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Research Article

Innovation Financing of Ethiopian Tech Start-ups: Challenges and Opportunities from a Survey Study

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KEYWORDS: Ethiopia; Tech startups; innovation financing; financing challenges; multinomial logistic regression

Abstract

This study intended to identify the challenges and opportunities of innovation financing among tech startups in Ethiopia. The study further analyzed the association between financing mechanisms used and perceived financing mechanism challenges, factors influencing financing mechanism selection. The study employed descriptive and correlational survey design using a quantitative approach. Data were collected from 138 tech startups out of 227 eligible tech startups identified from the Ministry of Innovation and Technology through purposive sampling techniques. The collected data were analyzed using descriptive statistics, Chi-square tests, and multinomial logistic regression analysis through SPSS software. The findings revealed that the major innovation financing challenges reported by respondents which include limited access to debt, non-dilutive and equity financing. The study also identified opportunities such as enhancing financial literacy, expanding collaboration among stakeholders and Leveraging the 2025 Ethiopian Startup Proclamation to Overcome Regulatory Barriers. The Chi-square analysis shows all the p-value exceeds the standard threshold of 0.05 indicating there is no statistically significant association exists between financing mechanisms usage and reported financing mechanisms challenges. On the other hand, the multinomial logistic regression results of the overall model were statistically significant (χ^2 = 27.590, df = 12, p = 0.006) and showed prior use of a financing type significantly increases the likelihood of choosing that same type, while perceived challenges do not have a significant effect. The study suggests to utilize various alternative source of financing like traditional informal financing options, enhancing stakeholder collaboration, importance of coordinated efforts among stakeholders and creating supportive regulatory frameworks to improve startup financing accessibility. The study contributes to understanding of Ethiopia's tech startup ecosystem and provides empirical evidence.

1 Introduction

Startups are described as the "driving force of economic and technological change in the modern world" (Wetzel & Eiche, 2024). They are considered "critical engines of innovation, entrepreneurship, and economic growth" within their respective ecosystems (Dekker et al., 2026). Tech-Startup also plays a critical role in innovation and in fostering the growth of developing countries. According to Yeboah (2023) startups in developing countries face some unique challenges, like not having enough resources, infrastructure and support from institutions, which can make it hard for them to get financing and be successful. However, the quest of supporting the economy and contribute to regional as well as worldwide problems tech startups must get sufficient finance that can help them solve their day today operational problem remains intact. Jean (2024) defined Financial constraints as the limitations on an organization's ability to access or allocate financial resources effectively. On the other hand, Lee and Jung (2024) highlights financial constraints can be understood as any limitation that reduces the availability of investment opportunities for firms. Obtaining funding from investors or financial institutions can be difficult specially for startups in high-risk (Jean, 2024). Firms face financing constraints due to difficulties in accessing external finance as well as insufficient internal funds (Santos & Cincera, 2022). As to Jean (2024) limited financial constraint can hinder product development, market entry, and scalability. These constraints also can arise from both internal and factors, such as cash flow limitations and restricted access to capital markets (Lee & Jung, 2024). Some studies suggest that financial constraints may encourage firms to become more efficient and selective in their investment decisions, potentially leading to better allocation of resources (Hahn et al., 2019).

As startup sector is growing quickly in Africa Kato (2025) confirms Africa's "promising youthful population" is a primary driver of the region's innovation potential and the necessity for a robust startup sector. Similarly, significant upward trend in the Ethiopian startup and small business landscape is a recent phenomenon. According to Meressa (2022) micro- and small-enterprise (MSE) development has moved to the top of the Ethiopian government's agenda as a vital instrument for economic growth. However, Financing has also become a crucial factor in determining the extent of their success (Sukachova et al., 2025). As Saleem and Atiq (2023) cited though it is vital for entrepreneurship in the growth of an economy startup financing is the least focused area of research especially in the developing countries. According to Lambert and Deyganto (2025) approximately 45% of surveyed small business in Ethiopia have access to formal financial services, indicating a substantial financing gap. In Ethiopia specifically, little is known about the challenges and alternative solutions that this tech startups take to solve their funding problem and prior studies have not adequately examined the primary challenges of innovation financing mechanisms that can solve the funding challenges tech startups face. The existing body of literature on startup financing in Ethiopia is fragmented. Most of the literature related to this study title found as reports, blogs, policy briefs, media articles which lacks empirical analysis and theoretical grounding. Moreover, there is lack of peer-reviewed studies published in reputable academic journals and the existing academic research tends to focus on broader issues such as small and medium enterprise (SME) financing or innovation systems in general. As a result, areas of financial constraints related to tech startups remain underexplored. Therefore, this study tries to fill this gap by providing a comprehensive and empirically grounded analysis of the financing challenges and opportunities of innovation financing mechanisms for Ethiopian tech startups, grounded in established theoretical frameworks and supported by primary data.

Tech startups take bigger risks, grow faster, and need a different kind of financing like equity investment, angel funding, and non-dilutive options like grants or competitions. However, relevant research not done adequately to show the challenges tech startups face in Ethiopia. What we still do not fully understand is also how these financing mechanisms used by tech start-ups along with the challenges they face and which financing options they end up choosing to grow their revenue? Therefore, our study seeks to an-

swer the following key research question: "What are the challenges and opportunities Ethiopian tech startups encounter when trying to secure funding and how the financing types used and reported challenges influence the financing type selection?".

The study aimed to identify challenges and opportunities of innovation financing that Ethiopian tech startups face. It further seeks to determine the statistical association between the financing mechanisms used and the specific financing mechanisms challenges reported, while also investigating how the financing mechanisms used and associated financing mechanism challenges reported influence the selection of financing mechanisms that leads tech startups to revenue growth.

This study gives practical insights for multiple stakeholders in Ethiopia's tech startup ecosystem. It shows the challenges and opportunities of innovation financing for tech startups in Ethiopia, financial literacy matters for growth, support policymakers in designing more effective startup and innovation financing policies, provides hard numbers of founders struggling with regulatory red tape most of them still relying on self financing to get funding, and also can be considered as an additional empirical literature contribution for innovation financing in Ethiopia.

The rest of the paper is organized as follows. The literature review and hypothesis development section explain existing evidence on the challenges and opportunities of innovation financing, presents the theoretical foundations of the study, and develops the research hypotheses. The methods section describes the study population, sample size, variable definitions, and model specification. The results section also presents the findings from the data analysis, including the chi-square tests, multinomial regression analysis, and hypothesis testing results. The discussion section interprets the findings in relation to the existing literature and highlights the opportunities for innovation financing in Ethiopia emerging from the study results. The manuscript concludes by summarizing the key findings and their implications.

2 Literature and Hypothesis Development

Lambert and Deyganto (2025) noted the importance of tech startup financing to foster industrial growth, raising productivity, and enhancing competitiveness in developing countries like Ethiopia. Meressa (2022) on the other hand stated financial constraints as one of critical Bottleneck in Ethiopia and many tech startups fail to secure sufficient funding. According to Hussain (2024) also mentioned as emphasis should be given for funding requirements which underline need for ongoing financial support to sustain operations and growth. As to Hussain (2024) Innovation can be financed through various financing mechanisms that are available for the startups during the different stages of their life cycle. Figure 1 below shows how the study classified the financing types as external and internal based upon the level of growth of the startups from the first stage of the firm life cycle to the final stages.

