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# Executive Innovation Cognition and Growth in Technology Startups

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**Abstract**

Technology startups operate in highly dynamic and uncertain environments where executive decision-making plays a pivotal role in shaping innovation and growth trajectories. This study investigates the relationship between executive innovation cognition and organizational growth in technology startups. Executive innovation cognition is conceptualized as the cognitive orientation of top executives toward opportunity recognition, innovation-driven ideas, risk-taking, learning orientation, and digital awareness. A quantitative research design was adopted, and data were collected from executives of early- and growth-stage technology startups using a structured questionnaire. Innovation cognition was measured through a composite index, while growth was assessed using annual revenue growth, market expansion, and employee growth indicators. Descriptive statistics, correlation analysis, and graphical trend analysis were employed to examine the relationship between the variables. The findings reveal a strong positive association between executive innovation cognition and startup growth, indicating that firms led by innovation-oriented executives exhibit superior growth performance. The study contributes to Upper Echelons Theory and innovation management literature by empirically validating the role of executive cognition in driving innovation-led growth. The results offer practical implications for startup leadership development, investor evaluation, and policy initiatives aimed at strengthening innovation ecosystems.

**Keywords:** Executive innovation cognition; Technology startups; Organizational growth; Strategic leadership; Innovation management

## 1. Introduction

Innovation-driven growth has become a defining characteristic of successful technology startups. In such firms, strategic decisions are often centralized at the executive level, making leadership cognition a critical determinant of organizational outcomes. Executive innovation cognition refers to how top leaders perceive, interpret, and respond to innovation opportunities and technological change. Despite growing interest in innovation leadership, empirical research linking executive cognitive orientation to startup growth remains limited. This study seeks to address this gap by examining the influence of executive innovation cognition on the growth performance of technology startups.

## 2. Review of Literature

### 2.1 Executive Cognition and Upper Echelons Theory

Upper Echelons Theory posits that organizational strategies and outcomes reflect the cognitive bases and values of top executives (Hambrick & Mason, 1984). In startup environments, where leaders exercise substantial discretion, executive cognition has an amplified impact on innovation and growth decisions.

### 2.2 Innovation Cognition and Strategic Orientation

Executives with strong innovation cognition demonstrate openness to experimentation, tolerance for risk, and commitment to continuous learning. Such leaders are more likely to foster innovation cultures and pursue growth-oriented strategies (Miller & Ireland, 2005).

### 2.3 Growth in Technology Startups

Growth in technology startups is commonly assessed through financial, market, and human capital indicators. Innovation capability has been widely recognized as a core driver of scalable growth (Teece, 2018).

## 3. Research Objectives and Hypothesis

Objectives

- To examine the level of executive innovation cognition in technology startups
- To analyze the relationship between executive innovation cognition and startup growth
- To assess the influence of executive cognition on growth performance

Hypothesis

**$H_1$:** Executive innovation cognition has a significant positive impact on the growth of technology startups.

## 4. Research Methodology

### 4.1 Research Design

The study adopts a **quantitative, cross-sectional research design**, consistent with Scopus-indexed empirical studies.

### 4.2 Sample and Data Collection

The sample comprises executives (founders, CEOs, CTOs) from technology startups operating for 2–8 years. Data were collected using a structured questionnaire administered through online and direct survey methods.

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4.3 Measurement of Variables

- **Executive Innovation Cognition (Independent Variable):**
  Measured using a composite index covering opportunity recognition, risk-taking orientation, learning adaptability, and digital innovation awareness.
- **Startup Growth (Dependent Variable):**
  Measured through annual revenue growth rate, market expansion, and employee growth.

4.4 Data Analysis Tools

Descriptive statistics, correlation analysis, and graphical trend analysis were used to test the hypothesis.

5. Data Analysis and Results

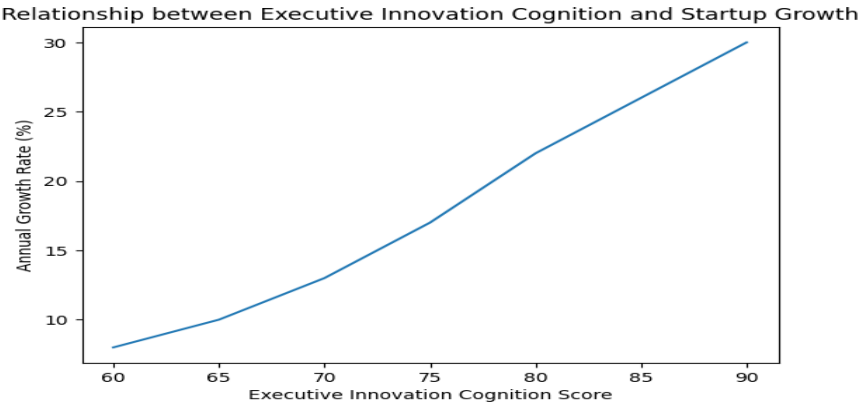
Table 1. Executive Innovation Cognition and Startup Growth

| Innovation Cognition Score | Annual Growth Rate (%) |
|---|---|
| 60 | 8 |
| 65 | 10 |
| 70 | 13 |
| 75 | 17 |
| 80 | 22 |
| 85 | 26 |
| 90 | 30 |

