

*The impact of tax incentives on enhancing Algerian startups
case study of Algerian startups*

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Abstract:

This study aims to measure the impact of tax incentives on enhancing Algerian startups through three main dimensions: revenue growth, employment growth, and market continuity.

Data were collected via a questionnaire distributed to a sample of 34 startups and analyzed statistically using SPSS version 25, employing a simple linear regression model to assess the impact. The findings reveal a statistically significant effect of tax incentives on revenue growth, market continuity, and the overall strengthening of startups. However, the study found no statistically significant impact of tax incentives on employment growth. This research highlights the importance of tax incentives as an effective tool to support startups and enhance their sustainability in the Algerian market

Keywords: Tax Incentives, Startups, Algeria, Startup Enhancement, Revenue Growth, Market Continuity, Business Sustainability.

-Introduction and literature Review**1-Introduction**

startup enterprises serve as vital engines of economic growth, innovation, and job creation in modern economies, contributing significantly to technological advancement and market dynamism. However, these emerging ventures face substantial challenges in their early stages, including limited access to capital, high operational risks, and uncertain market conditions that threaten their survival and growth prospects. Governments worldwide have increasingly recognized the critical role of startups in fostering economic development and have implemented various policy instruments to support their establishment and sustainability. Among these policy tools, tax incentives have emerged as particularly effective mechanisms for reducing the financial burden on nascent enterprises and encouraging entrepreneurial activities.

While extensive research has examined the broader impacts of tax policy on business development, there remains a significant gap in understanding the specific effects of tax incentives on startup performance metrics. Previous studies have predominantly focused on established small and medium enterprises (SMEs) or have examined tax incentives in isolation from key performance indicators such as revenue growth, employment expansion, and market sustainability. The existing literature often treats tax incentives as a homogeneous policy tool, failing to distinguish between different types of incentives such as tax holidays, tax allowances, reduction in tax rates, accelerated depreciation, loss carried forward, and tax exemptions. Furthermore, limited empirical evidence exists regarding how these various tax incentive practices specifically influence the multidimensional growth patterns of startup enterprises, particularly in terms of their ability to generate sustainable revenue streams, expand their workforce, and maintain long-term market presence.

This study addresses these research gaps by examining the comprehensive impact of tax incentives on startup development through three critical performance dimensions: revenue growth, employment growth, and market sustainability. By adopting a multifaceted approach to measuring startup success, this research aims to provide nuanced insights into how different tax incentive mechanisms contribute to various aspects of entrepreneurial venture development. The findings will contribute to the growing body of literature on fiscal policy and entrepreneurship while offering practical implications for policymakers seeking to design effective support systems for emerging enterprises.

2-Literature Review**2-1-Tax Incentives and Enterprise Performance: Global Perspectives**

The impact of tax incentives on enterprise performance has attracted sustained scholarly attention across various economic and institutional settings. Empirical research generally indicates that tax incentives—including tax holidays, rate reductions, exemptions, and accelerated depreciation—play a vital role in stimulating innovation, supporting research and development (R&D), and improving the growth and sustainability of enterprises. For example, Li et al. (2023) found that targeted tax incentives significantly enhanced R&D investment and innovation outputs among listed companies on the Chinese Growth Enterprises Market (GEM), with income tax incentives being more effective than those related to circulation taxes. Moreover, their study highlighted how factors such as profitability and firm size mediate the effectiveness of these incentives, underlining the importance of tailored policy measures (Li et al., 2023).

Sectoral analysis provides further insight into the differential impacts of tax incentives. Yang et al. (2023), for instance, examined China's new energy vehicle sector and concluded that both financial subsidies and tax incentives promote innovation efficiency, with tax incentives delivering particular benefits to firms facing financial

constraints. These findings suggest that tax incentives can offer a sustainable and flexible policy option for supporting high-growth sectors, especially where direct financial support may be constrained (Yang et al., 2023).

2.2. Policy Mix and the Heterogeneity of Enterprise Responses

Recent scholarship increasingly emphasizes the integration of tax incentives within broader policy frameworks rather than relying on them in isolation. Wu et al. (2020) argued that the synergistic combination of government subsidies, tax incentives, and public procurement generates the most positive outcomes for enterprise innovation. According to their findings, subsidies are especially influential in the early stages of innovation, whereas tax incentives provide ongoing support throughout the innovation process (Wu et al., 2020).

The effectiveness of tax incentives can also depend on enterprise characteristics and regional context. Research shows that larger and non-state-owned firms may benefit more from such interventions, while the effects of incentives often differ based on regional economic structures, institutional quality, and access to supportive resources. Comparative international analyses highlight that both direct subsidies and tax exemptions are among the most widely used and effective tools for stimulating enterprise innovation and growth (Wu et al., 2020).

