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Investigation of the Relations between Organizational Culture, Innovation, and Performance in Jordanian Banking Sector

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Abstract

Innovation is considered to be one of the key factors that influence the long term success of a company in the competitive markets of today. As a result, there is a growing interest in the further study of the determining factors of innovation. Today, the focus is on these factors related to people and behaviour, emphasizing the role of organizational culture, as a factor that can both stimulate or restrain innovation, and therefore affect company performance. However, there is little empirical research linking these variables, particularly in the Spanish context. The purpose of this paper is to study these links by using a sample of industrial companies. The results show that culture can foster innovation, as well as company performance, or it could also be an obstacle for both of them, depending on the values promoted by the culture. It has been found specifically, that an adhocratic culture is the best innovation and performance predictor. Based on these results, it can be concluded that, innovation mediates the relationship between certain types of organizational cultures and performance.

1. Introduction

Firms currently must operate in an environment characterized by ever increasing global competition, changing customer demands, rapid technical changes, and uncertainty[1]. Within this context, innovation is considered critical for achieving sustainable competitive advantages and therefore for firm success [2] [3]. That is mostly due to the fact that innovative firms are more flexible and can respond to change more quickly; they go the extra mile when it comes to creating new opportunities and exploiting existing ones. Empirical research provides support for a positive relation between firm innovation and performance [4].

Given the importance of innovation in improving firm performance, a number of studies have attempted to identify the factors that can enhance innovation [5]. Currently one of the variables deemed to have great influence on innovation is organizational culture [6], [7]. Because organizational culture influences employees' behaviour, it may lead the personnel to accept innovation as a fundamental value of the organization and to feeling more involved in it [8]. Despite the importance given to culture as a stimulant for innovation, empirical research on the topic is somewhat limited. Some studies on the link between culture and innovation merely look into some elements of culture; whereas others do not use the same cultural traits or typologies [9]. Besides, recent studies underpin the need for empirical research on organizational culture and innovation [10].

The purpose of this paper is to bridge a gap in the literature on the topic. First, a literature review was made and the most important characteristics related to innovative cultures were identified and compared to the cultural dimensions and typologies identified in the Competing Values Model. The research aims to identify what model or what model typologies stimulate more innovation and performance. In addition, considering that culture enhances performance and innovation and that innovation in turn affects performance, another question arose, ''Is the influence of culture on performance direct or is it mediated by innovation? Innovation's role of mediator in the relation between culture and performance has not yet been studied in the literature on the topic. Furthermore, it all becomes more interesting upon taking into account [11], who stated that a possible manner for advancing in innovation research is to test the connection between identified innovation determinants, innovation outcomes, and firm performance.

2. Theoretical framework

Studying the indirect effect of culture in the performance, involves testing, besides the direct effect of culture on firm performance, the effect of culture on firm innovation and the effect of firm innovation on performance. These relations are developed in the following sections. It is important to clarify that the effect of culture on firm innovation in the second relation has already been partially tested by the authors in previous research [12], and it is taken up here again, since it is required to complete the model of relations. Two types of culture were discussed in the previous research: adhocratic and hierarchical culture. In addition to these, this paper includes clan and market cultures.

2.1 Innovation and performance

Innovation has been conceptualized in a variety of ways. OECD [13] defines innovation as ''the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations''. Innovations may be classified using different criteria. OECD [13] distinguishes between four types of innovations: Product innovations involve significant changes in the capabilities of goods or services, both entirely new goods and services and significant improvements to existing products are included. Process innovations represent significant changes in production and delivery methods. Organizational innovations refer to the implementation of new organizational methods; these can be changes in business practices, in workplace organization or in the firm's external relations. Marketing innovations involve the implementation of new marketing methods; these can include changes in product design and packaging, in product promotion and placement, and in methods for pricing goods and services. In general, the literature on the topic considers innovation one of the key drivers for long-term corporate success, especially in dynamic markets [14]. The rationale behind the idea is that innovation often serves to deal with a turbulent external environment. To survive in Schumpeterian environments, organizations must be able to cope with increasing complexity and high-speed change. In such contexts, companies with the capability to innovate will be able to respond to the challenges faster, manufacture improved new products, and exploit market opportunities better than non-innovative companies [15] [16]. Many studies have demonstrated the positive effect of innovation on performance [6], [17], [18]. Thus, despite some conflicting evidence, theory and empirical research suggest a positive relation between innovation and firm performance. Therefore, the first hypothesis proposed is:

H1. Firm innovation is positively associated with firm performance.

