UNIVERSITY OF PETROȘANI
DOCTORAL SCHOOL

DOCTORAL THESIS

- SUMMARY -

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Candidate:
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Petroşani
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UNIVERSITY OF PETROȘANI
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RESEARCH ON PARTICIPATORY FINANCING FOR RESEARCH PROJECTS

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General Introduction

This thesis addresses the issue of participatory financing (crowdfunding) applied to academic and research projects, in a context where universities face budget constraints, bureaucracy, and limited access to traditional funding sources. The situation is particularly visible outside centers of excellence, where resources available to support innovative initiatives are scarce. Under these conditions, crowdfunding emerges as an alternative solution, with the potential to democratize access to resources and involve communities directly in supporting projects.

Although already validated in creative, social, and entrepreneurial fields, crowdfunding is still underutilized in academia. The major obstacle arises from the incompatibility between academic logic (focused on research and publication) and public market logic (focused on communication, transparency, and accountability). As a result, academic projects often fail to be attractive to supporters, in the absence of validation tools, applied entrepreneurial education, and effective communication mechanisms.

The research identifies the key problem: informational asymmetry between initiators and supporters. This occurs when projects are poorly explained, insufficiently tested, or communicated in language inaccessible to the general public. The consequence is the loss of funding opportunities for valuable initiatives.

The general purpose of the thesis is to explore the potential of crowdfunding for innovation and entrepreneurial development in academia, with emphasis on reducing this informational asymmetry through education, evaluation tools, and predictive models.

The research is guided by four fundamental questions:

1. *How can crowdfunding support the development and implementation of innovative research projects in academia?*
2. *What role does entrepreneurial education play in the success of crowdfunding campaigns for academic research?*
3. *How can informational asymmetry be reduced to increase the chances of success in crowdfunding campaigns?*
4. *What tools can be developed to assess the readiness of research projects for crowdfunding?*

These questions lead to four major objectives: theoretical grounding and problem identification, investigation of the role of entrepreneurial education, development of an evaluation tool for project readiness, and creation of a predictive analysis model through machine learning.

The research methodology is integrative: literature review, student surveys, direct observations, testing of team roles using the Belbin method, the use of fuzzy logic and gamification, and the development of machine learning models based on thousands of datasets

collected from established platforms (Kickstarter, Indiegogo). This approach enables both conceptual analysis and empirical testing of the proposed solutions.

The results aim at producing a tool directly applicable in universities to support student and researcher teams in evaluating their projects before public launch. In addition, the thesis proposes the development of a university crowdfunding platform, capable of providing a transparent institutional framework with educational and logistical support.

The general introduction thus emphasizes that the thesis does not limit itself to theoretical analysis but seeks to provide concrete, empirically validated solutions for integrating crowdfunding into the academic ecosystem.

Research context and motivation

In recent decades, the funding of academic research has faced a significant structural shift. Globally, public resources allocated to universities have stagnated or declined, while competition for accessing them has grown exponentially. Funding bodies impose strict selection criteria, with emphasis on past performance, international visibility, and academic productivity. This situation creates a vicious circle: established institutions consistently attract funds, while regional universities, with limited access to infrastructures and international networks, remain marginalized. At the same time, the demand for innovative solutions to complex problems – from energy transition to digitalization or health crises – is increasing, and universities are called to respond rapidly.

In this context, participatory financing through crowdfunding emerges as a viable alternative. Unlike traditional mechanisms, crowdfunding mobilizes resources directly from communities and interested individuals. More than money, this mechanism brings public validation, civic involvement, and visibility for projects. International platforms (Kickstarter, Indiegogo) have shown that ideas can be massively supported if they are communicated clearly and if they succeed in creating both an emotional and rational connection with the public. The global growth of the crowdfunding market, estimated at hundreds of billions of dollars by 2030, demonstrates that the model is expanding and can be adapted to less explored domains, such as academia.

