

PREDICTIVE ROLE OF KNOWLEDGE CULTURE AND INNOVATION CULTURE ON NON-FINANCIAL PERFORMANCE INDICATORS

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Abstract: *The aim of the research presented in this study was testing the correlation of knowledge and innovation culture and non-financial performance indicators (NFPIs), the predictive role of independent variables knowledge and innovation culture in NFPIs and differences between dependent and independent variables between micro, small and medium size companies. The study included 124 Serbian MSMEs, that voluntarily responded to 40 questions, presenting the research instrument. Statistical data analysis showed that a significant correlation exists between dependent and independent variables, that knowledge and innovation culture predict NFPIs with 33.4% and that there are differences in innovation culture and NFPIs, but not knowledge culture between companies grouped according to size. The conclusion of the study is that innovation and knowledge culture are of high importance for MSMEs, due to their predictive role in NFPIs, which are most often used, according to literature findings, for the assessment of their long-term success and sustainability. This study also revealed that the highest level of innovation culture and NFPIs is in micro companies in Serbia.*

Keywords: *knowledge and innovation culture, NFPIs, multiple regression, predictive model, MSMEs*

JET classification: *M14, M40, L25*

INTRODUCTION

Micro, small and medium enterprises (MSMEs) represent the vital segment of most economies, especially those in developing countries. They represent 90% of

businesses and contribute with 40% to national income (GDP) in emerging economies (The World bank, 2023). Being such an important part of the economy, contributing to the employment level, agility and innovation potential, governments look closely at their performances, trying to fill in the gaps within identified areas of improvements.

For a long period of time, tracking financial statements, revenues and profits were the only priority in the assessment of the performance of MSMEs. After the breakthrough of value-based management (VBM), the management focus has been transferred from traditional accounting information to a value creation (Ittner & Lacker, 2001). The beginnings of this approach go back to the early 1990's and Kaplan and Norton's introduction of Balanced Scorecard (Kaplan & Norton, 1992) with the idea that both financial and non-financial performance indicators should be measured.

In trying to distinguish between the two, Dikolli (Dikolli, 2010) stated that non-financial performance indicator is any measurement of quantitative information about the enterprise that is not stated in a monetary unit.

It is clear that the non-financial measures complement the existing accounting, while companies move toward customer-oriented facilities, aiming at converting strategy into key objectives and indicators. Measuring non-financial indicators enables the company to identify its value drivers and translate them into indicators.

Coram et al. (Coram, Mock, & Monroe, 2011) concluded that NFPIs have an influence on decision-making of financial analysts as well as in the valuation of the company. These authors found out also that "financial information received greater attention when the trend was negative whereas non-financial performance indicators received greater attention when the financial information showed positive trends." (Coram, Mock, & Monroe, 2011)(p. 87).

Therefore, non-financial performance measures are expected to be the leading indicators of future performance measurement for MSMEs and their sustainability.

In the last 20 years this subject and new contributions have been suggested in the form of non-financial reports (NFRs). The new perspective on NFRs has been brought through the EU Directive 2014/95/EU (Directive 2014/95/EU, 2023), based primarily on environmental, social and employee matters, showing the importance of the disclosure of the information related not only to finance, in terms of overall sustainability.

EU Directive (EC 2014) aims to provide "the consistency and comparability of non-financial information (NFI) disclosed throughout the European Union, emphasizing the need to have a concise and standardized set of SPIs that summarizes overall business performance" (Raucci, Tarquinio, Rupo, & Loprevite, 2020)(p. 275).

The number of companies adopting practices, that contribute to NFRs is increasing. At the same time, there is an ongoing effort for creating coordination of consistent NFR standards globally, through Value Reporting Foundation (VRF), and through proposition of new information report (IR), which combines financial and non-financial information in a single document (Turzo, Marzi, Favino, & Terzani, 2022).

This study focuses on early basic NFPIs. The basic NFPIs include employee and customer satisfaction, market expansion and growth, as well as the number of new products introduced to the market (Ahmad & Jamil, 2020). All of these largely depend on the knowledge and innovation culture of the company.

It can be concluded that the way for MSMEs to be innovative is dependent on their abilities and creativeness to innovate, which means thus depending on the knowledge and innovation cultures.

The approach in this study was to test the correlation between knowledge and innovation culture, and non-financial performance indicators. The study continues with testing if knowledge and innovation cultures can predict NFPIs. A predictive model was introduced, using these two dimensions and their constructs as the independent variables, and their predictive capacity, tested on the dimension of NFPIs, being the dependent variable. According to the currently available literature, such model does not exist, for Serbian MSMEs. Finally, it was tested if differences in dependent and independent variables exist between micro, small and medium size companies. All results of the study were presented and discussed.