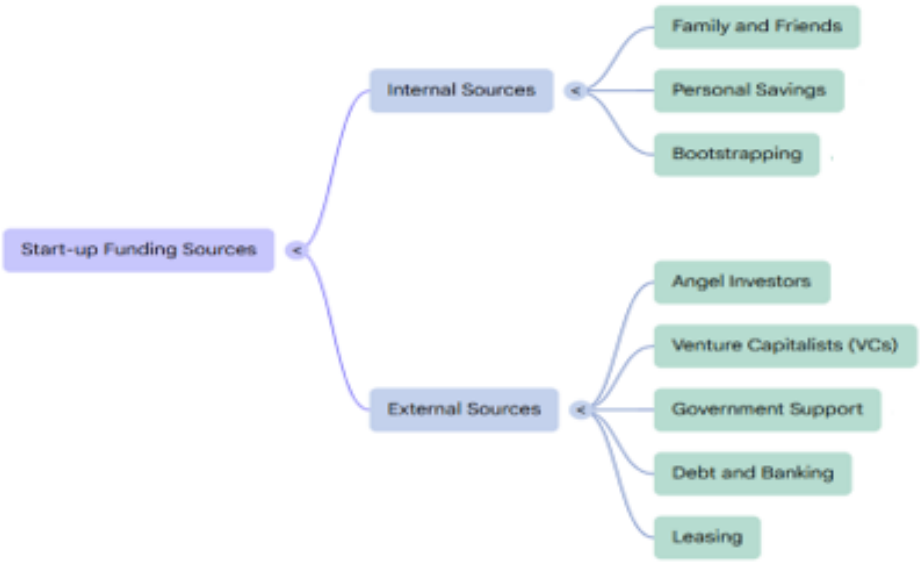

Figure 1: Startup Funding Sources as to Hussain (2024) Source (Author)

Vandenberg et al. (2020) also illustrated, as depicted in Figure 2 below, the various financing sources utilized by tech startups throughout different stages of their lifecycle.

Table 1: Comparison of Funding Sources by Stage, Advantages, Risks, and Usage

Source	Stage	Advantage	Risks/LIMITS	Usage*
Savings	Early	Availability; no screening by bank	Limited	Substantial
Family and Friends	Early	Availability; no screening by bank	Uncertainty about amount and repayment	Substantial
Salary from Other Job	Early	Continuous stream	Relatively small	Substantial
Prize Money	Early	Full fungibility	Relatively small amounts and hard to win	Limited
Company Revenues	Early-late	Possibly continuous stream	Revenues not invested in profitable business	Limited
Government Grants or Loans	Early	Full fungibility	Often small amounts	Limited
Angel Investor	Early	Access to potentially large pool of capital	Difficult to find	Very limited
Crowdfunding	Early-late	Relatively inexpensive	Uncertain response	Very limited
Banks	Early-late	Usually large amounts of capital available	Thorough screening; possibly onerous and restricted use of capital	Limited
Venture Capital	Early-late	Access to potentially large pool of capital	Participation in ownership	Very limited

2.1 Challenges and Opportunities of Innovation Financing (Review of Existing Evidence)

Though studies highlight several ways of obtaining funding tech startups companies face significant barriers to get finance and run their business smoothly. For instance, Vandenberg et al. (2020) stated transforming an innovative idea into a successful business is not easy and is constrained by limited access to finance, Sulillari (2023) noted funding is a critical factor in determining the success or failure of a start-up. They also stated it is the reason why many companies cannot survive for an extended period and why many great business ideas fail. According to Meressa (2022) business experience, size, financial reporting, and business plan preparation are the primary determinants of access to credit and Simba et al. (2024) observed that although pledging collateral serves as an effective mechanism for banks and lending institutions to assure themselves of future value, the criteria used to assess credit applications remain problematic.

Yeboah (2023) identified various barriers that limit entrepreneurs' access to finance. These are limited collateral, lack of financial literacy, inadequate credit information, high interest rates, and stringent loan requirements. Sulillari (2023) also identified lacking personal savings, lacking the experience needed, not knowing the amount of money that the business needs, not choosing the right funding source, fundraising fatigue, Economic conditions, leadership issues, Competition, not having a scalable business model and Risk perception as major barriers. There are also multiple Empirical Evidence from similar studies that have been identified and mentioned as Financing Challenges, Opportunities, Usage & Mechanism Selection shows in the Table1 below.

Table 2: Financing Challenges and Opportunities (Empirical Evidence from Similar Studies)

Authors	Key Findings on Financing Challenges, Opportunities, Usage & Mechanism Selection
Lambert and Deyganto (2025)	Limited market access, low financial literacy and poor recordkeeping are identified as key challenges and internal competencies are found to be more critical for accessing finance.
Panitkulpong et al. (2024)	Challenges: Platform quality, characteristics, and social influence are critical for investor trust. Social Influence is the most significant factor influencing investment decisions. Opportunities: Equity crowdfunding democratizes access to capital and reduces information asymmetry.
Lee and Jung (2024)	Financing constraints are negatively associated with product innovation. Strong R&D human capital positively moderates the relationship, helping firms overcome financial constraints. R&D human capital did not significantly impact R&D intensity.
Ahmed (2025)	Challenges: Lack of enabling regulation, investor protection concerns.
Lange et al. (2024)	Business Angels provide critical value-added services (expertise, networks, mentorship) beyond financial capital, bridging the funding gap between founders and Venture Capitals. In addition, Business Angels funding positively influences startup survival, and BA networks significantly facilitate funding through social capital and reduced information asymmetry.
Romero Alvarez et al. (2026)	Emerging channels (crowdfunding, supply chain finance) show potential but require more research. Bank credits are critical but their effectiveness depends on technological capacity. Self-financing follows pecking order logic. External equity/VC plays a crucial role for high-tech SMEs.

Continued on next page

Table 2 – Continued from previous page

Authors	Key Findings on Financing Challenges, Opportunities, Usage & Mechanism Selection
Dekker et al. (2026)	Venture debt availability reduces early-stage equity but significantly enhances late-stage investments, reallocating capital across the lifecycle.
Sukachova et al. (2025)	VC provides essential mentorship/networks while crowdfunding validates ideas, especially in transition economies.
Firszt (2025)	Reward and donation crowdfunding align well with startup needs and perform better than traditional bank loans in early stages.
Dey (2024)	Revenue based financing fills a unique gap between traditional debt and VC by utilizing data-driven analysis for non-dilutive funding.
Saleem and Atiq (2023)	Major challenges include unrealistic requirements from providers, such as high collateral and high equity sharing.
Giaretta and Chesini (2021)	Unregulated fintech's are more likely to obtain long-term debt; asset structure and ownership significantly impact access.
S. Singh and Subrahmanya (2021)	The amount raised is significantly influenced by entrepreneur characteristics and growth metrics, varying by stage.
Santos and Cincera (2022)	Being an innovative firm increases the probability of being financially constrained by 21–32%.
Garg and Shivam (2017)	Internal planning failures as a primary financing challenge, specifically the underestimation of start-up costs and miscalculating break-even points.
Hai et al. (2022)	An "innovation trap" where the "liability of newness" forces firms to spend more on marketing and complementary assets than they earn in initial profits.
Hahn et al. (2019)	The non-rival nature of technological knowledge discourages investment because firms cannot easily keep innovations secret.
Vandenberg et al. (2020)	Shortage of "patient capital" for tech startups producing physical goods (like agri-tech), Investors prefer capital-efficient software ventures over those requiring long testing and certification cycles.
Yeboah (2023)	Limited financial literacy and a lack of credible credit information infrastructure as the primary barriers to unlocking finance in developing countries.
Source: Authors	

Sulillari (2023) noted start-ups may have to deal with many of these financing challenges simultaneously, not one at a time, which makes the funding process extremely challenging and difficult to succeed in. Despite the above financing challenges, several opportunities exist for improving innovation financing and overcoming the challenges. According to Sulillari (2023) start-ups can try to overcome the financing challenges using different strategies. Networking, social media exposure, finding the best funding option and best business model are some to mention. Similarly, Yeboah (2023) highlighted factors that facilitate access to finance for entrepreneurs. These include supportive government policies, the presence of specialized financial institutions, and the use of financial technologies are some to mention.

