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PRODUCT DEVELOPMENT IN INNOVATIVE SMES FOLLOWING CONTEMPORARY FINANCING: CHANGES IN DEVELOPMENT STAGE AND REVENUE

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Abstract. *This study examines changes in product-development stages among innovative small and medium-sized enterprises (SMEs) following contemporary financing and evaluates whether development-stage advancement is associated with revenue growth. Data were collected in 2025 through an electronic questionnaire. The final sample comprised 57 innovative SMEs from 11 European countries that had received grants, business angel investment, venture capital, crowdfunding, or a combination of these financing models. Development stage and revenue category were observed before financing and during the first three post-financing years. The Friedman test revealed a statistically significant difference in development stage across the four observation points ($\chi^2(3) = 58.12, p < 0.001$), with a moderate effect size (Kendall's $W = 0.34$). Following a slight decline in the first year, the mean development-stage score increased substantially in the second and third years. Although 77.8% of firms that advanced to a higher development stage also reported revenue growth, the association between development-stage advancement and revenue-category change was weak and statistically non-significant (Spearman's $\rho = 0.185, p = 0.169$). The findings indicate a delayed post-financing pattern in product development, while development-stage advancement alone does not sufficiently explain revenue growth.*

Key words: *Product development; Innovative SMEs; Contemporary financing; Development stages; Revenue growth*

1. INTRODUCTION

Product development is a central mechanism through which small and medium-sized enterprises identify market opportunities, transform technical knowledge into customer value and create the conditions for sustainable growth. In engineering-oriented firms, this

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process may involve concept design, prototyping, testing, process preparation, certification and the transition from a prototype to repeatable production. These activities are resource-intensive and expose SMEs to technical, market and organisational uncertainty. Firms that develop products rapidly and align them with customer needs can strengthen their competitive position, but speed alone is insufficient when development routines, market validation and commercial capabilities are weak [1, 2].

For innovative SMEs, product development is not limited to a technical sequence. It is also an organisational capability that connects market research, knowledge management, cross-functional coordination, resource allocation and commercial decision-making. Creativity and novelty do not automatically lead to market success. Firms also need structured procedures for testing assumptions, documenting product requirements, gathering user feedback and preparing scalable delivery or production systems. Knowledge acquisition and knowledge sharing can therefore improve both the efficiency and effectiveness of new product development.

A persistent constraint is access to suitable financing. Limited internal resources can prevent entrepreneurs from completing prototypes, validating demand, acquiring equipment or specialised expertise, protecting intellectual property and entering formal distribution channels [3]. Contemporary financing models including grants, business angels, venture capital and crowdfunding may address part of this constraint. Their contribution may extend beyond capital by providing mentoring, external knowledge, credibility, networks and market intelligence. The combination of financial and non-financial support can be particularly important when a firm moves from product concept to validation and commercialisation [4, 5].

Despite extensive research on access to entrepreneurial finance, the post-investment period remains comparatively underexplored. Existing studies often examine financing decisions, investment selection or immediate survival, whereas fewer studies follow how innovative firms move through development stages during several years after financing. It is also unclear whether advancement from ideation and concept development towards validation, scaling and established operations is accompanied by an upward change in revenue performance.

Accordingly, the aim of this study is to examine how innovative SMEs progress through product-related development stages during the three years following the receipt of contemporary financing and whether such progression is associated with changes in revenue category. Product development is investigated through the broader development trajectory of the firm, from ideation and concept development to market validation, scaling and established commercial operations. This operationalization does not represent a direct measure of engineering performance; rather, it captures the organisational and commercial pathway through which an innovative product moves towards the market.

Recent evidence from innovative SMEs in European Widening Countries confirms that a firm's initial revenue position and product-development stage are relevant determinants of its post-investment performance. Đorđević et al. [6] found that pre-investment revenue was the dominant predictor of subsequent revenue growth, while development stage also contributed to explaining differences in post-investment outcomes. These findings indicate that external financing does not generate uniform effects across firms, as its contribution depends partly on the company's initial commercial position and its progress in transforming an idea into a market-ready product.