However, applying crowdfunding in academia raises specific obstacles. University projects are often presented in technical language, inaccessible to non-specialist audiences. Communication is oriented toward the scientific community, not toward the public sphere. In the absence of applied entrepreneurial education, teams of students and researchers encounter difficulties in building convincing campaigns, with clear messages, attractive visual materials, and realistic reward plans. Moreover, universities lack institutional infrastructures for preliminary testing and validation of projects, which leads to premature launches of campaigns or their abandonment.

These problems converge into an informational asymmetry between initiators and supporters. The public does not have enough clear and validated information to assess the risks and benefits of projects, while academic teams lack the tools needed to reduce this gap. The

result is paradoxical: projects with high scientific value remain without support, while less solid ideas, but better communicated, may attract funding.

The motivation of this research lies in the need to correct this discrepancy and to provide a methodological and applicative framework through which universities can use crowdfunding effectively. The thesis seeks to demonstrate that participatory financing is not only a technological solution for raising funds but also a strategic instrument for connecting academia with society. Through its mechanisms of transparency and involvement, crowdfunding can contribute to the democratization of research, to strengthening the social legitimacy of universities, and to diversifying funding sources.

The social relevance of this research is doubled by its institutional relevance. In Romania and Eastern Europe, the phenomenon of crowdfunding is only at its beginning, and universities have scarcely explored this model. In an educational landscape where young people show interest in entrepreneurship and innovation, but financial resources are limited, integrating crowdfunding could represent a sustainable solution. Furthermore, the research has a scientific stake: international literature analyzes crowdfunding in relation to start-ups and creative industries, but almost ignores its application to university research projects.

Therefore, the central motivation of the thesis is clear: if universities aim to become relevant actors in the knowledge society and to diversify their sources of funding, they must adopt, adapt, and test crowdfunding models dedicated to academia. This requires not only a change of instruments but also a change of paradigm: from closed research, financed exclusively through traditional channels, to open research, connected and publicly validated.

Research objectives

The research is based on four major objectives, directly correlated with the fundamental questions formulated in the introduction. They structure the theoretical and applicative approach of the thesis and define the directions of analysis, experimentation, and validation of results.

- **OB1 – Theoretical grounding and problem identification**

The first objective of the research consisted in building a clear conceptual and theoretical framework regarding crowdfunding and its potential application in academia. The specialized literature describes the phenomenon as a collective financing mechanism that, through online platforms, connects initiators and supporters. Depending on the nature of the reward, several models can be distinguished: donation-based, where the contribution is purely philanthropic; reward-based, where supporters receive products or services; lending-based (peer-to-peer lending), which involves repayment with interest; and equity-based, through which supporters become shareholders.

The comparative analysis of these models has shown that, for academia, the most suitable forms are donation-based and reward-based crowdfunding, since they do not involve complex financial obligations and allow community engagement in projects of public interest. At the

same time, this type of financing requires a strong component of communication and promotion, a field in which universities are disadvantaged.

The literature review allowed the identification of several success factors in crowdfunding campaigns: clarity of objectives, transparency in the use of funds, credibility of initiators, level of community involvement, and the quality of visual and narrative communication. In the absence of these elements, campaigns register a high failure rate.

Applying these findings to the academic context highlighted the central problem of the thesis: informational asymmetry. Research projects are often formulated in technical language, accessible only to specialists, while for the general public they remain difficult to understand. In addition, researchers usually lack the marketing and communication skills necessary to translate ideas into an attractive and persuasive form. This gap between academic logic and public logic generates a deficit of trust: potential supporters do not have the necessary information to evaluate the feasibility of projects, while initiators do not understand why their campaigns fail to attract interest.

The conclusion of this first stage is that the success of academic crowdfunding depends on the existence of additional mechanisms capable of reducing this informational asymmetry. The literature does not yet offer clear solutions, which justifies the aim of this thesis: the development of evaluation tools and predictive models that can provide universities with a real advantage and make projects more attractive to the public.

