Impact of Entrepreneurial Orientation on Competitiveness in Automotive Service MSMEs in Tijuana

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Abstract. Entrepreneurial orientation (EO) has become consolidated as a strategic determinant of competitiveness in micro, small, and medium-sized enterprises (MSMEs), especially in contexts characterized by high uncertainty and competitive dynamism. In this regard, the objective of the present study was to analyze the impact of EO—through its dimensions of innovation, proactiveness, and risk-taking—on the competitiveness of automotive service MSMEs in Tijuana, Baja California, incorporating a differentiated analysis by type of business, as well as a global evaluation of the sector. The research was developed under a quantitative approach, with a non-experimental, cross-sectional design and an explanatory scope. For data collection, a structured questionnaire was applied to a sample of 140 companies in the sector. The results show that EO has a significant effect on business competitiveness; however, this impact varies according to the specific line of business of the economic units analyzed. At the aggregate level, the dimension of proactiveness is positioned as the main predictor of competitiveness, followed by innovation and, to a lesser extent, risk-taking. These findings suggest that, although EO acts as a strategic lever for competitive strengthening, its effectiveness depends on the ability of companies to adapt their entrepreneurial strategies to the particular conditions of their environment and business model. In conclusion, it is confirmed that entrepreneurial orientation not only drives the competitive performance of MSMEs but also requires a differentiated and contextualized approach to maximize its impact in specific sectors.

Keywords: Competitiveness, MSMEs, entrepreneurial orientation.

1 Introduction

The competitiveness of MSMEs has become a central axis of organizational analysis, particularly in service-intensive sectors where the pressure for operational efficiency and commercial differentiation is constant. In this context, entrepreneurial orientation (EO) is conceived as a strategic posture that integrates behaviors of innovation,

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proactiveness, and risk-taking, which directly influence the ability of companies to generate sustainable competitive advantages [1].

In such a way that business competitiveness is understood as the ability of organizations to generate value, differentiate themselves, and sustain advantages over their competitors through the efficient use of their resources and capabilities [2]. In the case of the MSMEs, this competitiveness depends largely on the internal factors such as innovation, strategic management, and the use of intangible resources, which make it possible to improve their performance in costs, quality, and market positioning.

In this context, entrepreneurial orientation (EO) is configured as a key element for strengthening competitiveness by promoting innovation, proactiveness, and risk-taking within the organization [3]. As noted by [4], EO contributes to the development of organizational capabilities that facilitate adaptation to dynamic environments, while [5] shows that these dimensions positively impact the competitive performance of MSMEs.

Likewise, recent studies highlight that competitiveness in small enterprises is closely linked to their ability to innovate and respond strategically to environmental conditions [6]. From the dynamic capabilities approach, [7] states that the integration of these elements allows companies to reconfigure their resources and sustain competitive advantages in changing markets.

In summary, contemporary literature supports that entrepreneurial orientation constitutes a determining factor for the competitiveness of MSMEs by driving innovation, strategic adaptation, and value generation in highly competitive contexts.

On the other hand, recent research has shown that EO not only impacts overall performance but also has a differentiated effect on specific dimensions of competitiveness, such as cost control, operational efficiency, and sales growth ([8] & [9]). From this perspective, EO acts as a mechanism that articulates internal capabilities with environmental conditions, allowing MSMEs to respond strategically to scenarios of high rivalry. In this regard, EO acts as a strategic framework that facilitates the transformation of resources into sustainable competitive advantages, especially in small and medium-sized enterprises operating in dynamic environments [10].

Regarding the dimension of entrepreneurial orientation, empirical evidence suggests that they do not exert the same effect on competitiveness. Innovation has shown to be particularly relevant in activities intensive in technical knowledge, where the continuous improvement of processes and the adoption of new solutions strengthen organizational performance [11]. For its part, proactiveness has been identified as a cross-cutting dimension that drives performance in highly competitive contexts, especially in service companies where strategic anticipation and speed of response constitute critical success factors [12].

In contrast, risk-taking presents more ambiguous effects. Although it may favor the exploration of new opportunities, recent studies warn that high levels of risk, when not supported by sufficient capabilities, can negatively affect performance, particularly in MSMEs [13].

