KEY FACTORS OF PROMOTING INNOVATIVE PERFORMANCE IN AGRIBUSINESS SMEs: PROJECT AN EMPIRICAL METHOD

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ABSTRACT

The main goal of the research is to determine the effects of the selected factors (organization culture, organization learning, market orientation and innovation culture) on the innovation performance of small and medium-sized enterprises in agribusiness. The Structural Equation Modeling method was used to test the research hypotheses. The results showed that the selected factors are significant determinants of innovative performance. In addition, the relationship between organizational culture and innovation performance, as well as organizational learning and innovation performance, was found to be fully mediated, and the relationship between market orientation and innovation performance was found to be partially mediated by innovation culture. Small and medium-sized businesses should be empowered in the globalized and fiercely competitive market of today by fostering product innovation, investing in the development of human resources and technology, and broadening their market reach. These initiatives are essential to enhancing their marketing plans and successfully taking on competitors.

Introduction

Developing countries are increasingly relying on the SME sector for their economic growth and development, following the lead of established countries. At the start of the twenty-first century, the Republic of Serbia underwent institutional reforms that significantly advanced the establishment of a framework for promoting and assisting the growth of SMEs and improved the business environment (Kostadinović and

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Stanković, 2021). Serbian agriculture has the potential to significantly contribute to the nation's economic development with proper strategic planning (Dašić et al., 2022). The formulation and execution of economic policy present a challenging task for those responsible for fostering a highly competitive national economy and agriculture (Dimovski et al., 2022). According to the data of the Statistical Office of the Republic of Serbia, in Serbia, in 2022, out of a total of 108.305 enterprises, there were 12.540 small (11.6%) and 2.913 medium-sized (27.27%). In Serbia, over 25% of the workforce works directly in agriculture, producing agricultural goods and then processing them to make food items. Another 10% of the population is indirectly employed in agriculture. In 2017, 12.823 active enterprises were registered in the agribusiness industry, of which 1.249 were small and 350 were medium-sized, according to APR data (Fren, 2020).

For small and medium-sized businesses to grow or remain competitive, innovation is essential. How inventive these businesses can be largely depends on how capable and imaginative their entrepreneurs are. However, based on the review of the relevant literature, as far as the authors are aware, there is still not enough research that deals with the factors that determine the innovative performance of small and medium-sized enterprises in agribusiness that operate on the territory of Serbia. Bearing this in mind, the subject of the research is key factors promoting innovative performance in agribusiness SMEs, by applying the empirical method, i.e., structural equation modeling. According to the subject, the main goal of the research is to determine the effects of the key factors on the innovation performance of micro, small and medium-sized enterprises in agribusiness.

Literature Review

Nowadays, in the emerging information economy, creativity and innovation are critical organizational competencies (Kostadinović and Stanković, 2021a). The idea of innovation has been closely associated with economic ideology over time, as nations have embraced it as a means of overcoming economic obstacles and gaining a competitive edge in the global market (Drejer, 2004). According to Tellis et al. (2012), innovation can take place in platforms, business models, component or design technologies, goods or processes, and more. Innovation is a tool that promotes industrial leadership since it increases productivity (Adner & Kapoor, 2010). The subject of why businesses innovate is one that comes up frequently.

Innovation performance is one of innovation's main results (Robertson et al., 2023). According to Edquist et al. (2018), an ideal definition of innovation performance would take into account both linear and holistic methods, as well as all factors that influence the creation and spread of inventions that improve inventive company performance or achieve commercial success. Innovation performance, as it relates to organizations, is the ability to successfully implement creative ideas (Zhang et al., 2023). Innovation performance is the culmination of several driving forces and encompasses all innovations' accomplishments and outcomes. Organizational innovation performance is influenced by numerous influencing factors, such as organizational culture.

The innovation culture inside an organization is mostly driven by its organizational culture (Halim et al., 2019). An inventive organization is one where the proprietor is willing to experiment with new ideas and has the skills, knowledge, and resources needed to develop and carry out creative projects. Since innovation requires an environment that supports creative endeavors (Kaasa & Vadi, 2010), small and medium-sized enterprises should be given the chance to explore and experiment in order to produce innovative products and services (Halim et al., 2019). Dobni (2008) proposes four dimensions of organizational culture: intention, infrastructure, influence and implementation for innovation.