This study makes three contributions. First, it examines product-development maturity across four observation points rather than assessing financing as an isolated event. Second, it distinguishes between development-stage advancement and revenue-category growth, thereby examining whether technical and commercial progress are accompanied by measurable financial improvement. Third, it complements previous analyses of the same sample by examining within-firm changes across four retrospectively reported observation points and their association with revenue change.

2. THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

2.1. Product development as a driver of SME growth

Business growth is a multidimensional concept that may be reflected in cash flow, profit, sales, employment, customer numbers and market share. No single indicator captures all aspects of new-venture growth, although sales, employment and market share are among the most frequently applied measures [7]. In the present study, revenue is used as the primary indicator of business growth because it directly reflects the firm's ability to transform product-development progress into measurable commercial outcomes. Although employment growth, customer acquisition and business-model changes represent relevant dimensions of organisational development, they are not examined in this study. The analysis therefore focuses exclusively on changes in revenue categories as an indicator of the commercial performance of innovative SMEs.

Product development connects these dimensions. A new product can support revenue growth only if the firm can identify customer needs, formulate a convincing value proposition, allocate resources and manage the process from idea generation to launch [8]. Firms may therefore progress through a sequence of product-related stages: ideation, concepting, commitment of resources, validation, scaling and establishment of stable commercial operations. Although these stages describe broader firm development, they also reflect the movement of an innovative offering from an initial idea towards repeatable market delivery.

The transition is rarely linear. Validation may lead to product redesign, a revised value proposition or changes in the business model. Similarly, scaling requires more than demand: it may require production capacity, supply-chain coordination, quality assurance and organisational routines. Product development should therefore be viewed as an iterative capability embedded within the wider development of the SME.

To clarify this operational link, Figure 1 aligns the conventional new product development activities with the six firm-level development stages applied in this study. The alignment is conceptual rather than a direct equivalence: the upper sequence captures organisational and commercial maturity, while the lower sequence identifies the product-development activities that typically become dominant as an offering moves towards the market.

2.2 Contemporary financing and product development

Public startup grants represent an important innovation-policy instrument for supporting technology-oriented and knowledge-based ventures. Their contribution

extends beyond the provision of financial resources because grant programmes may also facilitate product development, business planning, networking and access to subsequent external financing. Evidence from the German EXIST Business Startup Grant indicates that public support can contribute substantially to the development of startup products and business plans, while producing moderate improvements in networking and the acquisition of external funding. Smaller improvements were also identified in the capabilities of founding teams. These findings suggest that grant financing can help innovative startups progress through early product-development stages and strengthen the conditions for their subsequent commercial and economic success [9].

Business angels and venture capital investors may support product development not only through capital provision but also by facilitating access to external knowledge, strategic partners and international networks. Evidence from innovative SMEs indicates that investor involvement can stimulate open innovation, strengthen organisational agility and improve international competitiveness. These non-financial contributions may help firms acquire the market and technological knowledge required to refine their products, identify international opportunities and adapt their offerings to the requirements of foreign customers. Therefore, external investor support can be particularly important during the transition from product validation to scaling [10].

Contemporary financing instruments do not contribute equally to the development of innovative SMEs. Previous research conducted among innovative firms in European Widening countries found that financing mechanisms significantly contributed to business improvement, with grants and venture capital producing the strongest effects. Financing was also frequently accompanied by business-model adaptation, indicating that external capital may stimulate not only financial development but also strategic and organisational changes within recipient firms [11]. Such adaptations can be particularly important during product development, as firms may need to revise their value propositions, target markets, key activities and resource configurations before progressing from product validation to commercial scaling.

Firm-level stages used in this study

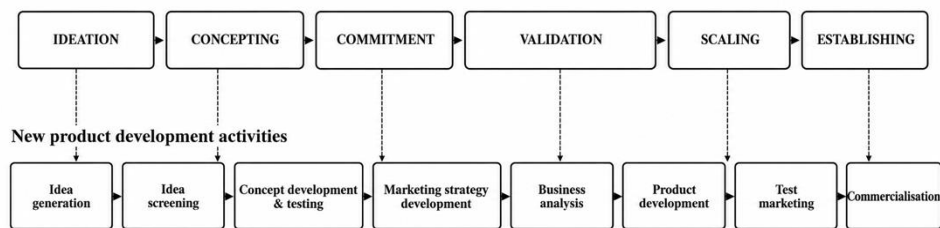


Fig. 1 Conceptual alignment of new product development activities and firm development stages. Source: Authors' adaptation based on [12]

2.3 Research hypothesis

The firm's position before financing, including its development stage, sector, size and previous financing experience, influences access to different sources of capital [13]. Early-stage firms often depend on grants, business angels, venture capital or crowdfunding because uncertainty and limited collateral restrict access to conventional

debt. These models differ in selection criteria, governance and non-financial support, but all can provide resources needed to advance product development.

