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The influence of network ties on entrepreneurial orientation in Mexican farmers: An institutional perspective

A influência dos laços de rede na orientação empreendedora em agricultores mexicanos: Uma perspectiva institucional

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ABSTRACT

Purpose: This study focuses on analyzing the institutional context and collaborative networks affecting farmers' entrepreneurial capacity in Mexico.

Originality/value: Both the institutional framework and collaborative networks are part of the environment faced by the farmer and empower them to decide about their business, being decisive elements to generate confidence in the environment and reduce the risk of assuming economic responsibilities

Design/methodology/approach: We incorporate the moderating effect of the institutional context considering its influence on collaboration networks. The statistical technique of structural equation models was used to test the hypotheses. The sample comprised 192 farmers from the state of Aguascalientes, Mexico.

Findings: The results showed significant and positive effects of institutional pillars and collaborative networks on the capacity to undertake. Regarding the non-significant effects of the institutional context as a moderating variable, further research is suggested to review the relationship of institutional pillars with collaboration networks and their possible negative relationship. Institutional pillars represent the perception of the social structure relevant to measuring society's position regarding the capacities, in this case, of rural entrepreneurship, especially when making public policies. The impact of current government actions on the commercial activity should be considered. Subsequently, public policies must have a practical application by the legal framework and the formation of an environment of certainty based on the normative and cognitive pillars of the institutional context.

Keywords: institutional pillars, entrepreneurial orientation, network ties, farmers, structural equation modeling

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RESUMO

Objetivo: Este estudo se concentra em analisar o contexto institucional e as redes colaborativas que afetam a capacidade empreendedora dos agricultores no México.

Originalidade/valor: Tanto o quadro institucional quanto as redes colaborativas fazem parte do ambiente enfrentado pelo agricultor e o capacitam para decidir sobre seu negócio, sendo elementos decisivos para gerar confiança no meio ambiente e reduzir o risco de assumir responsabilidades econômicas.

Design/metodologia/abordagem: Incorporamos o efeito moderador do contexto institucional considerando sua influência nas redes de colaboração. A técnica estatística de modelos de equações estruturais foi utilizada para testar as hipóteses. A amostra foi composta por 192 agricultores do estado de Aguascalientes, México.

Resultados: Os resultados mostraram efeitos significativos e positivos dos pilares institucionais e das redes colaborativas sobre a capacidade de empreender. Em relação aos efeitos não significativos do contexto institucional como variável moderadora, sugerem-se novas pesquisas para revisar a relação dos pilares institucionais com as redes de colaboração e sua possível relação negativa. Os pilares institucionais representam a percepção da estrutura social, relevante para mensurar o posicionamento que a sociedade tem em relação às capacidades, nesse caso, do empreendedorismo rural, principalmente na elaboração de políticas públicas. Deve ser considerado o impacto que as atuais ações governamentais estão causando na atividade comercial. Posteriormente, é necessário que as políticas públicas tenham uma aplicação efetiva pelo arcabouço legal e a formação de um ambiente de certeza baseado nos pilares normativos e cognitivos do contexto institucional.

Palavras-chave: pilares institucionais, orientação empreendedora, vínculos em rede, agricultores, modelagem de equações estruturais

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INTRODUCTION

The ability to undertake in the agricultural sector constitutes an individual's orientation toward innovating, being proactive, and risking their capital to pursue business opportunities (Amin Mohamad & Chin, 2019). In this sense, studies related to rural entrepreneurship have increased over the years since there are implications that entrepreneurship must combat poverty and rural development (Dias et al., 2019; Greenberg et al., 2018; Wu & Si, 2018). Farmers who deploy their entrepreneurial skills in addition to taking advantage of business opportunities (Greenberg et al., 2018), create them (Udimal et al., 2019), and formalize them have better weapons to contribute to the development of the rural context (Sutter et al., 2017; Xheneti et al., 2019). Entrepreneurial skills benefit the agricultural sector because they impact business decisions (Boza et al., 2018) by exploiting productive activity with other economic agents. Within the literature on agricultural entrepreneurship, studies that have analyzed collaboration networks in the sector have not yet made clear the influence that economic agents have in developing the capacities to innovate, compete and take advantage of business opportunities (Zhu et al., 2019). Studies such as Agbim (2018) discuss the impact that links with other commercial and institutional agents have on the formalization of agricultural units. However, they do not establish their effect on the entrepreneurial abilities of farmers who are detonated by relating to others. Indeed, the attributes that farmers regularly get by cooperating in a traditional, collective, and organized way are of agricultural industrialization or identification of food markets that do not necessarily contemplate the strengthening of their entrepreneurial skills (Benos et al., 2016; Cofré-Bravo et al., 2019; Korhonen et al., 2017).