↵ OB2 – Investigating the role of entrepreneurial education

The second objective of the research focused on analyzing how entrepreneurial education influences students' intentions and abilities to initiate crowdfunding campaigns. The underlying premise was that the lack of entrepreneurial training represents one of the main causes of failure in academic campaigns. While researchers are trained to formulate scientific hypotheses and follow rigorous methodologies, the crowdfunding market requires skills in presentation, negotiation, persuasion, and risk-taking—competences that are rarely found in traditional curricula.

To test this hypothesis, a quantitative study was conducted using questionnaires applied to 441 students from several fields, of which 227 were statistically validated. The research instrument aimed to measure perceptions of entrepreneurship, the intention to initiate a crowdfunding campaign, willingness to work in teams, and attitudes toward risk and uncertainty. The results showed that students exposed to courses with an entrepreneurial component displayed a higher probability of conceiving viable projects and greater openness toward alternative financing mechanisms.

At the same time, the qualitative analysis of responses highlighted a key issue: theoretical entrepreneurial education is not sufficient. Abstract knowledge does not automatically translate into the ability to build a successful campaign. Students indicated the need for practical activities—campaign simulations, pitching exercises, collaborations with real platforms—in

order to develop applied skills. Without this experiential dimension, declared intention does not turn into concrete action.

Another important finding relates to team dynamics. Entrepreneurial education supports the development of leadership and collaboration skills, but the distribution of roles remains unbalanced. For example, many teams tend to be dominated by technical profiles, while communication and management roles are underrepresented. This finding prepared the ground for the introduction of the Belbin test in subsequent stages, as a method of balancing teams and maximizing performance.

The conclusion of OB2 is clear: entrepreneurial education partially reduces informational asymmetry and increases the chances of success of crowdfunding campaigns, but only when theoretical content is complemented by applied exercises and direct experiences. Without this practical component, the impact of education remains limited and fails to generate the necessary skills for a convincing campaign.

- **OB3 – Developing a tool for assessing project readiness**

In universities, most ideas generated by students or young researchers are at an early stage, without real market testing. In the absence of a verification mechanism, these ideas are often prematurely transformed into crowdfunding campaigns that fail to attract supporters. This situation leads to two consequences: (1) the loss of time and energy resources for the teams involved, and (2) the reinforcement of the perception that crowdfunding is not a viable mechanism for academia. From this arises the need for a preliminary evaluation tool—an objective filter that helps teams measure their level of readiness and correct deficiencies before launch.

The tool developed in this research is not a simple checklist but a multidimensional evaluation system, based on empirically validated criteria. Its structure integrates four pillars:

A. Team analysis – using the Belbin test, predominant roles and gaps within teams were identified. The collected data showed that unbalanced teams, dominated by technical or analytical profiles, had reduced chances of success. The introduction of complementary roles significantly increased cohesion and project attractiveness.
B. Project evaluation – by observing 145 student projects, criteria were established for assessing the clarity of objectives, logistical feasibility, and degree of innovation. The scores were correlated with reactions from the public (colleagues, faculty, focus groups), which allowed calibration of the tool.
C. Integration of uncertainty – fuzzy logic was used to transform subjective appreciations (“the idea is attractive,” “the team is motivated”) into measurable values, thus reducing distortions caused by individual perceptions.
D. Gamification of the process – to stimulate student participation, evaluation was transformed into an interactive experience. Teams received scores and badges for each criterion, turning self-assessment into a motivating exercise rather than a rigid test.

The tool returns a readiness index calculated based on the scores obtained across the defined criteria. Depending on the result, the project is classified into one of the categories:

- # "Fully ready" – projects with high scores that meet the criteria of coherence, team balance, and public attractiveness.
- # "Needs improvement" – promising projects with specific deficiencies (e.g., lack of visual materials or role imbalance).
- # "Not ready for crowdfunding" – underdeveloped projects that risk failure if launched in their current form.

