

Investigation of the Contribution of Entrepreneurial Behavior to Firm Growth using PLS-SEM Approach

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ABSTRACT

Keywords:

entrepreneurial orientation,
strategic innovation,
entrepreneurial leadership, firm
growth, SMEs.

Bottled water SMEs in South Sulawesi face significant challenges in achieving sustainable growth due to high competition and low product differentiation. The objective is to analyze how entrepreneurial behavior contributes to firm growth within this context. The study is grounded in entrepreneurship and strategic management theories. Entrepreneurial Orientation reflects innovativeness, proactiveness, and risk-taking behavior, Strategic Innovation represents strategic improvements in operations and distribution, Entrepreneurial Leadership captures the leader's role in enabling innovation, and Firm Growth refers to business expansion and performance improvement. The framework proposes that entrepreneurial orientation influences firm growth directly and through strategic innovation, while leadership strengthens the orientation–innovation relationship. A quantitative approach using PLS-SEM was employed. Data were collected from bottled water SME owners and managers through structured questionnaires. Reliability and validity tests were conducted, followed by structural model evaluation and hypothesis testing. Triangulation through follow-up interviews with SME representatives was conducted to enhance credibility. The findings show that Entrepreneurial Orientation significantly affects Strategic Innovation and Firm Growth. Strategic Innovation significantly influences Firm Growth and mediates the relationship between Entrepreneurial Orientation and Firm Growth. Entrepreneurial Leadership shows a positive but relatively weak moderating effect on the relationship between Entrepreneurial Orientation and Strategic Innovation. In conclusion, firm growth in bottled water SMEs is primarily driven by the firm's ability to translate entrepreneurial orientation into strategic innovation. Leadership support enhances this process, although its moderating influence is limited. The study contributes to understanding how entrepreneurial strategy drives growth in emerging market SMEs.

INTRODUCTION

The bottled water industry is the fastest-growing industry in Indonesia's fast-moving consumer goods (FMCG) landscape over the past few decades, as public awareness continued grow on the importance of consuming drinking water that is hygienically and practically safe for health. Historically, this industry started to develop in the early 2000s. Historically, the industry began to expand rapidly in the early 2000s following the privatization of water distribution and the rising demand for hygienic drinking water among urban populations. According to data from The Jakarta Post (2015), national bottled water sales increased from 12.8 billion liters (2009) to 23.1 billion liters (2014), representing an average annual growth

rate of around 12.5%. This consistent expansion has positioned Indonesia as one of the largest bottled water markets in Southeast Asia (The Jakarta Post, 2015). The growth has remained strong due to improved health awareness, urbanization and improvement in distribution infrastructure. The bottled water market in Indonesia stood at USD 3.27 billion in 2024 and is projected to reach USD 5.58 billion by 2033, growing at a CAGR of approximately 5.5% during the period (2025-2030) (IMARC Group, Market analytics). Additionally, Mordor Intelligence (2024) similarly adds that the still water segment dominates One in a National Consumption at Almost 70 to Around 80 percent of Total Market Volume. The bottled water market shows strong potentials and demand is relatively stable while growing continuously long-term (Hawkins, 2017; Parag, Elimelech, & Opher, 2023). The continuous high demand has caught Investors attention, triggering several big conglomerate group in Indonesia to aggressively create their own bottled-water-brands. Meanwhile, the fundamental and stable demand for drinking water has also attracted many domestic entrepreneurs to get involved in this field. Bottled water represents a basic need, not something determined by short term trends or shifting consumer tastes as is so often the case with other food and beverage products. Water is a basic human need and it cannot be substituted; therefore, while living in the market place, it becomes one of the necessities (Bagheri, 2017; Bryman, 2016).

While in Indonesia this industry is one of the most long-standing industries not only are dominated by large scale local national corporations but also with the emergence of local and regional firms that can focus in more specific market. As shown in Figure I.2, the structure of this industry is very concentrated: Aqua (owned by Danone) has 46 percent share of market followed by Le Minerale at 18 percent, Cleo at 9 percent, and Ades at 6 percent; the remaining brands collectively represent only 21 per cent. That said, the overall market continues to thrive profitably even as smaller brands only hold a small amount of the sector share.

Despite its growth in recent years the bottled water companies are more stable and long-lasting market segmentation (Argentieri, 2019; Bajrami, 2019). This product is in the segment of staple goods (means consists of repetitive usage behavior, and its demand is stable through economic uncertainties) The Fast-Moving Consumer Goods (FMCG) sector that bottled water products belong to is also known for showing low demand elasticity as FMCGs are closely linked with public health and daily consumption needs (Kotler and Keller, 2016). Moreover, it helps to add a high demand stability making the industry less prone to recessions when compared to non-essential sectors (IMARC Group, 2024). Also, improvements in production technology and quality changing and leveraging distribution systems support firms to expand their market penetration more efficiently while also improving operational fanaticism (Grant, 2019).

The bottled drinking water industry in South Sulawesi has a different level of competition compared to the national market (Azani & Rahayu, 2023; Prasetyawan, Nastiti, & Muntalif, 2017; Yulianto et al., 2020). On the national scale, cottage industries are consolidated under larger brands like Aqua, Le Minerale and Cleo while in South Sulawesi many more small or medium-sized firms are active in smaller market areas, with locally-based distribution networks. These companies usually battle to the same level price efficiency, distribution simple access and tight relations with local Dealers and Brokers. Unlike the national market in South Sulawesi, the bottled water industry tends to be less concentrated due to brand dominance or large-scale distribution systems (Grant, 2019; Mordor Intelligence, 2024). Zero Minas Atene,

JS, Voda, Wahdah Water, AirQita, Jabal Nur and Aerpe with Celebes and 2S as local brands that compete locally in the distribution area. This is the usual, which usually focuses more on South Sulawesi market segments, by relying on proximity strategy and flexible distribution line to the final consumers (Hair et al., 2022; Kock, 2015).

the bottled water market is (and has always been) confronted by core structural issues namely low entry barriers. The production processes are comparatively standard, water treatment technology is increasingly accessible and the capital requirements for new producers are fairly moderate meaning a high threat of entry into the market. Porter (2008) notes that low entry barriers lead to increased competition, market fragmentation and sustained price and customer loyalty pressure for the industry. Within the bottled water industry, this phenomenon is exacerbated by a limited ability for firms to differentiate these products indeed, there are very few attributes on which bottled water can compete (Mordor Intelligence, 2024).