Similarly, in this discussion on entrepreneurial capacities in the agricultural sector, the institutional context must guarantee various elements, such as an adequate legal framework to be able to collaborate with greater institutional certainty (Wincent et al., 2016), the rule of law (De Beer & Wunsch-Vincent, 2013), increased confidence in the figure of the farmer (Kang et al., 2016), as well as the relevant empowerment of their skills and knowledge (Camisón-Haba et al., 2019) in their training as an entrepreneur so that they take advantage of the business opportunities presented to them (Baur, 2020). As several authors have indicated (Sutter et al., 2019; Wang, 2020), for the undertaking capacity to be generated in the individuals engaged in agriculture, institutional arrangements must lead towards successful entrepreneurship decisions that guarantee cooperation, creating in an individual

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ability to differentiate investment risk situations and generate innovation (Mohammed, 2020). Despite the efforts made in the literature, the positive influence of institutional pressures on entrepreneurial capacities has not yet been clarified. Likewise, they do not discuss how their relationship with other economic actors impacts their ability to undertake. On the one hand, some studies related to the institutional framework of farmers discuss the formalization of agricultural activities (Escandón-Barbosa et al., 2019; Terrazas et al., 2019). On the other hand, the government supports that farmers receive for belonging to this sector is studied (Mehedi et al., 2020; Negash et al., 2019).

There are different stances, studies such as (Lang & Fink, 2019) review entrepreneurial capacities from the theory of social capital considering the impact of institutional pressures. However, an absence of the scope of the effects both have on the orientation of farmers to undertake is evident. In this contrast, Lin, Winkler et al. (2020) conclude that institutional pillars can be as detrimental as they are beneficial to agricultural activities. In this order of ideas, the main objective of this work is to give an approach to study the negative effect of institutional pillars on the relationship that exists between collaboration networks and the capacity to undertake of Mexican farmers. We collected information from 192 Mexican farmers since their economic activity is an important source of income for the poorest population in the country (Wu et al., 2018). The agricultural sector in Mexico presents important deficiencies such as the population in precarious conditions (Torres-Mazuera, 2015), inequitable access to carry out their activities (Charmes et al., 2018), little infrastructure for its productive base (Morett-Sánchez & Cosío-Ruiz, 2017), as well as a composition of a family unit of production that limits its strategic vision in business (Boza et al., 2018).

LITERATURE REVIEW

Institutional pillars

The neo-institutional theory (NIT) has become one of the most used theories to explain the factors to which economic actors are subjected in a society. Previous studies have dealt with the analysis of entrepreneurship based on this theory (Arabiyat Talah et al., 2019; Urban, 2019; Wang et al., 2017). The fact that the NIT is commonly used in the literature to assess the economic and social context of an individual (Aksom et al., 2020; Alvesson

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& Spicer, 2019; Lok, 2019) is because it allows an understanding how entrepreneurial capacities are conducted in a specific way from one economy to another (Bylund & McCaffrey, 2017; Chowdhury et al., 2015, 2019; Sambharya & Musteen, 2014). The gaps in the institutional framework separate and divide the resources and capacities of the actors' opportunities (Goduscheit et al., 2021). Institutional pillars represent a complex composition that explains in social and economic terms the forms of interaction that economic actors have (van Wijk et al., 2019). NIT attempts to evaluate the positions and actions of actors by considering the rules, norms, and beliefs to which they are subordinated in the social order (DiMaggio & Powell, 1983; Hwang & Colyvas, 2019).

In entrepreneurship, various authors refer to institutional pillars as society's position concerning individuals' entrepreneurial capabilities (Fredström et al., 2020; Parga-Montoya & Cuevas-Vargas, 2020; Webb et al., 2020). The hidden forces form the entrepreneurial actions of individuals from three distinct profiles: regulative, normative, and cognitive (He et al., 2020; Scott, 2013). The regulatory pillar consists of the elements that legally restrict and modulate the actions of individuals in entrepreneurship (e.g., policies, laws, rules, norms, etc.). The normative pillar refers to the social values and norms reflected in the cultural and social certainty that society provides to individuals to undertake. The cognitive pillar focuses on the cognitive elements that support individuals' beliefs, customs, and habits concerning entrepreneurship (He et al., 2020).

Individual entrepreneurial orientation

In order to measure the capacity to undertake, the concept of entrepreneurial orientation (EO) is used, based on the strategic position from Miller (1983) and Miller and Toulouse (1986), which popularized the construct comprising three dimensions (Covin & Slevin, 1989) to measure from a firm-level the innovative, proactiveness, and risk-taking. The process of entrepreneurship brings together the realities, emotions, and desires of those who assume to create a company (Damian & Manea, 2019; Metallo et al., 2018). Since recent times, literature has suggested that EO can also be cataloged as an individual-level multidimensional construct. Studies that have used this perspective have defined individual entrepreneurial orientation (IEO) as the ability of an individual to explore and exploit new business opportunities (Koe, 2016; Popov et al., 2019). Sociocultural factors positively relate to entrepreneurial activity (Méndez-Picazo et al., 2021).