Grants can reduce technological and market risk without immediate ownership dilution, while business angels and venture capital investors may provide strategic guidance, networks and monitoring. Crowdfunding can combine resource acquisition with early market feedback and public validation. Financing may therefore enable technical development, product testing and initial market entry, but its value depends on how effectively the recipient firm transforms the acquired resources and knowledge into development capabilities [14–16].

The combination of financing models may further reduce the risks faced by innovative firms and support progressive growth [5]. Nevertheless, the post-investment contribution may not be immediate. Financing can trigger recruitment, experimentation, formalisation and strategic reorientation. These activities may temporarily slow observable progress before enabling subsequent validation and scaling.

Advancement through development stages represents a qualitative change in organisational and commercial maturity. Moving from conceiving to validation indicates that the firm has progressed from defining an offering to testing it with the market. Moving towards scaling and establishment suggests that the firm has developed more repeatable processes and a more stable market position. These transitions should eventually be reflected in quantitative outcomes such as customer acquisition and revenue, although the timing of the relationship may differ across firms and financing models.

Prior research identifies revenue as an important indicator of the growth and commercial performance of innovative firms [7, 17]. Revenue reflects the firm's ability to transform product-development activities and market validation into measurable commercial outcomes. Although firm development can also be assessed through employment, customer growth and business-model adaptation, these dimensions are not examined in the present study. Accordingly, the analysis focuses on whether advancement through product-related development stages is associated with an upward change in revenue category.

H1: Innovative SMEs significantly advance through product development stages within three years after receiving contemporary financing.

H2: Advancement through product development stages is positively associated with revenue growth in innovative SMEs.

3. METHODOLOGY

This study employed a retrospective multi-period research design. Data were collected in 2025 through an electronic questionnaire in which respondents reported the development stage and revenue category of their enterprises before financing and during each of the first three post-financing years.

A total of 81 responses were collected. The final analytical sample consisted of 57 innovative SMEs that had received at least one of the examined financing models: grants, business angel investment, venture capital or crowdfunding. Twenty-four enterprises were excluded because they had not received any of these forms of financing. To enable

the observation of three complete post-financing years, the selected financing event had to occur no later than 2022.

Table 1 presents the distribution of the analysed SMEs by financing model. Grants were the most frequent source of financing: 29 firms (50.9%) relied exclusively on grants, while 46 firms (80.7%) received a grant either alone or in combination with other models. Business angel investment was received by 19 firms (33.3%), venture capital by 13 firms (22.8%) and crowdfunding by 2 firms (3.5%). In total, 20 firms (35.1%) combined two or more financing models.

Table 1. Distribution of the analysed SMEs by financing model (N = 57)

Financing model	n	%
Grant only	29	50.9
Grant + venture capital	7	12.3
Grant + business angel	7	12.3
Business angel only	6	10.5
Business angel + venture capital	2	3.5
Venture capital only	2	3.5
Grant + business angel + venture capital	2	3.5
Grant + business angel + crowdfunding	1	1.8
Business angel + crowdfunding	1	1.8
Total	57	100.0

Development was observed at four time points: immediately before the most significant financing event and in the first, second and third years after financing. Development stage was measured on an ordered six-category scale: 1 = ideation, 2 = conceiving, 3 = commitment, 4 = validation, 5 = scaling and 6 = establishing. The scale represents the broader product-related development pathway of an innovative firm. It should not be interpreted as a direct measure of product quality, engineering novelty or development-cycle efficiency.