2.2 Organizational culture and innovation

Given the importance of innovation in firm success, a number of studies have attempted to identify its main determinants [11], [19]. In general, they can be grouped into individual level, organizational level, and environmental level. Within organizational level, the literature refers to size, organizational design, strategy, leadership, human resource practices, financial support, and organizational culture. Out of them all, the ones that stand out most are organizational design and organizational culture.

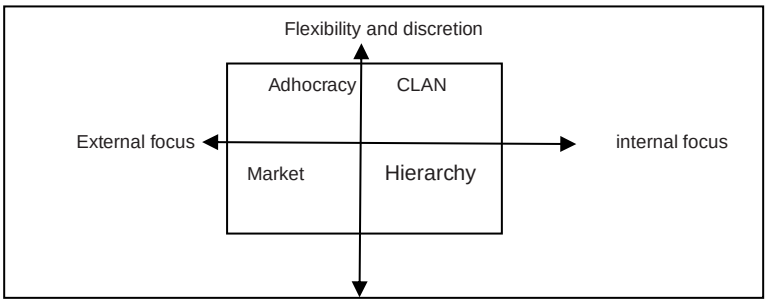

Figure 1 Cameron and Quinn Model

Source: [20]

Organizational culture can be defined as the values, beliefs and hidden assumptions that the members of an organization have in common. Such shared values form the basis of communication and mutual understanding and affect employee behaviour through its two main functions: internal integration and coordination [21].

Thus, culture can stimulate innovative behaviour among the members of an organization because it can lead them to accept innovation as a basic value of the organization and foster commitment to it; empirical research has also provided evidence of a significant relation between culture and innovation [22]. What the literature on the topic has not clarified enough is what types of culture enhance or inhibit innovation. In order to identify the characteristics of an innovative culture, the model proposed by Cameron and Quinn was used, the Competing Values Framework (CVF), this model is one of the most influential and extensively used models in the area of organizational culture research. Cameron and Quinn define four cultures - adhocracy, clan, market and hierarchy - using two dimensions (see Fig. 1): flexibility and discretion versus stability and control and external focus versus internal focus and integration [20].

Using these along with six organizational aspects dominant characteristics, organizational leadership, employee management, the organizational glue, strategic focus, and criteria for success --- they determine four types of organizational cultures. The *adhocracy culture* emphasizes flexibility and change; it is externally orientated. It is usually seen in companies that operate in dynamic contexts and in those seeking to be leaders in their markets. The key values in an adhocracy culture are creativity, entrepreneurship, and risk taking.

The *clan culture* also stresses flexibility but it is internally focused. Characteristics of clan culture firms are teamwork, employee involvement, and corporate commitment to employees. A *market culture* preaches control and stability and is externally oriented. The core values of firms with this culture are goal achievement, consistency, and competitiveness. Finally, a *hierarchy culture* is also control-oriented but it focuses on the internal organization. Its key values are efficiency and close adherence to norms, rules and regulations [23]. Having defined the types of models suggested by Cameron and Quinn, their relationship with innovation is now examined. First, a review of the literature that analyses the culture values that foster innovation There is general consensus regarding four characteristics or cultural values that enhance innovation: creativity, freedom/autonomy, a risk-taking attitude, and teamwork [24]. Regarding creativity, innovation relies on the appearance of new and creative ideas and innovation is achieved by combining creativity and the implementation of such ideas. Therefore, an enterprise needs creative people to support the processes, not only those associated with developing ideas, but also those involving the selection, assessment, and execution of the ideas [25].