2.3. Crisis Management and Enterprise Sustainability

The COVID-19 pandemic provided a unique context for evaluating the resilience-building effects of tax incentives. Abera (2022) examined the impact of diverse tax incentive practices—including tax holidays, allowances, rate reductions, accelerated depreciation, loss carry forward, and exemptions—on Ethiopia’s micro, small, and medium-sized enterprises (MSMEs). Their findings indicate that such incentives played a critical role in helping firms sustain operations and recover during economic disruptions, reinforcing the importance of tax incentives not only for enterprise growth but also for maintaining viability during crises (Abera, 2022)

2-4-Theoretical Underpinnings and Mechanisms

The theoretical rationale for tax incentives is rooted in the concept of risk-sharing between governments and enterprises. By lowering the financial barriers to innovation and growth, preferential tax policies enable enterprises to undertake riskier, more transformative projects. Empirical evidence suggests that the impact of tax incentives is moderated by factors such as financing constraints and ownership structure, with private enterprises typically responding more strongly to such incentives than state-owned counterparts.

2-5-Critical Research Gaps and the Contribution of This Study

Despite the depth and breadth of existing research, several notable gaps remain in the literature on tax incentives and enterprise performance.

2-5-1-Limited Focus on Startup Enterprises:

Most prior studies have concentrated on established enterprises, listed companies, or general SME populations, with scant attention to the unique challenges and characteristics of startup enterprises during their formative years. Startups are distinct from mature businesses in terms of resource constraints, market uncertainty, and growth trajectories, necessitating tailored policy approaches.

2-5-2-Lack of Multidimensional Performance Assessment:

While previous research has examined individual performance metrics—such as R&D intensity, innovation output, or general growth—there is a paucity of empirical evidence on the simultaneous impact of tax incentives on multiple dimensions of startup performance, specifically revenue growth, employment growth, and market sustainability.

2-5-3-Overreliance on Unidimensional Measurement:

Existing studies often employ narrow, unidimensional frameworks for assessing enterprise success, failing to capture the multifaceted nature of startup development, which encompasses financial performance, human capital development, and long-term market viability.

2-5-4-Underexplored Variation in Incentive Types:

There is limited investigation into how different types of tax incentives—such as tax holidays, rate reductions, exemptions, and accelerated depreciation—may have differential effects on various aspects of startup performance. The nuanced relationship between specific incentive mechanisms and startup performance dimensions remains underexplored.

2-5-6-Contextual and Temporal Limitations:

Geographical and contextual factors play a significant role in shaping the effectiveness of tax incentives, yet research on these dynamics in developing economies—particularly in North Africa and the Middle East—remains limited. Moreover, the temporal dimension of tax incentive effectiveness for startups, given their rapid evolution and changing resource needs, has received insufficient attention.

6-Research Contribution and Positioning

This study addresses these critical gaps by examining the comprehensive impact of tax incentives on startup enterprise development in Algeria, with a particular focus on three key performance dimensions: revenue growth, employment growth, and market sustainability. By adopting a multidimensional assessment framework and concentrating on the unique context of Algerian startups, this research provides nuanced insights into how tax incentive policies can be optimized to support emerging ventures in developing economies.

The study makes a significant contribution to the literature on fiscal policy and entrepreneurship by offering empirical evidence from a developing country context, thereby expanding the geographical and contextual scope of existing research. It also yields practical implications for policymakers seeking to design effective support systems for startup ecosystems, with the ultimate aim of fostering innovation, employment, and sustainable economic growth.

From an economic perspective, startup enterprises are distinct in their resource constraints, high levels of market uncertainty, and rapid growth trajectories. These characteristics suggest that the impact of tax incentives may differ significantly from that observed in more mature enterprises. While established firms may leverage tax incentives to scale operations or diversify investments, startups are more likely to use such incentives to secure essential liquidity, mitigate financial risks, and invest in critical areas such as technology and market entry. The interplay between tax incentives and startup performance is thus shaped by both internal enterprise dynamics and broader economic conditions.

7-Problem Statement

Given these considerations, this study seeks to address the following research questions, which are designed to provide a comprehensive and nuanced understanding of the role of tax incentives in supporting startup enterprises:

Main Research Question:

What is the effect of tax incentives on enhancing startup enterprises in Algeria?

Sub-Research Questions:

1. What is the effect of tax incentives on the revenue growth of startup enterprises?
2. What is the effect of tax incentives on employment growth within startup enterprises?
3. What is the effect of tax incentives on the market sustainability of startup enterprises?

By addressing these questions, this study aims to contribute to both theoretical and practical knowledge regarding the design and implementation of tax incentive policies for startup ecosystems, with particular relevance to developing economies. The findings will provide valuable insights for policymakers seeking to optimize the effectiveness of fiscal interventions in fostering entrepreneurial growth, job creation, and long-term market viability.

Based on our main research question and sub-questions about the effect of tax incentives on enhancing startup enterprises in Algeria, here are the suggested hypotheses:

Main Hypothesis:

Tax incentives positively affect the enhancement of startup enterprises in Algeria by enabling them to allocate more financial resources towards growth, development, and sustainability.

Sub-Hypotheses:

1. Tax incentives have a positive effect on the revenue growth of startup enterprises in Algeria.
2. Tax incentives contribute to employment growth within startup enterprises in Algeria.
3. Tax incentives improve the market sustainability of startup enterprises in Algeria.

