Industrial Cluster in the Competitiveness of Automotive Services Companies: Mediation of the Value Chain

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Abstract

Companies need to associate to share resources and capabilities, thereby achieving greater competitiveness in the market. The objective was to measure the influence of the industrial cluster on business competitiveness, mediated by the value chain in small automotive services companies in Peru. With a quantitative, basic approach, with a non-experimental design, cross-sectional data collection, causal scope, from a sample of 302 companies, applying a survey with a 51-item questionnaire, the data was processed with SPSS and PROCESS, applying a simple mediation model. The results showed that the industrial cluster is perceived as fair by 38.7% of respondents, the value chain as good by 42.1%, and business competitiveness as poor by 32.1%. The industrial cluster is related at 0.223 to business competitiveness, and 0.225 to the value chain. The value chain has a relationship of 0.832 with business competitiveness and an indirect effect of 0.187 in the relationship of the industrial cluster and business competitiveness, all significant relationships. It is concluded that the industrial cluster is fundamental in the competitiveness of automotive service companies and the value chain is the tool that enhances the relationship between these variables.

Keywords: *Cluster, Competitiveness, Value Chain, Small Businesses, Automotive Sector.*

INTRODUCTION

Achieving competitiveness has become a primary objective for companies, shaped by the market forces that determine their economic results. Being competitive is a requirement to be able to grow, generate new products, dominate the market, attract a greater amount of investment or surpass direct and indirect competitors (Iqbal *et al.*, 2024). The economic dynamism and competitiveness that small companies have in a strategic sector such as the automotive sector play a vital role in sustainable development in Peruvian mining areas (Bamber and Fernandez-Stark, 2021). Since it allows the transportation of people and products to different places in order to meet the needs of economic actors (Balland *et al.*, 2022), for which it is necessary to carry out efficient management of this type of companies (Luciano *et al.*, 2023), with mechanisms such as the industrial cluster that enhance the sector (Amoozad Mahdiraji *et al.*, 2022), through the exploitation of the value chain as a tool that allows generating added value and in this way achieving better levels of competitiveness of companies (Ali *et al.*, 2022).

In this sense, the formation of industrial clusters constitutes a fundamental element that decisively affects the efficiency and adaptation capacity of these companies in a constantly evolving competitive environment (Rodríguez *et al.*, 2020). In particular, the industrial cluster stands out as a network of companies, suppliers, institutions and other interrelated actors, which promotes collaboration, innovation and joint growth within a specific geographical area (Ali *et al.*, 2022). In this way, industrial clusters are the most important strategy to achieve high levels of competitiveness, since they allow efforts and resources to be grouped to develop a sector together (Jiménez *et al.*, 2021). In addition to incorporating the value chain as an element that enhances this relationship, it is understood as a collection of activities that, when interrelated, facilitate companies in the design, production, marketing and delivery of the product or service to the market, is positioned as a crucial element in the generation of added value and competitive differentiation (Mukhtar and Mahmood Azhar, 2020).

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In recent years, Peru has become a producer and exporter of mining resources such as copper, with the Apurímac region being where one of the largest mining operations in the country is located (Andujar *et al.*, 2021). This has led to rapid growth in the region's economy, increasing the gross domestic product (GDP) at an annual rate of 8.4% in the last decade (Andrés, 2023). Within this growth, one of the most dynamic sectors is the automotive sector, mainly related to automotive services, which has developed in the most important cities of the region and in the towns closest to the mining operation. Companies in this sector usually concentrate in strategic places designated by local governments, developing clusters that bring together small companies that develop related activities, enhance their value chains at the industry level and within the same organizations, with the purpose of have higher levels of competitiveness.