Structure of the paper that follows is literature review, research methodology, empirical evidence, results, discussion, and conclusion.

LITERATURE REVIEW

Literature review will show conceptual framework, followed by theoretical and empirical one.

The conceptual part of the study and relevant literature reviewed referred to the framework linking the innovation and knowledge culture with NFPIs. The main research question coming from this is: Can innovation and knowledge culture predict NFPIs?

Since the introduction by Kaplan and Norton's (Kaplan & Norton, 1996), the ongoing emphasis has been put on non-financial performance indicators (NFPIs), through various dimensions and variables, from different authors, that significantly improved the measurement of MSMEs' performance and long-term success. Most of the authors emphasize domain groups, which can be set under scorecard method: customer, internal processes, and learning and growth, with different number of individual

indicators presented by authors and shown in Table 1.

Table 1. Content and structures of NFPIs defined by different authors under scorecard method

	NFPIs		
	customer	internal business processes	learning and growth
Hoque, 2005	Market share Customer satisfaction survey On time delivery Customer response time Warranty repair cost	Material and labour efficiency variance Process improvement and engineering; New product introduction; Long-term relations with suppliers	Staff development and training Workplace relations Employee satisfaction Employee health and safety

Craig, Moores, 2005 for family business	Operational excellence Customer intimacy Product leadership Awareness of the family name, Use of family in marketing initiatives, Quality that reflects family brand	Spurring innovation Increasing customer value Achieving operational excellence Promoting corporate citizenship Investment in technology that will benefit future generations, Professional work practices that will attract best family Non-family employees Philanthropic activities	Employee capabilities and skills Technology Corporate climate Creating career paths for family members Making involvement in the business a privilege, Encouraging Providing seed funding for new ventures presented by family members
Philips, Louvieris, 2005 for hotel sector	Guest surveys Mystery guest Participation in grading schemes Anecdotal feedback via staff Customer satisfaction levels Average spend Customer satisfaction levels Customer retention rate	Meeting financial targets Internal auditing Completion of capital projects Staff satisfaction surveys Staff development reviews Staff retention rate percentage Wages (%) to achieve turnover Staff incentive schemes (performance-related pay)	Number of new products/services Process improvement initiatives Networking relationships Membership of trade/professional bodies Participation in grading schemes Courses completed by staff Level of multiskilling Productivity
Abdel-Maksoud et.al, 2005	Customers' satisfaction On-time delivery Product quality	Employee morale (staff turnover, lateness, absenteeism) Efficiency and utilisation	
Prieto, Revila, 2006	Customers' satisfaction Growth of number of customers Quality in products and services Organizational reputation	Employee satisfaction	
Fernandes et.al., 2006 For manufacturing sector	% of sales from new products On-time delivery Share of key accounts No. of cooperative efforts	Cycle time Efficiency Actual launch vs. delay Reduction in W/F	Time to new process maturity % of product representing 80% sales Compare to competitors
Chen et.al., 2009	Customer loyalty Attracting new customers Competitive advantage Reputation Perceived image		

Cardinaels, van Veen-Dirks, 2010	Customer satisfaction rating Repeat sales Sales per square foot of retail space New items first to market	Returns to suppliers (%) Average markdowns (%) Orders filled within one week Stock-outs	Suggestions per employee Hours of sales training per employee Retail experience of sales managers Employee satisfaction (%)
Coram et.al., 2011	Customer satisfaction rating Repeat sales Returns by customers (% of sales)	Returns to suppliers (%) Average markdowns (%) Sales from Trailblazer's brand	Suggestions per employee Hours of employee Training per employee Average tenure of sales personnel (years)

Source: (Kotane & Kuzmina-Merlino, 2011)

No consensus has been made, and cannot be made, regarding content and structure of NFPIs because as stated by Ittner & Larcker (Ittner & Lacker, 2001) NFPIs' selection depends on the company's competitive environment, strategy and organizational design.

With the emergence of SDGs including social, environmental, and economic aspects, NFPIs grew in numbers encompassing perspectives and the influences by diverse set of stakeholders, such as, employees, suppliers, investors, customers, public authorities etc.

Turzo et al. (Turzo, Marzi, Favino, & Terzani, 2022) stated that NFR became a comprehensive term which includes several forms of reporting such as Corporate Social Responsible reporting (CSR), Integrated Reporting (IR), Sustainable Development Goals (SDG) reporting, Global Reporting Initiative (GRI) reporting, and GHG reporting, etc. They also conducted a literature review 2012-2022 on NFR identifying eight clusters of research, from content of NFR, integrated report framework, the effect of NFR on firm-level accounting variables, the relationship between governance and NFR practices, theoretical perspective underlying NFR practices, NFR assurance practices, the relationship between institutional factors and NFR decoupling practices, concluding with environmental reporting.