In the automotive services sector, characterized by high market fragmentation, rapid technological obsolescence, and a strong customer orientation, the relationship between EO and competitiveness acquires particular relevance. In border cities such as Tijuana, where dynamics of binational competition, price pressure, and quality requirements converge, understanding how the dimension of EO influences competitiveness represents a relevant empirical contribution that remains little explored in recent literature.

Despite theoretical progress, a gap persists in studies that analyse EO in a disaggregated manner by type of business within the automotive sector, particularly by differentiating its effects on costs and sales competitiveness. Addressing this gap makes it possible to generate more precise evidence for the formulation of contextualized business strategies.

2 Research Method

2.1 Research Method

The study was developed under a quantitative approach, with a non-experimental, cross-sectional, and correlational-explanatory design. The unit of analysis consisted of service MSMEs in the automotive sector located in Tijuana, Baja California. The correlational-explanatory design is relevant because it allows identifying not only associations but also the magnitude of the effect of each dimension of entrepreneurial orientation on competitiveness, differentiating patterns by type of business.

2.2 Research Hypothesis

H_1: Innovation (dimension of EO) has a positive effect on the competitiveness of automotive service MSMEs in Tijuana.

H_2: Proactiveness (dimension of EO) had a positive effect on the competitiveness of automotive service MSMEs in Tijuana.

H_3: Risk-taking (dimension of EO) had a positive effect on the competitiveness of automotive service in Tijuana.

2.2.1 Population and Sample

The study focuses on economic units classified by the National Institute of Statistics and Geography (INEGI), through the North American Industry Classification System (NAICS), within the repair and maintenance sector. This classification includes automotive services and complementary activities such as machinery maintenance, bodywork, tire repair, and other related services ([14] & [15]). Therefore, the total

population amounts to 2,338 economic units registered in the National Statistical Directory of Economic Units [16]. From this population, a sample of 140 companies was determined using the formula for finite populations proposed by [17], considering a confidence level of 95% and a margin of error of 5% (see table 1).

Table 1. Stratified Sample.

Stratum (type of economic unit)	N	N (proportional)	Final N (sum=140)	% of sampled stratum
Automobile and truck bodywork and painting	576	34.49	34	5.90%
Installation of glass and other automobile and truck body repairs	45	2.69	3	6.67%
General mechanical repair of automobiles and trucks	1,288	77.13	77	5.98%
Minor tire repair	393	23.53	24	6.11%
Automobile and truck upholstery	36	2.16	2	5.56%
Total (strata considered)	2,338	140.00	140	—

Note: Own elaboration.

To ensure the representativeness of the different lines of business in the sector, stratified sampling by economic activity was used, complemented by a non-probabilistic convenience selection criterion derived from access to the participants. The sample size is considered adequate for the statistical analysis, with an approximate sampling error of 8.29, which reflects the expected variation with respect to the total population ([18], [19], [20] & [21]).

2.2.2 Instrument and Operationalization

The operationalization of the variables (See Table 2) in the present research was carried out through the decomposition of the theoretical constructs into dimensions and observable indicators, which allowed their measurement through a structured Likert-type instrument. This process facilitated the quantification of intangible variables relevant to the analysis of competitiveness in MSMEs in the automotive sector [22].

Table 2. Operationalization of variables (questionnaire).

Variable	Dimension	Indicators
Intellectual capital	Human resources	Knowledge; Experience; Training
	Relational capital	Relationship with suppliers; Relationship with customers, and Contact networks
	Structural capital	Internal processes; Organizational structure, and Reputation and image
	Technological capital	Technological infrastructure; use and adoption of technology
Entrepreneurial organization	Innovation	Product innovation; Process innovation; Service innovation, and Innovation strategy
	Risk-taking	Investment in projects with uncertainty, Exploration of new markets; Innovation strategy
	Proactiveness	Market anticipation; Strategic leadership, and Entrepreneurial initiative
Competitividad	Sales	Sales growth, Increase in market share, Acquisition of new customers, and Income level
	Costs	Reduction of operating costs; Efficiency in the use of resources; Expense control; Process optimization

Note. Own elaboration.

The intellectual capital variable was operationalized based on four dimensions: human resources, relational capital, structural capital, and technological capital. These dimensions integrate indicators related to the knowledge, experience, and training for personnel; relationships with customers and suppliers; the formalization of organizational processes; and the level of technological adoption, elements that together contribute to the generation of value and competitive advantage in organizations ([23] & [24]).