Therefore, the following questions have been raised: does the industrial cluster influence the competitiveness of small automotive service companies? Does the value chain mediate this relationship? The objective was to examine the relationship between the industrial cluster and the competitiveness of small automotive service companies in mining areas of Peru, with the mediating role of the value chain. Through a detailed analysis of how the industrial cluster affects the competitiveness of small automotive service businesses, and how the value chain mediates this relationship, this study seeks to provide a deeper understanding of the factors that influence business performance. in a context of large mining. Becoming a first exploratory study of the relationship of the three variables, which will allow other researchers to continue delving into other contexts. In addition, it is intended to offer relevant insights to formulate policies and strategies that promote economic development and strengthen the business fabric in mining areas of Peru.

LITERATURE REVIEW

Industrial Cluster

The industrial cluster is defined as a set of companies that have geographical proximity, which are connected to each other to achieve common objectives and supported by different institutions (Porter, 1998). The geographical proximity of companies has two important advantages, one that allows improving the flow of knowledge between them; and two, the exchange of innovation, ideas and commercialization processes is stimulated (Rychen and Zimmermann, 2008). Furthermore, in the particular case of small companies, it allows them to access the main resources, such as highly trained humans, suppliers, services such as transportation, which leads to cost reduction, compared to the individual management of each company. (Javaid *et al.*, 2022). In this way, companies together can also undertake various actions to enter and serve the market together, or comply with what the government may require (Troisi *et al.*, 2021). Therefore, when companies ally themselves through clusters, they find various advantages that will allow them to consolidate within an increasingly competitive market.

The study of industrial clusters dates back to the 1890s when Marshall (1890) stated that agglomeration brings with it three important advantages: a labor market that allows finding highly specialized workers, available inputs and services, and access to technology. Later, Hoover (1948) made definitions about the benefits of companies when grouping together, such as economies of scale, advantages in the availability of labor, higher levels of interaction with suppliers and customers, sharing infrastructure and transportation that allow generating savings. important, proposing grouped economies of urbanization, which are related to the size and diversity that occurs within cities and economies of location that have to do with companies within the same industry sector. More recent are the models of increasing returns that allow companies to generate incremental returns as they use resources better or have greater experience; this is allowed when working in a cluster (Bekele and Jackson, 2006). In recent years, the model proposed by Cornuéjols *et al.* (2018), who proposes various grouping algorithms for the optimization of corporate clusters, which have greater competitive advantages at a global level.

Business Competitiveness

Competitiveness has become a multi-faceted concept, with important contributions from economics, culture, business, management, politics and history (Waheeduzzaman and Ryans, 1996). This concept has evolved over the years, becoming a quite complex, multidimensional and relative concept of considerable relevance mainly

to the field of management (Chaudhuri and Ray, 1997). Various authors have made important contributions to the concept and to the synthesis of the literature about this concept (Banwet *et al.*, 2002; Bhawsar and Chattopadhyay, 2015; Chaudhuri and Ray, 1997). Competitiveness is directly related to the economic solvency of countries, industrial sectors or companies (Srivastava *et al.*, 2006). Mainly in these times of considerable turbulence and change, competitiveness has become the fundamental pillar of companies. It incorporates in its definition elements such as the objective, resources, choice and efficiency, translating into adequate management by companies of all their competencies that they possess to excel in the market (Veríssimo *et al.*, 2024).

The measurement of competitiveness has incorporated levels such as countries, industries, companies and even at the product level (Bhawsar and Chattopadhyay, 2015). It has also been measured in a macro and micro way. In the macro dimension, competitiveness between countries is measured and compared, while the micro dimension covers the competitiveness of companies within countries (Horvathova and Mokrisova, 2020). On the other hand, when talking about industrial competitiveness, the satisfaction of interested parties is included, such as a good work environment for employees, adequate combination of products and services, innovation, price, quality, as distinctive elements of the sector (Momaya, 1998). At the business level, the company must comply with what customers expect and generate value for its shareholders, therefore, it must offer more than its competitors, materializing in its daily activities (Cetindamar and Kilitcioglu, 2013).