The six-stage classification was used as an ordinal proxy for the product-development maturity of the enterprise. Progression from ideation and conceiving towards validation, scaling and establishment reflects the gradual transformation of an innovative idea into a tested, market-ready and commercially repeatable offering.

Annual revenue was measured through seven ordered categories: pre-revenue, below EUR 50,000, EUR 50,000–100,000, EUR 100,000–250,000, EUR 250,000–500,000, EUR 500,000–1,000,000 and above EUR 1,000,000. For H2, stage advancement is defined as the third-year stage score minus the pre-financing stage score, while revenue change is defined as the third-year revenue-category score minus the pre-financing revenue-category score.

Frequencies, percentages and graphical displays were used to describe the sample and the observed variables. Because the principal variables were ordinal and measured repeatedly, non-parametric procedures were selected. H1 was tested using the Friedman test across the four observation points. Kendall's W was calculated as an effect-size measure.

The dataset employed in this study has previously been used to investigate post-investment performance and the effects of financing models on innovative SMEs [6, 11].

Study [6] applied a decision-tree approach to identify predictors of post-investment revenue performance, while study [11] examined how individual financing models contributed to business improvement and business-model adaptation. The following analyses are unique to the present paper: the within-firm comparison of product-related development stages across four observation points (Friedman test and Kendall's W) and the association between development-stage advancement and revenue-category change (Spearman's correlation and Fisher's exact test).

Spearman's rank correlation coefficient (ρ) indicates the direction and strength of the monotonic association between the two variables, with values ranging from -1 to $+1$. Statistical significance was assessed using the p-value, with $p < 0.05$ considered statistically significant.

Kendall's W ranges from 0 to 1, with higher values indicating a stronger overall effect across the repeated measurements.

To test H2, two change scores were calculated for each enterprise. Development-stage advancement was measured as the difference between the development-stage category in the third post-financing year and the corresponding category before financing. Revenue change was calculated as the difference between the revenue category in the third post-financing year and the pre-financing revenue category. Spearman's rank correlation was used to examine the association between these two changes. In addition, firms were descriptively classified according to whether they advanced to a higher development stage and whether they moved to a higher revenue category. Fisher's exact test was used to compare the proportion of firms reporting revenue growth between enterprises that advanced and those that did not advance through development stages. Statistical calculations were performed using Python-based statistical procedures

4. RESULTS

4.1. Descriptive characteristics before financing

Before the most significant financing event, scaling was the most frequently reported development stage (26.4%), followed by validation (22.8%), commitment (21.1%), conceiving (19.3%), ideation (8.8%) and establishing (1.8%). Thus, the sample was concentrated in the middle development stages, where firms had moved beyond an initial idea but still required resources for validation, production or service preparation, market entry and expansion.

The revenue distribution presents a complementary view. More than one third of firms (35.1%) were pre-revenue, while 26.3% reported annual revenue below EUR 50,000. A further 8.8% reported EUR 50,000–100,000, 15.8% reported EUR 100,000–250,000, 8.8% reported EUR 250,000–500,000, 1.8% reported EUR 500,000–1,000,000 and 3.5% reported more than EUR 1,000,000. The coexistence of middle-stage development and low revenue is not contradictory: a firm may be validating or preparing to scale a product before commercial revenue becomes substantial.

4.2. Post-financing changes in development stage: H1

The mean development-stage score was 3.44 before financing and decreased slightly to 3.26 in the first post-financing year. It subsequently increased to 3.93 in the second

year and 4.26 in the third year. The pattern indicates an initial adjustment period followed by movement towards validation, scaling and established commercial operations, as shown in Fig. 2.