The typical habits, actions, and representations that all members of an organization share make up its culture (Davies and Buisine, 2018; Latinović et al., 2023). Every organization has an organizational culture, what matters is whether it was developed deliberately or consciously (Krušković et al., 2023). Furthermore, different organizational cultures have different effects on how employees behave and perform within the organization (Žikić and Valjević, 2021). Since organizations that instill organizational culture can have beneficial incremental and radical changes in their operations, an organization should have a set of shared behaviors, ideas, beliefs, and experiences in order to achieve innovative performance (O'Cass and Viet Ngo, 2007).

Given the importance of continuous, both formal and informal, learning in a well-structured system within the organization, employees in the organization should share a similar belief in promoting innovation (Achdiat et al., 2023). According to López et al. (2004), organizational learning is a combination of four processes: distribution, interpretation, acquisition, and organizational memory. Organizations that prioritize organizational learning must first gather data, then analyze it to fully comprehend its significance and turn it into knowledge. Organizational learning is encouraged by innovation cultures (Ilić et al., 2023; Krušković et al., 2022).

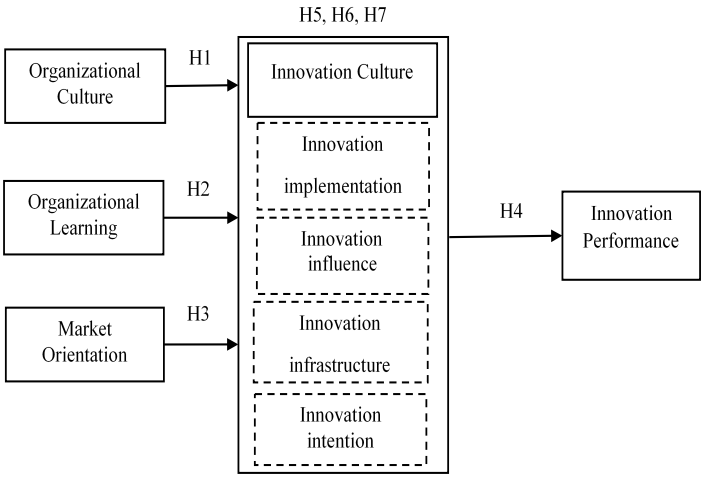
Any organization's performance depends on its market orientation, which prioritizes responsiveness, coordination, and awareness of its customers and competitors (Pérez-González, 2017). Innovation and market orientation are closely related fields, and market-oriented organizations frequently use innovative policies (O'Cass and Viet Ngo, 2007). Market orientation and organizational innovation have a statistically significant association, according to research findings by Šlogar (2021).

Methodology

Research model

Planned research examines how organizational culture (OC), organizational learning (OL), and market orientation (MO), through innovation culture (IC), influence innovation performance (IP) (Figure 1). This is done by following the methodology used in the studies by Halim et al. (2019), Hanifah et al. (2019), and Kusnandar et al. (2023).

Figure 1. Research model



Source: Authors' presentation, based on Halim et al. (2019), Hanifah et al. (2019), and Kusnandar et al. (2023) methodology

The research objectives and subject, together with previous studies on the topic, were taken into consideration when defining the following research hypotheses:

H1: Innovation culture is significantly affected by organizational culture.

H2: Innovation culture is significantly affected by organizational learning.

H3: Innovation culture is significantly affected by market orientation.

H4: Innovation performance is significantly affected by innovation culture.

H5: The relationship between organizational culture and innovation performance is significantly mediated by innovation culture.

H6: The relationship between organizational learning and innovation performance is significantly mediated by innovation culture.

H7: The relationship between market orientation and innovation performance is significantly mediated by innovation culture.