The theories that support competitiveness have their beginnings in what was proposed by Adam Smith in his proposal of absolute advantage (Smith, 2005), which was improved by David Ricardo with the comparative advantage, improved with the proposal of Heckscher (1919) and Ohlin (1933) who incorporated the natural endowment of countries and factor endowments into the study. Among the models we can mention Krugman (1980) who proposes the theory of comparative costs, based on international trade, expanded by Melitz (2003) who incorporates into the model the heterogeneity of the productivity of companies, which allows them not only to supply the internal market but also the external one. However, Porter proposes the diamond model to explain competitive advantage, through factors such as factor conditions, demand, industry and support, and strategies, structures and rivalry between companies; in addition to chance and governments (Mondal and Pant, 2014). Likewise, there are the contributions of Cho *et al.* (2008), who propose a model with nine factors, incorporating human resources into the diamond, key to achieving competitiveness.

At the business level, it is necessary to emphasize the core competency model, which emerges as a theory that explains competitiveness. Hamel and Prahalad (1989) state that competitiveness is the product of the appropriate use of competencies. Prahalad and Hamel (1990) maintain that to achieve competitiveness in the short term, the appropriate use of prices and product performance is necessary and in the long term it depends on how the company produces better quality products more quickly than its competitors. Going into these proposals to carve the resources and capabilities that companies have to operate in the market. As well as strategic processes (Ambastha *et al.*, 2004) and collaborative networks such as the cluster, which are fundamental strategies for the competitiveness of companies.

Value Chain

The value chain was defined for the first time by Michael Porter, as a set of activities that add value within the company, taking into account the cost structure and pricing strategy, in addition to the understanding of its own capabilities and need. of the client, which leads to success within the proposed competitive strategy (Porter, 1985). Value creation usually occurs at two levels, one within the industrial chain and a second within the company itself to generate competitive advantage (Bhargava and Bafna, 2018). In this way, the value chain is a method that allows activities that are strategic for the company to be divided and to be able to analyze their impact on costs and differentiation (Hertati and Sumantri, 2016). After being identified, they are cohesive and made interdependent with each other, that is, they form links between them so that they generate value (Sultan and Saurabh, 2013). In this way achieving chain value from the tangible and intangible. Within the tangible, the financial part and information flows will be taken into account, while in the intangible part, the management skills of the directors must be valued, as well as business skills in general (Barber, 2008). In this way, the value chain is consolidated as an important strategy for the competitiveness of companies, not only in the financial

part but also in an integral way in the organization, since it generates what the client wants to acquire, which is the value in exchange. of what you pay.

Industrial Cluster and Business Competitiveness

It has been shown that the industrial cluster greatly favors the competitiveness of companies. Engel (2015) describes how in Silicon Valley, technological clusters allow companies to access more advantageous costs, which allows a competitive advantage for companies. that integrate them. Similarly, Sellitto *et al.* (2020) found that the corporate business image, customer satisfaction and market participation, its elements that are derived from industrial clusters, which allow the company to generate competitive advantage. In the Peruvian context, in a study carried out in the footwear sector, Gutiérrez *et al.* (2023) determined that clusters are fundamental for the competitiveness of companies dedicated to footwear, since they allow collaboration with institutions, improved finances, greater confidence in production processes on the part of workers, the use of technological resources that They are shared related to the operational and administrative part.

H1: The industrial cluster has a positive and significant impact on the business competitiveness of small automotive service companies in mining areas of Peru.

Industrial Cluster and Value Chain

Various studies have addressed the relationship between the industrial cluster and the value chain, for example, Li *et al.* (2010) who determined that industrial clusters are important strategies for identifying and developing value chains at both the industry and company levels. In a study carried out in a port environment in China, Liao *et al.* (2022) determined that the industrial cluster is essential for the consolidation of the value chain in this type of companies, since it allows support among all participants to generate value on the services offered. Likewise, Scardino and García (2024) carried out a study in different productive sectors that allowed them to affirm that the cluster is essential to achieve higher levels of competitiveness in different productive sectors analyzed. With the support of the literature, the following hypothesis is proposed:

H2: The industrial cluster positively and significantly influences the value chain in small automotive service companies in mining areas of Peru.