A low barrier to entry industry structure instead of determining survival by whether a firm can attract and retain consumers is done so through the consistency of an organization in achieving long term growth. Entrepreneurial Orientation (EO) serves as the key strategic approach highlighted in literature on entrepreneurship that describes an organization's mindset to address market dynamics via innovativeness, proactiveness and risk-taking. EO allows firms to actively explore new opportunities, react to alterations in the environment of working sector and develop ongoing innovation to be able for contending. The impact of EO on firm performance is conditional to the interpretation of EO constructs as entrepreneurial behavior, and further mediation through strategic innovation that plays a key role in translating strategic intent into quantifiable output (Cillo et al., 2019).

Expanding upon the role of strategic innovation as a conduit for transforming opportunity-seeking behavior into performance outcomes, this transformation is not uniform across all firms. Finally, developing strategic innovation capabilities is not only specific to a firm's characteristics but also its internal challenges including sustaining business alignment and executing operations that may moderate the process by which entrepreneurial orientation translates into innovation. Accordingly, Entrepreneurial Leadership (EL) is essential to enhance this link between entrepreneurial orientation and strategic innovation. According to Thornberry (2006) entrepreneurial leadership creates an environment of innovation, ownership, and increased capacity to act on emerging opportunities despite limited resources. Empirical evidence also suggests that entrepreneurial leadership influences organizational preparedness and collective commitment, which may strengthen the ability of firm to effectively transform their entrepreneurial orientation to strategic innovation (Renko et al., 2015).

Entrepreneurial orientation and leadership alone do not guarantee firm performance unless they are translated into consistent strategic actions through strategic innovation, which acts as an organizational mechanism to implement and operationalize innovation. Within the dynamic capability's framework, strategic innovation enables firms to sense, seize, and reconfigure resources, transforming internal potential into sustainable competitive advantage. Integrating entrepreneurial orientation, entrepreneurial leadership, and strategic innovation drives firm growth across multiple dimensions, including market expansion, financial performance, and operational capability enhancement. While prior research often treats entrepreneurial orientation as a direct antecedent of growth and entrepreneurial leadership at the individual or team level, this study highlights the need for their strategic integration to

enhance organizational capabilities systematically. Strategic innovation serves not merely as an outcome but as a transformative mechanism linking orientation and leadership to firm growth, such as improving operational efficiency, distribution, and adaptive market positioning. This framework is particularly relevant in highly competitive industries with low product differentiation, such as bottled water.

Therefore, this study aims to empirically examine how the combination of entrepreneurial orientation (EO), entrepreneurial leadership (EnL), and strategic innovation (SI) enables firms to sustain competitiveness and achieve growth in such industry settings. This research provides both theoretical and practical benefits. Theoretically, it contributes to financial management literature on the Efficient Market Hypothesis (EMH) and fundamental analysis in emerging markets like Indonesia, while enriching understanding of post-pandemic stock valuation. Practically, it benefits retail and institutional investors by offering empirical guidance on key fundamental factors (DPR, ROE, Beta) for investment decisions. It helps corporate managers design strategies to enhance firm value through dividend policy, profitability, and risk management. It provides regulators (OJK, IDX) with evidence to develop financial literacy programs promoting fundamental-based investing. Finally, it serves as a reference for academics exploring forward-looking growth measures or moderating variables such as firm size and industry sector.

METHOD

This study used a quantitative and explanatory research design with a cross-sectional approach to analyze the influence of entrepreneurial behavior (consisting of entrepreneurial orientation, entrepreneurial leadership, and strategic innovation) on firm growth in bottled water companies in South Sulawesi (Kotler & Keller, 2016). The data were collected by distributing questionnaires to company owners, directors, and managers. We used a purposive sampling technique. The research sample consisted of 42 companies that had been operating for at least two years. Our questionnaire used a Likert scale of 1-5, and we then conducted interviews with several companies to obtain triangulation results. In the data analysis process, we used the PLS-SEM (Partial Least Squares Structural Equation Modeling) method to test direct relationships, as well as mediation and moderation effects in our research model. This method was chosen because it can be used with a small sample size. The analysis stages consisted of examining the initial data, testing the reliability and validity of the constructs (outer model), and testing the relationships between variables (inner model). This study also employed bootstrapping to test the significance of the hypotheses and triangulation to increase the credibility of the research results.

RESULT AND DISCUSSION

Preliminary Data Examination

(1) Assessment of Missing Value

Table 1. Descriptive Statistics of Research Variables

Name	Type	Missing	Mean	Standard deviation
EO1	MET	0	3.643	4.000
EO2	MET	0	3.714	4.000
EO3	MET	0	3.690	4.000

EO4	MET	0	3.690	4.000
EO5	MET	0	3.619	4.000
EO7	MET	0	3.548	4.000
EO9	MET	0	3.619	4.000
EO10	MET	0	3.643	4.000
EO11	MET	0	3.738	4.000
EO12	MET	0	3.619	4.000
EL1	MET	0	3.690	4.000
EL3	MET	0	3.595	4.000
EL5	MET	0	3.643	4.000
EL6	MET	0	3.643	4.000
SI6	MET	0	3.952	4.000
SI7	MET	0	3.738	4.000
SI8	MET	0	3.738	4.000
SI12	MET	0	3.952	4.000
SI13	MET	0	3.738	4.000
SI16	MET	0	3.881	4.000
SI17	MET	0	3.952	4.000
FG2	MET	0	4.095	4.000
FG3	MET	0	4.190	4.000
FG4	MET	0	4.167	4.000
FG5	MET	0	4.238	4.000
FG6	MET	0	4.167	4.000

Source: Author's data processing using SPSS (2025)

Initially, a screening of the quality of data was performed before checking measurement and structural model tests using the PLS SEM approach. The purpose of this step is to make the data ready for subsequent analysis.