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Although academics have been interested in analyzing IEO in students as a primary factor in triggering entrepreneurial intent (Popov et al., 2019; Rosique-Blasco et al., 2018), this study aims to test the effects that the institutional context of farmers has on their IEO – i.e., structural changes, strict regulations, high risks, and unconsolidated business ideas, *inter alia* (Suvanto et al., 2020). Within the scant literature on the institutional framework in the rural sector where its effects on entrepreneurial capacities are highlighted, the study conducted by Zhu et al. (2019) on the role of institutional pillars in farmer entrepreneurship in China points out that entrepreneurship is embedded in the social, economic, and institutional context, which defines the institutional harmony to which the farmer is subjected. Another study related to the agricultural sector, the institutional context, and entrepreneurial capacities is that of Lin, Luo et al. (2020), which assesses the influence of institutional pressures on perceived benefits and barriers to undertaking by farmers. Wang's contribution (2020) contemplates the severe influence of the institutional context, mainly the regulatory-governmental procedures-has, on the decisions of rural actors. Following the previous literature, the following hypothesis is established:

- H_1: The institutional pillars significantly influence the entrepreneurial orientation of Aguascalientes' producers.

Network ties

Within the theory of social capital (Nahapiet & Ghoshal, 2009), ties are important for actors because they have access to resources and information that they would not have individually (Lo et al., 2016; Luu & Ngo, 2019). The established business networks with customers, suppliers, and competitors are valuable in generating information about the market and its current situation (Shane & Cable, 2002; Shen, 2020). They are necessary to make decisions that correspond to risking capital, competing in the sector, and innovating new products (Farooq et al., 2018). These relationships are crucial to reducing uncertainty and building confidence in the environment for commercial trade (Guercini & Tunisini, 2017). In the same way, these relational resources open the possibility of generating new dynamic capacities (Monteiro et al., 2019).

Indeed, for farmers, commercial networks represent support for the development of ideas, work, economic resources, and even emotional support (Cofré-Bravo et al., 2019). It allows us to understand how to negotiate

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the sector (van Wijk et al., 2019) and reach both local and distant markets (Greenberg et al., 2018). I institutional networks, the function is to solve specific deficiencies such as funding (Luu & Ngo, 2019), legalization of economic activities, professionalization (Agbim, 2018), support for the application of subsidies, and the training of agricultural machinery (Cofré-Bravo et al., 2019). The two types of networks make farmers prone to develop their capacities to take advantage of business opportunities and proactivity (Naminse & Zhuang, 2018). Similarly, relationships facilitate mechanization and enable farmers to innovate in specific market niches as a capacity to undertake (Kansanga, 2017). Considering this evidence, the following hypothesis is proposed:

- H_2: The network ties significantly influence the entrepreneurial orientation of Aguascalientes' producers.

Institutional pillars as a moderator variable

The pre-existing literature analyzes the relationship between institutional pillars and the institutional context's effect on the network ties of economic actors (Fredström et al., 2020; Lo et al., 2016; Schøtt & Jensen, 2016; Torkkeli et al., 2019). However, for the purposes of this research, the moderating effect of institutional pillars on entrepreneurial orientation is calculated, as has already been linked in the literature with other study variables-innovation and entrepreneurial orientation (Guo et al., 2014). Commercial and institutional networks increase when there is a less uncertain environment that protects investment, encourages business activity, and empowers individuals to decide to run a business (Dewi et al., 2018; Monticelli et al., 2017). Institutional pillars are a decisive factor for the properly functioning of work networks because they contribute to building trust between actors and reducing the risk of assuming economic responsibilities (He et al., 2020). We analyze the effect of working networks on institutional pillars and the effect of institutional pillars on entrepreneurial orientation. This assumption starts from the fact that having better institutional pillars increase the effects that work networks will have on entrepreneurial orientation. So the following hypothesis is raised:

- H_3: The institutional pillars positively moderate the relationship between network ties and farmers' entrepreneurial orientation, so that a higher level of institutional pillars would increase the relationship between network ties and individual entrepreneurial orientation.