Sample

According to Creswell et al. (2011), empirical research employs a quantitative technique to test and generalize the preliminary findings. The sample includes owners /managers of small and medium-sized agribusiness enterprises operating on the territory of Serbia. Since enterprises in Serbia, according to the Law on Accounting, are classified as micro (up to 10 employees), small (up to 50 employees), medium (up to 250 employees), and large-sized, the sample only consists of enterprises with more than ten and fewer

than 250 employees. Data were collected through self-administered questionnaires distributed to small and medium-sized agribusiness enterprises in Serbia. Because the data in this research reflect the phenomenon of the individual's situation and behavior, wherein the organizational environment is assumed to be constant at different times, a cross-sectional design was employed in this study. The survey, including the pilot test, was carried out between March and November 2023. There were 281 questionnaires gathered, and upon reviewing the irregularities, all 281 respondents were included in the further analysis.

According to the data shown in Table 1, the sample had the most respondents with a higher school or faculty diploma (59.8%) and the least with a master's or PhD degree (10.3%). The sample includes 68% of small and 32% of medium-sized agricultural enterprises. Observed according to activity, the largest percentage of companies are engaged in the production of food of plant origin (45.2%), followed by companies engaged in the production of food of animal origin (37.4%), the production of mixed food (11.7%), and the smallest companies whose activity is service activities in agriculture (5.7%). In addition, the largest percentage of companies have been operating for more than 10 years (41.6%) and the smallest for up to 3 years (6.8%). As far as market coverage is concerned, the largest percentage of companies participate in the regional market (47.7%), followed by the national market (26%), slightly less in the local market (25.6%), and the least in the international market (0.7%).

Table 2. Socio-demographic characteristics of the research sample

Characteristics	Indicator	Percent
Education	Medium	29.9
	Higher/High	59.8
	Master/PhD	10.3
Enerprise size	Small	68.0
	Medium	32.0
Activity	Service activities in agriculture	5.7
	Production of food of animal origin	37.4
	Production of plant-based food	45.2
	Production of mixed food	11.7
Lenght of business	Up to 3	6.8
	4-6	18.9
	6-8	17.4
	8-10	15.3
	10+	41.6
Market Coverage	Local	25.6
	Regional	47.7
	National	26.0
	International	0.7

Source: Authors' own calculations

Measures

Six components made up the questionnaire that was created for the study. The demographics of the respondents were covered in the first section of the questionnaire (education level, size of company, activity, length of operation, and market penetration). The questionnaire (Appendix 1) was divided into six sections: part II asked business owners and managers about their perceptions of organizational culture; part III asked them about their perceptions of organizational learning; part IV asked them about their perceptions of market orientation; part V asked them about their perceptions of innovative culture; and part VI asked them about their perceptions of innovative performance. A five-point Likert scale was used to rate the items (1 - strongly disagree and 5 - strongly agree). A cover letter outlining the goals of the study and the meaning of the variables included in it was also sent with the questionnaire. Furthermore, participants were notified that the survey was anonymous and that an aggregate of the findings would be displayed.

The instrument for measuring organizational culture consisted of three attitudes, taken from Denison et al. (2006). In the research, the construct of organizational culture was observed as a first-order construct. The organizational learning measurement instrument consisted of 3 items, created by García-Morales et al. (2008). The scale for measuring market orientation consisted of four items, taken from Mac and Evangelista (2016). This construct is also seen as a first-order construct. The scale for measuring innovative performance consisted of three items taken from Zhang and Li (2010). In the research, this construct was viewed as a first-order construct. The innovation culture construct was viewed as a second-order construct. The instrument for measuring this construct consisted of 12 items, taken from Dobni (2008). Items are divided into 4 dimensions of 3 items each: innovation intention (InnInt), innovation infrastructure (InnInfr), innovation influence (InnInfl) and innovation implementation (InnImpl) (Appendix 2).