Hence, an innovative culture should, on one hand, encourage employees to take time to think creatively and experiment and, on the other, encourage them to seek new ways to tackle problems and explore their ideas even if the value of the results may not be clear. Freedom, which manifests itself as autonomy, empowerment, and participation in decision-making is one of the most common elements associated with an innovative culture. An atmosphere of freedom and autonomy increases the employees' intrinsic motivation, considered a key factor in promoting creativity in an organization [2], [25]. As for risk taking, companies have realized that successful innovation is not achieved on the first try. If the firm perceives that risk taking is dangerous and may not produce good results, the personnel will not risk any creativity, innovation or experimentation [8], [19]. A comparison of the above-mentioned characteristics to the types of culture developed by Cameron and Quinn leads to the conclusion that, flexibility-oriented cultures enhance innovation because flexibility is associated with creativity, freedom, and a risk-taking attitude, whereas cultures that stress stability and control may inhibit innovation. Empirical research provides evidence to justify that relation [3], [4]. Moreover, externally oriented cultures can be expected to foster innovation more than internally oriented cultures. Whereas customer orientation aids the initiation stage by directing product developers toward external users, seeking their input to hone new product ideas, if a company stays locked inside its own four walls, it is not able to discover and exploit opportunities outside its existing businesses or beyond its current technical or operational capabilities [11].

Then, the type of culture of the CVF expected to most foster innovation is an adhocracy culture as it emphasizes flexibility and is externally orientated. On the contrary, a hierarchy culture inhibits innovation because the values that it emphasizes hinder it: control, stability, and an internal orientation. Besides the key innovation, values (i.e. creativity, freedom, and a risk-taking attitude) are missing. In relation to the other two types of culture model (the market and the clan), it is necessary to deepen their characteristics to clarify the relationship. Taking into account the characteristics of a clan culture, it may foster innovation as it emphasizes teamwork and employee participation. If the work team has a diversity of talented interdisciplinary members, who come up with challenging ideas and incorporating new experiences and information it will promote creativity and innovation [26]. However, the evidence provided in empirical studies regarding this topic is non-conclusive. Whereas [27] find that cohesion of teams fosters innovation and proves that it encourages creativity, other studies present evidence to the contrary. For example, they find no particular effect on innovative behaviour when team members are changed.

Finally, [28] observed that an organizational culture characterized by stability and guidance for the team is inversely related to innovation. In addition, a clan culture is internally focused, which may reduce the firm's access to new ideas and opportunities. Wolpert states that if a firm is stuck within their own four walls, it will be unable to discover and take advantage of opportunities. In the case of market culture, there are several facts in favour of and against it. The external orientation of a market culture encourages innovation as offering new ideas and markets the company familiar with the needs of customers [29]. In contrast, other studies find that excessive attention to the current needs of customers can be a barrier against some types of innovation, however, in general, the literature on the subject believes that the external orientation encourages innovation. Additionally, the market culture - according to its definition in the model of Cameron and Quinn, emphasizes control and stability rather than flexibility, which is a constraint to innovation. In short, the relation between innovation and a clan culture or a market culture is not clear. In the light of the above, the following can be developed:

H2. Organizational culture affects firm innovation. In particular, an adhocracy culture has a positive effect on firm innovation whereas a hierarchy culture has a negative impact on firm innovation.

2.3 Organizational culture and performance

The above sections propose that organizational culture enhances firm innovation and that innovation is related to performance. Therefore, the fact that culture has an indirect effect on performance may be assumed. However, the assumption in the literature on the topic is that culture is directly related to performance because culture influences the

behaviour of the members of the organization [11], [19], as explained above. Furthermore, according to the resource based view of the firm, culture can be a source of sustainable competitive advantage not only because it is valuable and rare but also because it is difficult for competitors to imitate as many of its most important characteristics are tacit and highly complex. Furthermore, the literature suggests that different types of culture have a different effect on performance. [30] concluded that companies that emphasize adaptability tend to have better financial performance than companies that emphasize stability. On the contrary, [31] studied a sample of Greek organizations and they concluded that the achievement orientation (market culture) was related to performance whereas the humanistic orientation (clan culture) was not, and indicated that the organizational norms that promote goal setting, productivity, and effectiveness were related to high performance.