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MATERIALS AND METHODS

Sample

The population for the study was small chili pepper and grape farmers from the state of Aguascalientes, Mexico. Most of them are from the E3 stratum, which is characterized by being productive units with incipient commercial activities in informal ways, low-productive, still being in conditions of poverty, and with an average degree of marginalization. Rural units are not classified within the Federal Budget and Fiscal Responsibility (Ley Federal de Presupuesto y Responsabilidad Hacendaria). However, some of them are registered within the records of the Ministry of Agriculture. Information was collected from 192 farmers using a questionnaire. The instrument was tested by a panel of experts from the rural sector belonging to the State Committee of the Chile Product System and the Council of Viticulturists of the state of Aguascalientes and researchers related to agricultural and rural development. This panel of experts, by their experience, revised our questionnaire and adapted it to the rural context. The researchers collaborated with the State Committee of the Chile Product System and the Council of Viticulturists of the state of Aguascalientes to census the producers of both agricultural products. The interview procedure was personally with the producers in the location of the crops and through weekly assemblies during the survey.

The questionnaire used comprises three blocks. The first collects the sociodemographic information of the producer. The second includes external factors affecting farmer activity and collaborative networks. The third contains internal information about the producer's business capabilities, such as entrepreneurial orientation. Within the characteristics of the sample, differences in age and size of crops by type of crop, education, and sex of the producer are observed (see Table 1). Significant differences were found in both chili pepper and grape cultivation in age and crop size, with a higher mean per grape crop (age = 59 ± 1.11 years; cultivated area = 4.46 ± 1.82 has). In the case of age training, no differences were found in the postgraduate group. In contrast, significant differences were found in the other groups, especially those who did not receive an education or barely had elementary education. There were no significant differences in crop size in any of the groups. Regarding the differences presented in the sex of the respondents, there are significant age differences, with a higher mean for women (64.57 ± 2.33 years).

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Table 1

Descriptive analysis

		Age					Cultivated area	
		n	Mean	Std. dev.			Mean	Std. dev.
Crop type	Chili (c)	97	51.27	1.28	Crop type	Chili (c)	22	3.09
	Grape (g)	95	59	1.11		Grape (g)	4.46	1.82
Education	None (s,h,b)	25	63.8	1.58	Education	None	6.82	.81
	Elementary (s,h,b)	38	59.73	1.99		Elementary	6.59	2.02
	Secondary (e,s)	60	49.23	1.38		Secondary	15.87	4.11
	High school (e,s)	31	50.94	1.78		High school	13.54	4.53
	Bachelor's degree (e,s)	29	51.69	2.50		Bachelor's degree	19.45	4.76
	Postgraduate	9	53.89	2.53		Postgraduate	25.16	18.61
Sex	Men (m)	185	53.68	.89	Sex	Men	13.89	1.97
	Women (w)	7	64.57	2.33		Women	1.93	.74

Source: Elaborated by the authors.

Note. Sample size: 192; ANOVA results = significant differences between intergroups ($p < 0.01$); g = grape; c = chili; e = elementary; s = secondary; h = high school; b = bachelor; w = women; m = men.

Variables

The scale used to measure network ties were developed by Yiu et al. (2007), which considers the closeness it has with other economic actors related to its economic activity in two dimensions: business networks and institutional networks. The suppliers, customers, and competitors were considered for business networks, while for institutional networks, the government, universities, banks, guilds, legislative commissions, and business owners of other turns were considered. A five-point Likert scale was used, in which 1 = has no relation and 5 = a very close relation.

The construct of individual entrepreneurial orientation is measured through an adaptation of the entrepreneurial strategy instrument (Covin & Slevin, 1989). The scale is one of the most referenced in the literature to analyze the entrepreneurial orientation of companies (Covin & Wales, 2012). It measures entrepreneurial orientation with three dimensions: innovation, pro-

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activity, and risk-taking. Each dimension comprises three items, measured on a five-point Likert scale, in which 1 = nothing important and 5 = very important.

In order to measure institutional pillars, the instrument developed by Kostova and Roth (2002) was considered and adapted into 14 indicators that were measured with a five-point Likert scale, where 1 = nothing important and 5 = very important. It consists of three dimensions that measure the perception of the institutional context according to what was previously proposed by Scott (2013): regulatory (four items), normative (five items), and cognitive (five items).

Table 2

Indicators

First order construct		Indicator
Regulatory	AR3	Laws and taxes are applied equitably to all farmers.
	AR4	Supporting developing farmers is a policy priority of the federal, state, or local government.
Normative	AN4	You frequently hear stories of successful farmers in the mass media (newspapers, magazines, radio, television, internet etc.).
	AN5	Farmers are considered competent persons.
Cognitive	AC1	Most farmers have experience creating new businesses.
	AC2	Most farmers are quick to react to good business opportunities.
	AC3	Most farmers have the ability to raise the necessary resources to open a new business.
	AC4	In general, farmers find starting or growing a business easy.
	AC5	Most farmers know how to run a small business.
Commercial ties	CN1	How close is your relationship with your customers?
	CN2	How close is your relationship with your suppliers?
	CN3	How close is your relationship with your competitors?
Institutional ties	IN1	How close is your relationship with government offices?
	IN2	How close is your relationship with universities?
	IN3	How close is your relationship with financial institutions?
	IN4	How close is your relationship with associations or business councils?