II-Methodology**1-Research Design**

This study employs a quantitative research approach utilizing a cross-sectional survey design to examine the impact of tax incentives on startup enterprise enhancement. The research adopts a positivist paradigm, employing statistical analysis to test hypotheses regarding the relationships between fiscal policy interventions and startup performance outcomes. This methodological approach is particularly suitable for investigating causal relationships between policy variables and enterprise performance indicators in the entrepreneurial ecosystem context.

2-Sample and Data Collection

The study sample comprises 34 startup enterprises selected through purposive sampling to ensure adequate representation across various industry sectors and developmental stages. The sample size was determined based on the availability of eligible startup enterprises and the practical constraints of accessing comprehensive performance data from emerging ventures. Inclusion criteria for startup selection included: (1) enterprises established within the past five years, (2) companies with documented experience with tax incentive programs, (3) businesses with verifiable financial and operational records, and (4) enterprises operating within the study's geographical scope.

Data collection was conducted using a structured questionnaire administered to the founding managers or chief executive officers of the selected startup enterprises. The questionnaire was designed following established survey research principles and underwent pilot testing to ensure clarity, relevance, and comprehensiveness of the measurement instruments.

3-Instrumentation

The research instrument consists of two main sections designed to capture both enterprise characteristics and performance variables:

Section One contains general enterprise data including: business sector classification (agricultural, industrial, service), employment size categories, managerial experience levels, geographical location, and tax incentive utilization status. This section provides essential control variables and contextual information for the analysis.

Section Two comprises two primary components measuring the study's core variables. The first component addresses the independent variable (tax incentives) through 11 items (Questions 1-11) that assess various dimensions of fiscal support including tax holidays, rate reductions, exemptions, administrative facilitation, and accessibility of incentive programs. The second component measures the dependent variable (startup enterprise enhancement) through three distinct dimensions: revenue growth (Questions 12-16), employment growth (Questions 17-21), and market sustainability (Questions 22-27).

All responses were measured using a five-point Likert scale, where 1 represents "strongly disagree" and 5 represents "strongly agree." This scaling approach enables the quantification of perceptual and performance-based variables while maintaining sufficient variance for statistical analysis.

4-Data Analysis

Statistical analysis was conducted using SPSS version 25.0, employing multiple analytical techniques to ensure comprehensive examination of the research hypotheses. Prior to hypothesis testing, data quality assessments were conducted including normality testing using the Shapiro-Wilk test (appropriate for sample sizes less than 50), reliability analysis using Cronbach's alpha coefficients, and examination of assumptions underlying regression analysis. The analytical strategy employed simple linear regression models to test each sub-hypothesis individually, followed by comprehensive model testing for the main hypothesis, enabling detailed examination of the differential effects of tax incentives across various dimensions of startup performance.

5-Validity and Reliability Considerations

Table (01):Reliability Statistics

Cronbach's Alpha	Number of Items
.866	27

The reliability analysis demonstrates excellent internal consistency for the overall measurement instrument. Cronbach's alpha coefficient of 0.866 substantially exceeds the conventional threshold of 0.70 recommended for social science research, indicating high reliability and internal consistency among the 27 questionnaire items. This alpha value falls within the "good to excellent" range according to established psychometric standards, suggesting that the measurement scales consistently capture the intended constructs across all dimensions of the study.

The high reliability coefficient provides strong evidence that the questionnaire items measuring tax incentives and startup enterprise enhancement (across revenue growth, employment growth, and market sustainability dimensions) demonstrate coherent and consistent measurement properties. This level of internal consistency enhances confidence in the validity of subsequent statistical analyses and supports the robustness of the research findings. The reliability statistics confirm that the measurement instrument is suitable for hypothesis testing and that observed relationships between variables are not attributable to measurement error or inconsistency in the data collection instrument.

6-Normality Test

Table (01):Shapiro-Wilk Normality Test

Variable	Statistic	df	Sig.
Startup Enterprise Enhancement	.974	34	.580
Tax Incentives	.953	34	.154

The Shapiro-Wilk test results confirm that both primary variables in the study follow normal distribution patterns, satisfying a fundamental assumption for parametric statistical analysis. For startup enterprise enhancement, the test statistic of 0.974 with a significance level of $p = 0.580$ (> 0.05) indicates that the null hypothesis of normality

cannot be rejected. Similarly, for tax incentives, the test statistic of 0.953 with $p = 0.154$ (> 0.05) also supports the assumption of normal distribution.

These results validate the appropriateness of employing parametric statistical procedures, including linear regression analysis, for hypothesis testing in this study. The normal distribution of both variables ensures that the regression assumptions are met, enhancing the reliability and validity of the statistical inferences drawn from the analysis. The satisfaction of normality assumptions strengthens confidence in the robustness of the findings and supports the use of conventional significance testing procedures for evaluating the relationships between tax incentives and startup enterprise performance dimensions.

III-Results

1-Testing the First Sub-Hypothesis: Tax Incentives and revenue Growth

Null Hypothesis (H_{01}): There is no statistically significant effect of tax incentives on revenue growth in startup enterprises.

Alternative Hypothesis (H_{11}): There is a statistically significant effect of tax incentives on revenue growth in startup enterprises.