First windows, that is checking missing values across all research indicators. Inspired by the evaluation results as shown in in Table 1. There were no missing values found, implying that all data can be used without removing any.

(2) Skewness and Kurtosis Assessment

Prior to evaluating the inner model, normality of data is examined using statistics of skewness and kurtosis. The results of this test are presented in Table 2 below

Table 2. Skewness and Kurtosis Results

Name	Excess xkurtosis	Skewness
EO1	0.255	-1.119
EO2	-0.491	0.178
EO3	0.416	-0.446
EO4	0.633	-0.719
EO5	-0.342	0.094
EO7	-0.682	-0.658
EO9	0.133	-0.596
EO10	-0.270	0.151
EO11	-0.176	-0.033
EO12	-0.047	-0.159
EL1	-0.627	0.385
EL3	-0.306	-0.876
EL5	0.069	-0.253

EL6	0.069	-0.253
SI6	-0.342	-0.263
SI7	0.127	-0.175
SI8	-0.179	-0.187
SI12	1.020	-0.483
SI13	0.124	-0.315
SI16	-0.236	-0.186
SI17	-1.065	0.074
FG2	0.418	-0.549
FG3	-0.909	-0.290
FG4	-1.194	-0.295
FG5	1.363	-0.819
FG6	-1.194	-0.295

Source: Author's data processing using SPSS (2025)

Skewness and Excess Kurtosis The skewness and excess kurtosis for each indicator are used to ascertain how asymmetric the data distribution, or its peakedness is. Overall, the range values of skewness multiple between all indicators are from -1.119 to 0.385, while excess kurtosis is ranged from -1.194 to 1.363. With common rules of thumb, data can be considered normally distributed if the skewness and kurtosis values are both within plus or minus 2. Hence, it can be inferred that all studied indicators are preferable to an acceptably normal range.

Most indicators have negative values, and based on the skewness value it signifies that data distribution is slightly left skewed. This signifies henceforth that most of the respondents eleito a good ranking– mostly 4 and 5 likings– which also correlates with the aforementioned descriptive analysis. On the other side, several other variables (EO2, EO5, EO10, EL1 and SI17) record positive skewness values that suggest a right skewed distribution. However, these values are small in comparison and fall within the clinically normal range.

Meanwhile, the excess kurtosis values indicate variations in the shape of the data distribution, ranging from flatter distributions to more peaked ones. Indicators with positive kurtosis values, such as SI12 at 1.020 and FG5 at 1.363, suggest distributions that are more concentrated around certain values. In contrast, indicators with negative kurtosis values, such as FG4 at minus 1.194 and SI17 at minus 1.065, indicate more dispersed distributions. This variation reflects differences in the level of response concentration across indicators.

Overall, despite the variation in skewness and kurtosis values, all indicators remain within acceptable normality thresholds. This indicates that the data distribution is sufficiently well behaved and does not exhibit extreme deviations. Therefore, the data are considered suitable for further analysis using the PLS SEM method, which is also relatively robust to normality assumptions.

(3) Full Col v]

(4) linearity Assessment

The full collinearity assessment was conducted to examine potential multicollinearity and common method bias using Variance Inflation Factor (VIF) values obtained from the inner model analysis in SmartPLS. Referring to Ned Kock (2015), VIF values below 3.3 indicate the

absence of common method bias, while Joseph F. Hair Jr. et al. (2022) suggest that VIF values below 5 remain acceptable for structural model estimation in PLS-SEM.

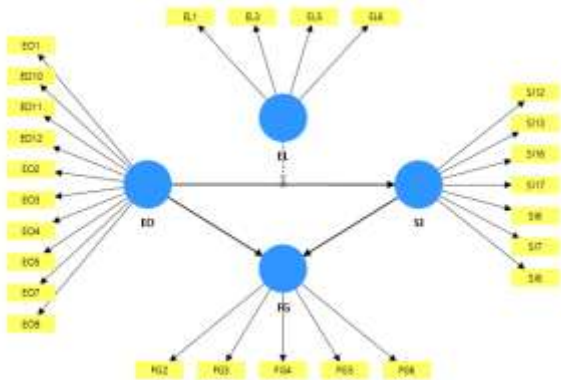


Figure 1. PLS-SEM xModel

Source: Author's data processing using SmartPLS (2025)

A full collinearity assessment was conducted to check for multicollinearity and common method bias (CMB) in the research model. VIF values for the relationships between Entrepreneurial Leadership (EL) and Strategic Innovation (SI), EL×EO interaction on SI, and Entrepreneurial Orientation (EO) and SI ranged from 1.192 to 4.069, all within acceptable thresholds. VIF values for EO→Firm Growth (FG) and SI→FG were 4.973, slightly below the cutoff of 5 recommended by Hair et al. (2022), indicating no serious multicollinearity. Using the more conservative criterion by Kock (2015), VIF values above 3.3 may suggest potential CMB, which is conceptually plausible given the single-source questionnaire data. Overall, the assessment indicates that the model is free from multicollinearity that could distort relationships, and despite minor potential CMB concerns, the VIF values remain below critical thresholds, allowing the analysis to proceed to structural model evaluation and hypothesis testing.