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Table 2 (conclusion)

Indicators

First order construct		Indicator
Institutional ties	IN5	How close is your relationship with business owners or managers?
	IN6	How close is your relationship with legislative committees?
Innovativity	OEI1	Do you consider that you were innovative in your activity in the last 5 years?
	OEI2	How much did you market new lines of products and services?
	OEI3	How important has it been for you in the last 5 years to make major changes to products or services?
Proactivity	OEP1	How important has it been for you in the last 5 years to ensure the sale of your crops before other producers?
	OEP2	How important has it been for you in the last 5 years to introduce innovations (new products and/or services, processes, technologies, and administrative techniques) to beat other producers?
Risk-taking	OER1	How important has it been for you in the last 5 years to have a strong preference for high-risk projects (with opportunities for very high returns)?
	OER2	How important has it been for you to act boldly and directly to achieve agricultural production goals?
	OER3	How important has it been for you to take a bold and aggressive stance to maximize the probability of fully exploiting opportunities?

Source: Adapted scale by several authors (Yiu et al., 2007; Covin & Slevin, 1989; Kostova, 2002).

ANALYSES

We used the variance-based structural equations modeling technique with the partial least squares method. Because of the complexity of the variables analyzed, using this method is appropriate to deal with the proposed theoretical model (Gabriel et al., 2019). Type A composite constructs were used, considering the reflective type second-order constructs. That is why, being a model of hierarchical components, the model was estimated through the repetition approach of indicators (Cuevas-Vargas et al., 2019; Ringle et al., 2012; Wetzels et al., 2009). The evaluation of the model was done in two steps. First, the measurement model was estimated, then the structural model was evaluated, and the hypotheses were contrasted. In addition, the

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second-order construct was approximated by modeling the relationship between the first-order and second-order constructs. Only the dimensions were associated in the first step, simulating the proposed model to obtain the factor loadings. In the second step, the pillars are used to measure the multidimensional construct. The model was estimated considering 5,000 sub-samples in the bootstrapping analysis.

RESULTS

The metrics used to test the model's reliability and convergent validity are reported. Table 3 shows the outer loadings of each of the indicators and the Cronbach's Alpha, composite reliability (CR), and average variance extracted (AVE) values of each of the first and second-order constructs. The second-order measurement model was evaluated following Henseler and Chin (2010). As seen, the loadings are above the critical value of 0.708 (Hair et al., 2017), with a significance ($p < 0.001$). The CR ranges are between 0.870 and 0.938, which is a very acceptable level (Bagozzi & Yi, 1988). The AVE exceeds the permissible level of 0.5 (Fornell & Larcker, 1981) to measure the convergence of the constructs. Regarding the path coefficients of the higher-order constructs, these are above 0.7, except with the regulatory pillar; however, their level of significance ($p < 0.001$), besides the parameters of internal consistency reliability, is satisfactory (Bagozzi & Yi, 1988).

Table 3

Reflective measurement model assessment

First order construct	Indicator	Convergent validity			Internal consistency reliability	
		Loadings	t-value	AVE	Composite reliability	Cronbach's alpha
		>0.708	>2.57	>0.5	>0.7	>0.7
Regulatory[1]	AR3	0.882	24.584	0.770	0.870	0.701
	AR4	0.873	26.734			
Normative[2]	AN4	0.870	23.631	0.778	0.875	0.716
	AN5	0.894	45.674			

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Table 3 (continuation)

Reflective measurement model assessment

First order construct	Indicator	Convergent validity			Internal consistency reliability	
		Loadings	t-value	AVE	Composite reliability	Cronbach's alpha
		>0.708	>2.57	>0.5	>0.7	>0.7
Cognitive	AC1	0.899	33.219	0.757	0.939	0.919
	AC2	0.821	14.709			
	AC3	0.915	43.422			
	AC4	0.890	26.381			
	AC5	0.820	26.348			
Commercial ties	CN1	0.913	51.617	0.796	0.921	0.871
	CN2	0.937	67.850			
	CN3	0.824	24.456			
Institutional ties	IN1	0.742	19.093	0.683	0.928	0.906
	IN2	0.798	23.870			
	IN3	0.782	19.503			
	IN4	0.886	48.745			
	IN5	0.877	37.900			
	IN6	0.863	32.348			
Innovativity	OEI1	0.893	37.174	0.834	0.938	0.900
	OEI2	0.935	62.666			
	OEI3	0.911	35.074			
Proactivity[3]	OEP1	0.864	22.631	0.800	.889	.755
	OEP2	0.924	79.049			
Risk-taking	OER1	0.771	14.513	0.738	.894	.820
	OER2	0.912	69.678			
	OER3	0.887	35.422			