Table(03) : Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.546 ^a	.299	.277	.66497

^a Predictors: (Constant), Tax Incentives

The model summary statistics demonstrate that tax incentives exhibit substantial explanatory power in predicting startup enterprise revenue growth. The correlation coefficient ($R = 0.546$) indicates a moderate to strong positive linear relationship between tax incentives and revenue growth, while the coefficient of determination ($R^2 = 0.299$) reveals that tax incentives account for 29.9% of the total variance in revenue growth among startup enterprises. The adjusted R^2 (0.277) confirms the robustness of this explanatory power after accounting for model complexity, with only a minimal reduction of 2.2 percentage points. From an economic perspective, this finding suggests that fiscal policy interventions through tax incentives represent a significant determinant of startup financial performance, though the remaining 70% of variance indicates that other factors—such as market conditions, managerial capabilities, and innovation capacity—also play crucial roles in revenue generation. The standard error of estimation (0.66497) provides a measure of prediction accuracy, indicating the average deviation between observed and predicted revenue growth values.

Table(04):Analysis of Variance and Model Significance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.025	1	6.025	13.626	.001 ^{^b}
	Residual	14.150	32	.442		
	Total	20.175	33			

^{^a} Dependent Variable: Revenue Growth

^{^b} Predictors: (Constant), Tax Incentives

The ANOVA results provide compelling evidence for the statistical significance of the regression model. The sum of squares decomposition reveals that tax incentives explain 6.025 units of the total variance (20.175 units) in revenue growth, while 14.150 units remain unexplained by the current model. This decomposition mathematically confirms the R^2 value ($6.025/20.175 = 0.299$) and demonstrates that the explained variance component is substantial relative to the total variance. Economically, the explained variance represents the systematic and predictable impact of tax policy on startup performance, while the residual variance reflects the influence of unobserved factors and random variations in business performance. The magnitude of the explained variance suggests that tax incentives operate through identifiable mechanisms—such as

improved cash flow, reduced operational costs, and enhanced investment capacity—that systematically influence revenue generation patterns across startup enterprises.

Table(05): Coefficient Analysis and Economic Impact

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.200	.851		.235	.816
	Tax Incentives	.828	.224	.546	3.691	.001

^a Dependent Variable: Revenue Growth

The coefficient analysis reveals the precise nature and magnitude of the tax incentive effect on revenue growth. The unstandardized coefficient ($B = 0.828$) indicates that each unit increase in tax incentives corresponds to a 0.828-unit increase in revenue growth, representing the marginal effect of fiscal policy interventions. The standardized coefficient ($\beta = 0.546$) facilitates comparison with other potential predictors and confirms a moderate to strong effect size according to conventional statistical benchmarks. The statistical significance ($t = 3.691$, $p = 0.001$) provides robust evidence against the null hypothesis of no relationship, with the probability of observing such results by chance being less than 0.1%. Economically, this coefficient magnitude suggests that tax incentives operate as an effective policy lever for stimulating startup growth, likely through mechanisms including liquidity enhancement, risk mitigation, and investment facilitation. The non-significant intercept ($B = 0.200$, $p = 0.816$) implies that baseline revenue growth in the absence of tax incentives does not differ significantly from zero, highlighting the crucial role of fiscal support in enabling positive growth trajectories for emerging enterprises.

Based on the comprehensive statistical analysis, **the first sub-hypothesis is accepted, confirming that tax incentives exert a statistically significant positive effect on startup enterprise revenue growth** (H_{11} : $\beta = 0.546$, $t = 3.691$, $p < 0.001$). The rejection of the null hypothesis (H_{01}) at the 99.9% confidence level provides robust empirical evidence supporting the theoretical proposition that fiscal policy interventions serve as effective catalysts for entrepreneurial financial performance. The magnitude of the effect size (Cohen's $d = 0.546$) indicates a moderate to strong practical significance, suggesting that tax incentives represent not merely a statistically detectable relationship but a substantively meaningful policy lever for stimulating startup growth. From a policy perspective, these findings validate the economic rationale for targeted fiscal support programs, demonstrating that each unit increase in tax incentives yields a predictable 0.828-unit improvement in revenue growth. However, the model's explanatory power ($R^2 = 29.9\%$) also highlights the multifaceted nature of startup success, indicating that while tax incentives constitute a crucial determinant, they operate within a broader ecosystem of factors including market dynamics, entrepreneurial capabilities, and institutional support mechanisms. These results contribute to the growing body of evidence supporting the effectiveness of fiscal policy tools in fostering entrepreneurial ecosystems and provide empirical guidance for optimizing the design and implementation of tax incentive programs in developing economies.

2-Testing the Second Sub-Hypothesis: Tax Incentives and Employment Growth

Null Hypothesis (H_{02}): There is no statistically significant effect of tax incentives on employment growth in startup enterprises.

Alternative Hypothesis (H_{12}): There is a statistically significant effect of tax incentives on employment growth in startup enterprises.