Table 3. Full Collinearity Assessment Results (VIF Values)

Collinearity Statistics (VIF)	
EL → SI	3.927
EL x EO → SI	1.192
EO → FG	4.973
EO → SI	4.069
SI → FG	4.973

Source: Author's data processing using SmartPLS (2025)

I.1.2 Measurement Model Evaluation (Outer Model)

(1) Indicator Reliability

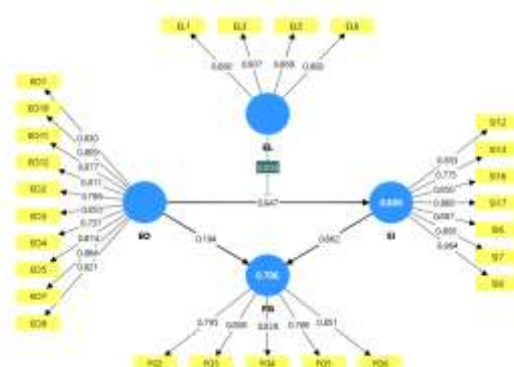


Figure 2. Results of external loading factor test
 Source: Author's data processing using SmartPLS (2025)

Based on the data processing results using SmartPLS, all indicators under the Entrepreneurial Orientation EO variable show outer loading values above 0.70, ranging from approximately 0.737 to 0.877. This indicates that all EO indicators have a strong contribution in reflecting the entrepreneurial orientation construct. The highest loading is found in indicator EO11, while the lowest value still exceeds the required threshold, confirming that all indicators are valid. For the Entrepreneurial Leadership EL variable, the outer loading values range from 0.869 to 0.907. These values indicate a very high level of validity, meaning that the indicators within the entrepreneurial leadership construct are able to consistently and strongly represent the latent variable. This also suggests that the role of leadership in both operational and strategic aspects of the firm is well captured by the selected indicators. Furthermore, for the Strategic Innovation SI variable, all indicators show high outer loading values, ranging from 0.775 to 0.895. The highest values are found in indicators SI6 and SI17, indicating that innovation in distribution and operational efficiency serves as the primary representation of the strategic innovation construct. The relatively high variation in loading values also reflects that SI indicators contribute significantly in explaining the construct. For the Firm Growth FG variable, the outer loading values range from 0.769 to 0.851. All indicators meet the criteria for convergent validity, indicating that the firm growth indicators consistently reflect the firm's growth condition. Indicator FG6 has the highest value, suggesting that perceptions of brand strength and business sustainability are key aspects in measuring firm growth. Overall, all indicators in this study have outer loading values above 0.70, leading to the conclusion that all constructs meet the criteria for convergent validity. Therefore, the measurement model is considered valid and appropriate to proceed to the next stage of evaluation.

(2) Internal Consistency Reliability

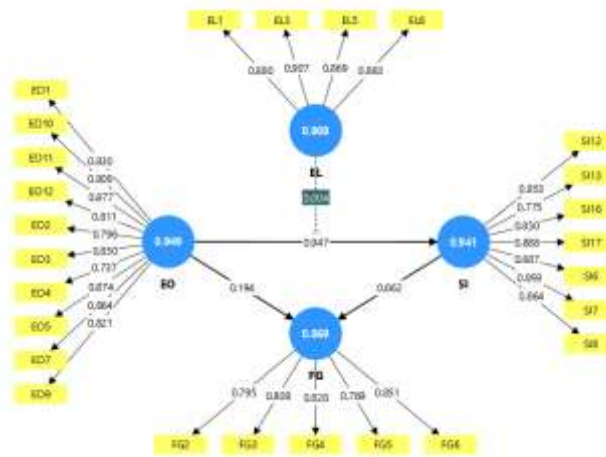


Figure 3. Cronbach's Alpha Test Results

Source: Author's data processing using SmartPLS (2025)

Based on the results of the internal consistency reliability test using Cronbach's Alpha, all constructs in this study show values above the minimum threshold of 0.70. This indicates that the indicators within the constructs of Entrepreneurial Orientation, Strategic Innovation, Firm Growth, and Entrepreneurial Leadership have a good level of internal consistency in measuring the same underlying concept. Therefore, it can be concluded that the research instruments meet the basic reliability criteria and are capable of providing stable and consistent measurement results.

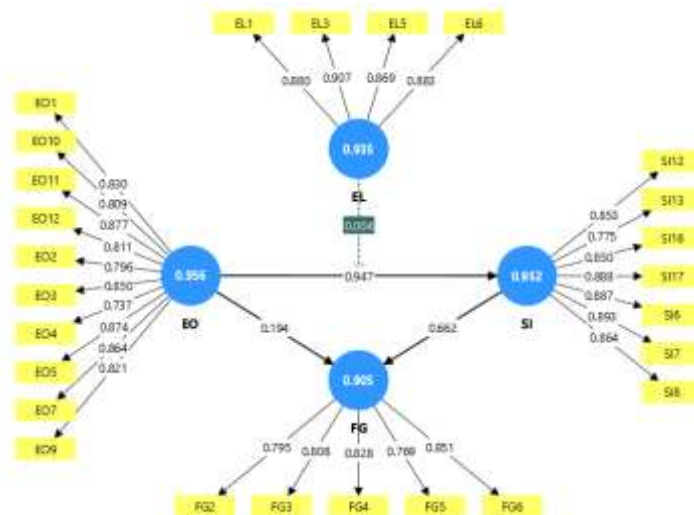


Figure 4. Composite Reliability Test Results (rho_c)

Source: Author's data processing using SmartPLS (2025)

The next assessment of construct reliability is conducted using Composite Reliability ρ_c , which is considered more accurate than Cronbach's Alpha in measuring internal consistency within the PLS SEM context. Based on the analysis results, all constructs show very high Composite Reliability values, namely Entrepreneurial Orientation EO at 0.956, Entrepreneurial Leadership EL at 0.935, Strategic Innovation SI at 0.942, and Firm Growth FG at 0.905.

Referring to the criteria by Hair et al. 2022, a Composite Reliability value above 0.70 is considered acceptable. Therefore, all constructs in this study demonstrate a very strong level of reliability. Values close to 1 further indicate that the indicators within each construct have a very high level of consistency in measuring the latent variables. Thus, the measurement model can be considered reliable and suitable for further analysis.

Based on the results of Cronbach's Alpha and Composite Reliability testing, it can be concluded that all constructs in this study have met the criteria for internal consistency reliability. Therefore, the measurement model is considered reliable and suitable to proceed to the next stage, namely the assessment of convergent validity and discriminant validity, before conducting the structural model evaluation.