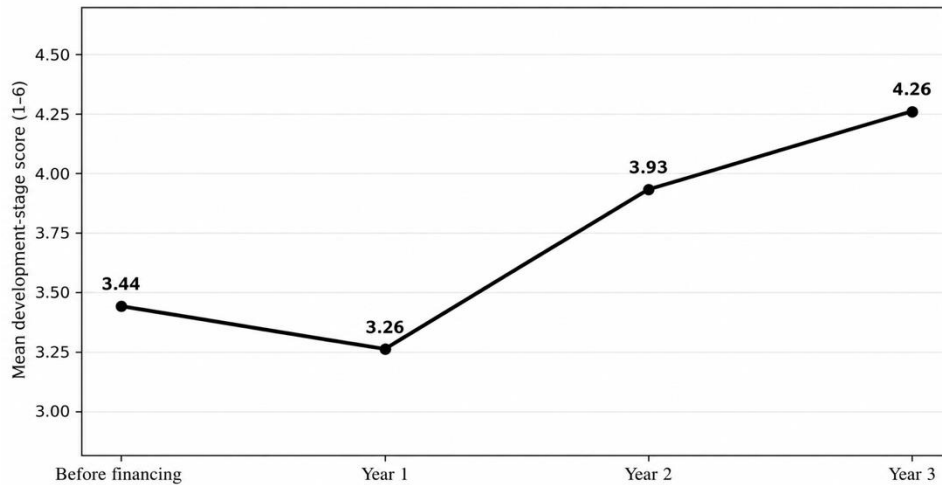


Fig. 2 Mean product-related development stage before and after financing.

The Friedman test identified a statistically significant difference across the four observation points, $\chi^2(3) = 58.12$, $p < 0.001$. Kendall's W was 0.34, indicating a moderate overall effect. This result indicates an overall change in development stage over the observation period, which is consistent with H1. Because the Friedman test is an omnibus test, it does not identify which observation points differ from one another; the result is therefore interpreted as evidence of an overall post-financing change rather than of significant advancement between specific periods. The pattern of mean scores suggests that this change was driven mainly by the second and third post-financing years.

4.3. Association between development-stage advancement and revenue change: H2

To examine H2, changes in product-development stage and revenue category were calculated for each of the 57 innovative SMEs by comparing the pre-financing period with the third year after financing. Of the 57 firms, 36 (63.2%) advanced to a higher product-development stage, while 40 (70.2%) moved to a higher revenue category. Among the firms that advanced through product-development stages, 28 (77.8%) also reported revenue growth.

Spearman's rank correlation revealed a weak positive association between advancement through product-development stages and upward change in revenue category ($\rho = 0.185$, $p = 0.169$, $N = 57$). Although the direction of the relationship was consistent with the hypothesis, the association was not statistically significant. H2 was not statistically supported, although the observed association was positive and descriptively consistent with the proposed relationship. The descriptive results

nevertheless indicate that advancement through product-development stages was frequently accompanied by revenue growth, but the observed relationship cannot be generalised beyond the analysed sample.

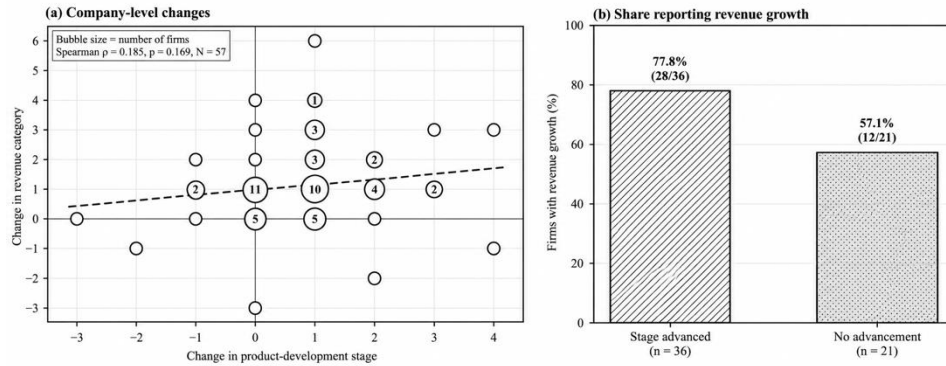


Fig. 3 Relationship between advancement through product-development stages and revenue-category growth from the pre-financing period to the third post-financing year

Fig. 3 illustrates the relationship between advancement through product-development stages and revenue growth among the analysed innovative SMEs. Panel (a) presents company-level changes from the pre-financing period to the third year after financing. Positive values indicate advancement to a higher product-development stage or movement to a higher revenue category, while negative values indicate regression. Bubble size represents the number of companies with the same combination of changes. The upward trend line suggests a weak positive relationship between the two variables. However, Spearman's correlation was not statistically significant ($\rho = 0.185$, $p = 0.169$, $N = 57$).