Table(06) : Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.050 ^a	.003	-.029	.76312

^a Predictors: (Constant), Tax Incentives

The model summary statistics reveal a markedly weak relationship between tax incentives and employment growth in startup enterprises. The correlation coefficient ($R = 0.050$) indicates an extremely weak positive linear association, while the coefficient of determination ($R^2 = 0.003$) demonstrates that tax incentives account for merely 0.3% of the variance in employment growth. The negative adjusted R^2 (-0.029) suggests that the model performs worse than a simple mean-based prediction, indicating that the inclusion of tax incentives as a predictor does not improve the model's explanatory power. From an economic perspective, this finding challenges conventional expectations about the employment effects of fiscal policy interventions and suggests that startup enterprises may prioritize alternative uses of tax savings over direct employment expansion. The negligible explanatory power implies that employment decisions in startup contexts are driven by factors other than tax incentives, such as market demand, operational efficiency requirements, technological substitution possibilities, or strategic preferences for flexible workforce arrangements. This result highlights the complex nature of employment dynamics in emerging enterprises and suggests that policymakers seeking to stimulate job creation through tax incentives may need to design more targeted interventions or consider complementary policy instruments to achieve employment objectives.

Table(07):Analysis of Variance and Model Significance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.047	1	.047	.081	.777 ^{^b}
	Residual	18.635	32	.582		
	Total	18.682	33			

^{^a} Dependent Variable: Employment Growth

^{^b} Predictors: (Constant), Tax Incentives

The ANOVA results provide definitive evidence of the lack of statistical significance in the relationship between tax incentives and employment growth in startup enterprises. The F-statistic ($F = 0.081$) with a significance level of $p = 0.777$ clearly indicates that the regression model fails to explain a statistically meaningful portion of the variance in employment growth. The decomposition of variance reveals that tax incentives account for only 0.047 units of the total variance (18.682 units), representing an infinitesimal 0.25% of the explained variance, while the overwhelming majority (18.635 units) remains unexplained by the current model. Economically, this finding suggests that startup enterprises exhibit fundamentally different employment behavior compared to established firms, potentially prioritizing operational efficiency, technological adoption, or flexible workforce arrangements over traditional employment expansion. The absence of a significant relationship may reflect the strategic preference of startups to invest tax savings in capital-intensive activities, automation technologies, or outsourced services rather than permanent employment commitments. This result has important policy implications, indicating that tax incentives alone are insufficient to stimulate direct job creation in the startup sector and that alternative policy mechanisms—such as employment-linked tax credits or targeted hiring subsidies—may be necessary to achieve employment policy objectives in entrepreneurial ecosystems.

Table(08): Coefficient Analysis and Economic Impact

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.183	.976		3.260	.003
	Tax Incentives	.073	.257	.050	.285	.777

^aDependent Variable: Employment Growth

The coefficient analysis confirms the absence of a statistically significant relationship between tax incentives and employment growth in startup enterprises. The unstandardized coefficient for tax incentives ($B = 0.073$) indicates that each unit increase in tax incentives corresponds to a negligible 0.073-unit increase in employment growth, representing an economically insignificant marginal effect. The standardized coefficient ($\beta = 0.050$) reflects an extremely weak effect size, well below conventional thresholds for meaningful relationships in social science research. The statistical insignificance ($t = 0.285$, $p = 0.777$) provides robust evidence for accepting the null hypothesis of no relationship between these variables. Notably, the significant intercept ($B = 3.183$, $p = 0.003$) suggests that baseline employment growth occurs independently of tax incentive policies, indicating that startup employment decisions are driven by factors unrelated to fiscal interventions. From an economic perspective, this finding reveals that startup enterprises exhibit distinct employment behavior characterized by strategic workforce management rather than tax-responsive hiring patterns. The minimal coefficient magnitude suggests that entrepreneurs prioritize alternative investments such as technology acquisition, market development, or operational optimization over immediate employment expansion when receiving tax benefits. This result underscores the need for policymakers to recognize the unique characteristics of startup employment dynamics and consider targeted interventions specifically designed to incentivize job creation in emerging enterprises.

Based on the statistical evidence, **we fail to reject the null hypothesis (H_{02})** and conclude that there is no statistically significant effect of tax incentives on employment growth in startup enterprises. This finding diverges from theoretical expectations and contrasts with some previous research that has documented positive relationships between government support and employment outcomes in established enterprises. However, our results align with emerging literature suggesting that startup enterprises exhibit fundamentally different behavioral patterns compared to mature firms.

The absence of a significant relationship can be explained through several economic mechanisms specific to the startup context. First, startup enterprises typically prioritize operational efficiency and technological advancement over immediate workforce expansion, particularly in early development stages where market uncertainty remains high. Second, the findings suggest that entrepreneurs may strategically allocate tax savings toward capital-intensive investments, automation technologies, or flexible workforce arrangements rather than permanent employment commitments. This behavior reflects the unique risk profile and growth strategies characteristic of emerging ventures, where maintaining operational flexibility often takes precedence over traditional employment expansion.

3-Testing the Third Sub-Hypothesis: Tax Incentives and Market Sustainability

Hypothesis Formulation

Null Hypothesis (H_{03}): There is no statistically significant effect of tax incentives on market sustainability of startup enterprises.

Alternative Hypothesis (H_{13}): There is a statistically significant effect of tax incentives on market sustainability of startup enterprises.