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Table 3 (conclusion)

Reflective measurement model assessment

Second-order construct	Construct	Path coefficient	t-value	AVE	Composite reliability	Cronbach's alpha
Institutional pillars	Regulatory	0.526	7.423	0.509	0.900	0.870
	Normative	0.735	14.427			
	Cognitive	0.937	50.667			
Network ties	Commercial ties	0.741	20.048	0.534	0.911	0.889
	Institutional ties	0.925	97.467			
Individual entrepreneurial orientation	Innovativity	0.895	52.926	0.573	0.914	0.891
	Proactivity	0.849	36.593			
	Risk-taking	0.807	24.471			

Source: Elaborated by the authors based on the results obtained with Smart PLS 3 (Ringle et al., 2015).

Note. [1]AR1 and AR2 were not considered in the measurement model for adjustment issues.

[2]AN1, AN2, and AN3 were not considered in the measurement model for adjustment issues.

[3]OEP3 was not considered in the measurement model for adjustment issues.

The Heterotrait-Monotrait (Henseler et al., 2014) and Fornell-Larcker (Fornell & Larcker, 1981) criteria verify the existence of discriminant validity, which are presented in Table 4. With the $HTMT_{85}$ test, which is shown above the diagonal, it was found that none of the correlations between the first-order constructs and, in its case, the second-order ones got values higher than the critical value of 0.85 (Clark & Watson, 1995; Henseler et al., 2014; Kline, 2011). Similarly, in the Fornell-Larcker test that is presented below the diagonal, none of the values of the correlations of the first and second-order constructs got values superior to the square root of the AVE (Fornell & Larcker, 1981). Therefore, based on these previously evaluated criteria, it can be concluded that the different measurements performed in this study demonstrated enough evidence of the measurement model's reliability and convergent and discriminant validity.

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Table 4

Discriminant validity for the first and second-order constructs

First order constructs	FOC1	FOC2	FOC3	FOC4	FOC5	FOC6	FOC7	FOC8
	AVE= 0.66	AVE= 0.73	AVE= 0.77	AVE= 0.65	AVE= 0.77	AVE= 0.78	AVE= 0.76	AVE= 0.80
Regulatory FOC1	**0.877**	0.479	0.379	0.348	0.206	0.404	0.186	0.198
Normative FOC2	0.341	**0.882**	0.638	0.432	0.304	0.523	0.529	0.411
Cognitive FOC3	0.303	0.519	**0.870**	0.397	0.224	0.419	0.510	0.351
Commercial ties FOC4	0.271	0.340	0.352	**0.892**	0.482	0.478	0.468	0.470
Institutional ties FOC5	0.165	0.247	0.204	0.430	**0.826**	0.364	0.317	0.382
Innovativity FOC6	0.321	0.423	0.381	0.423	0.328	**0.913**	0.825	0.612
Proactivity FOC7	0.146	0.398	0.432	0.389	0.272	0.692	**0.895**	0.675
Risk-taking FOC8	0.152	0.314	0.310	0.400	0.330	0.527	0.550	**0.859**

Second-order constructs	Institutional pillars	Network ties	Individual entrepreneurial orientation
Institutional pillars	**0.714**	0.411	0.555
Network ties	0.362	**0.731**	0.409
Individual entrepreneurial orientation	0.498	0.475	**0.757**

Source: Elaborated by the authors based on the results obtained with Smart PLS 3 (Ringle et al., 2015).

Note. The diagonal numbers (in bold) represent the square root of the AVE values (for reflective constructs). Above the diagonal, the HTMT.85 correlations ratio test is presented; below the diagonal, the Fornell-Larcker criterion test is presented.

Structural model

The results showed that the structural model has predictive relevance; therefore, there is sufficient evidence to obtain confidence intervals to test the accuracy of the parameters (see Table 5). For the individual entrepre-

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neurial orientation, 34.8% is explained by the variables network ties and institutional pillars. It is inferred that institutional pillars and producers' networks have moderate explanatory capacity because of R-square is higher than 0.33 (Chin, 1998; Hair et al., 2017).