2.2 Theoretical Review

"The financing constraints theory is the study of the impact of financial frictions on the firm's investment" (Mansour & Chichti, 2011). It suggests that firms may struggle to grow when they cannot easily obtain external finance due to information asymmetry, agency conflicts, and strict collateral requirements imposed by lenders (Ioannidou et al., 2022).

Du and Nguyen (2022) extended this perspective by introducing the concept of cognitive financial constraints, which emphasizes that entrepreneurs' perceptions, attitudes toward risk, and reluctance to seek external finance may also hinder firm growth. In response to these constraints, tech startups typically follow the Pecking Order Theory. Tech startups prefer debt financing over equity to avoid ownership dilution when internal funds are insufficient. Prior empirical literature indicates that bank lending plays a crucial role in providing liquidity to firms, enabling them to finance operations and expand quickly. However, asymmetric information between borrowers and lenders, together with agency problems and limited collateral, leads to credit rationing and financing constraints (Ioannidou et al., 2022). Empirical studies further indicate that while bank loans can support firm growth, access to such financing is often restricted by collateral requirements and borrower opacity (Meressa, 2022; Santos & Cincera, 2022). Therefore, a startup's choice to use a specific financing type is inherently tied to the structural challenges of that mechanism, leading to our first hypothesis

H1: There is a significant association between financing type used (debt, equity, non-dilutive) and the corresponding financing type challenges.

There are three distinct tiers in which the firm uses different ways to finance itself and their financing preference according to Frank et al. (2020) explanation of the standard pecking order theory. Tier1 discuss the firm has enough internal resources to fund its needs, and it does not need external financing. Tier2 states internal cash flows are not sufficient to meet the firm's needs and it must close the financing deficit through external funds. Tier3 places the firm uses internal resources plus the full debt capacity plus some new external equity to fund itself. As cited on Frank et al. (2020) literature often implicitly assumes that all or at least most firms are in Tier2. These implies that a firm's historical path of financing shapes its operational capabilities and strategic choices. Since startups often begin with a restricted budget they require careful prioritization of expenses and activities to achieve the greatest impact (Jean, 2024).

Tech startups that have used specific funding types (debt, equity, or non-dilutive) previously might have been learnt on how to deploy these specific financial resources efficiently to scale operations, directly influencing which mechanism they perceive as the ultimate driver of their revenue growth. Similarly, a tech startup challenged by significant amount of interest or restricted by rigid grant or loan process may find those mechanisms ineffective for driving revenue and force them to look toward alternative financing mechanisms. Here, lesson learned could be an issue as to Jean (2024) there are startups failed due to mismanagement of resources and lack of market fit and due to poor financial planning and prioritizing rapid expansion over building a sustainable business model. These theoretical insights lead us to hypothesize as:

H2a: Previous financing usage (debt, equity, and non-dilutive financing) significantly influences startups' financing mechanism choice.

H2b: Financing challenges associated with debt, equity, and non-dilutive financing significantly influence startups' financing mechanism choice.

Therefore, According to Financing Constraint Theory and Pecking Order Theory, startups develop financing preferences based on their prior experiences with funding accessibility. Consequently, both financing usage and reported financing challenges are expected to influence which financing mechanisms startups perceive as most effective for driving revenue growth.

3 Methods

The study employed a descriptive and correlational survey design using a quantitative approach to explore the challenges and opportunities Ethiopian tech startups face. A multinomial logistic regression model was employed to examine the influence of financing usage and financing challenges on the perceived financing mechanisms driving startup revenue growth. Prior to regression analysis, a multiple response analysis was used to identify the primary challenges Ethiopian tech startups face, and chi-square tests were conducted to examine associations between financing mechanisms usage and financing mechanisms challenges.

To determine an appropriate sample size, the Yamane (1967) formula was applied. As cited in Ayinaddis (2022), the Yamane (1967) sample size formula based on a margin of error and population size is widely used in survey research and is specified as follows:

$$n = \frac{N}{1 + N(e)^2} \tag{1}$$

Where $N = 520$ and $e = 0.05$.

Tech startups that satisfied the inclusion criteria were chosen using a purposive sampling technique. The initial population of the study consisted of 520 lists from the Ministry of Innovation and Technology database; only those with available contact information (mobile or email), in formal registration status, and evidence of having received at least one form of financing were included. This resulted in a final sampling frame of 227 startups. This sampling approach may limit the generalizability of the findings, as startups without prior funding, informal enterprises, or those lacking accessible contact information were excluded.

Of these, 138 startups responded, representing a response rate of approximately 61%. This response rate is considered adequate as cited in Ayinaddis (2022), indicating a 50% response rate is adequate for statistical analysis and provides a reasonable basis for drawing conclusions about the broader population, while acknowledging the possibility of non-response bias. Because information from non-respondents was not available, non-response bias could not be assessed and remains a limitation of this study. Primary data was collected using Google Forms. A digital link to the survey questionnaire was sent to respondents via email and/or mobile devices. Volunteers were assigned to engage directly with the respondents to clarify the objective of the study, ensure the participant understood the significance of the research before completing the survey, enhance the response rate, and ensure data integrity.

A designed questionnaire with 35 items served as the data gathering tool. Respondent demographics, firm-level characteristics, financing mechanisms usage with corresponding amounts, and perceptions and experiences regarding financing, collaboration, challenges, and regulatory environment are the four primary sections the questionnaire comprised. The questionnaire also used a variety of measuring forms, including binary (Yes/No) questions, multiple-response items, continuous numerical entries (revenue and employment data), and Likert-scale items (ranging from "Very ineffective" to "Very effective"). The questionnaire was examined by peers to make sure it was relevant and clear, even if a formal pilot test was not carried out (See Appendix-A).

The study also employed multinomial logistic regression analysis to examine the influence of usage of financing mechanisms and financing challenges on startups' financing

mechanism choices. The dependent variable consisted of multiple unordered financing categories, namely loan financing, business plan competition financing, government grant financing, crowdfunding platform financing, and venture capital and angel investor financing. However, to address sparse data and unstable parameter estimates observed in the initial multinomial logistic regression, these financing categories were restructured into three conceptually meaningful groups (debt financing, equity financing, and non-dilutive financing). Non-dilutive financing was used as the reference category. As cited in Deh et al. (2025), multinomial logistic regression is a multivariate analysis model used when the dependent variable (Y) is a qualitative nominal variable with more than two categories. Accordingly, multinomial logistic regression was found to be appropriate for this study. Independent variables included debt financing utilization, debt financing challenges, equity financing utilization, equity financing challenges, non-dilutive financing utilization, and non-dilutive financing challenges. Pearson's chi-square test was also employed to examine the association between financing mechanism usage and perceived financing challenges since both variables were categorical.