Analysis

The structural equation modeling method was used to evaluate the causal link between the variables included in the study. A multivariate statistical technique called structural equation modeling (SEM) includes estimating the parameters of a system of simultaneous equations. As noted by Bollen (1989), a few generalized frameworks that comprise SEM are factor, regression, and pathway analysis, as well as simultaneous econometric equations and latent growth curve models. Three tendencies may be seen in the development of SEM, according to Bollen et al. (2022). The first two trends involved combining popular statistical techniques into a single model and generalizing them. The third development was the spread of SEM across various fields. This made it easier to see how many conventional models fit under a broader model, which in turn made it possible to create new hybrid models. SEM is used to evaluate a system of linear equations to test the research "causal" model fit. Visualizing the proposed model or drawing a "path diagram" based on existing information and/or ideas is therefore the first step. Rectangles in path diagrams indicate variables that are directly measured or

observed, while circles or ovals usually indicate latent or unobserved constructions that are defined by measured variables. Double-headed arrows show correlations between variables, while unidirectional arrows show causal routes, where one variable directly affects another. Some people think "arc" is a better word than "causal path" (Stein et al., 2012). Measurement and structural models are the two submodels that make up SEM. According to Bollen (1989), the measurement model consists of the following equations:

$$x = \Lambda_x \xi + \delta$$

$$y = \Lambda_y \eta + \varepsilon$$

In which: x and y represent latent variable observable indicators; Λ represent factor loadings; ξ and η represent latent variables; δ and ε represent error.

The structural model, according to Bollen (1989), consists of the folowing equation:

$$\eta = \alpha + B\eta + \Gamma\xi + \zeta$$

In which: η is a vector with m x 1 latent endogenous variables; α is a vector of intercept terms with m x 1; ξ is a vector with n x 1 latent exogenous variables; B is an m x m matrix coefficient that gives the effect of endogenous variables (η) on each other; Γ is an m x n matrix coefficient that gives the influence of exogenous (ξ) on endogenous variables (η); The m x 1 disturbance vector, denoted by ζ, contains the segments of the η's that are described.

Based on the approach proposed by Anderson and Gerbing (1988), the paper first evaluated the measurement model (validity and reliability) and then the structural model (testing the relationship between research variables). Factor loadings, composite reliability (CR), and average variance extracted (AVE) should all be taken into account when evaluating convergent validity, as suggested by Hair et al. (2014). De Vellis (2003) states that the lower acceptance threshold for factor loading and AVE is 0.5, while for CR and Crombach's alpha (Cα), it is 0.7. Discriminant validity was interpreted in accordance with Fornell and Larcker (1981), as well as Farrell and Rudd (2009), who propose that the AVE values of the square root ($\sqrt[2]{AVE}$) of each of the concepts in a pair are bigger than the correlation between concepts. The coefficient of determination (R^2) value was used to assess the structural model. According to Cohen (1988), a substantial model is indicated by an R^2 value greater than 0.26. The path coefficient (β) was used to determine the impacts' magnitude.

Mediation analysis examines hypothesized causal links in which one variable affects a second variable, which in turn affects a third variable. This is also referred to as an indirect effect on occasion (Blair, w.d.). According to Edwards and Lambert (2007), partial mediation occurs when the relationship between two variables may be explained by both direct and indirect association, but full mediation occurs when the mediator

variable fully explains the relationship between two variables (indirect association). The Bootstrap technique was used to perform mediation analysis. A statistical method called bootstrap resamples a single dataset to produce several simulated samples (Stanković et al., 2023). The approach suggested by Hair et al. (2016) was applied for the mediation analysis. This approach looks at the direct impacts in the presence of intermediaries after looking at the indirect effects first.

Data processing was done using IBM SPSS 21 statistical software and IBM SPSS Amos Graphics.

Results

Requirements of the SEM model

Lee et al. (2010) state that the common method variance bias test (CMV), multicollinearity concerns not being present, and the adequacy of the research sample are requirements for structural equation modeling. Hoelter (1983) recommends a minimum sample size of 200. In this research, the sample included 281 respondents. Results of the VIF (variance inflation factor) test below 3 (range from 1.766 to 2.483) show that there is no multicollinearity problem. To look at CMV, the Harman's single-factor test was employed. Eight factors were extracted from the exploratory factor analysis that had a characteristic root larger than 1. According to Podsakoff et al. (2012), the first factor shouldn't account for more than half of the variance in the whole. The findings show that there was no problem with CMV, as the first construct explained 38.302% of the total variation.