(3) Convergent Validity

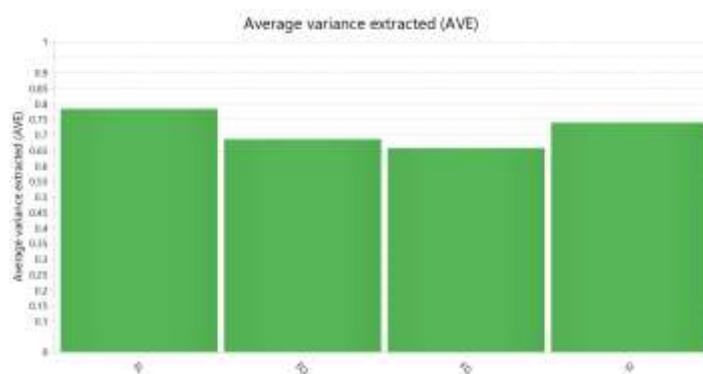


Figure 5. Average variance extracted (AVE) test results

Source: Author's data processing using SmartPLS (2025)

Based on the analysis results, all variables show AVE values above the minimum threshold of 0.50, namely Entrepreneurial Leadership EL at 0.78, Entrepreneurial Orientation EO at 0.68, Firm Growth FG at 0.65, and Strategic Innovation SI at 0.74. Referring to the criteria by Hair et al. 2022, AVE values above 0.50 indicate that the construct is able to explain more than 50 percent of the variance of its indicators, thereby meeting the criteria for convergent validity. Therefore, it can be concluded that all constructs in this study demonstrate good convergent validity and are appropriate for further analysis

(4) Discriminant Validity

Table 4. Discriminant Validity Results

	EL	EO	FG	SI	EL xEO
EL					
EO	0.931				
FG	0.766	0.860			
SI	0.817	0.944	0.922		
EL x EO	0.373	0.415	0.320	0.366	

Source: Author's data processing using SmartPLS (2025)

Based on the analysis results, most HTMT values fall below the recommended threshold. The relationship between Entrepreneurial Leadership EL and Firm Growth FG is 0.766, while the relationship between EL and Strategic Innovation SI is 0.817, indicating that these constructs demonstrate good discriminant validity. In addition, the interaction variable EL and

EO shows low HTMT values across all other constructs, ranging from 0.320 to 0.415, suggesting that the moderating variable does not exhibit discriminant validity issues.

However, several construct pairs show HTMT values close to or slightly exceeding the 0.90 threshold. These include the relationship between Entrepreneurial Orientation EO and Entrepreneurial Leadership EL at 0.931, the relationship between Strategic Innovation SI and Entrepreneurial Orientation EO at 0.944, and the relationship between Strategic Innovation SI and Firm Growth FG at 0.922. These values indicate relatively strong relationships among the constructs.

Conceptually, the high HTMT values can be explained by the close interrelationship between entrepreneurial orientation, leadership, and strategic innovation within the context of bottled drinking water firms. Firms with strong entrepreneurial orientation tend to be supported by active leadership and strong innovation capabilities, resulting in closely related constructs. According to Gold et al. 2001, a high degree of similarity between variables can still be acceptable if they are theoretically closely related. Since all questionnaire items have demonstrated strong loadings above 0.70, there is no need to remove any indicators. Forcing item removal could risk distorting or reducing the original meaning of the constructs.

1.1.3 Model Fit Evaluation

Table 5. Model Fit Evaluation Results

	Saturated model	Estimated model
SRMR	0.065	0.065
d_ ULS	1.497	1.497
d_ G	3.404	3.406
Chi-square	494.377	494.257
NFI	0.644	0.644

Source: Author's data processing using SmartPLS (2025)

Based on the analysis results, the SRMR value of the model is 0.065 for both the saturated model and the estimated model. Referring to the criteria by Hair et al. 2022, an SRMR value below 0.08 indicates that the model has a good fit. This suggests that the difference between the observed correlation matrix and the model predicted matrix is relatively small, meaning that the model demonstrates an adequate level of fit. Furthermore, the d_ ULS value of 1.497 and the d_ G value of 3.406 represent the discrepancy between the empirical matrix and the model implied matrix. Although there are no strict cutoff values as in SRMR, these indices serve as additional measures in evaluating model fit. The smaller the values of d_ ULS and d_ G, the better the model fits the data.

The Chi square value of 494.257 reflects the degree of discrepancy between the model and the data. However, in the context of PLS SEM, this metric is not the primary focus, as the method is more prediction oriented rather than covariance-based model fit. In addition, the Normed Fit Index NFI value of 0.644 indicates a moderate level of model fit. Although the ideal NFI value is typically close to 0.90, in PLS SEM this index is not the main criterion for determining model adequacy. Overall, based on the SRMR value that meets the good fit criteria and is supported by other indicators, it can be concluded that the research model demonstrates

an adequate level of fit and is suitable for further analysis, particularly for testing the structural relationships inner model and research hypotheses.

I.1.4 Structural Model Evaluation (Inner Model)

(1) Collinearity Assessment

Table 6. Collinearity Statistics (VIF) of Inner Model

	EL	EO	FG	SI	EL xEO
EL				3.927	
EO			4.973	4.069	
FG					
SI			4.973		
EL x EO					1.192

Source: Author's data processing using SmartPLS (2025)

As per the analysis results, the VIF values of in the model ranges from 1.192 to 4.973. The respective VIF values for the Entrepreneurial Leadership EL and Strategic Innovation SI relationship is 3.927, while it comes to the case of the EO and SI relationship a it writes this as 4.069 The other relationships, where EO placed a versus FG and SI versus FG each exhibited an identical VIF value of 4.973respectively.

Such relatively high VIF values in some relationships indicates that multicollinearity occurs because independent variables in the model are highly interrelated between one another, which is conceptually explainable given a close relationship of entrepreneurial orientation and strategic innovation alongside firm growth. Nonetheless, all VIFs are below the cutoff of 5, which implies no multicollinearity that would spoil model estimation.