Table 3: Variable Operationalization and Coding Scheme for Multinomial Logistic Regression

Survey Questionnaire	**Expected Response Options**	**Coding**	**Variable Role**	**Variable Type**
Has your startup used debt financing (e.g., bank loans) in the past three years (2022–2024)?	Yes, No	1 = Yes, 0 = No	Independent	Binary
Has your startup used equity financing (e.g., from angel investors or venture capitalists) in the past three years (2022–2024)?	Yes, No	1 = Yes, 0 = No	Independent	Binary
Has your startup used non-dilutive financing (e.g., your own fund, business plan competitions or grants) in the past three years (2022–2024)?	Yes, No	1 = Yes, 0 = No	Independent	Binary
What are the primary challenges your startup has encountered regarding financing mechanisms? (Select all that apply)	Debt, Equity, Non-dilutive	Since this is a "Select all that apply" question, each choice was treated as a separate binary dummy variable. Accordingly, Debt_Challenge (1 = Yes, 0 = No), Equity_Challenge (1 = Yes, 0 = No), or NonDilutive_Challenge (1 = Yes, 0 = No)	Independent	Binary
Which financing mechanism do you believe has been most effective in driving your revenue growth?	Loan Categorized as (Debt), (Venture capital and angel Investor; Crowdfunding Platform) Categorized as (Equity), (Business Plan competition; Government grant) Categorized as (Non-Dilutive)	Debt Financing = 1, Equity Financing = 2, Non-Dilutive Financing = 3	Dependent	Categorical

The multinomial logistic regression model is specified as:

$$\ln\left(\frac{P(Y=j)}{P(Y=\text{Non Dilutive Financing})}\right) = \beta_{0j} + \beta_{1j}\,\text{Debt\_Used} + \beta_{2j}\,\text{Debt\_Challenge} + \beta_{3j}\,\text{Equity\_Used} + \beta_{4j}\,\text{Equity\_Challenge} + \beta_{5j}\,\text{NonDilutive\_Used} + \beta_{6j}\,\text{NonDilutive\_Challenge}$$

Where:

- $P(Y=j)$ = Probability of selecting a financing mechanism that leads to revenue growth j
- $P(Y=$ Non-Dilutive Financing$)$ = Probability of selecting Non-Dilutive Financing (reference category)
- Debt_Used = Tech Startup firm has previously used debt financing (Binary)
- Debt_Challenge = Tech Startup firm faces challenges in obtaining debt financing (Binary)
- Equity_Used = Tech Startup firm has previously used Equity financing (Binary)
- Equity_Challenge = Tech Startup firm faces challenges in obtaining equity financing (Binary)
- NonDilutive_Used = Tech Startup firm has previously used Nondilutive financing (Binary)
- NonDilutive_Challenge = Tech Startup firm faces challenges in obtaining Nondilutive financing (Binary)
- β_0 = intercept term
- $\beta_{1j}, \beta_{2j}, \beta_{3j}, \beta_{4j}, \beta_{5j}, \beta_{6j}$ = log-odds coefficients for each predictor

A multinomial logistic regression model was estimated using maximum likelihood. The model compares each financing choice against the reference category (Non-Dilutive Financing).

4 Results

According to Kent State University Libraries (2026) when there is a list of potential answers presented in a multiple-choice question survey, and the respondent chooses all of the possibilities that apply to them, the researcher uses multiple response analysis. Hence, multiple response analysis was used to analyze the data.

4.1 Demographic Analysis of Tech Startups

The age distribution of respondents is presented in Table 3 below shows 77.5% (107 individuals) fall within the 26-40 age category. This was followed by the younger entrepreneurs (up to 25 years old) age group, which accounted for 15.9% of the respondents. Only a small proportion of respondents (6.5%) were aged 41-60. In this regard our survey results show that young and middle-aged workforce dominated the Ethiopian tech startup ecosystem.

Table 4: Demographic Analysis of Tech Startups

Category	Subcategory	Frequency	Percent	Valid Percent	Cumulative Percent
Age Category	Up to 25	22	15.9	15.9	15.9
	26-40	107	77.5	77.5	93.5
	41-60	9	6.5	6.5	100.0
	Total	**138**	**100.0**	**100.0**	
Gender	Female	16	11.6	11.6	11.6
	Male	122	88.4	88.4	100.0
	Total	**138**	**100.0**	**100.0**	
Marital Status	Divorced	2	1.4	1.4	1.4
	Married	50	36.2	36.2	37.7
	Single	86	62.3	62.3	100.0
	Total	**138**	**100.0**	**100.0**	
Education	Bachelor (University Degree)	86	62.3	62.3	62.3
	Certificate /Diploma	8	5.8	5.8	68.1
	High School	2	1.4	1.4	69.6
	Masters or above	41	29.7	29.7	99.3
	Primary school	1	0.7	0.7	100.0
	Total	**138**	**100.0**	**100.0**	
Sector	Agri Tech	18	13.0	13.0	13.0
	E-commerce	22	15.9	15.9	29.0
	Edtech	12	8.7	8.7	37.7
	Fintech	6	4.3	4.3	42.0
	Health Tech	3	2.2	2.2	44.2
	Manufacturing technology	10	7.2	7.2	51.4
	Other	8	5.8	5.8	57.2
	Software as a Service (SaaS)	59	42.8	42.8	100.0
	Total	**138**	**100.0**	**100.0**	

The results of gender distribution shows that significant gender disproportion within the tech startup sector which is 88.4% of respondents (122) were male, while 16 respondents (11.6%) were female. This disparity suggests gender-based barriers is highly reflected related to innovation financing mechanisms that may need to be studied further. Similarly, in terms of marital status, the majority of the respondents are single, accounting for 62.3% (86 respondents). Married individuals are 36.2% (50 respondents), and (1.4%) are divorced. The high percentage of single entrepreneurs indicate a higher risk tolerance within the ecosystem.

The educational profile of the respondents indicated in Table 2 above shows a highly qualified workforce, which is an opportunity for attracting better innovation financing. 62.3% of respondents hold a Bachelor's degree, and 29.7% possess a Master's degree or above. Combined, over 90% of the individuals in the startup ecosystem have university-level education. Other categories include Certificate/Diploma holders (5.8%), High School graduates (1.4%), and Primary school education (0.7%). Furthermore, the relatively high level of education among respondents suggests that they were capable of understanding existing financing mechanisms.

Software as a Service (SaaS) is the leading sector representing 42.8% of the startups regarding sector of tech startups shown in Table 2 above, the other respondents across E-commerce, Agri Tech, Edtech Manufacturing Technology, Fintech, Health Tech and Other sectors were distributed 15.9%, 13.0%, 8.7%, 7.2%, 4.3%, 2.2% and 5.8% respectively. This indicates that the study captured views from diverse sectors in which these startups

operate, with a strong lean toward software as a service based solutions.

4.2 Primary Challenges of Innovation Financing

Table 4 below shows the most significant challenge tech startups face is the limited access to debt financing, which impacts a substantial 68.8% of cases, making it the most frequently cited primary challenge. This is closely followed by difficulties in securing non-dilutive financing (56.5%), and equity financing (54.3%), which includes venture capital and angel investments. Over half of the respondents (52.9%) also identified regulatory barriers as a hindrance to funding, while 40.6% noted a lack of collaboration from stakeholders as a primary challenge. Here also, a significant knowledge gap exists as 42.0% of cases responded limited awareness of the different financing mechanisms availability.

Table 5: Primary Challenges of Innovation Financing

Primary Challenges	Responses		Percent of Cases
	N	Percent	
Limited access to debt financing (e.g., Loan)	95	21.6%	68.8%
Limited access to equity financing (e.g., Venture capital, angel investment)	75	17.0%	54.3%
Limited access to non-dilutive financing (e.g., grant, tax incentive, competition)	78	17.7%	56.5%
Regulatory barriers hindering access to funding	73	16.6%	52.9%
Limited collaboration from stakeholders	56	12.7%	40.6%
Limited Awareness in using different innovative financing mechanisms	58	13.2%	42.0%
Other	5	1.1%	3.6%
Total	**440**	**100.0%**	**318.8%**

4.3 Regulatory Burden

The respondents were also asked which regulatory burden affect them more specifically. Accordingly, Table 5 shows that government tax policies are perceived as the most significant regulatory burden, accounting for 37.8% of specific regulatory responses and affecting 71.0% of cases. Innovation and trade policies were also identified as major concerns, representing 27.4% and 19.3% of the responses respectively. The total percentage 187.7% which surpass 100% indicates that tech startups are typically affected by multiple regulatory categories simultaneously.