Value Chain and Business Competitiveness

There is no doubt about the relationship of the value chain in business competitiveness, since it is a strategy that allows achieving a competitive advantage that allows reducing costs and therefore better prices for customers. This relationship has been studied by various researchers, for example Straková *et al.* (2020) found in Czech companies that the competitiveness of companies is explained by the golden triangle composed of human resources, input logistics and scientific and technological development, as activities in the chain that generates value within these companies. . Evidence of a direct and significant relationship has also been found in the health sector Prado-Prado *et al.* (2020) found that by identifying the service value chain and implementing best practices in each activity, they demonstrated better levels of competitiveness in the company, demonstrated in the efficiency, effectiveness and quality of their services and an improvement in the culture in general. In a closer context such as Ecuador, in the fruit sector, Apolinario *et al.* (2021) found that by properly managing the mango value chain, a better international competitive position for this product in the world market will be achieved. With empirical evidence, the following hypothesis is proposed:

H3: The value chain has a positive and significant impact on the business competitiveness of small automotive service companies in mining areas of Peru.

Value Chain Mediation

Although it is true that there are no studies that include the value chain as a mediator between the industrial cluster and business competitiveness, however, it does play a mediating role when other variables are related. In a study conducted by Hapsari *et al.* (2021) found that the value chain mediates the relationship between intellectual capital and environmental uncertainty for better levels of business performance, recommending the implementation of the value chain strategy to obtain better performance at the business level. Similar is the

study carried out by Foster *et al.* (2022), who found that the value chain mediates the relationship between intellectual capital and environmental uncertainty in the performance of non-financial state-owned enterprises in Indonesia. Therefore, the following hypothesis is explored:

H4: The value chain mediates the relationship between industrial cluster and business competitiveness in small automotive service companies in mining areas of Peru.
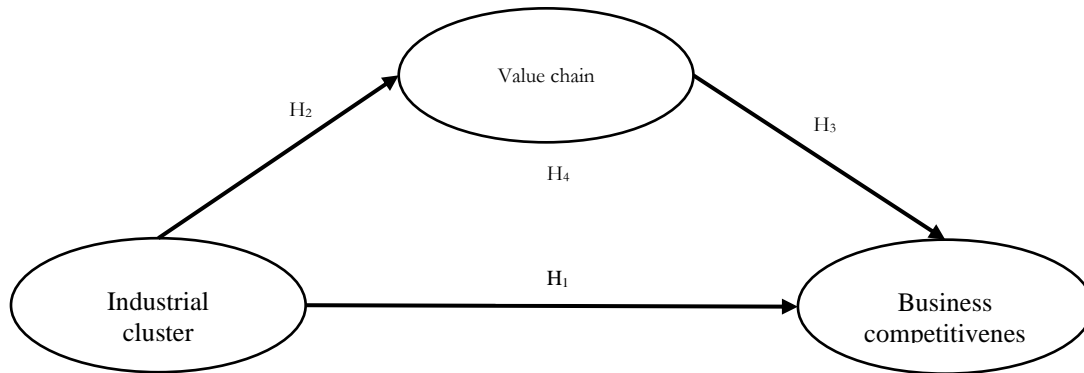

Figure 1 Proposed theoretical model

METHODOLOGY

The research was carried out in the southern region of Peru, specifically in the department of Apurímac, this department was selected because it is one of those that has achieved the greatest economic growth within the country as it is an area of large mining. The work was carried out between the months of July to October 2023.

Population and Sample

As a population, 1,218 legally constituted companies in the automotive sector were taken, according to the Superintendence of Tax Administration (SUNAT), and their legal representatives were informants. A convenience sample of 345 companies was selected, which gave their informed consent and They decided to participate voluntarily.