Since NFPIs represent non-tangible assets such as knowledge, skills, brands, reputation, relationship, information and data, patents, processes, and innovative organisational culture, the factors influencing these will be expending with the trends and regulatory changes in the business activity. Literature review on these new trends in the business environment point to the importance of multiple stakeholder engagement and co-creation, stressing the importance of developed knowledge and innovation culture (Bellucci, Simoni, Acuti, & Manetti, 2017).

In the literature there is no research about factors that can predict non-financial performance of the company. The only predictive performance models, found, are those that offer prediction of success or bankruptcy based on financial and non-financial performance reports. For example, Al-Kassar & Soileau (Al-Kassar & Soileau, 2014) found out that without both financial and non-financial, the prediction process is incomplete and does not provide correct image and result of the process of bankruptcy. Mousa et al. (Mousa, Elamir, & Hussainey, 2022) used both financial and non-financial indicators in order to predict financial performances of banks.

Knowledge and innovation are tightly linked. Knowledge has been viewed as the most valuable strategic source of the company for the past 30 years. Ever since the introduction of knowledge management (KM) concept by Nonaka and Takeuchi (Nonaka & Konno, 1998), companies have been trying to raise their competitive advantages by creating the culture where knowledge is acquired, shared, applied and created. According to Samir (Samir, 2020), these processes contribute to the performance of MSMEs.

Stylianou & Savva (Stylianou & Savva, 2016) state following knowledge culture factors: knowledge sharing, appropriate leadership, communication quality, motivated organization members, organizational learning, positive atmosphere, role clarity, and trust.

Development of knowledge culture (KC) leads to development of innovation culture (IC). Arsawan et al. (Arsawan, Koval, Rajiani, Rustiarini, Supartha, & Suryantini, 2020) state that knowledge sharing and innovation culture contribute to MSMEs sustainable competitive advantage. Mileva & Hristova (Mileva & Hristova, 2022) state that stimulating innovativeness influences MSMEs performance. The conclusion of their study is that innovativeness and knowledge sharing should be increased in order to achieve long term sustainability. According to the study of Halim et al. (Halim, Ahmad, & Ramayah, 2019), organizational culture influences innovation culture, while organizational learning also influences innovation culture.

According to Raajpoot & Sharma (Raajpoot & Sharma, 2021) innovation culture is set of values, beliefs, attitudes, and behaviours in the company that can enable development and commercialisation of innovative product/service/process.

There is still no consensus in the literature about the representative structures of innovation culture dimensions in the research instrument. For example, Dobni (Dobni, 2008) provided the following 4 dimensions with 7 factors of innovative culture: 1. innovation intention (innovation propensity, organizational constituency), 2. innovation infrastructure (organizational learning, and creativity and empowerment), 3. innovation influence (market orientation and value orientation), and 4. innovation implementation (implementation context).

Dombrowski et al. (Dombrowski, et al., 2007) talk about elements of organisational innovative culture: innovative mission and vision statements, democratic communication, safe spaces, flexibility, collaboration, boundary spanning, incentives, and leadership.

Michaelis & Aladin (Michaelis & Aladin, 2016) broaden the list of latent factors representing innovation culture: 1. innovative mission and vision statements, 2. democratic communication, 3. flexibility, 4. teamwork within teams, 5. teamwork between teams, 6. incentives, 7. leadership, 8. sustainability, 9. external collaboration, and 10. teamwork between firms.

On the other hand, there is general agreement in the literature that the innovation culture should provide: 1. intent to innovate, 2. technical, financial and process-based infrastructure support, 3. strategy support, and 4. risk encouragement with punishment avoidance (Raajpoot & Sharma, 2021).

Raajpoot & Sharma (Raajpoot & Sharma, 2021) suggest that managers should understand their central role in setting innovation culture which is important for success of new services. In the absence of innovation culture, understanding customer

needs does not improve success chances, and financial rewards help develop an innovation culture.

In the empirical literature the impact of knowledge culture and innovation culture on NFPIs can be found, but no research was conducted on predictive role of knowledge culture and innovation culture on NFPIs.

Nathan et al. (Nathan, Yi, Görgényi, Victor, Gonda, & Farkas, 2019) conducted empirical test on 300 large companies operating in Malaysia with the conclusion that knowledge and innovation management dimensions and processes have significant impact on companies' financial and non-financial performances.