The study conducted in Japanese companies (Tokyo) by [32] showed that the market culture is associated with better performance, followed by the adhocracy culture, and that the clan culture and the hierarchy culture are associated with poor performance. Other studies used other typologies such as the cultural trait typology that can be compared to [33] typology, developed and tested by [34] mention the traits involvement, adaptability, mission, and consistency (they share the same cultural-type orientation introduced by Cameron and Quinn), which correspond to the cultural types: clan, adhocracy, market and hierarchy, described above. Denison and Mishra conducted a study in the U.S., concluding that the four traits are positively related to subjective measures (quality, employee satisfaction, and overall performance). Fey and Denison conducted a study using Russian firms and compared its results to those obtained in similar studies in the U.S. In general, they concluded that the adaptability and involvement (adhocracy and clan) of companies with a flexible orientation are the most relevant traits of effectiveness in the Russian context whereas in the U.S. context, mission (market culture) is important. Likewise, Chan, Shaffer, and Snape concluded based on a study in Hong Kong that adaptability (adhocracy) were the trait more related to performance. The four cultural types have different effects on business performance. First, the expectation for the adhocracy culture (adaptability), characteristic of organizations that are leaders in products and innovation, which stimulate the entrepreneurial mindset, initiative, creativity, and a risk taking attitude, is that it would have a positive effect on performance. for example, it was found that companies that value adaptation are likely to create ambitious objectives, give priority to customer satisfaction, and show willingness to try out new ideas. Such values and practices were closely related to growth in the firms that those authors studied. In general, prior research provides evidence that the adhocracy culture has a positive effect on performance. Second and sharing the same external orientation emphasis is the market culture; these companies promote ambitious, competitive objectives; their people are result-oriented and success is based on market penetration and market share. Organizations in which "efficiency and achievement is the norm" motivate employees by setting difficult yet attainable goals and by providing feedback on employee performance, which in turn promotes a perception of competence and feelings of self-efficiency and collective efficacy.

Furthermore, the market culture [35] is also found to improve performance, mainly when the performance measuring stick is market results. There is also evidence that the clan culture and, in general, all cultures that enhance cooperation and teamwork have a positive effect on performance [36]. Equally, a high level of involvement fosters a strong sense of psychological ownership and commitment to the organization and its goals. Although Deshpande et al. found a negative effect and [31] did not obtain any significant results for the relation between this culture, which they called humanistic orientation, and performance, other studies provide evidence of a positive relation [35]. Finally, the hierarchy culture has limitations in current changing environments where the ability to adapt becomes essential for successful performance, as this type of culture often shows most resistance to change and adaptation. Its bureaucratic nature appears to be an obstacle in the organization's struggle to respond to fundamental environmental change. Although some studies have found a positive relation between the hierarchy culture and some levels of organizational results or a non-significant relation, the general literature on the topic provides evidence that its effect on performance is negative [37]. Existing literature does show a precedent of the importance of the cultural types on effectiveness. Taking into account all of the above considerations, the third hypothesis proposed is:

H3. Organizational culture affects performance. More specifically, the adhocracy culture, the market culture, and the clan culture have a positive effect on performance whereas the hierarchy culture has a negative effect.

As discussed above, prior research has shown a direct causal relation between culture and performance and also between culture and innovation. However, the literature on the topic shows that the interrelation among the three constructs has not been modelled as yet. An indirect effect of culture on performance through innovation is predictable because --- depending on the values that it encourages --- culture may foster or limit an organization's innovation activity. Therefore, innovation has an impact on organizational performance. Along these lines, the fact that some types of culture may indirectly affect performance through innovation because they either foster or limit it may be argued. The performance of organizations with a proactive culture that stimulates risk-taking activities, creativity, and tolerates error is superior to the performance in companies that do not. This is due to the fact that such organizations can develop more and better differentiated innovations more rapidly than their competitors. According to [38] an innovation-oriented focus, characteristically with an adhocracy culture may improve long-term business performance. On the contrary, a hierarchy culture may have a negative effect on organizational results because values such as emphasis on rules and procedures that lead to conformity and lack of creativity, excessive control, and lack of autonomy, are not deemed favourable conditions for innovation. Furthermore, the lack of innovation will be responsible for a negative effect on performance. This leads us to propose another hypothesis:

H3.1. Organizational culture indirectly affects performance through firm innovation. In particular, the adhocracy culture has a positive indirect effect on performance through firm innovation whereas the hierarchy culture has a negative indirect effect on performance through firm innovation.

