?. *Family Business Review*, 17(2), 99-118. DOI:10.1111/j.1741-6248.2004.00007.x

Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship theory and practice*, 33(3), 761-787. DOI: 10.1111/j.1540-6520.2009.00308.

Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of work and organizational psychology*, 16(4), 353-385. DOI: 10.1080/13594320701595438

Reimann, M., & Bechara, A. (2010). The somat-

ic marker framework as a neurological theory of decision-making: Review, conceptual comparisons, and future neuroeconomics research. *Journal of Economic Psychology*, 31(5), 767-776. DOI: 10.1016/j.joep.2010.03.002

Sanfey, A. G., Loewenstein, G., McClure, S. M., & Cohen, J. D. (2006). Neuroeconomics: cross-currents in research on decision-making. *Trends in cognitive sciences*, *10*(3), 108-116. DOI: 10.1016/j.tics.2006.01.009

Schulze, W. S., Lubatkin, M. H., & Dino, R. N. (2003). Exploring the agency consequences of ownership dispersion among the directors of private family firms. *Academy of management journal*, 46(2), 179-194. DOI: 10.5465/30040613

Statistical Register of SMEs (2021). Available at: http://www.instat.gov.al/al/temat/industria-tregtia-dhe-sh%c3%abrbimet/regjistrat-e-biznesit/

Stewart Jr, W. H., Carland, J. C., Carland, J. W., Watson, W. E., & Sweo, R. (2003). Entrepreneurial dispositions and goal orientations: A comparative exploration of United States and Russian entrepreneurs. *Journal of small business management*, *41*(1), 27-46. DOI: 10.1111/1540-627X.00065.

Tauringana, V., & Adjapong Afrifa, G. (2013). The relative importance of working capital management and its components to SMEs' profitability. *Journal of Small Business and Enterprise Development*, 20(3), 453-469. DOI: 10.1108/JSBED-12-2011-0029

Van Vuuren, J., & Pretorius, M. (2003). Contribution of support and incentive programs to entrepreneurial orientation and start-up culture in South Africa. *South African Journal of Economic and Management Sciences*, 6(3), 514-528.

Vieira, E. S., & Novo, A. J. (2010). A estrutura de capital das PME: evidência no mercado portugués. *Estudos do ISCA*, (2). DOI: 10.34624/ei.v0i2.6505

Vijverberg, W. P. (1991). Profits from self-employment: the case of Cote d'Ivoire. *World Development*, 19(6), 683-696. DOI: 10.1016/0305-750X(91)90202-S

Wiewel, W., & Hunter, A. (1985). The interorganizational network as a resource: A comparative case study on organizational genesis. *Administrative Science Quarterly*, 482-496. DOI: 10.2307/2392693

Zhao, H., & Seibert, S. E. (2006). The big five personality dimensions and entrepreneurial status: A meta-analytical review. *Journal of applied psychology*, 91(2), 259. DOI: 10.1037/0021-9010.91.2.259

Arhetip međukulturnog poduzetništva malih i srednjih poduzeća: analiza višeslojnog perceptrona

Sažetak

Ovo istraživanje proučava međukulturni arhetipski fenomen poduzetništva MSP-ova koji djeluju u Albaniji kroz angažiranje financijskih i društvenih pokretača. Analiza veličine učinka i višeslojni perceptron umjetne neuronske mreže (MLP-ANNs) koriste skup podataka koji sadrži 120 MSP-ova koji se odnose na razdoblje 2020.-2021. Pomoću modela neuronske mreže ispituje se arhetip poduzetništva MSP-ova mjerenim putem indikatora porijekla kapitala koji klasificira poslovne subjekte u nacionalne, strane i zajedničke tvrtke. Podaci pokazuju da nacionalne tvrtke imaju tendenciju razmatranja pristupa diversifikaciji portfelja. Stoga oni delegiraju pitanja upravljanja poslovanjem vještim stručnjacima koji preferiraju održavanje visoke likvidnosti i dugoročnih zaduženosti. Upravljački stil stranih tvrtki podudara se s lokalnim, ali se obrađuje manje agresivnim tonovima i više je usmjeren na specifične ciljeve/aktivnosti. S druge strane, kod zajedničkih tvrtki vlasnici su izravno uključeni u pitanja upravljanja preuzimanjem konzervativnijeg pristupa uglavnom usmjerenog na kratkoročnu imovinu i fiksna sredstva.

Ključne riječi: Arhetip malih i srednjih poduzeća, pokretači financijskog i društvenog poduzetništva, ulazno-izlazni modeli, marketinška strategija malih i srednjih poduzeća, međukulturni pristup poslovanju malih i srednjih poduzeća.