This mechanism functions both as a selection tool and as an educational guide, offering teams detailed feedback and recommendations for improvement.

Applying the tool to a sample of 145 student projects provided consistent data on the actual level of readiness of university teams. The results highlighted several clear patterns:

- ↗ The majority of projects fell into the "not ready for crowdfunding" category. This did not mean a lack of scientific value but the absence of elements required for public presentation: insufficiently defined objectives, unbalanced teams, and superficial communication materials.
- ↗ The "promising" projects showed greater coherence and teams with diversified roles. In particular, the presence of a member with communication and storytelling skills proved to be a significant differentiator.
- ↗ The "ready for launch" projects were few, but they demonstrated that success is possible if the team has a balanced structure and a presentation adapted to the general public. These cases validated the tool, showing that high scores correlate with positive public perception.
- ↗ Gamification had a visible motivational effect. Teams perceived the evaluation process not as an obstacle but as an interactive exercise. In many cases, teams returned with improved versions of their projects, aiming to achieve better scores.

The tool did not stop at classifying projects but functioned as a learning mechanism:

- ✓ Teams understood the importance of complementary roles and began to include members with skills in communication, marketing, and design.
- ✓ Clarity of objectives became a central concern, with projects reformulated in simpler and more accessible terms.
- ✓ Logistical planning received more attention, with detailed budgets, activity calendars, and realistic estimates introduced.
- ✓ Originality was re-evaluated, motivating teams to seek distinctive elements to differentiate themselves in front of the public.

Objective 3 demonstrated that the success of academic crowdfunding does not depend exclusively on the value of the idea but on the level of team readiness and the way the project is communicated. The developed tool reduces the risk of failure and offers universities a practical mechanism for selecting and improving projects. Moreover, through its educational

component, it contributes to the formation of entrepreneurial competences and to cultivating an organizational culture oriented toward transparency and adaptability.

↵ OB4 – Creating a predictive model through machine learning

The fourth objective aimed to take the research beyond a descriptive framework and provide an advanced analytical tool capable of anticipating the chances of success of academic projects launched through crowdfunding. While the previous objective (OB3) proposed a self-assessment mechanism for readiness, OB4 added a new dimension: the use of machine learning technologies to create a predictive model that learns from past experiences and transfers this knowledge into the academic context.

The approach started from a practical question: how can the risk be reduced that universities support projects destined to fail? In the absence of solid data, project selection often depends on subjective impressions or formal criteria that do not capture the real complexity of campaigns. The predictive model addresses this gap, offering an evaluation based on a large volume of data and algorithms capable of identifying hidden patterns within their structure.

For building the model, a database of nearly seven thousand crowdfunding campaigns conducted between 2009 and 2023 on Kickstarter and Indiegogo was used. The set included both successful and failed campaigns, covering diverse domains such as technology, art, education, and social projects. Beyond financial indicators (requested amount, amount obtained, campaign duration, number of supporters), the analysis also integrated qualitative elements such as the structure of the description, the presence of visual materials, the consistency of objectives, and the initiators' track record. All these data were processed and normalized to be usable in training the predictive models.

The testing process included several statistical and algorithmic methods: from logistic regression, chosen for its simplicity and interpretability, to decision trees, random forests, and simple neural networks. The purpose was not only to find the best-performing algorithm but also to compare approaches and evaluate their practical usefulness. The results showed that models based on random forests captured complex interactions between variables more effectively, providing more stable predictions than linear methods.

Beyond these statistical results, the research also focused on transferring the approach to academia. To adapt the model to the reality of student projects, data collected from university experiments (especially the scores obtained with the evaluation tool in OB3) were integrated into the training set. In this way, the model is not just a theoretical exercise based on commercial campaigns but incorporates the specific characteristics of the academic environment: uneven teams, limited resources, innovative but poorly communicated ideas.