3. Methodology

3.1 Data collection and sample

The population of this study is HRM and marketing employees in all 24 headquarters of banks in the capital of Amman, so community size equal 220 individuals. The basic unit of analysis for this study will be the banks which are considered as organizations for the current study. Although banks (organizations) were studied, HRM and marketing employees were chosen as key informants since banks could not speak for themselves. Besides, HRM and marketing are the representatives of their organizations who implement the overall plans, policies, and strategies. Also, they are well-informed and most knowledgeable about their organizations' operations.

The sample members were drawn by using a stratified random type of probability sampling by considering suitable guarantee equivalent and independent representation of the research data. This type of sampling method is being free of bias in the way respondents were selected, and the selection reflects the characteristics of the whole population [39]. However, it consumes more time [39], its advantages worth the required time. The individual strata were formed based on the MFJ directory (Table 1). For recording a reasonably acceptable response rate, as well as avoiding non-valid questionnaires, 220 employees from HR & marketing departments will be selected.

Table 1: Sample Size

Bank Name	Type	No. Employee/HR & Marketing	Proportionate Sample Size (n=220)
Arab Bank	Commercial	62	26
Arab Banking Corporation	Commercial	25	11
Bank of Jordan	Commercial	17	7
Cairo Amman Bank	Commercial	16	7
Capital Bank of Jordan	Commercial	22	9
Jordan Commercial Bank	Commercial	13	6
Jordan Kuwait Bank	Commercial	18	8
Jordan Ahli Bank	Commercial	23	10
Housing Bank for Trade & Finance	Commercial	59	24
Arab Jordan Investment Bank	Commercial	20	9
Invest Bank	Commercial	14	6
Société Générale de Banque Jordanie	Commercial	21	9
Bank al Etihad	Commercial	33	14
Islamic International Arab Bank	Islamic	11	5
Jordan Islamic Bank	Islamic	31	13
Safwa Islamic Bank	Islamic	12	5
Standard Chartered	Foreign	10	4
Egyptian Arab Land Bank	Foreign	9	4
Citibank	Foreign	11	5
Rafidain Bank	Foreign	13	6
National Bank of Kuwait	Foreign	14	6
BLOM Bank	Foreign	15	6
Bank Audi	Foreign	17	7
Al-Rajhi Bank	Foreign	31	13
Total		517	220

For this study, the data collection was done according to personally administered questionnaires. There are several advantages of this technique which include (a) developing relationship capable of motivating the respondents; (b) clarifying any doubts as it happens; (c) responding rate is guaranteed; (d) immediate assistance to respondents is physically available. However, the negative side of using this technique is very costly and time-consuming, particularly if the sample is geographically diffused [39].

4. Measures

4.1 Innovation

According to Manu, innovation deals not only with outputs (e.g. new products or processes) but also with inputs (e.g. R & D expenditure) and with timing (e.g. pioneers, quick seconds or late followers). In this line, 5-point scales were used for each type of innovation. They cover the number of new products/process/management systems introduced, the pioneer disposition to introduce new products/process/management systems, the clever response to new products/process/management systems introduced by others companies in same sector, the R&D efforts to develop new products/process/management systems and the efforts to develop new products/process/management systems in terms of hours/person, teams and training involved. Then, the scales were combined to measure innovation by calculating the mean of the 5-point scales (α= 0.779).

4.2 Performance

Identifying an optimal measure for a firm's performance is a problem in itself, since it is difficult to obtain financial measures. According to [34], subjective measures of effectiveness are better suited for comparing a disparate set of firms than objective measures of effectiveness. That is why a 5-point Likert scale was used. The respondents were asked to discuss the evolution of the firm's performance over the past three years, in terms of twelve items taken from [40]. Then, the scales were combined to measure performance (Cronbach α = 0.873).