Measurement Model

As indicated by the results displayed in Table 2, the factor loadings ranged from 0.794 to 0.914 for the construct organization culture, 0.780 to 0.881 for the construct organization learning, from 0.702 to 0.760 for the construct market orientation, from 0.926 to 0.972 for the construct innovation performance, and from 0.67 to 0.858 for the innovation culture construct, respectively. The value of the Cα coefficient for the organization culture construct is 0.896, the CR value is 0.898, and the AVE value is 0.746. For the organization learning construct, the Cα coefficient is 0.859, the CR value is 0.861, and the AVE value is 0.674. For the market orientation construct, the Cα coefficient is 0.837, the CR value is 0.839, and the AVE value is 0.565. The value of the Cα coefficient for the innovation performance construct is 0.965, the CR value is 0.966, and the AVE value is 0.903. For the innovation culture construct, the Cα coefficient is 0.852, the CR value is 0.849, and the AVE value is 0.587. The results showed that the convergent validity criteria were satisfied.

Table 2. Measurement model evaluation

1st order construct	2st order construct	Item	Factor loading	Cα	CR	AVE
Organization culture		OC1	.794	.896	.898	.746
		OC2	.914			
		OC3	.879			
Organizaton learning		OL1	.780	.859	.861	.674
		OL2	.881			
		OL3	.799			
Market orientation		MO1	.702	.837	.839	.565
		MO2	.771			
		MO3	.760			
		MO4	.772			
Innovation performance		IP1	.926	.965	.966	.903
		IP2	.972			
		IP3	.953			
	Innovation culture	Innovation implementation	.670	.852	.849	.587
		Innovation influence	.858			
		Innovation infrastructure	.810			
		Innovation intention	.712			

Source: Authors' own calculations

The measurement model demonstrated adequate discriminant validity, according to the test results of discriminant validity, since the square root of the AVE is greater than the correlations between all pairs of constructs (Table 3).

Table 3. Discriminant Validity

Construct	OC	OL	MO	IC	IP
OC	.864*				
OL	.626	.821*			
MO	.371	.393	.752*		
IC	.634	.592	.517	.950*	
IP	.145	.179	..323	.243	.766*

Note: * - $\sqrt[2]{AVE}$

Source: Authors' own calculations

The results of the confirmatory analysis, interpreted according to the suggestions of Byrne (1998) as well as Hu and Bentler (1999), showed that the measurement model fit well (Table 1).

Table 4. Fit indices of measurement model

	χ2 /df	NFI	TLI	CFI	RMSEA	SRMR
Fit indices	1,729	.942	.969	.975	.051	.055
Recommended values	≤ 3	≥ .90	≥ .90	≥.90	≤ .08	≤ .08

Source: Authors' own calculations

Structural Model

The value of the coefficient of determination was 0.534 for the construct innovation culture, i.e., 0.567 for the construct innovation performance. The obtained results indicated a substantial model. The results showed a positive and significant influence of organizational culture on innovation culture ($\beta = 0.371$; $p < 0.001$), a positive and significant influence of organizational learning on innovation culture ($\beta = 0.247$; $p < 0.001$), a positive and significant influence of market orientation on innovation culture ($\beta = 0.290$; $p < 0.001$), and positive and significant impacts of innovation culture on innovation performance ($\beta = 0.258$; $p < 0.001$) (Table 5 and Figure 2).