Table(09) :Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.678 ^a	.460	.443	.52692

^a Predictors: (Constant), Tax Incentives

The model summary statistics demonstrate that tax incentives exhibit the strongest explanatory power in predicting market sustainability among all examined dimensions of startup performance. The correlation coefficient ($R = 0.678$) indicates a strong positive linear relationship between tax incentives and market sustainability, while the coefficient of determination ($R^2 = 0.460$) reveals that tax incentives account for 46.0% of the total variance in startup market sustainability. The adjusted R^2 (0.443) confirms the robustness of this explanatory power after accounting for model complexity, with only a minimal reduction of 1.7 percentage points, indicating that the relationship is not artificially inflated by model overfitting. From an economic perspective, this substantial explanatory power suggests that fiscal policy interventions through tax incentives serve as a critical determinant of startup survival and long-term viability in competitive markets. The strong relationship reflects the fundamental role of financial stability in enabling emerging enterprises to navigate the inherent uncertainties and resource constraints that characterize early-stage business development. Tax incentives enhance market sustainability by improving cash flow predictability, reducing operational risks, enabling strategic investments in competitive positioning, and providing essential financial buffers against market volatility—collectively addressing the "valley of death" phenomenon that threatens startup survival during critical growth phases.

Table(10):Analysis of Variance and Model Significance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.563	1	7.563	27.240	.000 ^{^b}
	Residual	8.885	32	.278		
	Total	16.448	33			

^{^a} Dependent Variable: Market Sustainability

^{^b} Predictors: (Constant), Tax Incentives

The ANOVA results provide compelling evidence for the statistical significance and practical importance of the relationship between tax incentives and market sustainability in startup enterprises. The F-statistic ($F = 27.240$) with a significance level of $p < 0.001$ demonstrates that the regression model is highly statistically significant, far exceeding conventional thresholds and indicating less than a 0.1% probability that the observed relationship occurred by chance. The variance decomposition reveals that tax incentives explain 7.563 units of the total variance (16.448 units) in market sustainability, representing 46.0% of the explained variance, while only 8.885 units remain unexplained by the current model. This substantial explained variance component indicates that tax incentives operate through systematic and predictable mechanisms that enhance startup survival prospects. Economically, the large explained variance suggests that fiscal policy interventions address fundamental challenges in startup sustainability, including liquidity constraints, operational risk mitigation, and competitive positioning enhancement. The relatively small residual variance (8.885 units) implies that while other factors contribute to market sustainability, tax incentives represent the dominant systematic influence among observable policy variables. This finding has profound implications for entrepreneurial ecosystem development, suggesting that well-designed tax incentive programs can serve as powerful policy instruments for reducing startup failure rates and fostering long-term business viability in emerging markets.

Table(11): Coefficient Analysis and Economic Impact

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.052	.674		.078	.939
	Tax Incentives	.928	.178	.678	5.219	.000

^a Dependent Variable: Market Sustainability

The coefficient analysis reveals the strongest and most statistically significant relationship observed across all dimensions of startup performance examined in this study. The unstandardized coefficient for tax incentives ($B = 0.928$) indicates that each unit increase in tax incentives corresponds to a substantial 0.928-unit increase in market sustainability, representing the highest marginal effect among all performance indicators. The standardized coefficient ($\beta = 0.678$) demonstrates a strong effect size that approaches the threshold for very large effects according to conventional statistical benchmarks, confirming the practical significance of this relationship. The statistical significance ($t = 5.219$, $p < 0.001$) provides robust evidence against the null hypothesis, with the probability of observing such results by chance being virtually negligible. Notably, the non-significant intercept ($B = 0.052$, $p = 0.939$) suggests that baseline market sustainability in the absence of tax incentives does not differ significantly from zero, highlighting the critical role of fiscal support in enabling startup survival. From an economic perspective, this coefficient magnitude reflects the fundamental importance of financial stability for startup sustainability, as tax incentives provide essential resources for weathering market volatility, investing in competitive advantages, and maintaining operational continuity during challenging periods. The strong relationship underscores that tax incentives operate as a vital policy mechanism for addressing market failures in startup financing and reducing the high failure rates characteristic of emerging enterprises, thereby contributing to entrepreneurial ecosystem development and economic dynamism.

Based on the comprehensive statistical evidence, **we reject the null hypothesis (H_{03}) and accept the alternative hypothesis (H_{13})**, concluding that there is a highly significant positive effect of tax incentives on market sustainability of startup enterprises. The standardized coefficient ($\beta = 0.678$) represents a large effect size according to conventional statistical benchmarks, confirming both statistical and practical significance of this relationship.

The strength of this relationship can be explained through several economic mechanisms specific to startup sustainability challenges. First, tax incentives provide crucial liquidity that enables startups to maintain operations during revenue fluctuations and market downturns, addressing the cash flow volatility that often leads to premature business failure. Second, fiscal support reduces operational risks by lowering the overall cost structure, allowing startups to weather competitive pressures and market uncertainties more effectively. Third, tax savings enable strategic investments in competitive positioning, innovation, and market development that enhance long-term viability. The non-significant intercept ($B = 0.052$, $p = 0.939$) suggests that baseline sustainability in the absence of tax support approaches zero, underscoring the critical role of fiscal interventions in startup survival.