Table 6: Regulatory Burden

Government Tax and Regulations Affecting	Responses		Percent of Cases
	N	Percent	
Tax Policies	98	37.8%	71.0%
Innovation Policy	71	27.4%	51.4%
Environmental Regulations	31	12.0%	22.5%
Trade Policies	50	19.3%	36.2%
Other / General Administrative	9	3.5%	6.6%
Total	**259**	**100.0%**	**187.7%**

4.4 Collaboration among Stakeholders

According to the respondents' responses, although collaboration is common among startups, some still operate independently, which may reflect limited collaboration platforms or trust issues. The data in Table 6 below shows 64.5% (89 respondents) reported that they engage in collaboration while 35.5% (49 respondents) reported no collaboration. Only 34.8% of the total sample described their collaborations as either "Effective" (26.8%) or "Very Effective" (8.0%). This leaves a large portion of the population experiencing collaborations that are simply neutral (18.8%) or actively ineffective/very ineffective (10.8%).

Table 7: Collaboration and Financing Mechanism Frequencies

Category	Response/Type	Frequency	Percent	Valid Percent	Cumulative Percent
Collaboration	No	49	35.5	35.5	35.5
	Yes	89	64.5	64.5	100.0
	Total	**138**	**100.0**	**100.0**	
Collaboration Effectiveness	[Missing/No]	49	35.5	35.5	35.5
	Effective	37	26.8	26.8	62.3
	Ineffective	6	4.3	4.3	66.7
	Neutral	26	18.8	18.8	85.5
	Very Effective	11	8.0	8.0	93.5
	Very Ineffective	9	6.5	6.5	100.0
	Total	**138**	**100.0**	**100.0**	
Financing Mechanisms	Business Plan Competition	49	35.5	35.5	35.5
	Crowd Funding Platform	5	3.6	3.6	39.1
	Government Grant	15	10.9	10.9	50.0
	Loan	27	19.6	19.6	69.6
	Venture Capital and Angels	42	30.4	30.4	100.0
	Total	**138**	**100.0**	**100.0**	

4.5 Financing Mechanisms Used

As we can see from the Table 7 below the Business Plan Competitions are the most frequently used mechanism at 35.5%, followed closely by Venture Capital and Angel Investors Financing at 30.4%. Crowdfunding utilized by only 3.6% of respondents which shows the underdevelopment of the platform in the country. 19.6% of the survey respondent also indicated they are highly struggling to get traditional debt in order to solve their financing problem.

4.6 Strategies used to overcome financing challenges

The data in Table 8 below shows strategies used to overcome financing challenges which also reveals a culture of using own money. The most significant finding is the dominance of "Self" strategies, utilized by a substantial 71.7% of cases. This strongly indicates barriers in accessing formal funding sources is one of the primary challenges, innovation financing ecosystem is underdeveloped and external financiers are risk-averse. While 34.1% tech startups try to leverage Government strategies and 33.3% pursue Equity options, these figures are notably higher than the remaining 18.1% of Loan and 2.9% of Other strategies used to overcome the financing challenges. The cumulative total of 160.1% for "Percent

Table 8: Collaboration and Financing Mechanism Frequencies

Category	Response/Type	Frequency	Percent	Valid Percent	Cumulative Percent
Collaboration	No	49	35.5	35.5	35.5
	Yes	89	64.5	64.5	100.0
	Total	**138**	**100.0**	**100.0**	
Collaboration Effectiveness	[Missing/No]	49	35.5	35.5	35.5
	Effective	37	26.8	26.8	62.3
	Ineffective	6	4.3	4.3	66.7
	Neutral	26	18.8	18.8	85.5
	Very Effective	11	8.0	8.0	93.5
	Very Ineffective	9	6.5	6.5	100.0
	Total	**138**	**100.0**	**100.0**	
Financing Mechanisms	Business Plan Competition	49	35.5	35.5	35.5
	Crowd Funding Platform	5	3.6	3.6	39.1
	Government Grant	15	10.9	10.9	50.0
	Loan	27	19.6	19.6	69.6
	Venture Capital and Angels	42	30.4	30.4	100.0
	Total	**138**	**100.0**	**100.0**	

of Cases" suggests a varied survival approach, where the startups cannot rely on a single solution and must use fragmented resources across multiple channels.

Table 9: Strategies Used to Overcome Financing Challenges

Strategies Used to Overcome The Challenges	Responses		Percent of Cases
	N	Percent	
GOVERNMENT	47	21.3%	34.1%
SELF	99	44.8%	71.7%
EQUITY	46	20.8%	33.3%
LOAN	25	11.3%	18.1%
OTHER	4	1.8%	2.9%
Total	**221**	**100.0%**	**160.1%**

4.7 Chi-Square Test

Adeniran (2018) stated the Chi-Square distribution is a theoretical or mathematical distribution which has wide applicability in statistical analysis. This test has been widely used in entrepreneurship and innovation finance research to examine relationships between categorical variables. For instance, Narayan et al. (2019) applied chi-square tests and demonstrated that there is not enough evidence to suggest an association between level of development of startup and the stages of funding. Accordingly, to test whether there is a statistically significant association between debt used vs debt challenges, equity used vs equity challenges, and non-dilutive used vs non-dilutive challenges a chi-square test of independence was performed and Table 9 summarizes the result of the test.

All expected cell counts were greater than 5, indicating that the assumptions of the chi-square test were satisfied. Since all the p-value exceeds the standard threshold of 0.05 there is no statistically significant association exists between debt financing usage and debt financing challenges ($\chi^2 = 0.178$, $p = 0.673$), equity financing usage and equity

Table 10: Summary of Chi-Square Test between Financing Type Used vs. Financing Challenges

Metric	Debt Used vs. Debt Challenges	Equity Used vs. Equity Challenges	Non-Dilutive Used vs. Non-Dilutive Challenges
Pearson Chi-Square (χ^2)	0.178	0.288	0.098
Degrees of Freedom (df)	1	1	1
p-value	0.673	0.592	0.754

financing challenges ($\chi^2 = 0.288$, $p = 0.592$), as well as non-dilutive financing usage and non-dilutive financing challenges ($\chi^2 = 0.098$, $p = 0.754$).

4.8 Multinomial Logistic Regression Result

A multinomial logistic regression was performed to model the choice among three financing mechanisms: Debt Financing, Equity Financing, and Non-Dilutive Financing (the latter served as the reference category). The predictors were six dichotomous variables indicating whether the firm had previously used each financing type and whether it faced challenges in obtaining that type (1 = yes, 0 = no). Firms that had not used debt before (Debt_Used = 0) were less likely to choose debt over non-dilutive financing than firms with prior debt experience ($B = -1.259$, $SE = 0.556$, Wald $\chi^2(1) = 5.123$, $p = 0.024$). The odds ratio (Exp(B) = 0.284) indicates that the odds of selecting debt financing were 71.6% lower for non-users of debt compared to previous users (95% Confidence Interval [0.095, 0.845]). In simple terms, Startups without prior debt financing experience are less likely to select debt financing. All other predictors in the debt financing versus non-dilutive financing comparison were not statistically significant at the 5% significance level. These included Debt_Challenge ($p = 0.076$), Equity_Used ($p = 0.221$), Equity_Challenge ($p = 0.509$), NonDilutive_Used ($p = 0.071$), and NonDilutive_Challenge ($p = 0.589$).