Panel (b) provides a descriptive comparison between companies that advanced through product-development stages and those that did not. Revenue growth was recorded in 77.8% of the companies that advanced to a higher stage, compared with 57.1% of companies without development-stage advancement. Although this difference indicates a positive descriptive pattern, Fisher's exact test showed that it was not statistically significant ($p = 0.136$). Therefore, the findings indicate that product-development advancement was frequently accompanied by revenue growth, but they do not provide sufficient statistical evidence to support H2.

Table 2 summarises the statistical results and decisions concerning the proposed hypotheses. H1 was supported at the omnibus level, as development stages differed significantly across the four observation points, with the mean stage score increasing from 3.44 before financing to 4.26 in the third post-financing year. By contrast, H2 was not statistically supported. Although the association between development-stage advancement and revenue-category change was positive, its magnitude was weak and it did not reach statistical significance.

Table 2. Summary of hypothesis-testing results

Hypothesis	Statistical result	Decision
H1	Friedman $\chi^2(3) = 58.12$, $p < 0.001$; $W = 0.34$	Supported (omnibus level)
H2	Spearman $\rho = 0.185$, $p = 0.169$, $N = 57$	Not supported

The findings therefore indicate significant development-stage changes during the post-financing period, whereas the evidence was insufficient to establish a statistically significant relationship between development-stage advancement and revenue-category growth.

5. DISCUSSION

5.1. Development-stage changes after financing

The results show a statistically significant change in the product-related development stage of innovative SMEs across the four observed periods. The initial decline from 3.44 to 3.26 suggests that the first year after financing should not automatically be interpreted as immediate acceleration. Financing may initiate a period of organisational adjustment in which firms recruit employees, revise the product concept, acquire equipment, test prototypes, formalise processes or reconsider the value proposition. Such activities can temporarily return a firm to an earlier development logic even when they strengthen its longer-term prospects.

The subsequent increase in the second and third years is consistent with the view that contemporary financing provides resources that help firms move from concept development and commitment towards validation and scaling. This interpretation aligns with research emphasising the role of financing in reducing early-stage constraints and supporting survival and product development [3, 14]. It also supports Politis's [4] argument that the post-investment phase deserves greater attention because investor value is not limited to the transfer of capital.

The moderate effect size indicates meaningful development over time while also suggesting substantial heterogeneity. Firms differ in starting stage, financing model, country, sector and internal capability. Capital can enable progress, but it does not replace product-market fit, knowledge management or execution. The results should therefore be interpreted as evidence of a positive post-financing trajectory, not as proof that financing alone caused the observed advancement.

These findings complement the results of Đorđević et al [6], who analysed the same sample using a decision-tree approach. That study identified pre-investment revenue as the dominant predictor of post-investment revenue performance, while development stage had a secondary predictive role. The present analysis provides a complementary within-firm perspective, showing that development maturity and revenue level are related, but that advancement through development stages alone does not sufficiently explain changes in revenue categories.

5.2. Product-Development Advancement and Revenue Growth

The results indicate a positive, but statistically non-significant, relationship between advancement through product-development stages and revenue growth. Revenue growth was observed in 77.8% of firms that advanced to a higher product-development stage, compared with 57.1% of firms that did not demonstrate such advancement. This descriptive difference suggests that progression from ideation and concept development towards validation, scaling and commercialisation is frequently accompanied by improved revenue performance.

Nevertheless, Spearman's correlation between change in product-development stage and change in revenue category was weak and statistically non-significant ($\rho = 0.185$, $p = 0.169$). Fisher's exact test also showed that the difference in the proportion of firms reporting revenue growth was not statistically significant ($p = 0.136$). Therefore, H2 was not statistically supported, although the direction of the relationship was consistent with the theoretical expectation.

One possible explanation is that product-development advancement does not immediately translate into revenue growth. Activities such as concept refinement, prototype development, testing, certification, production preparation and market validation require substantial resources and may initially increase costs without generating immediate commercial returns. Revenue effects may become visible only after the product enters the market and the firm develops sufficient production, distribution and customer-acquisition capacity. Consequently, the three-year observation period may not fully capture the delayed commercial effects of product development, particularly among firms that received financing in the earliest development stages.