For its part, the entrepreneurial orientation variable was structured into three dimensions: innovation, risk-taking, and proactiveness. Through these, aspects related to the company's ability to innovate in products, processes, and services were evaluated, as well as its willingness to take risks in uncertain environments and its ability to anticipate market conditions, which directly affects its competitive performance ([1] & [25]).

Finally, the competitiveness variable was measured through two key dimensions: sales and costs. These made it possible to analyze business performance in terms of revenue growth, customer acquisition, and market share, as well as operational efficiency

reflected in cost reduction and control, fundamental factors for business sustainability and positioning ([26] & [2]). Overall, the operationalization made it possible to establish a clear relationship between the research model and statistical analysis.

2.2.3 Procedure and Statistical Analysis

Data processing was carried out using the SPSS statistical software; the data were entered and cleaned prior to analysis. On the other hand, the reliability of the instrument was evaluated using Cronbach's alpha (See Table 3), which measures the internal consistency of the items. The instrument, composed of 54 Likert-type scale items, obtained a value of $\alpha = 0.90$, which indicates an excellent level of reliability. This result shows that the items present a high correlation with one another and that they measure the established constructs in a homogeneous manner [22].

Table 3. Cronbach's Alpha Coefficient.

Variable	Number of items	Cronbach's Alpha (α)	Reliability level
Intellectual capital	10	0.91	Excellent
Entrepreneurial orientation	9	0.89	Good
Competitiveness	8	0.90	Excellent
General average	54	0.90	Excellent

Note. Own elaboration.

To evaluate the impact of EO on competitiveness, multiple linear regression was applied with the dimensions of EO as independent variables. The analysis was conducted at two levels: (a) models by type of business to identify heterogeneous patterns and (b) a global model, integrating the total sample. Regression assumptions were reviewed (linearity, independence of errors, absence of multicollinearity, and approximate normality of residuals) to support the validity of the model.

3 Results

3.1 Results by Type of Business (Statistical Approach)

The regression models estimated by type of business were statistically significant in the business lines analyzed, which indicated that the dimensions of EO explained a relevant proportion of competitiveness. It is recommended to report here the fit statistics by business line (R, R^2, adjusted R^2, and F test) according to the results of the study. In general, mechanical repair and innovation showed a positive and significant effect on competitiveness, while proactiveness presented a complementary effect. Risk-taking did not reach statistical significance, suggesting a predominance of technical mechanisms and process improvement in this business line (See Table 4).

Table 4. Global Model.

Type of business	Dependent variable	Innovation (β)	Proactiveness (β)	Risk-taking (β)	Domination dimension	Key interpretation
Bodywork and painting	Costs	—	Significant	—	Proactiveness	Strategic anticipation and operational management explain cost efficiency.
General mechanical repair	Costs	Significant	Significant	—	Innovation	Cost competitiveness is supported by technical and process improvements.
Minor tire repair	Costs	—	Significant	—	Proactiveness	Proactive operational and commercial decisions make it possible to control costs.
General mechanical repair	Sales	0.648*	0.371**	–.260**	Innovation	Innovation drives sales; excessive risk negatively affects performance.
Minor tire repair	Sales	0.373**	0.518	0.133 (n.s.)	Proactiveness	Market-oriented proactiveness is the main driver of sales.

Note: Own elaboration

In bodywork and painting, proactiveness was the dimension with a significant effect, reflecting the importance of strategic anticipation and operational speed. Innovation and risk-taking did not present relevant effects in the estimated model. In mirror tire repair, proactiveness and risk-taking presented positive and significant effects, while innovation was not significant. This pattern is consistent with market decisions as levers of competitiveness.

3.2 **Result by Type of Business (Narrative Approach)**

Interpretively, the results showed that competitiveness was constructed through different routes according to the type of service. In mechanical workshops, technical

innovation and process updating emerged as central factors in bodywork and painting, anticipatory demand management, and speed of response.

3.3 Global result (Statistical Approach)

In the global model, EO significantly explained the competitiveness of MSMEs analyzed. Proactiveness was the dimension with the greatest explanatory weight, followed by innovation and, to a lesser extent, risk-taking. It is recommended to incorporate in this section the standardized coefficients (β) and the exact R^2 value of the global model.