While the VIF value of EL and EO interaction moderating variable on Strategic Innovation SI is 1,192. It means that there is no collinearity problem in the interaction term so it also confirms the stability of moderation model used on this study. In general, the collinearity diagnostic results showed that the research model is free from serious multicollinearity problems and is feasible to continue analyzing stages II by evaluating path coefficients and hypothesis testing through bootstrapping

(2) Path Coefficients & Hypothesis Testing

Table 7. Path Coefficients Table

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics	P values
EL → SI	-0.060	-0.083	0.137	0.438	0.661
EL x EO → SI	0.004	0.016	0.089	0.046	0.963
EO → FG	0.194	0.202	0.176	1.102	0.271
EO → SI	0.947	0.973	0.131	7.214	0.000
SI → FG	0.662	0.657	0.183	3.618	0.000

Source: Author's data processing using SmartPLS (2025)

The relationship between Entrepreneurial Orientation EO and Strategic Innovation SI based on analysis results shows the path coefficient: 0,947, t statistics value 7,214 and p value 0.000. This means that EO has a significant and positive effect on SI, so the hypothesis is that EO affects SI accepted.

In addition, Strategic Innovation SI Firm Growth FG displaying a path coefficient value of 0.662 has t statistics and p value are 3.618 and 0.000, respectively. The result suggests that the hypothesis H1 SI has a positive and significant effect on FG is accepted.

On the other hand, between EO and FG has a path coefficient of 0.194 with t statistics value of 1.102 and p value of 0.271. This shows that the effect of EO on FG is not significant and also, therefore the hypothesis that EO has a direct effect FG is rejected.

Furthermore, the relationship type of Entrepreneurial Leadership EL and Strategic Innovation SI is represented with the coefficient path -0.060 , t statistics value 0.438 p value 0.661 This finding shows that there is no strong effect of EL on SI as a result the corresponding hypothesis would therefore be rejected.

In addition, the moderated regression found that an interaction of EL and EO on SI had a coefficient of 0.004 with t statistics value 0.046 dan p value 0.963 . This suggests that it is a nonsignificant moderation, so Entrepreneurial Leadership (EL) does not constitute the moderation in the linkage between EO and SI.

In summary, the findings show that only the relationships EO SI and OA FG are statistically significant among those tested. Takeaway: This means, Strategic Innovation serves as a major mediator between entrepreneurial orientation and firm growth whereas direct effect of EO on growth are not supported empirically.

(3) Coefficient of Determination (R^2)

Table 8. Coefficient of Determination (R^2) Results

	R-square	R-square adjusted
FG	0.706	0.691
SI	0.800	0.784

Source: Author's data processing using SmartPLS (2025)

The analysis results show that the Strategic Innovation SI variable has an R^2 of 0.800 and adjusted R^2 of 0.784 . This means that 80 percent of the variance in SI is accounted for (explained) by Entrepreneurial Orientation EO, Entrepreneurial Leadership EL and their interaction. This value falls into the strong range of model explanatory power for strategic innovation.

In addition, The Firm Growth FG variable explained 70.6% of the variance ($R^2=0.706$) and adjusted $R^2 = 0.691$ This indicates that EO and SI explain 70.6 percent of the variance in FG. The model has a strong explanatory power for firm growth, and this value also qualifies as strong.

The minimal variation between R^2 and adjusted R^2 for both variables suggests that the model is not overfitting, remaining constant even when taking into account the number of variables in the model.

Overall, the coefficient of determination results imply that the research model is quite capable to explain endogenous variables (significantly Strategic Innovation and Firm Growth). Hence, the resulting model can be considered of good quality and is appropriate for further analyses such as effect size and predictive relevance.

(4) Effect Size (F^2)

Table 9. F-Square Effect Size Results

	EL	EO	FG	SI	EL x EO
EL				0.005	
EO			0.026	1.102	
FG					
SI			0.299		
EL x EO				0.000	

Source: Author's data processing using SmartPLS (2025)

Results of the analysis on the effect of Entrepreneurial Orientation EO platform Strategic Innovation SI found to have an F^2 value equal to 1.102 which is concluded with large effect category. This means that EO plays a major role in examining the SI variable within its path model of investigation.

Moreover, Strategic Innovation SI on Firm Growth FG has an F^2 value of 0.299, so it is classified as a medium effect. This indicates that SI significantly contributes to improving firm growth. On the other hand, the F^2 values given by Entrepreneurial Orientation EO on Firm Growth FG is 0.026 which can be classified as small effect. This supports previous results suggesting that the direct effect of EO on FG is insignificant. Conversely, the influence of Entrepreneurial Leadership EL on Strategic Innovation SI climate is negligible with an F^2 value of 0.005 (small). The same is also true for moderating variable EL and EO on Strategic Innovation SI, with an F^2 value of 0.000 which indicates that moderation itself does not provide a significant contribution to the model either.

In general, the effect size results show that in this research model Entrepreneurial Orientation is the strongest variable magnitude influencing Strategic Innovation and Strategic Innovation is the strong variable influencing Firm Growth. These results support the mediation of strategic innovativeness in the relationship between entrepreneurial orientation and firm growth.

(5) Predictive Relevance (Q^2)

Table 10. Q^2 Predict Tables

	Q^2 predict
SI	0.758
FG	0.570

According to the analysis result, Strategic Innovation SI variable has Q^2 _predict value of 0.758 and Firm Growth FG has value of 0.570. Both values are far greater than the zero level, showing that the model is able to predict itself well.

With reference to the criteria proposed by Hair et al. 2022, A Q^2 _predict value larger than 0.35 shows mid predictive relevance and the one bigger than 0.67 demonstrates large predictive relevance (Hair et al., 2022). Thus, this study shows that the Q^2 _predict values for both SI and FG are categorized as large, but the predictive power Strategic Innovation is even more ferocious.

In general, these findings show that the research model not only has high explanatory ability to represent relationships between variables but also possess high predictive

performance of endogenous variables. This additional helps to establish the overall soundness of the structural model produced in this article.