Michaelis & Aladin (Michaelis & Aladin, 2016) empirically tested innovative culture in 453 firms upon its 10 factors. Two clusters representing high and low innovation cultures were identified with the conclusion that those companies, in the high innovation culture cluster, had a significant increase in profit.

Ouedraogo et al. (Ouedraogo, Ouakouak, & Salem, 2020) tested empirically on 320 managers and concluded that without positive influence of innovation culture in the company, creative problem-solving has no significant effect on innovation outcomes.

RESEARCH METHODOLOGY

Research findings presented in this study entail the data gathered through the empirical research, conducted during the year 2021, as an online survey, in the Republic of Serbia. Participants of the study were 124 MSMEs from production and service sectors. The research instrument was constructed, according to the summary of literature findings, consisting of 40 questions, embedded into four segments: 1. demographics, 2. knowledge culture, 3. innovation culture and 4. non-financial performance indicators.

The first segment of the instrument had 3 questions, the second 13, the third 16 and the fourth 8. In the Figure 1 research framework is presented. The second segment of the instrument, regarding knowledge culture, is based on Stylianou & Savva (Stylianou & Savva, 2016). The third segment of the instrument, regarding innovation culture, is based on Raajpoot & Sharma (Raajpoot & Sharma, 2021), and the last, NFPIs, is based on Kaplan & Norton (Kaplan & Norton, 1996).

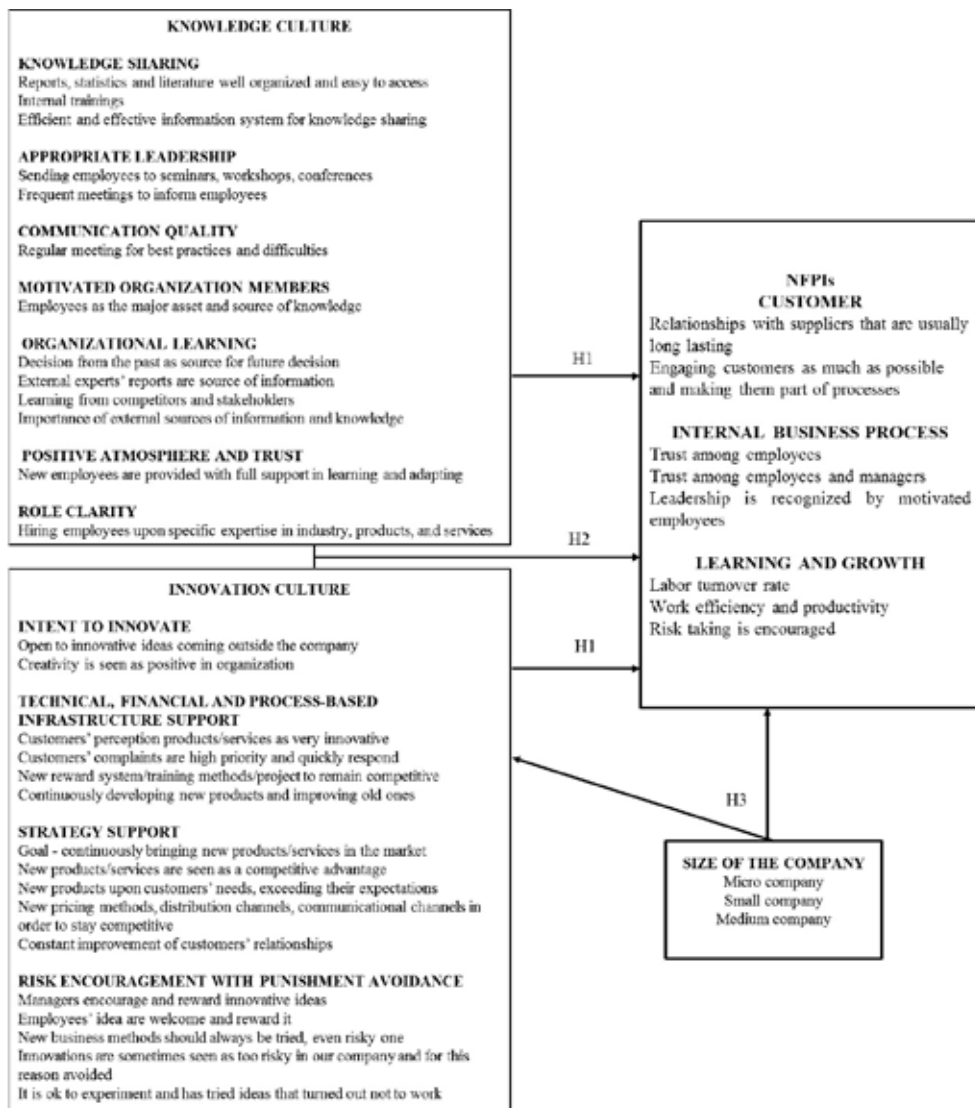
The study focused on examining the relationship between knowledge and innovation cultures and non-financial performance indicators. Firstly, the correlation was tested between knowledge and innovation culture and non-financial performance indicators and secondly regression analysis was performed to test if these two independent variables predict and to what extent a dependent variable, in this case non-financial performance indicators. Finally, the differences between variables in companies grouped according to size, were examined.