The final outcome consists of a model capable of providing, for each project, both a numerical probability of success and an explanation of the factors influencing this result. For example, the model showed that a realistic financial target, the presence of a presentation video, and team consistency are decisive factors for success. In universities, these findings translate

into concrete recommendations: setting modest financial objectives at the beginning, preparing high-quality visual materials, and ensuring a balance between team profiles.

Thus, OB4 demonstrated that machine learning technologies can be used not only for financial or commercial forecasts but also as support for educational and institutional innovation. The proposed model offers universities a strategic tool: an objective, scalable, and adaptable filter that can support decision-making and reduce reputational risks associated with unsuccessful crowdfunding campaigns.

In conclusion, Objective 4 completes the entire research endeavor: from theoretical grounding (OB1) and entrepreneurial education (OB2), to preliminary evaluation (OB3), and finally to an advanced predictive instrument (OB4). Together, these stages outline a coherent and applicable framework for integrating crowdfunding into academia, in a way that combines methodological innovation, practical utility, and scientific rigor.

Research methodology

The methodology of this thesis was designed to ensure the coherence of the entire scientific endeavor, from theoretical grounding to applied testing and validation through modern analytical tools. It was not limited to a single approach but combined bibliographic, empirical, experimental, and algorithmic methods, each playing a role in shaping and verifying the research objectives.

The first stage was the bibliographic one. To understand the place and potential of crowdfunding in academia, a systematic investigation of the specialized literature was required. This was based on consulting established international databases such as Scopus, Web of Science, and ProQuest, and on applying well-defined search strategies with Boolean operators. The organization and management of citations were carried out using specialized software such as Zotero, Mendeley, and EndNote. Beyond the accumulation of sources, this stage also involved the application of methods such as systematic review, meta-analysis, citation analysis, and content analysis, which made it possible to identify knowledge gaps and to ground the central problem of the research.

The research then moved into an empirical phase, focused on students, particularly those enrolled in programs that included courses with an entrepreneurial component. Both qualitative data, through the analysis of curricula, and quantitative data, through the application of a questionnaire previously validated in the literature (Hasnan Baber, 2022) and adapted to the local context, were collected. Of the 441 questionnaires distributed, 245 were completed, and 227 were validated and introduced into statistical analysis. Data processing and interpretation were performed using software such as SPSS, AMOS, SMART PLS, and R, which allowed a rigorous analysis of how entrepreneurial education influences students' intentions and behaviors regarding the use of crowdfunding.

For the objective related to the development of an evaluation tool for assessing project readiness, the research had an important applicative component. A total of 145 projects, created by 507 students in various educational contexts, were monitored. In team analysis, the Belbin

test was used, which allowed the identification of role distribution and imbalances affecting performance. Projects were evaluated according to clear criteria—coherence, utility, communication quality, presence of video materials, type of rewards—and the data were centralized and calibrated. To reduce subjectivity, fuzzy logic was applied, which transformed qualitative evaluations into measurable values, and to increase participants' interest, the tool integrated gamification elements. The result was an evaluation mechanism with a dual role: on the one hand, a preliminary diagnostic of project readiness; on the other hand, an educational instrument that stimulated learning through practical experience.

The fourth stage of the methodology brought to the forefront the algorithmic component. A large dataset was built, consisting of 6,864 projects collected from the Kickstarter and Indiegogo platforms, covering the periods 2009–2018 and 2010–2023. These data were accessed via Kaggle and were processed to enable comparative analysis. Evaluation was carried out using the Cloverleaf method, which captures multiple dimensions of a campaign: clarity of objectives, team coherence, public attractiveness, and financial realism. In parallel, qualitative data were also collected from the activity of seven student groups, coordinated by doctoral candidates, who contributed to testing the practical applicability of the criteria. This stage represented the transition from subjective evaluation to the development of a predictive model based on machine learning, adapted to the academic context but anchored in international crowdfunding trends.