The weak relationship may also reflect the heterogeneity of the analysed firms. The sample includes companies from different countries, industries, development stages and financing models. A transition from ideation to validation does not have the same commercial meaning as a transition from validation to scaling. Similarly, grants, business angel investment, venture capital and crowdfunding provide different combinations of capital, knowledge, monitoring and market access. These differences may influence both the speed of product development and the time required for advancement to be reflected in revenue.

An additional finding supports the broader theoretical relationship between product development and commercial performance. In the third post-financing year, firms in more advanced product-development stages generally reported higher revenue categories ($\rho = 0.523$, $p < 0.001$). However, a similar association was already present before financing. This indicates that development maturity and revenue level are related, but it does not prove that advancement through development stages directly caused revenue growth during the observed period.

Overall, the results suggest that product-development advancement creates conditions that may support revenue growth, but development progress alone is insufficient to explain changes in commercial performance. Revenue outcomes may also depend on product-market fit, market demand, management capabilities, production capacity, competitive conditions and the type of financial and non-financial support received. Future studies should use larger and more homogeneous samples, distinguish between individual financing models and include direct indicators such as new-product sales, time to market, prototype completion and commercialisation milestones.

5.3. Theoretical and practical implications

The study contributes to product-development and entrepreneurial-finance literature by examining financing through a multi-year post-investment lens. Rather than treating financing as a single event, the findings indicate a developmental sequence in which short-term reorganisation may precede later progress. The distinction is relevant because evaluations conducted only in the first post-financing year may underestimate the contribution of financing programmes.

For managers of innovative and engineering-oriented SMEs, the findings underline the importance of allocating financing across the entire path from concept to commercialisation. Funding plans should include technical development, testing and equipment, but also customer validation, knowledge acquisition, production preparation and market-entry capabilities. For investors and public programmes, evaluation indicators should reflect the recipient's starting stage and should combine short-term milestones with multi-year commercial outcomes.

5.4. Limitations

Several limitations should be considered when interpreting these findings. First, the development stage and revenue category for all four observation points were reported retrospectively by respondents in a single survey conducted in 2025; the data are therefore self-reported and may be affected by recall and self-assessment bias. Second, the sample of 57 firms is relatively small, which limits statistical power, particularly for detecting weak associations such as the one examined in H2, and restricts the generalisability of the results. Third, the sample is heterogeneous with respect to country, sector and financing model, and its size did not permit separate analyses for these subgroups, so the aggregate trajectory may conceal differences between, for example, grant-financed and investor-backed firms. Fourth, development stage and revenue were measured as ordinal categories, and the change scores used for H2 treat transitions between adjacent categories as equivalent, although a one-step change may have different substantive meaning at different points of the scale; in addition, changes in revenue within a single category remain unobserved. Finally, the study does not include a control group of non-financed firms, so the observed changes cannot be causally attributed to financing.

6. CONCLUSION

This study examined changes in the product-related development stages of innovative SMEs during the first three years after receiving grants, business angel investment, venture capital or crowdfunding. The firms displayed a slight decline in their mean development-stage score during the first year, followed by clear advancement in the second and third years. The overall difference across the four observation points was statistically significant and of moderate magnitude, although the omnibus test does not identify the specific periods between which significant change occurred. These findings suggest that the post-financing development process may include an adjustment period before firms progress towards validation, scaling and established commercial operations.

The study demonstrates how product development can be examined as part of the wider organisational and commercial trajectory of an innovative SME. At the same time, the findings do not prove causality and should not be interpreted as a direct evaluation of engineering product performance. Although development-stage advancement was positively associated with revenue growth, the relationship was weak and statistically non-significant. Therefore, H2 was not statistically supported. Even with this limitation, the results emphasize that financing initiatives should support not only access to capital but also the knowledge, market validation and operational capabilities required to convert innovative ideas into scalable products.