The collected data were further processed using IBM SPSS statistics version 26.

Selection of participants

In the study presented in this paper, 124 randomly selected MSMEs operating in the Republic of Serbia answered to questions in the research instrument. Channels used to reach out to study participants were the established database of the Chamber of Commerce and Industry of Serbia, LinkedIn and personal contacts. Participation in the study was voluntary and completely anonymous.

Figure 1. Research framework



Source: Research methodology

Hypotheses

Three hypotheses were tested and proven.

H1: Serbian MSMEs' knowledge and innovation cultures are in positive correlation with non-financial performance indicators.

H2: Knowledge and innovation cultures are a predictor of non-financial performance indicators of Serbian MSMEs.

H3: The differences exist in dependent and independent variables between micro, small and medium enterprises.

EMPIRICAL EVIDENCE

Descriptive statistics

Out of 124 companies included in the study presented, 44 (35.5%) are classified as „micro“, 48 (38.7%) as small and 32 (25.8%) companies as medium. 56 (45.2%) companies are in the production sector and 68 companies are in the service sector (54.8%). There are 8 (6.5%) companies in the heavy industry sector, 36 (29.0%) in the light industry sector, 16 (12.9%) in agriculture, 16 (12.9%) in ICT and 48 (38.7%) in services. 20 (16.1%) companies have been in the market for less than 10 years, 32 (25.8%) between 10 and 20 and 72 (58.1%) companies have been in the market for more than 20 years. These three groups were sorted out into two being less than 20 years, 52 (41.9%) and more than 20 years, 72 (58.1%). It can be noted that all medium size enterprises (100%) of them are longer than 20 years in the market, while micro have distribution of 54.5% (less than 20) and 45.5% (more than 20), and small ones have distribution for less than 20 of 58.3% and more than 20 of 41.7%. Production sector enterprises are present with the larger percentage for longer than 20 years, while this is more equally distributed for service enterprises.

Reliability testing

Cronbach's alpha (α) was used to measure internal consistency or reliability of each of three scales used in the research. All three scales have multiple questions with Likert scale (1-5) answers and Cronbach's alpha was used to show how closely related these questions are.

The results in Table 2 show that the reliability of the scale "Innovation culture" is "acceptable", while scales "Knowledge culture" and "Non-financial performance" have "good" reliability. No questions were excluded after calculating Cronbach's alpha.

Table 2. Cronbach's alpha reliability results

Scale	Cronbach's alpha	Number of items	Reliability
Knowledge culture	0.797	13	Good
Innovation culture	0.759	16	Acceptable
Non-financial performance	0.835	8	Good

Source: Research results

Composite reliability, or construct reliability is a measure of internal consistency in scale items, very similar to Cronbach's alpha (Netemeyer, Bearden, & Sharma, 2003).

Cronbach's Alpha measures the lower limit of the reliability value of a construct while Construct Reliability measures the true value of the reliability of a construct. The minimum value that must be met by either Cronbach's Alpha or Construct Reliability is 0.7, while Netemeyer and colleagues (Netemeyer, Bearden, & Sharma, 2003) state that it's "reasonable" for a narrowly defined construct with five to eight items to meet a minimum threshold of .80. The composite reliability represents the variance due to the

factor divided by the total variance of the composite. The average variance extracted (AVE) is approximately the average of the estimated indicator reliability of the scale. An AVE less than 0.50 means that the items explain more errors than the variance in the constructs. For any measurement model, an AVE must be calculated for each construct and must be at least 0.50.

Based on the results of data processing, shown in Table 3 a value of Composite Reliability was above 0.7 and above 0.8, precisely 0.883 for knowledge culture, 0.889 for innovation culture and 0.798 for non-financial performance indicators. AVE values for knowledge and innovation culture and NFPIs are 0.658, 0.667 and 0.601 respectively, all above 0.50.