4-Testing the Main Hypothesis: Tax Incentives and Startup Enterprise Enhancement

Hypothesis Formulation

Null Hypothesis (H_0): There is no statistically significant effect of tax incentives on startup enterprise enhancement.

Alternative Hypothesis (H₁): There is a statistically significant effect of tax incentives on startup enterprise enhancement.

Table(12) :Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.586 ^a	.343	.322	.45675

^a Predictors: (Constant), Tax Incentives

The comprehensive regression analysis examining the overall impact of tax incentives on startup enterprise enhancement reveals substantial evidence supporting the effectiveness of fiscal policy interventions in fostering entrepreneurial development. The model demonstrates strong explanatory power, with tax incentives accounting for 34.3% of the variance in startup enterprise enhancement ($R^2 = 0.343$, Adjusted $R^2 = 0.322$). The correlation coefficient ($R = 0.586$) indicates a moderate to strong positive linear relationship between fiscal support and overall startup performance, confirming the systematic nature of this relationship across the entrepreneurial ecosystem.

Table(13):Analysis of Variance and Model Significance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.483	1	3.483	16.696	.000 ^{^b}
	Residual	6.676	32	.209		
	Total	10.159	33			

^{^a} Dependent Variable: Startup Enterprise Enhancement

^{^b} Predictors: (Constant), Tax Incentives

The ANOVA results provide compelling evidence of statistical significance, with an F-statistic of 16.696 and $p < 0.001$, substantially exceeding conventional significance thresholds and indicating virtually no probability that the observed relationship occurred by chance. The variance decomposition reveals that tax incentives explain 3.483 units of the total variance (10.159 units) in startup enhancement, representing over one-third of the explained variance while leaving 6.676 units attributable to other factors.

Table(14): Coefficient Analysis and Economic Impact

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.077	.584		1.842	.075
	Tax Incentives	.629	.154	.586	4.086	.000

^{^a} Dependent Variable: Startup Enterprise Enhancement.

The coefficient analysis confirms this robust relationship, showing an unstandardized coefficient of $B = 0.629$ ($SE = 0.154$, $t = 4.086$, $p < 0.001$), indicating that each unit increase in tax incentives corresponds to a 0.629-unit improvement in overall startup enterprise enhancement.

Based on the comprehensive statistical evidence, **we reject the null hypothesis (H₀) and accept the alternative hypothesis (H₁)**, concluding that there is a highly significant positive effect of tax incentives on startup enterprise enhancement. The standardized coefficient ($\beta = 0.586$) represents a large effect size according to conventional statistical benchmarks, confirming both statistical and practical significance of this relationship across multiple dimensions of startup performance.

The strength of this relationship reflects the multifaceted mechanisms through which tax incentives enhance startup performance. Economically, fiscal support operates through several channels: improving financial liquidity for operational flexibility, reducing cost structures to enhance competitiveness, enabling strategic investments in growth opportunities, and providing risk mitigation during uncertain market conditions. The significant intercept ($B = 1.077$, $p = 0.075$) suggests some baseline enhancement

potential exists independently of tax incentives, though the magnitude of the tax incentive coefficient indicates that fiscal support substantially amplifies this baseline effect.

IV-Conclusion

This study provides comprehensive empirical evidence regarding the impact of tax incentives on startup enterprise enhancement, contributing to the growing body of literature on fiscal policy effectiveness in entrepreneurial ecosystems. Through rigorous statistical analysis of data from 34 startup enterprises, the research demonstrates that tax incentives exert differential effects across multiple dimensions of startup performance, with particularly strong impacts on revenue growth and market sustainability, while showing limited influence on employment growth.

The findings reveal that tax incentives account for 29.9% of the variance in revenue growth ($\beta = 0.546$, $p = 0.001$) and an impressive 46.0% of the variance in market sustainability ($\beta = 0.678$, $p < 0.001$), representing moderate to strong effect sizes that confirm both statistical and practical significance. These results validate the theoretical proposition that fiscal policy interventions serve as effective mechanisms for addressing market failures in startup financing and enhancing entrepreneurial performance. The overall model testing confirms that tax incentives significantly enhance startup enterprise development ($R^2 = 34.3\%$, $\beta = 0.586$, $p < 0.001$), providing robust support for the main research hypothesis.

However, the absence of a significant relationship between tax incentives and employment growth ($R^2 = 0.3\%$, $p = 0.777$) reveals important nuances in how startup enterprises utilize fiscal support. This finding suggests that emerging ventures prioritize operational efficiency, technological advancement, and market positioning over immediate workforce expansion, reflecting the unique strategic priorities and resource allocation patterns characteristic of early-stage enterprises. This differential impact pattern has important implications for policymakers seeking to achieve specific objectives through tax incentive programs.

From a theoretical perspective, these results contribute to entrepreneurship and public policy literature by demonstrating that the effectiveness of fiscal interventions varies significantly across different performance dimensions within the startup context. The findings support the resource-based view of entrepreneurship while highlighting the need for nuanced understanding of how external support mechanisms interact with internal strategic priorities in emerging ventures. The strong relationship between tax incentives and market sustainability particularly underscores the critical role of fiscal support in addressing the "valley of death" phenomenon that threatens startup survival.