Table 5

PLS-SEM results of the structural model

Hypotheses	Path	Standardized coefficient β	t-value	p-value
H_1: The institutional pillars have a significant influence on the individual entrepreneurial orientation of the Aguascalientes' producers	Institutional pillars → Individual entrepreneurial orientation	0.335***	3.561	0.000
H_2: The network ties have a significant influence on the individual entrepreneurial orientation of the Aguascalientes' producers	Network ties → Individual entrepreneurial orientation	0.345***	5.950	0.000
H_3: The institutional pillars positively moderate the relationship between network ties and farmers' entrepreneurial orientation, so that a higher level of institutional pillars would increase the relationship between network ties and individual entrepreneurial orientation.	Network ties → Moderator → Individual entrepreneurial orientation	-0.063 NS	0.657	0.511

Source: Elaborated by the authors based on the results obtained with Smart PLS 3 (Ringle et al., 2015).

Note. *** = $p < 0.001$; ** = $p < 0.05$; NS = non-significant.

Entrepreneurial orientation $R^2 = 0.348$.

R^2 values: >0.20 = weak; >0.33 = moderate; >0.67 = substantial (Chin, 1998).

Concerning H_1, the results shown in Table 4 indicate that there are positive and significant effects of institutional pillars on individual entrepreneurial orientation with an impact of 34.5% ($\beta = 0.345$, $p < 0.001$), therefore, H_1 is accepted. Regarding H_2, it was found that network ties have positive and significant effects on individual entrepreneurial orientation with an impact of 34.1% ($\beta = 0.341$, $p < 0.001$), therefore, H_2 is accepted. Contrarily, to estimate the moderating effect of institutional pillars on the relationship between network ties and individual entrepreneurial orientation, the product indicator method was used since they are reflective constructs (Henseler & Chin, 2010). In order to compare the moderating effect, it was found that the institutional pillars have a negative moderating effect of

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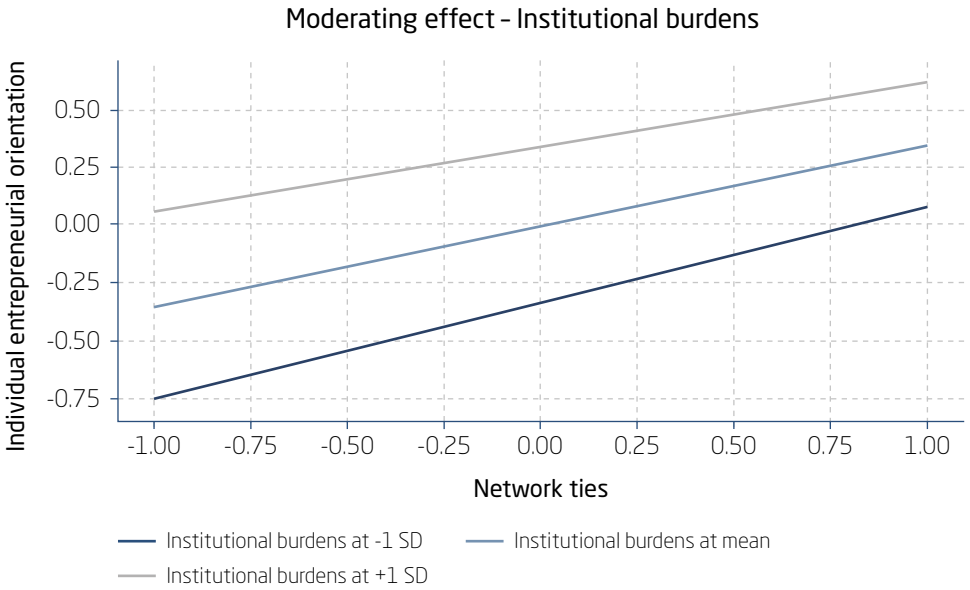
-1.3% (β = -0.063, NS), which is not statistically significant, but if institutional pillars increase, the relationship between network ties and IOE decreases. These results reveal that when Aguascalientes producers get higher levels of institutional pillars (e.g., if a unit of standard deviation increases institutional pillars), the relationship between network ties and IEO decreases to the same extent as the size of the interaction (i.e., 0.345 – 0.063 = 0.282). Conversely, by obtaining lower levels of institutional pillars (e.g., if institutional pillars are reduced at a point of standard deviation), the relationship between network ties and IEO increases to the same extent as the size of the interaction (i.e., 0.345 + 0.063 = 0.408), as shown in Figure 1. Therefore, based on these results, H_3 is not supported.

Figure 1

Simple slope plot analysis in SmartPLS



Source: Ringle et al. (2015).

DISCUSSION

The results showed that farmers' ability to undertake is affected by both the institutional framework and the ability to engage with other actors. For the first hypothesis, the influence of institutional pillars on IEO was significant and positive. Although the literature has had different stances on the

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effects of the institutional framework on the ability to undertake. For Zhu et al. (2019), institutional pillars have a significant and positive impact because of their relevance in the certainty it gives to the rural and economic environment. On the contrary, Wang (2020) concluded the negative effect that the institutional context has on the decisions of rural actors when they are restrictive or, failing that, permissive to the establishment of the rule of law.