Viewed as a whole, the methodology of this research has an integrative character. The bibliographic analysis provided the theoretical foundation, the empirical research brought direct evidence from the student environment, the project experiment allowed the construction of an applicable evaluation tool, and the algorithmic component opened the path toward prediction and automation. Each stage supported the next, forming a logical sequence that led from identifying the problem to formulating practical and innovative solutions for academia.

Structure of the thesis

The thesis is organized into several chapters, each designed to address the central themes progressively and to lead to the achievement of the general and specific research objectives.

The first chapter of the thesis is dedicated to the theoretical foundation of the research and aims to clarify the conceptual framework related to crowdfunding. It analyzes the definitions proposed in the specialized literature as well as the main classifications and typologies of this phenomenon. The chapter reviews the crowdfunding models—donation-based, reward-based, lending-based, and equity-based—and describes the differences between them from the perspective of supporters' motivations and the implications for initiators.

This chapter also presents the main findings of international studies that investigated the success factors of campaigns. Clarity of objectives, team credibility, transparency regarding the use of funds, quality of communication, and community involvement consistently appear as major determinants of success. At the same time, the barriers encountered are also mentioned,

particularly the difficulties of attracting supporters in less visible fields or in projects with a high degree of specialization.

The comparative analysis of the literature highlights the discrepancy between the domains where crowdfunding has developed rapidly, such as the creative industries or technology start-ups, and academia, where the phenomenon is still marginal. This situation outlines the central problem of the research: the lack of a solid theoretical and applicative framework for the use of crowdfunding in financing university projects. Chapter I thus establishes the conceptual foundations of the thesis and prepares the ground for the empirical and applicative investigations that follow.

The second chapter of the thesis is dedicated to entrepreneurial education and its connections with the use of crowdfunding. The chapter starts from the idea that, in the absence of specific knowledge and skills, students and young researchers face difficulties in transforming their ideas into fundable projects that are attractive to the public. The specialized literature discussed in this section emphasizes that entrepreneurial education contributes to the development of abilities such as initiative, risk-taking, creativity, and effective communication.

Within this chapter, the established theories and models in the field are presented, emphasizing the importance of developing entrepreneurial spirit from the university stage. It is shown that these competences are valuable not only in the process of creating one's own business but also in other contexts, including the formulation and promotion of research projects that require alternative funding.

A special place is occupied by the discussion on informational asymmetry. This arises when university teams formulate projects in excessively technical language, difficult to understand for non-specialist supporters. In the absence of entrepreneurial skills, initiators fail to build a convincing narrative, which reduces the chances of crowdfunding campaigns. The chapter shows that entrepreneurial education can reduce this asymmetry by offering practical tools for communication, planning, and project management.

Chapter II ends with the formulation of working hypotheses that are to be tested in the empirical research: the existence of a correlation between exposure to entrepreneurial education and students' intention to use crowdfunding as a source of funding. In this way, the section creates a direct link between the theoretical framework and the empirical investigations described in the following chapter.

The third chapter of the thesis is dedicated to the empirical research carried out at the University of Petroșani, with the objective of analyzing students' perceptions and intentions regarding entrepreneurship and crowdfunding. This stage of the research was designed to verify the hypotheses formulated in the previous chapter, according to which entrepreneurial education has a direct impact on students' willingness to initiate projects financed through collective contributions.

The target group of the research consisted of students enrolled in study programs that included courses with an entrepreneurial component. The data collected were of two types:

qualitative, through the analysis of curricula, and quantitative, through the application of a questionnaire previously validated in the specialized literature (Hasnan Baber, 2022), translated and adapted to the local context.

A total of 441 questionnaires were distributed, of which 245 were completed, and 227 were validated and used in the statistical analysis. Data processing was performed using established programs—SPSS, AMOS, SMART PLS, and R—which allowed testing of the hypotheses and highlighting the links between entrepreneurial education and the intention to use crowdfunding. The results showed that students exposed to entrepreneurial courses displayed greater openness to initiating campaigns and an increased willingness to take risks, partially confirming the theoretical hypotheses.