Instruments

To collect data, surveys were applied; for this, an instrument was adapted for each variable. In the case of the industrial cluster, 13 reagents were used, an instrument that was appropriate to the proposal by Nwokoye *et al.* (2022), validation was carried out through the judgment of three experts in management issues who gave their approval for its application, the reliability obtained with Cronbach's Alpha was 0.855, a result considered good. Value chain was measured using 10 items, which also had validity approval from the experts and a Cronbach's Alpha of 0.815, which was also good, the instrument was adapted from the proposal of Palacios-Mateo *et al.* (2021). Business competitiveness was measured with 13 items, which were also validated and obtained a favorable opinion from the experts, with a reliability value in Cronbach's Alpha of 0.802, considered good, an instrument adapted from Abeson and Taku (2009). The instruments were designed with a Likert-type scale, with five alternatives ranging from 1=Never to 5=always.

Analysis of Data

The questionnaires were applied in person and physically, 345 questionnaires were completed, and after a review, 43 were discarded for not being completely completed and showing unavoidable errors, such as some questions were filled out in more than one alternative or questions left out. mark, so the final sample consisted of 302 completely completed questionnaires. The results obtained were transferred to a data matrix in EXCEL, which were then exported to SPSS, a program that allowed the respective analyzes to be carried out. First, reliability analyzes were carried out for each of the variables. Next, the descriptive analysis of control variables and the main variables was carried out, using tables and graphs to present the results. As the next step, a simple

mediation model was applied through PROCESS V.24 (Fernandez and García, 2017), a model that allows measuring the impact of mediating variables, in this way the proposed hypotheses and the corresponding mediation were tested.

RESULTS

Next, the results obtained from the application of the research instruments are presented. The descriptive results seek to report the main characteristics of the informants and the variables. The type of companies, according to their legal status and age in the market in which they operate, have been considered as control variables. Table 1 presents the type of companies that operate in the automotive sector in the department of Apurímac, 78.5% of them are run by natural persons with business. While 21.5% are constituted as legal entities.

Table 1 Legal status of the companies studied

Type of legal status	Frequency	Percent
Natural person	237	78.5
Legal person	65	21.5
Total	302	100.0

Note. The results were obtained from the application of the survey and processed with SPSS.

In relation to the age of the companies in the market, 54% have a life of more than 10 years, 20.2% between 5 to 10 years, 14.9% between 3 to 5 years and 10.9% less than 2 years. This can be seen in Table 2.

Table 2 Market experience

Years of experience	Frequency	Percent
less than 2 years	33	10.9
Between 3 to 5 years	45	14.9
Between 5 to 10 years	61	20.2
Greater than 10 years	163	54.0
Total	302	100.0

Note. The results were obtained from the application of the survey and processed with SPSS.

Central tendency and dispersion analyze of the main variables were carried out. Regarding the average value chain, it presented better results with 3.87, which means that it had a higher perception from the respondents. Similar results were obtained for the median and mode. Likewise, it is the variable that has the lowest standard deviation $\square$ =0.924, which indicates less dispersion regarding the mean. Regarding industrial cluster asymmetry, it presents a lower value, which was 0.163, which indicates that the values are more concentrated, close to the mean. Greater detail can be seen in Table 3.

Table 3 Results of central tendency and dispersion of the variables studied

Statistics		Industrial cluster	Value chain	Competitiveness
N	Valid	302	302	302
	Lost	0	0	0
Half		2.51	3.87	2.35
Median		3	4	2
Fashion		3	4	2
Standard deviation		1.053	0.924	1.086
Variance		1.108	0.855	1.18

Asymmetry	0.163	-0.484	0.449
Skewness standard error	0.14	0.14	0.14
Kurtosis	-0.539	-0.58	-0.525
Kurtosis standard error	0.28	0.28	0.28
Minimum	1	2	1
Maximum	5	5	5

Note. The results were obtained from the application of the survey and processed with SPSS.