Table 3. Composite Reliability and AVE

Dimension	Items	CR	AVE
Knowledge culture	4	0.883	0.658
Innovation culture	4	0.889	0.667
Non-financial performance	3	0.798	0.601

Source: Research results

Item communality is a numerical measure of how much an item's variance is captured by the factor model. Communalities between 0.25 and 0.4 have been suggested as acceptable cutoff values, with ideal communalities being 0.7 or above. Results of the study show that all items in the three scales have ideal values for communalities, presented in Table 4. Extraction communalities for factors in the dimension of knowledge culture are between 0.736 and 0.932, with average value of 0.84. Extraction communalities for factors in the dimension of innovation culture are between 0.753 and 0.917, with average value of 0.838. Extraction communalities for factors in the dimension of innovation culture are between 0.736 and 0.932, with average value of 0.834.

Table 4. Factor analysis for three dimensions

Scale items	Communalities	
	Initial	Extraction
Knowledge culture factors 1-13	1.000	.736-932
Innovation culture factors 1-16	1.000	.753-917
Non-financial performance factors 1-8	1.000	.736-932

Source: Research results

RESULTS AND DISCUSSION

To test hypothesis 1 correlation analysis was performed. Hypothesis 1 was tested using Spearman's rho correlation coefficient, also known as Spearman's rho statistical test, shown in Table 5. It is used to show linear relationship between variables.

This test is used to measure strength between the different variables and their relationship. Correlation coefficient shows how strong the relationship between variables is.

Below each correlation coefficient, both the significance value of the correlation and the sample size (N) on which it is based are shown. Spearman's coefficient shows that this correlation on the sample of 124 respondents cannot be accidental, or that the probability for it to be accidental is 0.

Table 5. Spearman's correlations between variables knowledge culture, innovation culture and non-financial performance

		Knowledge culture	Innovation culture	Non-financial performance
Knowledge culture	Spearman's rho Correlation	1.000	.640**	.507**
	Sig. (2-tailed)		.000	.000
	N	124	124	124
Innovation culture	Pearson Correlation	.640**	1.000	.591**
	Sig. (2-tailed)	.000		.000
	N	124	124	124
Non-financial performance	Pearson Correlation	.507**	.591**	1.000
	Sig. (2-tailed)	.000	.000	
	N	124	124	124

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Research results

Knowledge culture, innovation culture, and non-financial performance scales were each transformed into a single variable and the Spearman correlation test was performed on the averages. In Table 5 it is shown that knowledge culture shows a moderate to strong positive correlation with innovation culture and a moderate positive correlation with NFPIs. Innovation culture shows a moderate to strong positive correlation with knowledge culture and a moderate positive correlation with NFPIs and NFPIs show a moderate positive correlation with knowledge culture and innovation culture. All correlations are significant at the p-value of 0.01. The test performed proves that both knowledge and innovation culture are in moderate positive correlation with NFPIs, for 124 MSMEs in the Republic of Serbia. This is in accordance with findings of Nathan et al. (Nathan, Yi, Görgényi, Victor, Gonda, & Farkas, 2019).

Hypotheses 2 was tested using regression analysis. Multiple regression analysis was used, which proved to be acceptable, since it is not recommended when predicting variables have strong correlation between each other.

To test if these two variables, correlating, can be used in multiple regression analysis VIF value was examined. In Table 6 it is shown that the value of collinearity between knowledge culture and innovation culture is 0.604, which implies that it can be used, as well as VIF value which, according to Johnston et al. (Johnston, Jones, & Manley, 2018) should be below 2.5, in order for predictor variables that correlate to be used in multiple regression analysis. The statistical significance of the influence of knowledge culture and innovation culture on NFPIs is also shown, with innovation culture having higher influence.

Table 6. Collinearity of knowledge culture and innovation culture

Model	Stand. Coeff. Beta	t	Sig	Correlations Zero-order	Part	Collinearity Statistics	VIF
Constant		2.552	0.012				
Innovation culture	0.368	3.855	0.000	0.538	0.286	0.604	1.655
Knowledge culture	0.271	2.835	0.005	0.502	0.210	0.604	1.655

Source: Research results

In Table 7 below, it is shown that for both predictor variables, correlation coefficient (R) is 0.578 and R², coefficient of determination 0.334, or 33.4%, meaning that these two variables combined, knowledge culture and innovation culture, influence 33.4% of variations in NFPIs. The remaining 76.6% are influenced by other factors. R value squared shows how well the model fits the data and F test is also related to it (Table 8). The adjusted R² shows how well the proposed model generalizes and the value would ideally be the same as R. In this case, the difference between R² and R² adjusted is 0.334-0.323=0.011, which is 1.1%. This means that if the model were derived from the population rather than a sample it would account for 1.1% less variance in the outcome. This indicates that the cross-validity of this model is very good.