4.3 Organizational culture

The organizational culture measure employed is based on the Organizational Culture Assessment Instrument (OCAI) developed by Cameron and Quinn. In this research there were used four of the six key dimensions of organizational culture the OCAI proposes: dominant characteristics, management of employees, organization glue and criteria of success since authors did not have information about the other two dimensions: leadership style and strategic focus. The former is strongly related to the management of employee dimension and the latter is similar to the criteria of success dimension. Thus, our measure can be considered as valid even though those two dimensions were excluded. Other previous studies have also measured organizational culture using fewer dimensions than the OCAI model proposes [41], [42]. Following the OCAI methodology, 16 items were included in the questionnaire, organized in four parts (corresponding to the four dimensions used) with four descriptions in each part. The four descriptions matched the definitions of each of the four culture types in the model developed by Cameron and Quinn: adhocracy, clan, market, and hierarchy. Respondents were asked to allocate a score, for a total of 100 points, among the four parts, according to how well the descriptions matched their organization.

4.4 Control variables

Four control variables frequently associated with innovation and performance were included in the analyses. They were *industry* (0 = manufacturing; 1 = service), *age* (the number of years that the firm has been running), *size* (the number of employees) and *strategy* (the four types of strategy taken from the model by Miles and Snow. Table 2 provides information regarding the variable mean values, standard deviations, and bivariate correlations.

4.5 Statistical analysis

The hypotheses were tested using hierarchical regression analysis. To assess the indirect effects of culture on firm innovation, the methodology proposed by Baron and Kenny was chosen. According to that methodology, to establish mediation, it is necessary to test three regressions and meet the following conditions: first, the independent variable must affect the mediator in the first equation; second, the independent variable must affect the dependent variable in the second equation; and third, the mediator must affect the dependent variable in the third equation. If these conditions are all met with the predicted sign, then the effect of the independent variable on the dependent variable must be lower in the third equation than in the second. There is perfect mediation if the independent variable has no effect when the mediator is controlled.

Table 2 Means, standard deviations and correlations among variables.

		Mean	Standard deviation	1	2	3	4	5	6	7	8	9	10	11	12
1	Industry	0.56	0.49	1											
2	Age	22.04	15.30	0.08*	1										
3	Size	71.14	18.144	0.01	0.10**	1									
4	Analyzer	0.44	0.49	0.03	−0.04	−0.03	1								
5	Defensive	0.28	0.44	−0.07*	0.09*	0.08*	−0.56***	1							
6	Reactive	0.02	0.16	0.02	0.01	0.00	−0.15***	−0.10**	1						
7	Clan	2.13	0.74	−0.03	0.00	−0.11**	0.05	0.00	0.01	1					
8	Adhocracy	1.53	0.43	0.06	0.04	0.04	−0.02	−0.00	−0.05	−0.12***	1				
9	Market	1.46	0.46	−0.01	−0.12**	0.13***	0.01	−0.04	−0.00	−0.45***	−0.03	1			
10	Hierarchy	1.73	0.64	0.01	0.03	−0.02	0.05	−0.04	−0.00	−0.40***	−0.34***	0.00	1		
11	Innovation	3.40	0.62	0.00	0.06	0.09*	−0.05	0.02	−0.01	0.00	0.34***	0.00	−0.24***	1	
12	Performance	3.76	0.50	−0.04	−0.05	0.03	−0.01	0.02	−0.08	0.12**	0.21***	−0.12**	−0.23	0.53**	1

* p < .1., ** p < .05., *** p < .01.

5. Results

Table 3 shows the results of testing Hypothesis 1. As may be appreciated in this table, when going from Model 1.0 (which only includes the control variables) to Model 1.1 (which includes the innovation variable), the increase in *R*2 is significant and β is significantly positive (β = 0.541), which indicates that innovation has a significantly positive effect on results (β = 0.541). This result provides support to confirm Hypothesis 1.

Hypothesis 2 proposes that organizational culture affects firm innovation and that the sign will vary according to the type of culture. To test this hypothesis, the four types of organizational culture were independently entered into the equation (Models 2.1 through 2.4) after the control variables. Table 4 shows the results obtained. As predicted, the adhocracy culture has a positive effect on innovation and the hierarchy culture has a negative impact on firm innovation.

Table 3 Results of hierarchical regression analysis for Hypothesis 1.