Regarding the qualification levels of the main variables studied, the industrial cluster was perceived as regular by 38.7% as the highest value, which indicates that the industrial cluster in the automotive sector has not yet been adequately developed in the context of the study; Also, in this same variable you can see a negative rating of more than 46% who consider that this strategy is still deficient or very deficient. Regarding the value chain, the results are more encouraging, since nearly 70% rate it as good or excellent, which means that companies are clear about their business processes and how value is generated in each of the processes. However, when it comes to business competitiveness, there is still no encouraging perception, since more than 57% of respondents consider that competitiveness is deficient or very deficient, this indicates that companies still lack competitive advantages compared to larger competitors, in terms of personnel, technologies, capital, among others. Greater detail in Table 4.

Table 4 Descriptive results of the measured variables

Level	Industrial cluster		Value chain		Business competitiveness	
	f	%	F	%	f	%
Very poor	64	21.2	0	0	77	25.5
Deficient	76	25.2	29	9.6	97	32.1
Regular	117	38.7	63	20.9	82	27.2
Well	35	11.6	127	42.1	36	11.9
Excellent	10	3.3	83	27.5	10	3.3
Total	302	100	302	100	302	100

Note. The results were obtained from the application of the survey and processed with SPSS.

To measure direct and indirect relationships, a simple mediation model was used. Table 5 presents the results obtained. It has been found that industrial cluster and business competitiveness, in terms of validity of the model, there is R=0.3019, 1 degree of freedom and p=0.000, that is, the model is adequate, it was determined that cluster explains 22.34% of the competitiveness variable. , significant relationship. Regarding the direct relationship between the industrial cluster and the value chain, the model shows a value of R=0.333, with 1 degree of freedom and a p=0.000 which indicates that the model is adequate. Regarding the influence, it was determined that the first variable explains 22.52% of the behavior of the second variable, a value that is significant. Regarding the relationship of value chain and business competitiveness, in terms of model values R = 77.42, 2 degrees of freedom and p = 0.000, which indicates that the model is adequate, in addition that value chain explains 82.3% of the competitiveness variable. With the values obtained, it was possible to test the hypotheses H1, H2 and H3, as accepted.

Table 5 Statistical results of the simple mediation model

**************** PROCESS Procedure for SPSS Version 4.2 ****************
Written by Andrew F. Hayes, Ph.D.   www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model: 4.

Y: Competitiveness; X: Industrial cluster; M: Value chain.

Sample size: 302.

Outcome variable: Value chain						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
0.3347	0.112	45.3327	37.8453	1	300	0.000

	Model					
	Coefficient	Se	T	p	LL	UL
Constant	28.9446	1.3058	22.1664	0.000	26.375	31.5143
Industrial cluster	0.2252	0.0366	6.1519	0.000	0.1532	0.2972

	Standardized coefficients
	Coefficient
Industrial cluster	0.3347

Result variable: Business competitiveness

Model Summary						
R	R-sq	MSE	F	df1	df2	p
0.7742	0.5994	24.8148	223.6884	2	299	0.000

	Model					
	Coefficient	Se	T	p	LL	UL
Constant	-1.9889	1.5691	-1.2675	0.206	-5.0767	1.099
Industrial cluster	0.036	0.0287	1.2542	0.2107	-0.0205	0.0926
Value chain	0.832	0.0427	19.4766	0.000	0.7479	0.916

	Standardized coefficients
	Coefficient
Industrial cluster	0.0487
Value chain	0.7565

*********************** **TOTAL EFFECT MODEL** ***************************

Result variable: Business competitiveness

Model Summary						
R	R-sq	MSE	F	df1	df2	p
0.3019	0.0912	56.1093	30.0911	1	300	0.000

	Model					
	Coefficient	Se	T	p	LL	UL
Constant	22.0919	1.4527	15.2071	0.000	19.233	24.9507
Industrial cluster	0.2234	0.0407	5.4855	0.000	0.1433	0.3035