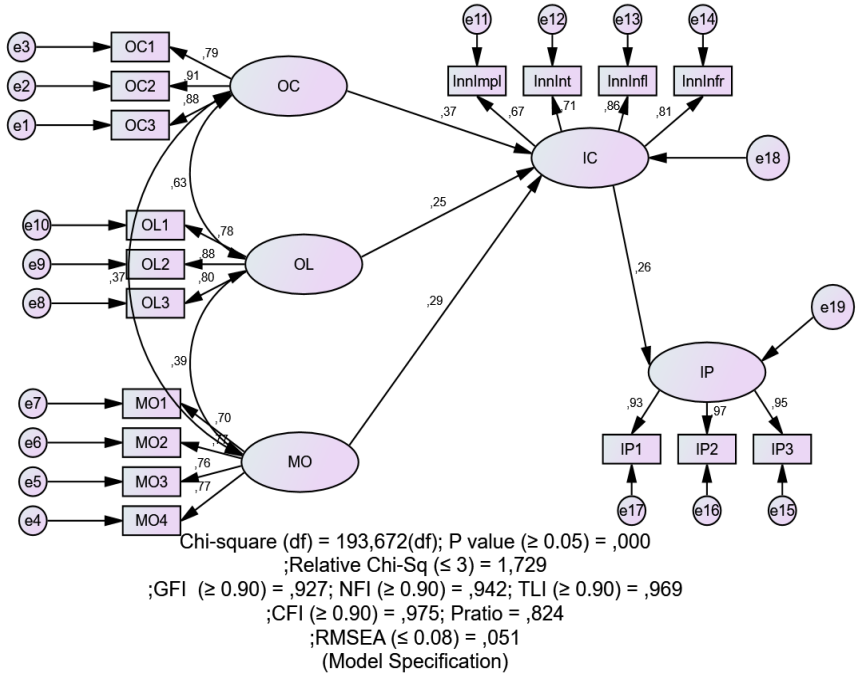
Table 5. Structural model evaluation

Hypotheses	Paths	β	S.E.	t	R^2	Decision
H1	OC⟶IC	.371	.064	5.131*	R^2_{IC} = .534	Supported
H2	OL⟶IC	.247	.066	3.330*		Supported
H3	MO⟶IC	.290	.064	4.660*		Supported
H4	IC⟶IP	.258	.077	4.067*	R^2_{IP} = .567	Supported

Note: * - $p < 0.001$

Source: Authors' own calculations

Figure 2. Structural model



Source: Authors' presentation

Mediation analysis

To assess the mediating role of innovation culture in the relationship between organizational culture, organizational learning and market orientation, on the one hand, and innovation performance, on the other hand, three mediation analyses were applied by first examining indirect and then direct effects (in the presence of mediators) (Table 5). The first mediation analysis assessed the role of innovation culture as a mediator of the relationship between organizational culture and innovation performance. In the first phase of the mediation analysis, the indirect influence of organizational culture on innovation performance, via innovation culture, was assessed. The obtained results showed that this influence is significant ($\beta = 0.162$; $p < 0.05$). In the second phase, the direct influence of organizational culture on innovation performance was examined in the presence of innovation culture as a mediator. The results showed that this influence was not significant ($\beta = -0.017$; $p > 0.05$), which indicated full mediation. The second mediation analysis assessed the role of innovation culture as a mediator of the relationship between organizational learning and innovation performance. In the first phase of the mediation analysis, the indirect influence of organizational learning on innovation performance, via innovation culture, was assessed. The obtained results showed that this influence is significant ($\beta = 0.125$; $p < 0.05$). In the second phase, the direct influence of organizational learning on innovation performance was examined in the presence of innovation culture as a mediator. The results showed that this influence was not significant ($\beta = 0.057$; $p > 0.05$). These results indicated full mediation. The third mediation analysis assessed the role of innovation culture as a mediator of the relationship between market orientation and innovation performance. In the first phase of the mediation analysis, the indirect influence of market orientation on innovation performance, via innovation culture, was assessed. The obtained results showed that this influence is significant ($\beta = 0.155$; $p < 0.05$). In the second phase, the direct influence of market orientation on innovation performance was examined in the presence of innovation culture as a mediator. The results showed that this influence was significant ($\beta = 0.267$; $p < 0.05$). These results indicated partial mediation.