Table 7. R value for predictor variables

Model	R	R square	Adjusted R Square	Standard Error of the Estimate
1	.578a	.334	.323	4.030

a. Predictors: (Constant), Knowledge culture, Innovation culture

Source: Research results

In Table 8 ANOVA shows that the suggested model of NFPIs through knowledge culture and innovation culture is statistically significant. F ratio value is showing how much the model has improved the prediction of the outcome compared to the inaccuracy of the model. The F-test compares the model specified in this study to the model with no independent variables.

Table 8. ANOVA for the statistical significance of predictor variables

Model	Sum of squares	df	Mean Square	F	Sig.
Regression	984.840	2	492.420	30.325	.000b
Residual	1964.838	121	16.238		
Total	2949.677	123			

a. Dependent Variable: Performance

b. Predictors: (Constant), Knowledge culture, Innovation culture

Source: Research results

Hypothesis 2 is proved, stating that knowledge and innovation cultures have predictive role in 33.4% on NFPIs. These predictive role of some of the factors on NFPIs cannot be found in the literature.

Hypothesis 3 was tested using ANOVA for differences between groups. In Table 9 it is shown that differences exist between different groups in the study, being sizes of companies, and statistically significant differences are observed in innovation culture and non-financial performance indicators, but not in the knowledge culture.

In Figure 2 the differences are presented in innovation culture related to the size of the company. The strongest innovation culture is present in micro, then in small and the weakest is in medium size enterprises.

Table 9. ANOVA for differences between groups

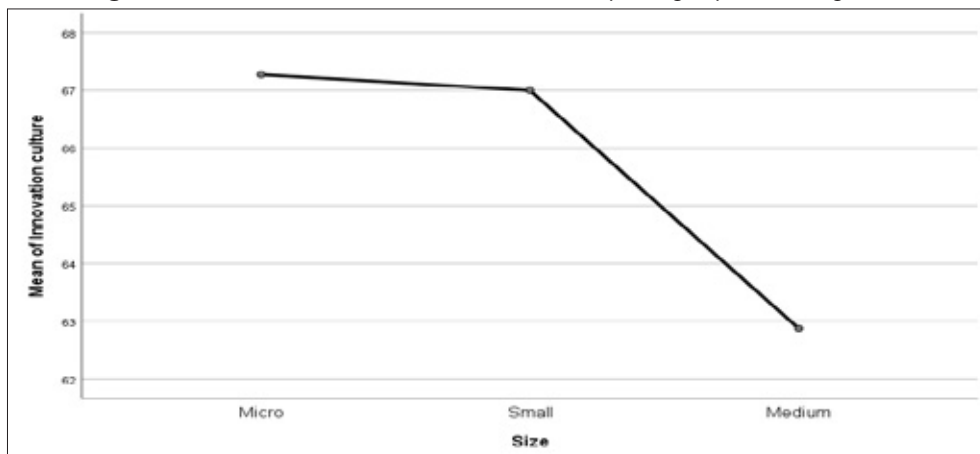
ANOVA		df	F	Sig
Knowledge culture	Between groups	2	1.738	.180
	Within groups	121		
	Total	123		
Innovation culture	Between groups	2	3.888	.023
	Within groups	121		
	Total	123		
Non-financial performance	Between groups	2	26.162	.000
	Within groups	121		
	Total	123		

Source: Research results

In Table 9 it is shown that differences exist between different groups in the study, specifically, the sizes of companies, and p-values are less than 0.05 for the innovation culture and non-financial performance indicators, but not for the knowledge culture. The differences in the knowledge culture also exist, but are not significant.

In Figure 2 the statistically significant differences in innovation culture, between companies grouped according to size, are shown. The highest level of innovation culture is present in micro, then in small and the lowest is in medium size enterprises. This leads to the conclusion that micro-companies see their biggest potential in innovations they deliver and this is why they put efforts in the development of innovation culture from the very beginning.