REFERENCES

1. Brown, S.L., Eisenhardt, K.M.: Product development: Past research, present findings, and future directions. *Academy of Management Review*. **20**(2), 343–378 (1995). <https://doi.org/10.5465/AMR.1995.9507312922>
2. Cooper, R.G.: *Product Leadership: Creating and Launching Superior New Products*. Perseus Books, Reading, MA (1998).
3. Klein, M., Neitzert, F., Hartmann-Wendels, T., Kraus, S.: Start-up financing in the digital age: A systematic review and comparison of new forms of financing. *The Journal of Entrepreneurial Finance*. **21**(2), 46–98 (2019). <https://doi.org/10.57229/2373-1761.1353>
4. Politis, D.: Business angels and value added: What do we know and where do we go? *Venture Capital*. **10**(2), 127–147 (2008). <https://doi.org/10.1080/13691060801946147>
5. Bessière, V., Stéphany, E., Wirtz, P.: Crowdfunding, business angels, and venture capital: An exploratory study of the concept of the funding trajectory. *Venture Capital*. **22**(2), 135–160 (2020). <https://doi.org/10.1080/13691066.2019.1599188>
6. Dorđević, A., Galabova, L.P., Rajić, M., Janković, I., Mladenović, M.: Evaluating post-investment performance of innovative SMEs in European Widening Countries: A decision tree approach. *Sustainability*. **18**(15), 7573 (2026). <https://doi.org/10.3390/su18157573>
7. Gilbert, B.A., McDougall, P.P., Audretsch, D.B.: New venture growth: A review and extension. *Journal of Management*. **32**(6), 926–950 (2006). <https://doi.org/10.1177/0149206306293860>
8. Cooper, R.G.: The drivers of success in new-product development. *Industrial Marketing Management*. **76**, 36–47 (2019). <https://doi.org/10.1016/j.indmaman.2018.07.005>
9. Mueller, C.E.: Startup grants and the development of academic startup projects during funding: Quasi-experimental evidence from the German “EXIST – Business Startup Grant”. *Journal of Business Venturing Insights*. **20**, e00408 (2023). <https://doi.org/10.1016/j.jbvi.2023.e00408>
10. Sidrat, S., Chaudhry, P.E., Chaudhry, S.S., Boujelbene, Y.: Business angels, venture capitalists, and open innovation: A pathway for SME success. *International Journal of Engineering Business Management*. **18**, 1–18 (2026). <https://doi.org/10.1177/18479790261446180>
11. Kitić, A., Radišić, M., Takači, A.: Bridging entrepreneurial intention and action: How financing models shape the growth of innovative SMEs in Widening Countries. *Administrative Sciences*. **15**(11), 419 (2025). <https://doi.org/10.3390/admsci15110419>
12. Borza, S.I., Borza, I.C.: A broad analysis of marketing strategies for their incorporation as activities in a user centred process. *Procedia Economics and Finance*. **16**, 239–250 (2014). [https://doi.org/10.1016/S2212-5671\(14\)00797-7](https://doi.org/10.1016/S2212-5671(14)00797-7)
13. Rajamani, K., Akbar Jan, N., Subramani, A.K., Nirmal Raj, A.: Access to finance: Challenges faced by micro, small, and medium enterprises in India. *Engineering Economics*. **33**(1), 73–85 (2022). <https://doi.org/10.5755/j01.ee.33.1.27998>
14. Howell, S.T.: Financing innovation: Evidence from R&D grants. *American Economic Review*. **107**(4), 1136–1164 (2017). <https://doi.org/10.1257/aer.20150808>
15. Hervé, F., Schwienbacher, A.: Crowdfunding and innovation. *Journal of Economic Surveys*. **32**(5), 1514–1530 (2018). <https://doi.org/10.1111/joes.12274>
16. Okunnuga, I., Prah, M.K., Folorunsho, F.O., Njoku, K.T., Adeboye, E.O.: Optimizing government grants for startups: Encouraging growth of technology startups within the U.S. entrepreneurial ecosystem. *International Journal of Advance Research, Ideas and Innovations in Technology*. **10**(1), 507–519 (2024). <https://www.ijariit.com/manuscripts/v10i1/V10I1-1304.pdf>

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17. Korunka, C., Kessler, A., Frank, H., Lueger, M.: Conditions for growth in one-person startups: A longitudinal study spanning eight years. *Psicothema*. **23**(3), 446–452 (2011). <https://www.psicothema.com/pi?pii=3908>