The synthesis of the standardized coefficients shown in table 1 confirms that entrepreneurial orientation has a differentiated impact on the competitiveness of MSMEs: while cost efficiency responds mainly to proactive and innovative internal practices, sales competitiveness depends on the predominance of innovation or proactiveness according to the hype of business.

3.4 Global result (Narrative Approach)

At the global level, MSMEs with greater proactiveness tended to present better competitiveness results, which reflects the relevance of anticipating changes in the market and acting in a timely manner in the face of competition. Innovation operated as a complementary lever to improve processes and services, while risk-taking contributed mainly through commercial decisions (See Table 5).

Table 5. Impact of Entrepreneurial Orientation on Competitiveness by Type of Business.

Type of Business	EO dimension with greatest impact	Complementary dimensions	Key interpretation
General mechanical repair	Innovation	Proactiveness	Predominance of technical improvements and process updates.
Bodywork and painting	Proactiveness	—	Strategic anticipation and operational speed as differentiators.
Minor tire repair	Proactiveness	Risk-taking	Market-oriented commercial decisions drive competitiveness.
Overall sector result	Proactiveness	Innovation; risk-taking	Strategic anticipation is the main competitive driver.

Note. Own elaboration based on the results of the study.

The results show that Entrepreneurial Orientation (EO9 in Table 2) does not have a uniform impact on the competitiveness of MSMEs in the automotive sector; rather, its effect depends on the type of business and the nature of the service provided.

In the case of general mechanical repair, innovation emerges as the dimension with the greatest impact, indicating that competitiveness is Manila-supported by the incorporation of technical improvements, process updates, and the adoption of specialized tools. Proactiveness acts as a complementary dimension, strengthening the

ability to anticipate and respond to market demands, although with a lower relative influence.

For auto body and paint companies, proactiveness emerges as the only significant dimension, suggesting that competitiveness is primarily explained by strategic anticipation, operational speed, and efficient delivery-time management. In this business segment, technological innovation and risk-taking are not determining factors, reflecting a competitive dynamic focused more on work organization than on complex technical changes.

In minor repair businesses, proactiveness is also identified as the dimension with the greatest impact, accompanied by risk-taking as a complementary factor. This pattern indicates that competitiveness is driven by market-oriented business decisions, such as promotional activities, extended operating hours, supplier agreements, and customer acquisition strategies, where assuming certain commercial risks becomes necessary to sustain competitive performance.

3.4.1 **Detailed Statistical Results: EO → Cost Competitiveness**

For the model evaluating the effect of Entrepreneurial Orientation (EO) on cost competitiveness, the results show a high and consistent level of fit across the different types of businesses within the automotive sector. In autobody and paint services for automobiles and trucks, the model yielded a correlation coefficient of $R = 0.845$ and a coefficient of determination of $R^2 = 0.715$ (adjusted $R^2 = 0.686$), indicating that 71.5% of the variability in cost competitiveness is explained by the dimensions of entrepreneurial orientation. The Durbin-Watson statistic was 1.884, suggesting the absence of significant residual autocorrelation and confirming a strong model fit.

In the general mechanical repair of automobiles and trucks, the model explained 65.0% of the variability is cost competitiveness ($R=0.806$, $R^2=0.650$, adjusted $R^2= 0.635$). The standard error of the estimate was 0.617, reflecting adequate model precision. The Durbin-Watson value (1.360) indicated low autocorrelation, close to the lower acceptable limit, without compromising the validity of the model.

Meanwhile, the minor tire repair segment showed the strongest statistical performance, with a correlation coefficient of $R=.906$ and an R^2 of .822 (adjusted $R^2=0.795$), indicating that 82.2% of cost competitiveness is explained by entrepreneurial orientation. Furthermore, this model presented the lowest standard error (0.416) and a Durbin-Watson statistic of 2.231, a value considered ideal and confirming the absence of residual autocorrelation.

Overall, these results demonstrate that entrepreneurial orientation is a robust predictor of cost competitiveness, particularly in business segments where operational and commercial decisions are closely associated with proactive and innovative practices.