The chapter also underlines the limitations of the research: the responses reflect declarative perceptions and intentions, without guaranteeing actual behaviors in practice. Nevertheless, the analysis provides a solid starting point for the following stages, oriented toward the construction of tools directly applicable in the evaluation and development of university projects.

The fourth chapter of the thesis has an applicative character and is centered on the development of a tool for evaluating the readiness of projects for crowdfunding. Starting from the idea that many university initiatives are launched prematurely and have reduced chances of success, the chapter describes how a mechanism was constructed and validated to prevent such situations and to offer teams a preliminary diagnostic.

The research was based on 145 student projects, developed by 507 students in diverse educational contexts. Team analysis was carried out using the Belbin test, which allowed the identification of the roles assumed by each member and the imbalances that could affect performance. The results showed that teams dominated by technical profiles, but lacking roles oriented toward communication and implementation, were much more vulnerable to failure.

Project evaluation was conducted according to specific criteria: the coherence and usefulness of the idea, the quality of communication, the presence of video materials, and the nature of the proposed rewards. The data thus obtained were centralized and calibrated to ensure consistency of results across different projects.

To reduce the subjectivity of evaluation, the tool integrated fuzzy logic, which transformed qualitative assessments into measurable values, with intermediate levels. At the same time, to increase team involvement and motivation, the process included gamification elements, which transformed evaluation into an interactive experience, perceived by students more as a learning exercise than as a formal test.

The chapter demonstrates that this tool not only serves to filter projects ready for launch but also supports the educational process, providing teams with clear feedback and guidance for improving their ideas before exposure in the public space.

The fifth chapter of the thesis is dedicated to the development of a predictive model for evaluating crowdfunding projects, based on machine learning methods. This chapter marks the

transition of the research from internal evaluations, applied to student projects, to a large-scale analysis, grounded in an extensive and diverse dataset.

For this purpose, a corpus of 6,864 projects was compiled, collected from the international platforms Kickstarter (2009–2018) and Indiegogo (2010–2023), accessed through Kaggle. This dataset included both successful and failed campaigns, which made it possible to identify common patterns and relevant differentiating factors.

The analysis of these projects was carried out using the Cloverleaf method, which offers a multidimensional approach by evaluating aspects such as the clarity of objectives, team coherence, public attractiveness, and the realism of the financial plan. These criteria were also applied in parallel to projects from the academic environment, thus ensuring methodological consistency between international datasets and those generated in the local context.

In addition to the quantitative analysis, the chapter also integrated qualitative data from the activity of seven student groups (15 participants each), coordinated by doctoral students. Their role was to test the relevance and applicability of the criteria and to provide practical perspectives on how a predictive model can be effectively used in the selection and preparation of university campaigns.

Through this stage, the research demonstrated that the use of machine learning tools is not limited to commercial domains but can also be transferred to academia, offering universities objective support in identifying projects with real chances of success. Chapter V thus consolidates the innovative dimension of the thesis, by introducing a predictive component based on large, replicable datasets.

The sixth chapter of the thesis has an applicative character and is oriented toward integrating the research results into a practical proposal: the development of a university crowdfunding platform. This platform is conceived as an institutional space that brings together the tools built in the previous stages and provides a coherent framework for preparing, evaluating, and launching academic projects.

The proposed platform is based on two essential components resulting from the research. The first is the tool for evaluating the readiness of projects, which ensures a preliminary diagnosis and allows teams to correct their weaknesses before launching campaigns. The second is the predictive model based on machine learning, which estimates the probability of success and provides universities with an objective filter for prioritizing projects. The integration of these two tools creates an infrastructure that not only supports student and academic initiatives but also reduces the risk of failure and resource loss.

The chapter presents how the platform could function at the institutional level, being designed as an interface accessible to students and researchers, as well as to faculty and university administrators. Through this platform, the university does not remain limited to the role of observer of the crowdfunding process but becomes an active actor, capable of providing support, validating, and monitoring the campaigns carried out.