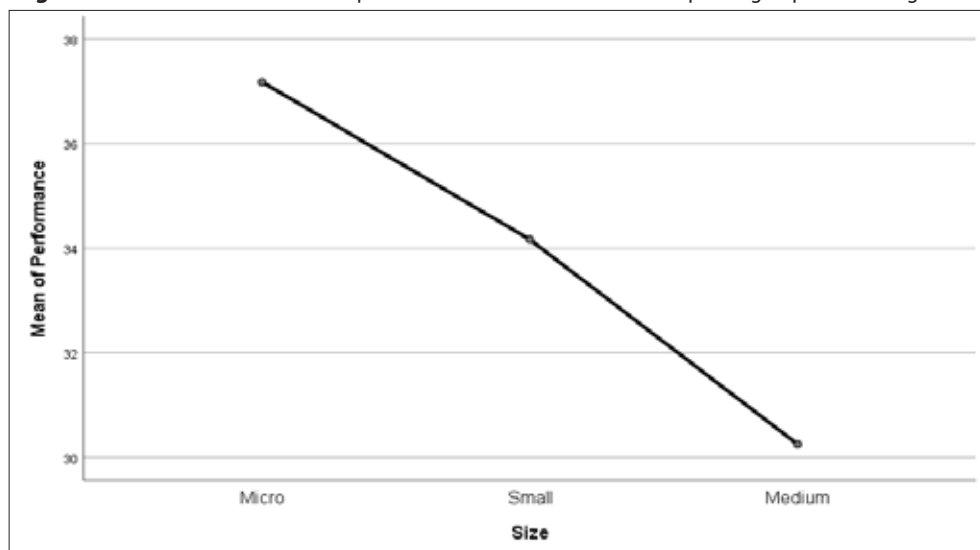
Figure 2. Differences in innovation culture between companies grouped according to size



Source: Research results

In Figure 3 the differences are presented in NFPIs between companies grouped according to size. The highest level NFPIs is present in micro, then in small and the lowest is in medium size enterprises.

Figure 3. Differences in non-financial performance indicators between companies grouped according to size



Source: Research results

Differences in NFPIs show that since there are no differences in knowledge culture, the whole loop of new knowledge creation has only been circled for micro companies, while small and medium ones are stagnating and that they have not pursued new knowledge creation leading to fostering the innovation potential.

Hypothesis 3 is proved meaning that there is statistically significant differences in innovation culture and NFPIs when the enterprises were compared in size. It is in accordance with the findings of Vitolla, et al. (Vitolla, Raimo, Rubino, & Garzoni, 2020).

CONCLUSION

In the past 30 years, literature findings acknowledge the importance of non-financial performance indicators, as the main showcase for the assessment of the long-term success of MSMEs. Very often financial reports, as seen by the analysts, do not give sufficient information, or may even be misleading in the estimation of the viability and sustainability of these enterprises, which contribute greatly to the global economy. Currently, new trends have been emerging in the form of non-financial reports, proving that there are more important factors to consider, besides the information found in the financial statements. This approach not only proved to be beneficial to the companies and their stakeholders and it has also been supported by European Union Directives, specifically European Commission and EISMEA. During the literature review, no theoretical or empirical data have been found on the application and consideration of using NFPIs for the assessment of Serbian MSMEs. The only exception is the authors' conference paper (Pavlovic & Raskovic-Depalov, 2022). This study was conducted as the continuance of the contribution to the filling of this gap, but also for providing insights to MSMEs about the relevant findings. In the study, three hypothesis were tested. The first one was proved and a statistically significant correlation was shown between three dimensions used in the research instrument: knowledge culture, innovation culture, and non-financial performance indicators. Knowledge and innovation cultures are tightly linked according to different authors and also to NFPIs, because developed culture of knowledge and innovation indirectly leads to factors of NFPI dimension, presented in Table 1 and also NFRs mentioned in previous sections. This showed that Serbian MSMEs are no exception to the literature findings. In the second hypothesis the model was tested in which dimensions of knowledge and innovation culture combined predict NFPIs. Multiple regression analysis was performed. This model showed that knowledge and innovation culture influence 33.4% of variations in NFPIs, which is approximately one-third. The cross-validity of the model was very good. The finding that one-third of variations in NFPIs originate from the established knowledge and innovation culture is beneficial for the MSMEs, because it provides them with evidence that if they raise these to a higher level, that would lead to the achievement of NFPIs and eventually long-term success. Testing of the third hypothesis showed that micro-enterprises have the statistically significant highest level of innovation culture, together with NFPIs, followed by small and then medium enterprises. Differences in the knowledge culture, when compared between micro, small, and medium enterprises exist but are not significantly different. This is most probably due to the fact that micro-companies tend to be the most adaptable and continuously struggle to survive, which is why they accelerate the transfer of knowledge to innovations, which immediately reflects on NFPIs. The limitation of this study is that the proposed research instrument was used for Serbian MSMEs, but since it represents the combination of literature findings and conclusions it can be used for any group of MSMEs selected nationally or in specific industries. The study presented can represent the basis for further research and expansion of the prediction model with the incorporation

of more dimensions, expected to be in correlation with NFPIs, as well as the addition of factors in the dimension of NFPIs according to the most recent research findings.

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