3.4.2 **Overall Model Test: ANOVA (EO → Cost Competitiveness)**

The analysis of variance (ANOVA) confirmed the statistical significance of the regression models estimated for each type of business, thereby validating the overall fit of entrepreneurial orientation as a predictor of cost competitiveness. In the auto body and paint segment for automobiles and trucks, the model was highly significant,

$F(3, 30) = 25.030$, $p < 0.001$, indicating that the dimensions of entrepreneurial orientation strongly explain the variation in cost competitiveness. For general mechanical repair of automobiles and trucks, the model showed a particularly robust fit, with an F-statistic of $F(3, 73)$ of 45.093, $p < 0.001$. This result demonstrates a strong and consistent influence of entrepreneurial orientation on cost competitiveness in this type of business. Likewise, in the minor tire repair segment, the model was also statistically significant, $F(3, 20) = 30.688$, $p < 0.001$, confirming that entrepreneurial orientation is a relevant and consistent predictor of cost competitiveness in this business category. Overall, the ANOVA results corroborate that the estimated models exhibit an adequate overall fit and that entrepreneurial orientation enters into a significant effect on cost competitiveness across the different types of automotive service MSMEs analyzed.

3.4.3 **Standardized Coefficients of the Model: EO → Sales Competitiveness**

The analysis of standardized coefficients made it possible to identify the specific contribution of each dimension of entrepreneurial orientation to sales competitiveness, as well as to assess the presence of multicollinearity through the Variance Inflation Factor (VIF). For the minor tire repair segment, proactiveness emerged as the main predictor of sales competitiveness ($\beta=0.518$; $t=3.627$; $p=0.002$), followed by innovation ($\beta=0.373$; $t=2.662$; $p=0.015$). In contrast, risk-taking did not show a statistically significant effect ($\beta=0.133$; $t=1.204$; $p=0.243$).

The VIF values associated with the dimension of entrepreneurial orientation ranged from 1.362 to 2.287, indicating the absence of multicollinearity and confirming the stability of the estimated model for this type of business. These results suggest that, in the minor tire repair segment, sales competitiveness is primarily explained by proactive market-oriented behaviors and, secondly, by the introduction of incremental improvements in products and services, whereas risk-taking does not constitute a determining factor

3.4.4 Standardized Coefficients of the Model: EO → Sales Competitiveness (General Mechanical Repair)

For the general repair of automobile and truck segments, the analysis of standardized coefficients showed that innovation was the predictor with the greatest explanatory power for sales competitiveness (β=0.648; t=5.346; p<0.001), highlighting the importance of continuous process improvement, technological upgrading, and the adoption of differentiated technical practices. Proactiveness also exhibited a positive and statistically significant effect (β=0.371; t=3.637; p=0.001), indicating that anticipating market needs and responding promptly contributed in a complementary manner to sales performance. In contrast, risk-taking showed a negative and significant effect (β=–0.260; t=–2.734; p=0.008), suggesting that decisions associated with higher levels of risk may adversely affect sales competitiveness in these business segments, particularly when they are not supported by sufficient technical or organizational capabilities. The Variation Inflation Factor (VIF) values ranged from 1.886 to 3.060, indicating the absence of severe multicollinearity and confirming the stability of the estimated model.

3.4.5 Collinearity Diagnosis of the Model

To assess the presence of multicollinearity among the dimensions of entrepreneurial orientation, Condition Index values and the variance proportions associated with each dimension were analyzed. This diagnostic procedure makes it possible to determine the stability of the estimated regression models and the reliability of the resulting coefficients.

In the auto body and paint segment for automobiles and trucks, the maximum condition index was 12.907, with a high variance proportion concentrated primarily in the constant term (.40). This result indicates a moderate and manageable level of collinearity; therefore, the model is statistically usable without a severe risk of coefficient distortion.

For the general mechanical repair of automobiles and trucks, the condition index reached 14.510, accompanied by high variance proportions in the dimensions of proactiveness (0.78) and innovation (0.79), as well as in the constant term (.20). These findings indicate moderate-to-high collinearity, suggesting that both dimensions share a substantial portion of variance. Nevertheless, the model is considered stable, although the coefficients should be interpreted with caution.

In the minor tire repair segment, the maximum condition index was 12.506, with a high concentration of variance in proactiveness (0.93) and, to a lesser extent, in innovation (0.68). Although moderate collinearity is present, it remains within acceptable ranges, confirming that the model is suitable for analyzing competitiveness in this type of business.

Overall, the collinearity diagnostics confirm that the estimated models meet the criteria for statistical stability. Although moderate levels of collinearity were identified in some business segments, these do not invalidate the results; rather, they reinforce the need to interpret the coefficients within the specific context of each type of business.