(6) Hypothesis Testing Analysis

Using PLS-SEM, the five proposed hypotheses were tested in order to analyze the relationships of Entrepreneurial Orientation, Strategic Innovation, Entrepreneurial Leadership and Firm Growth for bottled water SMEs in South Sulawesi. The results revealed that Entrepreneurial Orientation EO has a positive and significant impact on Strategic Innovation SI. The path-coefficient is 0.947, the t-statistic is 7.214 and p-value shows a significance level of 0.000 in favor of this statement. This result suggests that the firms are more capable to develop strategic innovation with their higher levels of innovativeness, proactiveness and risk-taking behavior. Thus, we confirm the first hypothesis.

Also, the positive and significantly influence effect of Strategic Innovation SI on Firm Growth FG is determined. Therefore, the path coefficient is of 0.662 (t-statistic:3.618; $p < 0.001$). It implies that firms with innovation competence in operational processes and market strategies have greater prospects for sustainable growth. So, the second hypothesis has been accepted. This study was conducted to test mediation which shows Strategic Innovation SI mediates the relation between Entrepreneurial Orientation EO and Firm Growth FG. H8: There is no significant effect of EO on FG ($\beta = 0.194$, t-statistic = 1.102, p-value = 0.271). This finding suggests that firm growth is not directly driven by entrepreneurial orientation, unless it is translated into a tangible strategic innovation. As a result, the third hypothesis is accepted, and full mediation can be confirmed in the model.

Whereas, Entrepreneurial Leadership EL has no significant moderating role in between the relationship of Entrepreneurial Orientation EO and Strategic Innovation SI. The interaction between EL and EO: Path coefficient = 0.004, t-statistic = 0.046, p-value = 0.963. This finding proves that leadership does not amplify or affect the relationship of entrepreneurship orientation on innovation. Thus, we reject the fourth hypothesis. Furthermore, EO has no direct and significant effect on FG. Path coefficient = 0.194, t-statistic = 1.102, p-value = 0.271. This suggests that simply an entrepreneurial orientation does not drive firm growth directly. Thus, the fifth hypothesis has to be rejected.

Overall, the results indicate that Strategic Innovation is a mediating mechanism between Entrepreneurial Orientation and Firm Growth. It is an internal need that drives firms to pursue opportunities and take strategic action unless they are innovated. In contrast, the role of Entrepreneurial Leadership is rated relatively low in this model indicating that the growth of firms in a bottled water SME context is more attributable to innovation capability than to leadership influence. Therefore, the final empirical model can be summarized as follows: Entrepreneurial Orientation influences Strategic Innovation, and Strategic Innovation influences Firm Growth. This indicates that firm growth is achieved through the effective transformation of entrepreneurial behavior into strategic innovation.

(7) Triangulation and Validation of Findings

The triangulation results were consistent with the findings except in the context of business development. Interviews supported empirical evidence that entrepreneurial orientation (EO) leads firms to growth, renewal, and market opportunities, which are then transformed into strategic innovation (SI) through improvements in production systems, distribution strategies, and operational efficiency. The results further emphasized the role of

SI as a dominant mechanism behind Firm Growth (FG) as respondents focused on how innovation drives production, the capacity to expand into new markets or regions, and sales performance. Furthermore, although Entrepreneurial Leadership (EL) had a positive effect through coordination and execution, the interviews confirmed that EL's moderating role was limited because innovation implementation was also supported by well-defined organizational systems, delegation, and operational routines. Therefore, our triangulation results helped corroborate the finding that entrepreneurial orientation facilitates sustainable firm growth in the bottled water industry primarily through its mediating effect on transformation into strategic innovation, while confirming the role of entrepreneurial leadership as a supportive, rather than dominant, contextual moderator.

(8) Implementation Plan

The implementation plan drives strategic innovation toward firm growth. The empirical findings are then used to suggest implementations that can further strengthen strategic innovation as the primary mechanism through which EO impacts firm growth. The roadmap is organized into three distinct phases operational stabilization, strategic expansion and market domination allowing firms to take a phased approach whereby risk can be minimized while maximizing growth impact.



Figure 6. Three-Phase Implementation Roadmap for Transforming Entrepreneurial Orientation into Firm Growth
 Source: Author's design (2025)

The Implementation Plan and Roadmap outline a three-phase strategy to transform Entrepreneurial Orientation into company growth through Strategic Innovation. Phase One – Operational Stabilization (0–6 months) focuses on strengthening operational foundations,

optimizing production capacity, distribution routes, and implementing simple digital ordering systems to ensure stable operations and accurate demand data. Phase Two – Strategic Expansion (6–18 months) emphasizes market share growth through strategic innovation, developing micro-distribution networks, expanding into untapped areas, incentivizing agents, and increasing brand exposure via signage and local activities. Phase Three – Market Dominance (18–36 months) targets sustainable growth and long-term competitive advantage, integrating production and distribution systems, reducing operational costs, implementing structured digital systems, and consolidating brand leadership and customer loyalty. Each phase builds sequentially, with interdependent objectives and actions, ensuring gradual organizational development from operational efficiency to innovation-driven growth and market leadership. Budgeting and flexibility are essential for the roadmap’s effectiveness, adapting to business size, production capacity, and cash flow. Collectively, the phases support firm growth by aligning production, distribution, and supply to meet market demand while fostering profitability, market share, and brand positioning.

Table 11. Implementation Roadmap and Estimated Cost

Phase	Focus	Key Activities	Estimated Cost (IDR)
Phase 1 (0–6 Months)	Operational Stabilization	Machine maintenance & calibration, operator training, WhatsApp ordering system setup, distribution mapping & route optimization	Rp 12.500.000 – Rp 34.000.000
Phase 2 (6–18 Months)	Strategic Expansion	Small distribution vehicles, agent credit system, incentives, branding & local activation	Rp 53.000.000 – Rp 140.000.000
Phase 3 (18–36 Months)	Market Domination	Production machine expansion, system integration, logistics optimization, digital database system	Rp 135.000.000 – Rp 395.000.000
Total Investment	—	Integrated 3-phase implementation	Rp 200.000.000 – Rp 569.000.000

Source: Author's design (2025)

Phase 1 Operational Stabilization has a lower investment requirement and is fundamental as it provides internal efficiency. Companies generally do not go after global top-down expansion yet at this point and focuses on making sure things internally like production distribution and ordering systems are working on point. This is vital, as a shaky operating base will turn subsequent phases into distorted investment waste lines.