Variables	Y=performance	
	Model 1.0	Model 1.1
Industry	−0.029	−0.033
Age	−0.052	−0.074*
Size	0.039	−0.007
Analyzer	−0.008	0.028
Defensive	0.013	0.031
Reactive	−0.011	0.000
Innovation		0.541**
F	0.351	23.732**
R2	−0.010	0.282
ΔR2		0.289**

*$p < .1$.

**$p < .01$. Elaboración propia.

Although no effect between the clan culture and firm innovation or the market culture and firm innovation was proposed, those relations were analysed. As may be observed, no significant results were obtained, which is consistent with the reviewed literature on the topic.

Table 4 Results of hierarchical regression analysis for Hypothesis 2.

Variables	Y = Innovation				
	Model 2.0	Model 2.1	Model 2.2	Model 2.3	Model 2.4
Industry	0.06	0.06	−0.17	0.006	0.006
Age	0.048	0.048	0.33	0.047	0.057
Size	0.084*	0.084*	0.70	0.086*	0.081*
Analyzer	−0.079	−0.079	−0.61	−0.079	−0.066
Defensive	−0.031	−0.031	−0.16	−0.031	−0.032
Reactive	−0.020	−0.020	−0.02	−0.020	−0.015
Clan		0.000			
Adhocracy			0.345**		
Market				−0.009	
Hierarchy					−0.255**
F	1.050	0.898	9.188**	0.903	5.204**
R2	0.001	−0.002	0.118	−0.002	0.064
ΔR2		0.000	0.118**	0.000	0.065**

*$p < .1$.

**$p < .01$. Elaboración propia.

Table 5 presents the results for Hypothesis 3. As predicted, the adhocracy culture and the clan culture have a positive effect on performance and the hierarchy culture has a negative effect on performance. However, the market culture was expected to have a positive effect on performance but the effect obtained was negative. Thus, there is only partial support for confirming Hypothesis 3.

Table 5 Results of hierarchical regression analysis for Hypothesis 3.

Variables	Y= Performance				
	Model 3.0	Model 3.1	Model 3.2	Model 3.3	Model 3.4
Industry	−0.029	−0.022	−0.041	−0.031	−0.025
Age	0.052	−0.053	−0.063	−0.070	−0.040
Size	0.039	0.055	0.030	0.059	0.034
Analyzer	−0.008	−0.016	0.003	−0.006	0.005
Defensive	0.013	0.009	0.023	0.011	0.014
Reactive	−0.011	−0.014	0.001	−0.010	−0.006
Clan		0.123*			
Adhocracy			0.221**		
Market				−0.136**	
Hierarchy					−0.228**
F	0.351	1.161	3.227	1.349	3.434
R2	−0.010	0.003	0.037	0.006	0.040
ΔR2		0.015*	0.048**	0.018**	0.052**

*$p < .1$.

**$p < .01$. Elaboración propia.

Finally, Hypothesis 3.1 proposes that organizational culture has an indirect effect on performance through firm innovation. To test this hypothesis, the methodology by Baron and Kenny was chosen. The first condition implies that culture affects performance. This was proposed in Scenario 3 (Y = performance). The condition is true for the adhocracy

culture and for the clan culture (a positive effect), as well as for the hierarchy culture (a negative effect). The second condition was that culture affects firm innovation. This relationship is shown in Scenario 2. The second condition is met for the adhocracy culture (a positive effect) and for the hierarchy culture (a negative effect). To analyze whether Baron and Kenny's third and fourth conditions are met, it is necessary to examine the effects of the types of culture and of firm innovation on performance together. Since the two first conditions are only met for the adhocracy culture and for the hierarchy culture, the combined effect of those two types of culture is evaluated. Table 6 shows the results obtained.

For the adhocracy culture, innovation affects performance, when the adhocracy culture is controlled. In addition, the effect of the adhocracy culture on performance disappears after firm innovation is controlled. For the hierarchy culture, innovation affects the dependent variable when the hierarchy culture is controlled; likewise the effect of the hierarchy culture on performance drops when firm innovation is controlled. Therefore, the third and fourth conditions are met.

Those results enable ensuring that firm innovation mediates the positive effect of the adhocracy culture on performance and the negative effect of the hierarchy culture on performance.