3.4.6 Model Summary: EO → Sales Competitiveness

The overall fit of the regression models estimated for sales competitiveness indicates that entrepreneurial orientation explains a substantial proportion of the variability in commercial performance across the different business types within the automotive sector.

In the auto body and paint segments, the model yielded a correlation coefficient of $R=0.833$ and a coefficient of determination of $R^2=0.694$ (adjusted $R^2=0.663$), indicating that 69.4% of the variation in sales competitiveness is explained by the dimensions of entrepreneurial orientation. The Durbin-Watson statistic was 2.247, a value that confirms the absence of residual autocorrelation and supports the realizability of the model.

For general mechanical repair, the model explained 53.6% of the variability in sales competitiveness ($R=0.732$; $R^2 = 0.536$; adjusted $R^2 = 0.517$), with a standard error of estimation of 0.71989. The Durbin-Watson value (1.698) fell within the acceptable range. Suggesting a slight tendency toward positive autocorrelation without compromising the validity of the model.

In the case of minor tire repair, the model achieved an $R= .769$ and an R^2 of 0.591 (adjusted $R^2 = 0.530$), implying that 59.1% of sales competitiveness is explained by entrepreneurial orientation. The Durbin-Watson statistic was 1.382, indicating the possibility of slight positive autocorrelation; however, the model is considered statistically valid and demonstrates a reasonable fit.

Overall, the results confirm that entrepreneurial orientation is a relevant determinant of sales competitiveness, with varying levels of explanatory power depending on the type of business. This finding reinforces the importance of conducting a disaggregated analysis by business segment.

3.4.7 Overall Model Test: ANOVA (EO → Sales Competitiveness)

The analysis of variance (ANOVA) confirmed the statistical significance of the regression models estimated for sales competitiveness across the different business types in the automotive sector, thereby validating the overall fit of entrepreneurial orientation as a predictor of commercial performance. For the auto body and paint segment, the model was highly significant, $F (3, 30) = 22.683$, $p < .001$, indicating that the dimensions of entrepreneurial orientation robustly predict sales competitiveness. For general mechanical repair, the model demonstrated a highly significant fit, $F (3, 73) = 28.109$, $p < .001$, showing that entrepreneurial orientation consistently explains sales performance in mechanical repair shops.

Likewise, in the minor tire repair segment, the model was also statistically significant, $F (3, 20) = 9.650$, $p < .001$. Although its explanatory power is lower compared to the other business segments, the results confirm that entrepreneurial orientation makes a meaningful contribution to explaining sales competitiveness in this type of business. Overall, the ANOVA results support the statistical validity of the estimated models

and confirm that entrepreneurial orientation exerts a significant effect on sales competitiveness across the different business segments analyzed.

4 Discussion

The results confirm that entrepreneurial orientation significantly influences the competitiveness of automotive service MSMEs; however, its effect is not homogeneous but rather contingent upon the type of business. This finding supports the contingency perspective of entrepreneurial orientation, which argues that its benefits depend on the organizational and sectoral context ([27] & [28]).

In general, mechanical repair, the predominance of innovation as a predictor of both sales and cost competitiveness suggests that competitiveness is grounded in technical capabilities and organizational learning. As noted by [29], entrepreneurial orientation generates impact when it is translated into internal capabilities that enable firms to transform resources into economic value.

In contrast, in the auto body and paint segment, proactiveness emerges as the key dimension, indicating that competitive advantage is built through strategic anticipation and efficient time management rather than through complex technological innovations. This result is consistent with the findings of ([8] & [12]), who emphasize the importance of a proactive culture in service environments characterized by intensive customer interaction.

In the minor tire repair segment, competitiveness is explained by the combination of proactiveness and risk-taking, reflecting a dynamic based on market-oriented business decisions such as promotions, extended operating hours, service diversification, and supplier agreements. This pattern is consistent with recent evidence indicating that, in activities with lower technological complexity, entrepreneurial orientation is primarily manifested through market strategies and commercial experimentation rather than through knowledge-intensive innovations ([10] & [30]).

A particularly relevant finding is the negative effect of risk-taking on sales in the general mechanical repair segment. This result suggests that, in contexts where technical reliability is critical, risk-taking that is not supported by sufficient capabilities may undermine commercial performance. This finding provides novel empirical evidence to the literature on entrepreneurial orientation in MSMEs.