	Standardized coefficients
	Coefficient
Industrial cluster	0.3019

********** **TOTAL, DIRECT AND INDIRECT EFFECTS OF X ON Y** **********

Total effect of X on Y

Effect	se	t	p	LL	UL	c_cs
0.2234	0.0407	5.4855	0.000	0.1433	0.3035	0.3019

Direct effect of X on Y

Effect	se	t	p	LL	UL	c'_cs

	0.036	0.0287	1.2542	0.2107	-0.0205	0.0926	0.0487
Indirect effect of X on Y:							
	Effect	Boot-SE	Boot-LI	Boot-LS			
Value chain	0.1873	0.0326	0.123	0.2505			
Fully standardized indirect effect of X on Y:							
	Effect	Boot-SE	Boot-LL	Boot-UL			
Value chain	0.2532	0.0415	0.169	0.3314			

Note: Confidence level for all production confidence intervals: 95%. Number of bootstrap samples for percentile bootstrap confidence intervals: 10000.

Regarding mediation, it was determined that the value chain has an indirect effect of value 0.1873, indicating a partial mediation in the relationship between industrial cluster and business competitiveness in the context of small automotive service companies. In this way testing hypothesis H4. A summary of the main values found is presented in Figure 2.
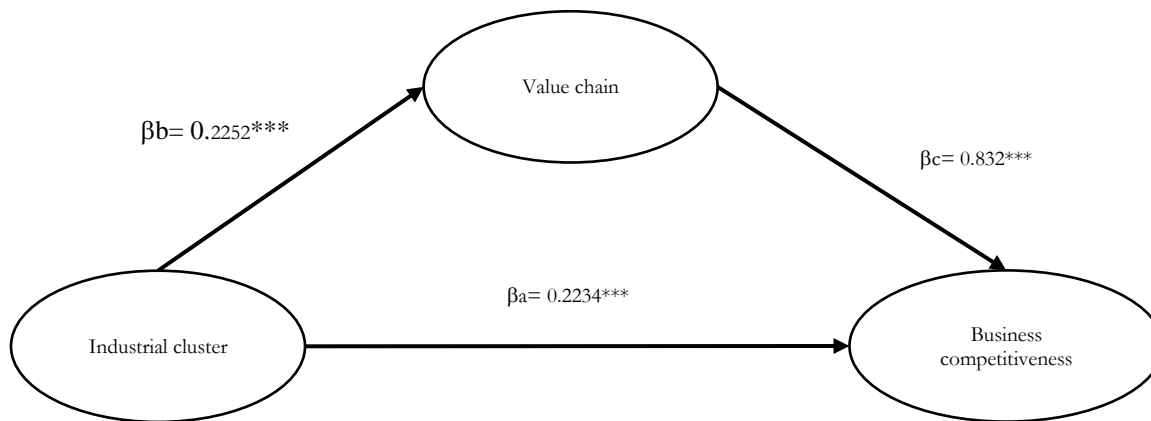

Figure 2 Statistical results of the relationships of the proposed theoretical model

Note: * ** significance level less than p<0.01.

Industrial cluster → Value chain → Business competitiveness

Indirect effect β= 0.1873, SE = 0.0326, 95% CI [0.123, 0.2505]

DISCUSSION

There is no doubt about the great importance of the industrial cluster to achieve the competitiveness of companies, specifically it has been shown that small automotive service companies are no exception, since through the implementation of the cluster in this specific sector, Companies can share more specialized mechanics who can provide solutions to complex problems that may arise, as well as infrastructure facilities when it comes to providing maintenance services with large companies, such as mining companies, for example, or manage to reduce their costs when purchasing. in batches together with other companies, which could not be accessed individually (Momaya, 1998). Therefore, the results found are justified by the studies carried out by Engel (2015) and Sellitto *et al.* (2020) who in different contexts managed to prove that the business cluster promotes the competitiveness of companies and achieves better competitive advantages.