Table 10 also shows a similar pattern for equity financing. Prior use of equity was the only significant predictor. Firms that had not used equity before (Equity_Used = 0) were substantially less likely to choose equity over non-dilutive financing ($B = -1.365$, $SE = 0.568$, Wald $\chi^2(1) = 5.773$, $p = 0.016$). The odds ratio (Exp(B) = 0.255) suggests a 74.5% reduction in the odds of choosing equity for firms without prior equity experience (95% Confidence Interval [0.084, 0.778]). No other variable reached statistical significance: Debt_Used ($p = 0.556$), Debt_Challenge ($p = 0.363$), Equity_Challenge ($p = 0.114$), NonDilutive_Used ($p = 0.727$), and NonDilutive_Challenge ($p = 0.925$).

Furthermore, the multinomial logistic regression results of the overall model were statistically significant ($\chi^2 = 27.590$, $df = 12$, $p = 0.006$) and showed that prior use of a financing type significantly increases the likelihood of choosing that same type, while perceived challenges do not have a significant effect.

4.9 Hypothesis Testing Results

H2a was partially supported. The results indicate that prior debt and equity financing usage significantly influence startups' financing mechanism choice, whereas prior non-dilutive financing usage does not show a statistically significant effect. H2b was not supported, as none of the financing challenge variables (debt, equity, and non-dilutive) significantly affect financing mechanism selection.

Table 11: Multinomial Logistic Regression Results

Financing Mechanism Choice		B	Std. Error	Wald	Sig.	Exp(B)	95% Confidence Interval	
							Lower Bound	Upper Bound
Debt Financing	Intercept	.658	.873	.568	.451			
	[Debt_Used=0]	-1.259	.556	5.123	.024	.284	.095	.845
	[Debt_Used=1]	0[b]						
	[Debt_Challenge=0]	-1.172	.660	3.156	.076	.310	.085	1.129
	[Debt_Challenge=1]	0[b]						
	[Equity_Used=0]	-.847	.692	1.497	.221	.429	.110	1.665
	[Equity_Used=1]	0[b]						
	[Equity_Challenge=0]	.637	.965	.436	.509	1.891	.285	12.533
	[Equity_Challenge=1]	0[b]						
	[NonDilutive_Used=0]	.891	.494	3.249	.071	2.438	.925	6.424
	[NonDilutive_Used=1]	0[b]						
	[NonDilutive_Challenge=0]	-.528	.978	.291	.589	.590	.087	4.008
	[NonDilutive_Challenge=1]	0[b]						
Equity Financing	Intercept	.997	.770	1.674	.196			
	[Debt_Used=0]	.346	.588	.346	.556	1.414	.446	4.480
	[Debt_Used=1]	0[b]						
	[Debt_Challenge=0]	.546	.600	.828	.363	1.727	.532	5.601
	[Debt_Challenge=1]	0[b]						
	[Equity_Used=0]	-1.365	.568	5.773	.016	.255	.084	.778
	[Equity_Used=1]	0[b]						
	[Equity_Challenge=0]	-1.249	.789	2.505	.114	.287	.061	1.347
	[Equity_Challenge=1]	0[b]						
	[NonDilutive_Used=0]	.145	.415	.122	.727	1.156	.513	2.604
	[NonDilutive_Used=1]	0[b]						
	[NonDilutive_Challenge=0]	-.066	.706	.009	.925	.936	.235	3.731
	[NonDilutive_Challenge=1]	0[b]						

Note. a. The reference category is: NonDilutive Financing.
b. This parameter is set to zero because it is redundant.

5 Discussion

The survey results show that tech startups in Ethiopia face several financing challenges at once. This is reflected by the high cumulative percentage (318.8%) which indicates that the majority of startups are struggling with multiple major obstacles simultaneously.

The demographic analysis indicates that the ecosystem is dominated by young and middle-aged entrepreneurs, particularly those between the ages of 26 and 40 years. This suggests that tech innovation-driven entrepreneurship in Ethiopia is largely being led by technologically adaptive individuals which is in line with Manyonyi and Shavdia (2024) a report which offers the broader narrative of how a young, tech-savvy populace is transforming the East African entrepreneurial landscape. The findings also revealed a substantial gender imbalance within the tech startup sector, where male respondents accounted for 88.4% of the participants while female respondents represented only 11.6%. This indicate the existence of structural and socio-economic barriers that limit women's participation in technology-based entrepreneurial activities. As evidence Pareek and Bagrecha (2018) mentioned women entrepreneurs face significant financial challenges due to investor perceptions that women-led businesses are riskier.

The dominance of male entrepreneurs in the sector could also influence access to innovation financing, as women-owned startups may face additional challenges such as limited professional networks, lower investor confidence, restricted access to collateral, and lower exposure to financial information and mentorship opportunities. Therefore,

the result implies that gender disparities remain an important concern in the innovation financing landscape and may require targeted policy and institutional support to improve inclusiveness.

The educational profile of respondents demonstrates that the Ethiopian tech startup ecosystem comprises an educated tech entrepreneur, with more than 90% of respondents having university-level education. This finding may indicate that lack of human capital is not the primary obstacle to innovation financing. The concentration of startups in the Software-as-a-Service (SaaS) sector also reflects the country's ongoing digital transformation and the relatively lower capital requirements of software-based ventures compared to hardware-intensive industries.

Another important finding of the study was the limited access to debt financing among startups. Many respondents indicated that obtaining loans from formal financial institutions remains difficult, mainly because startups often lack physical collateral and stable financial records. This finding is consistent with previous studies that describe startups as high-risk borrowers within traditional lending systems (Saleem & Atiq, 2023; A. Singh, 2024). The result may also suggest that existing lending practices are not well suited for innovation-driven businesses, particularly those relying more on knowledge and intangible assets than fixed property. Similar concerns were raised by Lee and Jung (2024) and Lambert and Deyganto (2025), who noted that weak credit evaluation systems and risk-averse banking practices continue to limit startup financing opportunities.

Beyond debt financing, another key challenge identified in this study was limited access to non-dilutive funding. This may be linked to the complexity of regulatory procedures, which can make it difficult for startups to secure such support (Cooper et al., 2022). In addition, Okunnuga et al. (2024) noted that many startups struggle to obtain additional funding needed to sustain operations and support expansion once government incentives come to an end. Similarly, Sulillari (2023) emphasized that startups are often required to clearly differentiate themselves and demonstrate strong competitiveness in order to attract non-dilutive financial support.

The other challenge is equity financing which shows the under development of such financing mechanism in Ethiopia. Previous study of Pallathadka (2022) states the investor's response towards the startup's ecosystem can be slow and tired sometimes. One possible reason could be as to Adwani (2020) they often fail to meet the unique needs of new and growing businesses which is also consistent with A. Singh (2024) that highlighted difficulty of getting money from venture capitalists and angel investors who are risk averse in unpredictable markets. As to Hussain (2024) the angel investing is not also without its challenges as they also asses the viability of start-ups, scrutinize business models, market potential, and the competency of the leadership team. This suggests that the absence of structured equity instruments in Ethiopian startups remains a binding constraint.