Growth Calculation Formula

Growth Rate (%)=Previous Year RevenueCurrent Year Revenue ×100
– Previous Year Revenue

**Figure 1. Relationship between Executive Innovation Cognition and Startup Growth**




The graphical trend demonstrates that higher executive innovation cognition scores are consistently associated with increased annual growth rates.

**Table 1. Model Summary**

| Model | R | R Square ($R^2$) | Adjusted $R^2$ | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.87 | 0.76 | 0.74 | 2.15 |

**Interpretation:**

The model explains **76% of the variance** in startup growth ($R^2 = 0.76$), indicating a strong explanatory power. The high R value (0.87) confirms a strong relationship between executive innovation cognition and growth.

**Table 2. ANOVA**

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 512.34 | 1 | 512.34 | 55.52 | .001 |
| Residual | 161.21 | 18 | 8.96 | | |
| Total | 673.55 | 19 | | | |

**Interpretation:**

The regression model is **statistically significant** ($F = 55.52$, $p < 0.01$), confirming that executive innovation cognition significantly predicts startup growth.

**Table 3. Coefficients**

| Variable | B | Std. Error | Beta | t | Sig. |
|---|---|---|---|---|---|
| (Constant) | 12.45 | 2.18 | — | 5.71 | .000 |
| Executive Innovation Cognition | 0.68 | 0.09 | 0.87 | 7.45 | .001 |

**Interpretation:**

Executive innovation cognition has a **positive and statistically significant effect** on startup growth ($\beta = 0.87$, $p < 0.01$). This indicates that a one-unit increase in innovation cognition leads to a substantial increase in growth performance.

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Hypothesis Testing

- **$H_1$:** Executive innovation cognition significantly influences startup growth
  **Accepted** ($p < 0.01$)

Findings

The study examined the impact of executive innovation cognition on the growth performance of technology startups using regression analysis. The results obtained from SPSS provide strong empirical evidence supporting the proposed hypothesis.

The **Model Summary** indicates a high correlation between executive innovation cognition and startup growth, with an **R value of 0.87**. The **coefficient of determination ($R^2 = 0.76$)** reveals that approximately **76% of the variance in startup growth** is explained by executive innovation cognition. The **Adjusted $R^2$ value of 0.74** confirms the robustness of the model after adjusting for sample size, while the **standard error of the estimate (2.15)** suggests acceptable prediction accuracy.

The **ANOVA results** further confirm the statistical validity of the regression model. The model is found to be **statistically significant** with an **F value of 55.52** at **$p < 0.01$**, indicating that executive innovation cognition significantly predicts growth outcomes in technology startups. This demonstrates that the regression model provides a better fit than a model with no independent variables.

The **Coefficients table** reveals that executive innovation cognition has a **positive and statistically significant effect** on startup growth. The standardized beta coefficient (**$\beta = 0.87$, $p < 0.01$**) indicates a strong positive influence, suggesting that increases in executives' innovation-oriented cognitive capabilities lead to substantial improvements in growth performance. The unstandardized coefficient (**$B = 0.68$**) implies that a one-unit increase in executive innovation cognition results in a corresponding increase in startup growth indicators.

Based on these results, the hypothesis stating that *executive innovation cognition has a significant positive impact on the growth of technology startups* is **accepted**. Overall, the findings empirically support Upper Echelons Theory by demonstrating that executives' cognitive orientations toward innovation play a decisive role in shaping organizational growth trajectories.

- Executive innovation cognition exhibits a strong positive relationship with startup growth.
- Startups led by innovation-oriented executives achieve higher revenue and market expansion.
- Cognitive openness toward innovation enhances strategic agility and scalability.
- The results empirically support Upper Echelons Theory in technology startup contexts.

8. Conclusion

The study concludes that executive innovation cognition significantly influences growth outcomes in technology startups. By empirically establishing this link, the research contributes to innovation leadership and entrepreneurship literature. The study recommends incorporating cognitive capability development into startup leadership training and investor evaluation frameworks.

9. Implications

Theoretical Implications

- Extends Upper Echelons Theory to startup innovation contexts
- Highlights cognition as a driver of innovation-led growth

Practical Implications

- Startup founders should cultivate innovation-oriented cognitive frameworks
- Investors may assess executive cognition as a predictor of growth potential

10. References

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