Likewise, the industrial cluster greatly favors the analysis of the value chain of the organizations studied, since, due to the effects of imitation, competition or collaboration, it allows companies to become infected with the strategies for identifying strategic processes that They generate greater value (Bekele and Jackson, 2006) and

reduce their costs in such a way that they can provide lower prices to their clients, becoming more competitive (Hertati and Sumantri, 2016). The results found in the research, in the automotive context, are consistent with what Li *et al.* managed to find at the time. (2010) in the business context, Liao *et al.* (2022) in China in the port sector and Scardino and García (2024) in different productive sectors in Latin America, all concluded that the cluster is a strategy that allows greater competitiveness of companies in different sectors.

The value chain has also demonstrated a great impact on the competitiveness of automotive companies, which corroborates what the literature has proven in other environments and other sectors. That is why it is important to affirm that when the strategic processes to be carried out are identified, the corresponding interest is placed in the analysis of each one and since these generate value for organizations, there is a high probability that companies will be more competitive, as demonstrated by Straková *et al.* (2020) in Czech companies, by identifying human resources, logistics management, and innovation and technology as the fundamental pillars of the value chain to achieve high levels of competitiveness, as well as Prado *et al.* (2020) who found that in the health sector the service value chain works to make organizations more competitive. Demonstrating that the value chain has a very significant contribution, if implemented properly, in better companies, to face an increasingly competitive market.

The value chain has also shown that it is a enhancer of the implementation of strategies such as the cluster to achieve higher levels of competitiveness of companies, since it allows identifying in industrial agglomerates the joint activities that add value to the company, making an analysis detailed costs and thus allowing the implementation of appropriate pricing strategies in the market, in addition to understanding the capabilities available and the resources that are valuable in each process, which will definitely lead to higher levels of business competitiveness. Therefore, an important contribution of this research is to test the mediation of the value chain in the cluster relationship in business competitiveness, which will allow academics to continue studying these theoretical relationships and demonstrating their value in other contexts; and managers have greater input to make better decisions in business association processes.

The research provides important results that at the same time must be taken with caution, since it was developed within various limitations. The first is the size, context and scope, because it was carried out in a geographical area of Peru, such as the department of Apurímac, therefore, future research could cover the country or broader regions, such so that the results are more generalizable. Another limitation of the research is the data collection that was carried out at a single moment, which could imply the measurement of the perception of a single moment, encouraging researchers to carry out longitudinal studies that allow measuring the theoretical relationships based on longer periods, in this way evaluating the behavior of the variables and their relationships over time and whether these continue. Likewise, one more limitation is the data collection strategy, that is, a questionnaire of questions was applied through the survey. Other researchers are encouraged to use other research strategies such as interviews or panel studies, which allow for greater knowledge. depth the theoretical relationships presented here. Finally, urge researchers, in addition to the variables included in the theoretical model, to include other variables, to measure the relationships and their effects, in such a way that a clearer domain of knowledge in business management in the business sector is achieved. and how to improve the competitiveness of companies in general.

CONCLUSIONS

From the results obtained, it is corroborated that the industrial cluster positively and significantly influences business competitiveness in small automotive service companies in mining areas of Peru, in this way the validity of implementing association strategies is demonstrated, since they allow generating competitive advantage to each of the companies found in a certain industrial sector. Likewise, it has been determined that the industrial cluster has a positive and significant effect on the value chain of small automotive service companies, demonstrating that the cluster strategy allows companies to identify their processes that generate value for the products they offer. , which is because it allows them to share information, professionals, infrastructure among other resources and capabilities. Likewise, it has been found that the value chain explains to a large extent and significantly the competitiveness of small automotive service companies, thus demonstrating that companies consider that if they adequately identify their value chain it will allow them to be more competitive in the

market, increasing their competitive advantage and value within the business environment in which they operate. It has also been found that the value chain partially, positively and significantly mediates the relationship that exists between cluster and competitiveness in this business sector, thus demonstrating that the value chain enhances the effect of the cluster strategy implemented in this type of companies, since it will allow them to be more competitive. Therefore, it is necessary to continue testing these relationships in other contexts and areas, in such a way that the theoretical relationships are consolidated, through empirical results, which allows managers to have greater tools for managing the companies they direct.

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