Table 6. Results of mediation analysis

Hypotheses	Paths	Indirect effect	Direct effect	Decision
H5	OC⟶IC⟶IP	.162*	-.017	Full mediation
H6	OL⟶IC⟶IP	.125*	.057	Full mediation
H7	MO⟶IC⟶IP	.155*	.267*	Partial mediation

Note: $p < 0.01$

Source: Authors' own calculations

Discussions

According to the results of the research, organizational culture has a significant impact on innovation culture. Such results are consistent with the results of earlier research, which also indicate the importance of this factor for improving innovation culture (Sharifirad and Ataei, 2012; Halim et al., 2019; Zhang et al., 2023). The obtained results indicate a significant positive relationship between organizational learning and innovation culture, which is in accordance with the results of earlier studies by Škerlavaj et al. (2010). Similarly, Halim et al. (2019) obtained results according to which two (information acquisition and behavioral and cognitive learning) out of three organizational learnings positively and significantly influence organizational culture. The results of the current research indicate a positive and significant relationship between market orientation and organizational culture. Similarly, Halim et al. (2019) found a positive and significant relationship between market orientation towards competition and innovation culture. Kusnandar et al. (2023) report positive and significant effects of market orientation on innovation.

The current research findings indicate that innovation performance is positively and significantly impacted by innovation culture. Similar findings were reached by Hanifah et al. (2019) and Liu et al. (2021), who found that innovation culture significantly and positively affects innovation performance.

The current research findings demonstrate the important moderating role that creative culture plays in the interaction between market orientation, organizational learning, organizational culture, and innovation performance. As far as the authors are aware, the results obtained, which were based on a study of the pertinent literature, cannot be compared with the findings of other studies because this link has not been thoroughly examined in previous research. Nonetheless, important role for organizational culture as a mediator can be inferred given the positive and significant correlations that have been shown between innovative performance and organizational learning, organizational culture, and market orientation. In particular, the findings of the Lee et al. (2008) study showed a strong and favorable correlation between organizational learning and organizational culture and innovation performance. Furthermore, as per the results of the aforementioned investigation, varying degrees of organizational culture and learning exert a differential impact on innovation. The study by Škerlavaj et al. (2010) found that organizational learning promotes innovation both directly and indirectly through organizational culture. Innovation culture is a key moderator of the relationship between organizational learning and inventive performance characteristics, according to data obtained by Ghasemzadeh et al. (2019). Market orientation has a significant and direct impact on innovative performance in Chinese manufacturing organizations, according to Zhang and Duan's (2010) findings.

Conclusions

The main goal of this paper was to determine the effects of key factors (organizational culture, organizational learning, market orientation and innovation culture) on the innovative performance of small and medium-sized enterprises in agribusiness. The results showed a significant impact of organizational culture, organizational learning and market orientation on innovation culture, as well as significant positive impacts of innovation culture on innovation performance, which is why it was concluded that hypotheses H1, H2, H3 and H4 are accepted. In addition, the research results showed that organizational culture is a significant mediator of the relationship between organizational culture, organizational learning and market orientation, on the one hand, and innovation culture, on the other hand, which is why it was concluded that hypotheses H5, H6 and H7 are accepted.

Increasing the innovative performance of small and medium-sized enterprises in agribusiness requires a combination of internal characteristics of the enterprise. The main implication of this paper is that, although SMEs might not require large resources for innovation, organizational culture, organizational learning, market orientation, and innovative culture are necessary conditions for attaining innovation performance. Furthermore, because it examines the role of organizational culture as a mediator in the relationship between organizational culture, learning, and market orientation and innovation performance, this paper can add to the body of literature on innovation issues pertaining to small and medium-sized enterprises.

There are certain limitations to this study. It could be argued that the study's reliance on a single respondent (SME owners) is a weakness, since bias can occur. According to the results of the Harman's test, bias is not a problem, but this does not mean that such a possibility does not exist. The fact that the research only looks at four agribusiness-related activities could be another limitation. Additional activities like retail trading, plant cultivation, animal husbandry, mixed farming, hunting, and fishing may be included in future studies. Future research should look at how other factors, such as government support or innovation strategy, affect the innovation performance of agribusiness SMEs.