Afterward, Phase 2, Strategic Expansion, becomes the most crucial phase in generating growth. This is where the company begins implementing strategic innovation by building a distribution network, deepening relationships with agents, and entering new markets. This phase is crucial for increasing sales volume, thus requiring significant investment. This phase directly targets a broader market. In other words, this phase is where Entrepreneurial Orientation is transformed into business growth and reflected in the results. Phase 3, Market Dominance, is about scaling the business and driving long-term efficiency. It also represents

the largest investment, particularly in building integrated production and systems. This investment is data-driven, meaning it will only be implemented once the company has established stable demand and product distribution. The goal is to maximize profitability and establish the company as a local market leader.

The results indicate that production expansion should be undertaken after stable market demand, adequate distribution channels and systems, and strategic innovations have been implemented. Premature capacity increases can leave the company with excess idle capacity, increasing organizational costs and cash flow pressures. However, increasing capacity is more cost-effective and will provide substantial increases in profit per unit. Figure IV.10: Simplified ROI (Return on Investment) analysis conducted with conservative assumptions to provide an understanding of the investment's feasibility.

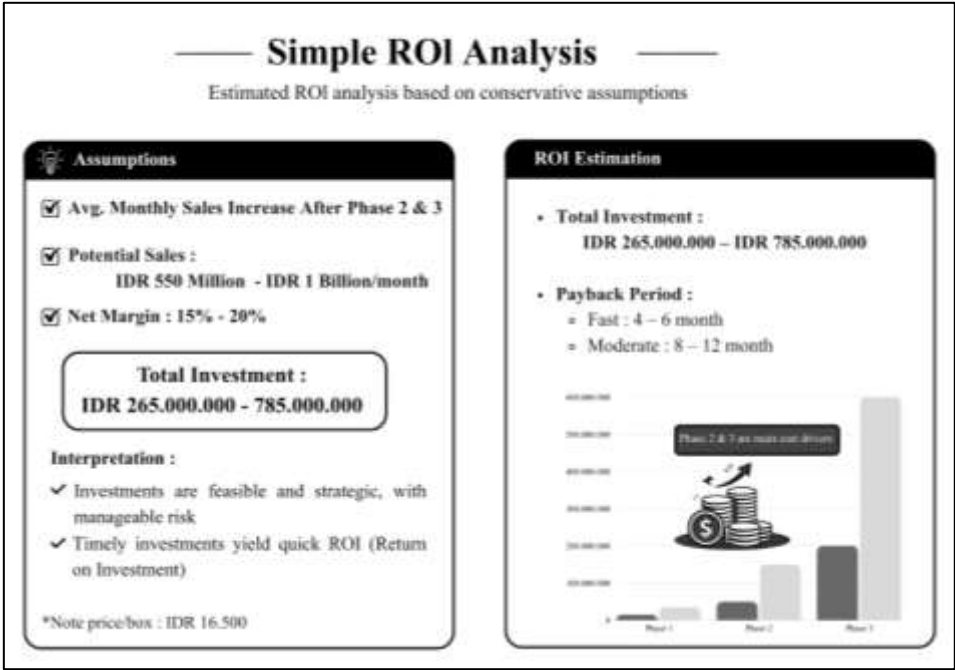


Figure 7. Projected ROI and Payback Period for Business Transformation

Source: Author's calculation (2025)

The analysis outcomes show that implementation of this roadmap is practical and logical, with the added benefit of a payback period convenient to small and medium scale manufacturing companies. The quick return on investment is simply that the impact of effective Strategic Innovation in Phase 2 drives sales volume. The phased investment approach also enables firms to control risk better. Rather than making large capital expenditures upfront, firms can calibrate their investments to the trajectory of their business and how well the markets are performing. This approach is consistent with the research that highlights steady reconstructions of the firm via strategic innovation, not immediate production capacity expansion.

CONCLUSION

This study aimed to ascertain how Entrepreneurial Orientation (EO), Strategic Innovation (SI), and Entrepreneurial Leadership (EL) relate to firm growth (FG) in the bottled drinking water industry in South Sulawesi. The results prove that Entrepreneurial Orientation positively and significantly affects Strategic Innovation, with a significant path coefficient at

the 0.001 level, indicating that innovativeness, proactiveness, and risk-taking behavior are major impetuses for firm innovation. Furthermore, Strategic Innovation positively and significantly influences Firm Growth, particularly in firms that innovate on operational processes, distribution systems, and market strategies, making SI an imperative aspect for firm performance and competitiveness in a low-entry-barrier sector. Strategic Innovation is also found to be a full mediator between Entrepreneurial Orientation and Firm Growth, as EO has no direct effect on FG but only an indirect effect through SI, demonstrating that entrepreneurial behavior leads to growth only when embedded in tangible innovation. Regarding the moderating role of leadership, the results indicate that Entrepreneurial Leadership is not a significant moderator in the relationship between Entrepreneurial Orientation and Strategic Innovation, suggesting that organizational systems and operational processes are stronger drivers of innovation than individual leadership influence. In summary, this study concludes that firm growth in bottled water SMEs in South Sulawesi is driven primarily by Strategic Innovation as the core mechanism. While Entrepreneurial Orientation is a key determinant of innovation, it cannot contribute to growth without being translated into strategic actions, and Entrepreneurial Leadership does not play a significant role in this process. Therefore, firms need to effectively convert their entrepreneurial orientation into appropriate strategic innovation to achieve sustainable growth. For future research, it is suggested to explore other mediating variables such as organizational culture or market orientation, expand the sample across different regions and industries, and employ longitudinal designs to capture the dynamic nature of entrepreneurial behavior and firm growth over time.

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