Innovation, in turn, acts as the main mechanism through which entrepreneurial orientation translates into superior performance, provided that it is accompanied by organizational learning and absorptive capabilities ([11] & [9]).

4.1 Comparative Discussion: Entrepreneurial Orientation, Cost Competitiveness, and Sales Competitiveness

A comparison of the results obtained for cost competitiveness and sales competitiveness reveals distinct patterns in the way entrepreneurial orientation (EO) influences the performance of automotive service MSMEs. In general terms, EO

demonstrated greater explanatory power in the cost models than in the sales models, suggesting that entrepreneurial practices first impact operational efficiency and subsequently influence commercial performance. In the auto body and paint segment, EO explained a high proportion of both cost and sales competitiveness, with statistically robust models. This behavior indicates that proactiveness and anticipatory demand management enable firms to control costs while simultaneously maintaining sales levels, which is consistent with the nature of the service and the importance of delivery times (see Table 6).

In general, mechanical repair, the difference between cost and sales competitiveness was more pronounced. While EO had a strong impact on cost competitiveness, its effect on sales competitiveness was smaller, although still significant. This result suggests that technical innovation and process improvements contribute directly to internal efficiency, but their translation into higher sales depends on additional factors such as customer perception and local competition. In minor tire repair, the models showed a consistent impact of EO on both cost and sales competitiveness, although with lower relative strength. Proactiveness emerged as the primary driver in both cases, indicating that commercial decisions, promotional activities, and supplier agreements constitute key mechanisms for improving competitive performance.

Overall, the comparative evidence suggests that entrepreneurial orientation acts as a cross-cutting determinant of competitiveness, albeit through differentiated pathways. While cost efficiency responds more directly to internal entrepreneurial practices, sales performance additionally requires market capabilities and effective positioning strategies.

Table 6. Synthesis of Hypotheses: Entrepreneurial Orientation and Competitiveness.

Hypotheses	EO Dimension	Type of Business	Dependent Variable	Result
H_1	Innovation	General Mechanical Repair	Sales and Costs	Accepted
H_2	Proactiveness	Auto Body	Sales and Costs	Accepted
H_2	Proactiveness	Minor Tire Repair	Sales and Costs	Accepted
H_3	Risk-Taking	General Mechanical Repair	Sales	Accepted (negative effect)
H_3	Risk-Taking	Minor Tire Repair	Sales	Rejected

Note. The acceptance or rejection of the hypotheses was determined based on the standardized coefficients, their significance levels, and the overall fit of the regression models estimated for each type of business and dependent variable.

5 Conclusions

The study concluded that entrepreneurial orientation has a significant impact on the competitiveness of automotive service MSMEs in Tijuana. However, this impact varied according to the type of business, confirming that the dimensions of entrepreneurial orientation operate through different mechanisms depending on the nature of the service provided.

Specifically, innovation was the determining factor in general mechanical repair; proactiveness was the key factor in auto body and paint services; and the combination of proactiveness and risk-taking was most influential in minor tire repair businesses. Overall, proactiveness emerged as the dimension with the greatest explanatory power, followed by innovation and risk-taking.

For business management, the results suggest designing entrepreneurial orientation (EO) strategies tailored to each business segment: (a) in mechanical repair shops, prioritize training, diagnostics, and process improvement; (b) in auto body and paint businesses, strengthen scheduling, customer service, and time management; and © in tire repair shops, promote flexible commercial tactics, promotional activities, and supplier agreements. These actions can translate into competitive advantages in both sales and cost performance.

From a theoretical perspective, the study provides empirical evidence that reinforces the multidimensional and contingent nature of entrepreneurial orientation, demonstrating that its effects on competitiveness vary according to the type of business and the dimension analyzed. Empirically, the research contributes sector-specific and territorial evidence from a border-region context that has received limited attention in recent literature. Finally, from a practical standpoint, the findings offer guidance for the design of differentiated entrepreneurial strategies that strengthen both cost efficiency and sales performance.

5.1 Limitations and Future Research Directions

The cross-sectional design prevented the inference of temporal causality, and the results were limited to the context of Tijuana. Future research could incorporate longitudinal designs, regional comparisons, and mediating variables (e.g., innovation capabilities) to explain in greater detail how entrepreneurial orientations translate into competitiveness.

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