Table 6 Results of hierarchical regression analysis for Hypothesis3.1.

Variables	Y=performance		
	Model 4.0	Model 4.1	Model 4.2
Industry	−0.029	−0.035	−0.031
Age	−0.052	−0.075	−0.068
Size	0.039	−0.007	−0.007
Analyzer	−0.008	0.029	0.032
Defensive	0.013	0.032	0.030
Reactive	−0.011	0.002	0.001
Adhocracy		0.035	
Hierarchy			−0.095
Innovation		0.528*	0.516*
F	0.351	20.820*	21.553*
R2	−0.010	0.281*	0.288*
ΔR2		0.290	0.297

6. Discussion

As expected, the findings provide evidence for the relation between firm innovation and performance. However, the more interesting findings that this research offers refer to the relation between organizational culture and both firm innovation and performance. Regarding the culture-innovation link, the results show that organizational culture is a key determinant for firm innovation and that it can actually foster it but that it can also act as a barrier against innovation. In particular, findings showed a positive influence of the adhocracy culture on firm innovation. As identified in the literature on the topic, certain traits such as creativity, freedom, and a risk-taking attitude associated with the adhocracy culture enhance innovation. The negative effect of the hierarchy culture on innovation seen is also consistent with studies that have demonstrated that the hierarchy culture traits, such as centralized decision making and a high degree of formalization, are negatively associated with innovation.

No significant result regarding the clan culture or the market culture was found. Although some studies point out that the clan culture factors, such as teamwork, are determinant factors for innovation, they may possibly only affect innovation when other values related to external orientation are present. Something similar occurs regarding the market culture results. Although the customer orientation that characterizes the market culture (and also the adhocracy culture) has a positive effect on innovation, other traits, such as emphasis on mechanistic structure, excessive hierarchy, emphasis on details, and exerting too much pressure on the employees, may reduce the positive effect on innovation that its external focus has. Along those lines, [43], [44] indicate that a market orientation is not always sufficient and it needs to be accompanied by other conditions, such as creativity, a characteristic that is absent in the market culture. With regards to the relation between organizational culture and performance, there is evidence that the adhocracy culture is also the culture with the highest positive effect on performance, and that the effect of the hierarchy culture is negative. The clan culture and the market culture that were found to have no effect on firm innovation do have an effect on performance. The clan culture is positively related to performance, although the effect is lower than the effect of the adhocracy culture. The market culture also has a significant effect on performance but with a negative signal. Taking into account the findings for the four types of culture, the conclusion may be drawn that flexibility versus stability and control orientation is more important than external orientation versus internal orientation when it comes to performance.

That is to say, flexibility is a must to improve performance. External orientation is better than internal orientation but it must be combined with flexibility to have a positive effect on performance. This idea is consistent with some previous researchers' propositions that some characteristics of non-adaptive cultures are associated with low performance [45]. Regarding the mediation role of firm innovation in the relation between culture and performance, it is possible to conclude that firm innovation mediates the relation of the adhocracy culture and of the hierarchy culture. In other words, the positive effect of the adhocracy culture occurs because that culture fosters innovation among the employees whereas the negative effect of the hierarchy culture occurs because that culture does not promote innovation.

For practitioners, the implications of the above results are clear. An organization that wishes to enhance innovation and performance should pay attention to its organizational culture as it can be a key enabler of both or a major barrier against both, depending on the values comprising the current organizational culture of the firm. In particular, the findings of this research show that the adhocracy culture fosters both innovation and performance. Some of the main values of this culture are creativity, a risk-taking attitude, freedom, and flexibility. Thus, companies must make efforts to develop a stable adhocracy culture. It is also important to highlight that this study shows that an external orientation or a flexibility orientation is not sufficient for the firm to enhance innovation; companies must focus on both.

However, as flexibility is required to improve performance, top management should focus on enhancing it. In short, the findings of this research can guide managerial efforts to develop an organizational culture that fosters both innovation and performance. Future research should delve in more depth into the relation between organizational culture and innovation. A suggestion could be taking into account the stage of the innovation process. As organizational traits facilitating the generation and implementation of innovation can vary, it would be interesting for future research to examine whether they require different types of organizational culture.

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