The policy implications of this research are substantial. The findings provide empirical justification for maintaining and expanding tax incentive programs targeting startup enterprises, particularly in developing economies where access to alternative financing sources may be limited. However, the results also suggest that policymakers seeking to stimulate employment growth through fiscal interventions may need to design more targeted mechanisms, such as employment-linked tax credits or complementary support programs that directly incentivize job creation.

Several limitations should be acknowledged. The cross-sectional design limits causal inference, and the sample size, while appropriate for the analytical approach employed, may limit generalizability. Future research should employ longitudinal designs to examine the temporal dynamics of tax incentive effects and investigate the mechanisms underlying the differential impacts across performance dimensions. Additionally, comparative studies across different economic contexts and policy frameworks would enhance understanding of the boundary conditions for tax incentive effectiveness.

Despite these limitations, this study makes significant contributions to both academic knowledge and policy practice. The findings provide empirical evidence for the

effectiveness of tax incentives in fostering startup development while revealing the complex and differentiated nature of these effects. The research offers practical guidance for policymakers seeking to optimize fiscal support programs for entrepreneurial ecosystems and establishes a foundation for future investigations into the mechanisms and moderators of tax incentive effectiveness in startup contexts.

In conclusion, tax incentives represent a valuable policy instrument for supporting startup enterprise development, particularly in enhancing revenue growth and market sustainability. However, achieving comprehensive entrepreneurial ecosystem development requires nuanced policy design that recognizes the differential effects of fiscal interventions across various performance dimensions and incorporates complementary mechanisms to address areas where tax incentives alone may be insufficient.

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Appendices

Questionnaire

Section One: General Information about the Enterprise

1. **The sector in which your enterprise operates:**
☐ Agricultural ☐ Industrial ☐ Service
2. **Number of employees in your enterprise:**
☐ 1–9 ☐ 10–49 ☐ 50–249 ☐ More than 250
3. **Years of managerial experience of the enterprise manager:**
☐ 1–3 ☐ 4–6 ☐ 7–9 ☐ More than 10 years
4. **Location of your enterprise:**
☐ Coastal areas ☐ Inland areas ☐ Southern regions
5. **Has your enterprise benefited from tax incentives?**
☐ Yes ☐ No

Section Two: Questionnaire Topics

Topic One: Tax Incentives

No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	The state provides sufficient tax exemptions for startups.	☐	☐	☐	☐	☐
2	Tax reductions helped alleviate financial burdens during the startup phase.	☐	☐	☐	☐	☐
3	Administrative facilitation (simplifying tax registration procedures) contributes to enhancing tax compliance among startups.	☐	☐	☐	☐	☐
4	There are government programs to defer tax payments to support enterprises in growth stages.	☐	☐	☐	☐	☐
5	Tax incentives are clear to startup managers.	☐	☐	☐	☐	☐
6	Managers have sufficient access to information related to tax incentives.	☐	☐	☐	☐	☐
7	Tax procedures targeted at startups are transparent in criteria (such as clear eligibility conditions and ease of obtaining information).	☐	☐	☐	☐	☐
8	All startups have the opportunity to benefit from tax privileges without discrimination (fairness in granting incentives).	☐	☐	☐	☐	☐
9	I felt that tax support helped reduce financial risks at the beginning of the project.	☐	☐	☐	☐	☐
10	An encouraging tax system represents an incentive for investment and expansion.	☐	☐	☐	☐	☐
11	Tax incentives helped allocate more resources toward growth.	☐	☐	☐	☐	☐

Topic Two: Startup Enhancement

No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Dimension 1: Revenue Growth (Sales)						
12	Enterprise sales have increased significantly over the last three years.	☐	☐	☐	☐	☐
13	Tax incentives contributed to improving financial profitability.	☐	☐	☐	☐	☐
14	Larger budgets for marketing and sales were possible thanks to tax reductions.	☐	☐	☐	☐	☐
15	Customer base expanded after benefiting from tax incentives.	☐	☐	☐	☐	☐
16	Benefiting from tax exemptions helped invest in sales or distribution technologies.	☐	☐	☐	☐	☐
Dimension 2: Employment Growth						
17	The number of employees in the enterprise increased in recent years.	☐	☐	☐	☐	☐
18	Tax relief contributed to creating new job opportunities.	☐	☐	☐	☐	☐
19	The enterprise was able to hire experienced talents thanks to tax savings.	☐	☐	☐	☐	☐
20	Part of the tax savings was directed toward improving salaries and internal incentives.	☐	☐	☐	☐	☐
21	Job satisfaction increased after financial improvement of the enterprise.	☐	☐	☐	☐	☐
Dimension 3: Market Continuity						
22	Tax incentives helped the enterprise face financial challenges.	☐	☐	☐	☐	☐
23	The enterprise has a clear continuity plan supported by tax policy.	☐	☐	☐	☐	☐
24	Management is confident in the sustainability of the enterprise's activity in the long term.	☐	☐	☐	☐	☐