The results of this paper contribute to the understanding of how selected factors influence innovation performance and provide organizations with useful advice on how to create management environments that encourage innovation. Finally, achieving innovative performance is a difficult task without a proper plan or roadmap that outlines and practices it.

Conflict of interests

The authors declare no conflict of interest.

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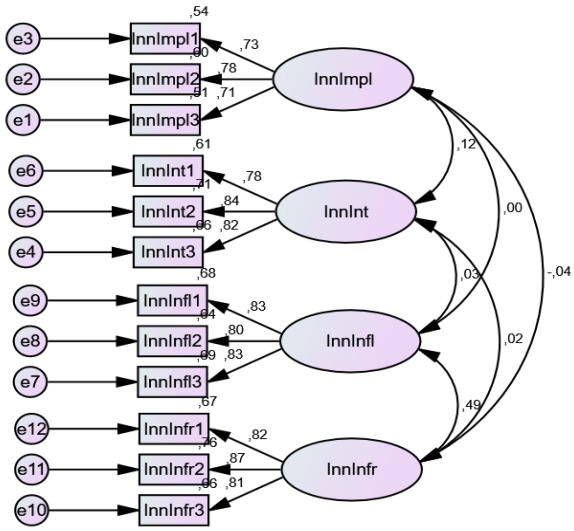
Appendix 1 / Questionnaire

Constructs and items	Source
Organization culture	Denison et al., 2006
We are able to meet short-term demands without compromising our long-term vision	
There is widespread agreement about goals	
Most employees are highly involved in their work.	
Organization learning	García -Morales et al., 2008
The organization has acquired and used much new and relevant knowledge that has provided competitive advantage	
The organization's members have acquired critical capacities and skills that haveprovided competitive advantage	
Organizational improvements have been influenced fundamentally by new knowledge entering the organization	
Market orientation	Mac and Evangelista, 2016
Strategy for competitive advantage is based on our understanding of customers' needs	
We rapidly respond to competitive actions that threaten us	
We freely communicate information about our successful and unsuccessful customer experiences across all business functions	
Measure customer satisfaction systematically and frequently	
Innovation culture	Dobni, 2008
Innovation implementation (dimension)	
We can quickly facilitate changes to our products and services based on client or competitive reaction	
We are quick to turnaround ideas into marketable products/services	
There is an understanding that mistakes will occur or an opportunity will not transpire as expected	
Innovation influence (dimension)	
We take time to understand our competitive environment to the point where wecan anticipate industry shifts	
When I find out something important about a customer or competitor that may affect others in the organization, I know what to do with that information	
I actively search for new ideas and innovations at all stages of product/ service development	
Innovation intention (dimension)	
My contributions are valued by my fellow employees	
There is trust and mutual respect currently between management and employees	
Innovation is a core value in this organization	
Innovation infrastructure (dimension)	
There is an expectation to develop new skills, capabilities and knowledge that is directed toward supporting innovation in this organization	
I view uncertainty as opportunity, and not as a risk	
Innovation in our organization is more likely to succeed if employees are allowed to be unique and express this uniqueness in their daily activities	

Constructs and items	Source
Innovation performance	Zhang and Li, 2010
The new products developed by our organization are of high quality	
Our organization has a strong ability to develop markets with new products	
Our organization has a relatively short development cycle for innovative products	

Appendix 2 / Confirmatory factor analysis of the innovation culture measurement instrument



Chi-square (df) = 53,374(df); P value (≥ 0.05) = ,275;
Relative Chi-Sq (≤ 3) = 1,112;
GFI (≥ 0.90) = ,971; NFI (≥ 0.90) = ,965; TLI (≥ 0.90) = ,995;
CFI (≥ 0.90) = ,996; Pratio = ,727;
RMSEA (≤ 0.08) = ,020
(Model Specification)

$$InnImpl = (InnImpl1 + InnImpl2 + InnImpl3)/3$$

$$InnInt = (InnInt1 + InnInt2 + InnInt3)/3$$

$$InnImpl = (InnInfl1 + InnInfl2 + InnInfl3)/3$$

$$InnInfr = (InnInfr1 + InnInfr2 + InnInfr3)/3$$