With the second hypothesis, the results confirm the significant and positive impact of the collaborative networks that farmers establish to detonate their IEO. The direct effect of institutional and commercial networks implies actions by the farmers. In this sense, our results were similar to those obtained by Cofré-Bravo et al. (2019) and Naminse and Zhuang (2018). On the one hand, commercial networks have served them to define their projects since they provide them with information and financial support and support them to get specific resources for their daily activity. On the other hand, institutional networks serve to contact banking institutions, universities, government offices, and business guilds in different sectors, from where they get primary information to address new business opportunities with greater certainty.

Although previous studies have considered institutional pillars as moderating variables in studies related to collaboration networks (Gupta et al., 2014; Torkkeli et al., 2019), a relevant finding of the study was to find that there was insufficient statistical evidence to verify the moderating effect of institutional pillars on the relationship of collaboration networks and the capacity to undertake. In this sense, a slightly negative effect was observed that could be interpreted, with the farmers analyzed, as regulatory, normative, and cognitive pillars are causing a slight contraction of the impact of collaborative networks on the ability to undertake. For years, the literature has expressed the need to develop public policies that strengthen the economic growth of the rural sector (Dias et al., 2019; Greenberg et al., 2018). This guideline focuses on farmers' individual growth without encouraging the collaboration of the links in the agricultural chain. A major interest has been placed in those factors that build a clear direction for the rural entrepreneur, especially those studies that analyze the ability to detect new business opportunities (Boza et al., 2018). Although the agricultural sector is continuously considered to have low growth (Pindado & Sánchez, 2019), the main stance of the analyzed economy is characterized by no long-term plans for industrial chaining (Bolio et al., 2014) or not being fundamentally directed towards the needs of the Mexican farmer (Morett-Sánchez & Cosío-Ruiz, 2017).

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CONCLUSIONS

The obtained results can help generate further development based on external factors. A relevant contribution was to verify that the variables are necessary to include in rural development plans. Both the institutional framework and collaborative networks are part of the environment faced by the farmer and empower them to decide about their business (Dewi et al., 2018), being decisive elements to generate confidence in the environment and reduce the risk of assuming economic responsibilities (He et al., 2020). In this sense, both factors contribute to integrating the production chain to develop a strategic and entrepreneurial vision (Boza et al., 2018). The research results were significant and positive in the effects of institutional pillars and collaborative networks on the ability to undertake. In contrast, there was no significant influence on the moderating effect of institutional pillars.

These findings have important implications for academics and policymakers. Since interpreting both factors is essential for defining social programs that promote agriculture as an economic and social activity. Institutional pillars represent the perception of the social structure (van Wijk et al., 2019), relevant to measure the position that society has regarding the capacities, in this case, of rural entrepreneurship, especially when making public policies. Contrariwise, collaborative networks are the social capital that supports their economic activity, which is more seen by themselves as survival activity (Wu et al., 2018).

The results reflect the public policies implemented in previous decades: little collaboration, low economic activity, and a poor institutional framework (Fao & Sagarpa, 2012; Sagarpa, 2011). The empirical evidence of the non-significant moderating effect has important practical implications for developing new public policies that do not truncate commercial or institutional relations. First, the impact of current government actions on commercial activity should be considered. Subsequently, public policies must have an effective application by the legal framework and the formation of an environment of certainty based on the normative and cognitive pillars of the institutional context, that is, a positive perception of the farmer by the society that is based on an individual with a specific role necessary for economic, social, and cultural development.

Current challenges require minimizing the uncertainty and aggressive competitiveness of the global scenario (Pindado & Sánchez, 2019). The global agricultural sector is pre-eminent for the need to cover food security (Todorovic et al., 2018). It is a primary element for social mobility in rural

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areas (Boza et al., 2018). The studies by Banerjee and Duflo (2011) show the importance of public policies that encourage human interactions for tangible and intangible resources. In the rural context, collaborative processes are supported in a democratic and transparent environment that improves well-being and freedom (Naminse et al., 2019).

It should be noted that our study is not without theoretical and empirical deficiencies that made it difficult to generalize the results. First, the theoretical discussion of institutional pillars is a topic that is gaining greater interest in the primary sector at the international level. The theoretical basis used has been considered in urban environments characterized by being predominantly industrial, commercial, or service industries. Although it is noteworthy that the results revealed statistical validity and reliability, it is an empirical finding that the adaptation of the scale has got positive results in the collection of information. Second, the sample was relatively small to generalize the results. Gathering more information would extend the results to new studies with greater findings. Regarding the non-significant effects of the institutional context as a moderating variable, further research is suggested to review the relationship of institutional pillars with collaboration networks and their possible negative relationship.

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