Regulatory barriers were also identified as one of constraints affecting startup financing. This is in line with Sukachova et al. (2025) who stated the idea of political instability and economy makes venture capital rare. Adwani (2020) also strengthened unclear or fragmented regulations can hinder the development of new funding mechanisms. Tax policy also emerged as the most significant burden which is similar to A. Singh (2024) that explicitly identifies tax and regulation as a primary financial burden for startups in emerging markets.

The study further revealed that although collaboration exists among stakeholders, its effectiveness remains limited. While a majority of respondents indicated that they engage in collaboration, only a relatively small proportion considered such collaboration effective or very effective. This may indicate weak networking systems among startups, investors, universities, government institutions, and incubators. In this regard Lange et al. (2024)

stated the importance of startup culture and ecosystem collaboration in facilitating access to startup capital.

The analysis of financing mechanisms utilization shows that Ethiopian tech startups utilize more business plan competitions than equity financing or traditional bank loans. This is in line with Lazopoulos (2025) that mentioned prize winnings from pitch competitions serve as a non-traditional, ad hoc funding route for entrepreneurs facing systemic barriers to institutional capital. As to Garg and Shivam (2017) the business Plan competition indicates whether a startup idea is feasible and has the potential to generate an adequate return on investment and similarly readiness of Investors such as (banks, venture capitals, and angels), considering the business plan is a primary criterion for evaluation.

On the other hand, the low utilization of crowdfunding platforms suggests that digital financing mechanisms are still underdeveloped in Ethiopia. This is supported by A. Singh (2024) by stating crowdfunding's presence is still fairly constrained in emerging markets.

The study also reveals that dominant strategy used to overcome financing challenges are self-financing. This heavy reliance on internal funds suggests either a lack of accessible external financing options or a deliberate preference for avoiding debt or external partners. This is in line with Lia Nurina and Napiajo (2026) which stated stronger internal funds significantly reduce the likelihood of external financing, while financing deficits increase the probability of using both debt and equity. Fred-Sawo et al. (2025) mentioned as this also strengthens the Pecking Order that states firms prefer internal financing to debt, and debt to equity, due to information asymmetry and potential loss of control. Contrary to this Garg and Shivam (2017) found majority of the entrepreneurs prefer venture capital round over any other round as it is the only chance of finding so many people willing to invest in their idea. Therefore, Policymakers can consider strengthening external financing options to reduce over-dependence on personal funds, which can limit long-term investment capacity.

The application of the chi-square test in this study resulted as there is no statistically significant association between the use of specific financing mechanisms and the challenges associated with them. The findings indicate that utilizing specific financing mechanisms are not significantly influenced by whether access to those mechanisms are perceived as challenging. In other words, the tech startups may continue using debt, equity, or non-dilutive financing despite experiencing associated constraints. According to Ioannidou et al. (2022), when organizations encounter strong financing problems, they tend to face a lack of financing access and slow growth potential. However, the above results show that startups could use strategies to cope with their financing problems rather than avoid financing mechanisms that are considered hard. The findings are consistent with prior empirical studies showing that financing challenges are widespread across startup ecosystems. For example, Du and Nguyen (2022) indicated that due to information asymmetry and limited financial credibility startups frequently face financing constraints regardless of financing type. Similarly, Adwani (2020) found that startups continue utilizing debt and equity financing despite high financing barriers because alternative funding opportunities remain limited in developing entrepreneurial ecosystems.

The result also supports the concept of the Pecking Order Theory we used in our theoretical review. According to this theory, firms adopt funding alternatives in the order of availability and necessity (Lia Nurina & Napiajo, 2026; Myers & Majluf, 1984). This means that despite the difficulties associated with accessing external finances, technology startups may resort to these funding sources since internal financing is insufficient for innovation. From a policy perspective, the findings suggest that increasing the amount of financing available to startups alone may not fully solve startup financing challenges. There is also a need to improve the overall financing environment. The finding in general indicates, tech startups who used grants or business plan competition may face limited funding size, one-time support, delays and continued funding gaps. On the other hand,

Startups who did not use them may face access barriers, competition and lack of information. The result also suggests that usage of specific financing option regardless of the difficulties involved in Ethiopian startups ecosystem may continue due to the absence of viable alternative financing mechanisms.

On the other hand, multinomial logistic regression was also done to see why startups choose certain types of funding. The findings revealed financing utilization variables have a stronger influence on financing mechanism choice than perceived financing challenges. The results offer two main insights. The most robust finding is that past use of a financing instrument strongly predicts its future selection over nondilutive alternatives. Firms that had previously used debt were about 3.5 times more likely (1 / 0.284) to choose debt again rather than grants or subsidies. The same pattern holds for equity: prior users were nearly four times more likely to opt for equity over nondilutive financing.

This result aligns with the pecking order theory (Myers & Majluf, 1984), which suggests that managers prefer financing sources they are familiar with and that entail lower information costs. Once a firm has established a relationship with debt providers or equity investors, the transaction costs and informational asymmetries decrease, making that channel more attractive than unfamiliar non-dilutive options. Moreover, Herrmann et al. (2024) found that nascent ventures follow a "follow-the-money" process where initial financing sources shape subsequent choices, creating a persistent trajectory. Our findings extend this idea by showing that even when non-dilutive financing (e.g., grants) is available and carries no ownership cost, firms still gravitate toward what they already know.

None of the challenge variables (debt challenge, equity challenge, non-dilutive challenge) significantly affected the financing decision. This is surprising, as one might expect that firms facing difficulties obtaining a certain type of financing would switch to another. However, the non-significant results may reflect a few possibilities:

- The binary "challenge" variable (0/1) might not capture the severity or persistence of difficulties.
- Selection effect: Firms that have never used a financing type may not be aware of potential challenges, or they may avoid that type precisely because they anticipate challenges – a tendency that would already be reflected in the "used" variable.
- Non-dilutive financing (grants, subsidies) is often scarce, competitive, or subject to specific eligibility criteria. Firms may perceive it as less reliable, so they default to debt or equity regardless of challenges with those instruments. Kaur and Singh (2024) investigated MSME entrepreneurs and noted that hesitancy toward new financing alternatives often overrides the effect of constraints – a behavioral inertia that explains why challenges alone do not alter choices. Furthermore, the reference category itself – non-dilutive financing – may be perceived as less reliable or more time-consuming to obtain, even when no explicit "challenge" is reported. Grants and subsidies often involve competitive applications, lengthy reviews, and compliance requirements that are not captured by a simple yes/no challenge indicator.

For practitioners and policymakers, the results imply that building initial experience with a financing type is critical. Incubators or development banks that wish to promote non-dilutive financing may need to facilitate "first time" usage, because without prior exposure, firms are unlikely to switch from familiar debt/equity paths.

Limitations of this study include the dichotomous nature of the predictors, the relatively small sample (reflected in wide confidence intervals for some odds ratios), and the lack of control for firm size, industry, or profitability. Future research should use continuous measures of challenge severity and longitudinal designs to establish causality.

In conclusion, the startup firms tend to keep using the same type of financing they used before or it will likely use it again. Challenges alone do not influence this inertia. The findings support a hybrid view of capital structure one that blends pecking order behavior with path dependence.

5.1 Opportunities of Innovation Financing in Ethiopia

The demographic and sectoral characteristics of the sampled startups revealed opportunities. The concentration of startups in Software as a Service sectors generally require lower fixed investment and allow startups to generate revenue faster than manufacturing-oriented businesses. This finding aligns with S. Singh and Subrahmanya (2021), who argued that service-based technology startups are more adaptable and attractive to investors because of their relatively lower operational risk. The (11.6%) of female participation was found to be relatively low which indicates an opportunity for expanding financial inclusion and entrepreneurial support initiatives. Previous studies suggest that gender diversity can contribute positively to startup performance when adequate support mechanisms are available.