Overall, Chapter VI demonstrates how the results of the research can be transposed from the theoretical and experimental level into a concrete applicative framework. It marks the transition from analysis and modeling to institutional proposal and offers a clear direction for implementation, through which universities can harness crowdfunding as an instrument of financing, validation, and public engagement.

Research results

The results obtained from the research confirm that crowdfunding can be integrated into the academic environment, but only if issues related to team preparation, project clarity, and communication with the public are directly addressed.

A first result was the validation of the central problem. The analysis of the literature and the experiences with student projects showed that the main causes of campaign failure are the excessively technical language and the absence of a framework for verifying project quality before launch. This informational asymmetry reduces the interest of potential supporters and explains why academia has not yet widely adopted this financing mechanism.

A second result is related to the role of entrepreneurial education. The analysis of questionnaires applied at the University of Petroșani showed that students who attended entrepreneurial courses are more open to initiating campaigns and have a more realistic perception of the risks involved. However, the research highlighted that the effect of education is limited if there are no applied exercises and direct experiences. Theoretical knowledge alone is not sufficient to transform intentions into concrete behaviors.

The third major result comes from the experiment on student projects. Monitoring the 145 teams demonstrated the usefulness of a preliminary evaluation tool. By applying the established criteria and integrating fuzzy logic and gamification elements, the teams managed to identify their weaknesses and significantly improve their projects. Out of the total, 24 initiatives reached the stage of prototype or Minimum Viable Product, confirming that structured feedback and the iterative process considerably increase the chances of developing viable ideas.

The last set of results is connected to the predictive model. The analysis of 6,864 international campaigns, combined with data generated in the academic environment, enabled the construction of a mechanism capable of estimating the probability of project success. The tests showed that the model can differentiate between projects with real prospects and those with reduced chances, thus offering universities a much more objective decision-making tool. The integration of this model with the project evaluation tool creates a complete infrastructure that combines applied education, internal diagnosis, and algorithmic analysis.

Conclusions and future research directions

The research confirms that informational asymmetry represents the main barrier in the use of crowdfunding for academic projects. The lack of clarity, validation mechanisms, and entrepreneurial skills limits the chances of success for initiatives. The thesis demonstrated that this problem can be reduced through the integration of entrepreneurial education, a pre-launch evaluation tool, and a predictive model based on machine learning.

The main contributions are:

- ☆ the theoretical grounding of the connections between entrepreneurial education and crowdfunding,
- ☆ the empirical validation of the role of education in increasing participation intentions,
- ☆ the development and testing of an evaluation tool applied to 145 student projects,
- ☆ the proposal of a predictive model tested on 6,864 international campaigns,
- ☆ the formulation of an institutional solution through a university crowdfunding platform.

As future directions, the thesis proposes:

- ↔ *The development of a crowdfunding platform at the University of Petroșani, as an internal mechanism for supporting student and young researcher initiatives. This would function as a controlled environment, with prior evaluation, mentorship, and integration into the educational path. The technical basis of the platform will be the evaluation tool and the ML predictive score validated in the research.*
- ↔ *Connecting the platform to a national network of similar initiatives, to strengthen crowdfunding as a complementary instrument for academic funding.*
- ↔ *Transforming crowdfunding into an educational and cultural instrument, through the public exposure of projects and the involvement of the external community, which strengthens both students' communication and management skills and the university's connection with society.*
- ↔ *The technical improvement of the developed tools, by exploring adaptive fuzzy models, using more diverse datasets, and developing user-friendly interfaces to increase scalability and applicability in various educational contexts.*

The conclusions and directions formulated confirm that crowdfunding is not just an alternative source of funding but a catalyst for change in universities. Through openness to the public, transparency, and community involvement, it can transform the way academic projects are conceived, validated, and supported. This research represents a first step in this direction, and future developments may consolidate the position of crowdfunding as both an educational and institutional instrument.

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