Our study further revealed 42% of tech startups owners have lack of awareness on new ways of raising finance. Similar to such problem A. Singh (2024) reported one of the biggest challenges that many startup founders face especially in emerging markets is knowledge of funding opportunities. However, this tech startups lack of knowledge creates an opportunity of creating financial literacy for founders. Previous studies support studies like A. Singh (2024) reported enlarging the financial literacy of existing businessmen and enhancing the credit information infrastructure can very much enhance financing awareness. This gives other tech startups to focus on improving their financial knowledge by spending time on learning how to use alternative funding options.

In our study the 34.8% response which indicate collaborations effectiveness creates an opportunity for startups to build high-impact strategic alliances with stakeholders. According to Jean (2024) Collaborating with established companies, suppliers, or service providers can reduce costs and provide access to expertise, infrastructure, or distribution channels. Partnerships also help share risks and create synergies for mutual growth.

The other challenge identified in the current study and reported by 52.9% of respondents is regulatory barriers. This is in line with Tshehla and Mangquku (2025) who highlighted that current administrative requirements are protracted, ambiguous, and poorly articulated leading many to quit fundraising. The existence of such problem may help the government to review its policy and it implies if tech startups obey the rules and use available government support systems properly they may find it easier to get finance.

Furthermore, using own money or bootstrapping strategies were utilized by 71.7% tech startups. It is in line with Gerba and Viswanadham (2016) which revealed own personal saving is most frequently used sources to raise startup capital for sample small business enterprises in Ethiopia. In contrast A. Singh (2024) argue as most start-up use friends and family funding which is mostly limited and is not appropriate for expansion. In our context, the contradiction indicates tech startups can adopt flexible financing strategy to use both internal and external funding source that balance business control, sustainability and growth opportunity to their objectives.

Our study also revealed that Business Plan Competitions are currently the most used mechanism (35.5%). On the other hand, 10.9% respondent reported government grant utilization which may indicates the underutilization or complexity of the scheme. As to A. Singh (2024) complex regulatory systems, high costs of compliance and unfriendly tax policies burden operations and discourage investment. Therefore, opportunity to look

for underutilized government grants or tax incentives can be utilized by startups here too. Cooper et al. (2022) supported the usage of government grants by stating grants reduce financial risk through easing liquidity constraints and lowering dependence on external debt or equity financing. Hence, better utilization of government grant and tax incentives may provide tech startups in Ethiopia with additional financial resource. This in turn implies government shall develop more accessible and transparent system. Furthermore, Ethiopia has approved startup proclamation No. 1396/2025. This newly approved proclamation of startups main purpose is to boost economic growth by offering strong legal protections, financial incentives, easier and faster administrative processes in which tech startups can also utilize it as a good opportunity to solve their financial scarcity.

Finally, as Adwani (2020) suggested Innovative models like peer-to-peer lending, revenue-based financing, and venture debt have emerged as viable alternatives. So, tech startups in Ethiopia can utilize various alternative source of financing to expand opportunities derived from identified problem in this study. Digital tools like fintech platforms and blockchain has also revolutionized the way startups engage with investors. Though context matters in determining how well financial systems grow, the success of new ways of financing and financial innovations depends on how well they fit into the system where startups operate, especially in less developed countries like Ethiopia as these opportunities do not work the same everywhere. As to Gerba and Viswanadham (2016) noted using Iquib and Idir which are traditional informal financing options can be considered as sources of finance to solve the financial burden of tech startups in Ethiopia.

6 Conclusion

This study explored challenges and opportunities related to innovation financing and examined how financing usage and financing challenges influence the financing mechanism choices of tech startups. The findings showed that limited access to debt, equity, financing, non-dilutive financing, tax related regulatory barriers, financial literacy gap and limited collaboration with stakeholders remain some of the biggest challenges facing tech startups in Ethiopia. At the same time, the study identified important opportunities for improving the innovation financing environment, particularly through strengthening financial literacy, encouraging stronger collaboration among stakeholders, and taking advantage of Ethiopia's 2025 Startup Proclamation to reduce regulatory barriers and improve access to finance.

The chi-square results showed that there was no statistically significant association between the financing mechanism usage and financing challenges. On the other hand, the multinomial logistic regression findings showed prior use of a financing type (debt or equity) significantly increases the likelihood of choosing that same type over non-dilutive financing, while perceived challenges do not have a significant effect.

Moreover, majority of tech-startups used their own money to overcome financing challenges they faced. Previous studies show in developing countries the problem of financing constraints for tech startups can be addressed through a combination of alternative financing mechanisms and stronger government policy support which in turn collectively reduce dependence on a single financing mechanism selection and enhance access to innovation financing. The findings in general indicate the importance of coordinated efforts among stakeholders to strengthen the innovation financing ecosystem in Ethiopia.

Our paper add value to the subject area already out there, but we have to admit some limitation. First, there could be response overlap since there are multiple response questions in which respondent can answer more than one answer. Second, the findings rely entirely on self-reported responses from startup founders, which may introduce recall

bias where participants might overstate successes or underreport challenges. Third, the sample of 138 startups, while adequate for analysis, may not fully represent the entire Ethiopian tech ecosystem or those that could not be reached due to unavailability of their contact address and formal registration. Fourth, the gender imbalance of the respondents shows 88.4% of the participants were male. This may affect the generalizability of the findings to female startup founders and entrepreneurs. Finally, because this study focuses exclusively on Ethiopia, the findings may not be directly generalizable to other African countries with different policy environments, investor landscapes, or levels of ecosystem maturity. Therefore, readers should interpret the results with these caveats in mind. More research using in-depth interviews could shed light on the deeper reasons behind the quantitative patterns found here. Additionally, 88.4% of respondents in this study were male, future studies can make a deliberate effort to include more women-led startups to understand whether their financing challenges, opportunities, and mechanism selection differ significantly from their male counterparts.

Funding

No external funding was received.

Declaration

Data availability

All data necessary for reproducing the results of this study will be provided upon request.

Ethical Approval and Informed Consent

All procedures were performed with sufficient understanding and within appropriate ethical standards as per the guidelines of the institutional review board and with the Helsinki Declaration of 1964 and its later amendments. The list of registered tech startups has been provided by the Ministry of Innovation and Technology (MinT) by presenting data gathering authorization letter written by the university dated September 2, 2024. Data collection was conducted between April 11 and July 21, 2025. Ethical approval was obtained retrospectively from the Institutional Review Board on February 13, 2026, due to the minimal-risk nature of the study. The IRB reviewed and approved the use of previously collected data, confirming that the study met ethical standards. All data were anonymized, and the Institutional Review Board (IRB) categorized the study as the non-interventional trial, which included an anonymous online survey. The Ethical Review Board of Adama Science and Technology University's (ASTU) College of Humanities and Social Science approved the study, with Approval No. CoHSS/RTTC/34/2026.

The study team and the corresponding author collected the data via google form. To acquire informed consent from each participant a two-step procedure was used. An initial oral briefing was given over the phone to confirm participant eligibility and outline the goals of the study. A digital link to the survey questionnaire was also sent to respondents via email or mobile device after this verbal agreement. Submission and voluntary completion of the digital survey instrument was also served as confirmation of the second step of consent. The goal of the study and data confidentiality described in survey's first page. By opting not to finish the form or by shutting off the interface before the final submission, participants exercised their right to withdraw. The final analysis included data from individuals who actively clicked "Submit" ($n = 138$).

Conflict of Interests

The authors declare no conflicts of interest.

Declaration of interests' statement

The author declare no competing interests.

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