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ROLE AND POSITIONING OF REWARD BASED CROWDFUNDING IN THE FUNDING OF TECHNOLOGICAL INNOVATION PROJECTS

VIEWPOINT OF ENTREPRENEURIAL FINANCING EXPERTS

The research summarizes interim results of a doctoral study examining the role and positioning of reward based crowdfunding in the case of start-ups launching technological innovation projects. The article provides a brief introduction to the reward-based model of crowdfunding, highlighting aspects of its positioning compared to traditionally known entrepreneurial funding opportunities. Analyzed data of 17 interviews conducted with senior experts from the startup funding ecosystems (VCs, Business Angels, leaders of incubator houses and accelerators leaders) is shared. Recommendations and risks of application of reward-based crowdfunding, depending on the different phase of product readiness and financial status of the company, is shared.

Keywords: reward-based crowdfunding, technology innovation, crowdfunding, entrepreneurial financing

Special credit goes to those experienced professionals of the Hungarian, Portuguese, French and Polish start-up ecosystems who supported the scientific work by contributing with their time and by sharing their experiences, in a truly supportive and open manner that is the very own of the world of Entrepreneurs.

Background

Within the framework of a doctoral research, between 2016 to 2018 a scientific study was conducted with the goal to expand the knowledge base and formulate recommendations for SMEs on the application of crowdfunding.

The scientific work focused on the reward-based crowdfunding of technological innovation projects. The research explored the phenomenon from the perspectives of entrepreneurial finance and innovation management dimensions, with the aim of clarifying the role, benefits and disadvantages of this financing option for the businesses concerned. Applied research methods included conduction of secondary and primer research. Secondary research was set up on the basis of more than 200 bibliographical sources, exploring the commonalities and white zones of application of crowdfunding in relation of technological innovation projects[1]. This was followed by processing a database curated by the Berkeley University, that contained detailed project information of the campaigns launched and closed on Kickstarter - the largest reward-based, and most innovative platform - based in 2016, including 4700 technology projects. Of this population, a sample of 200 projects was sorted out and evaluated by at least two independent experts per campaign along different dimensions of innovation content.

Based on the results of the literature review, the hypotheses - and adaptability of their interpretation to the local characteristics of the region - were substantiated by primary research results among key stakeholders of the start-up ecosystems.

In order to ensure that the relevant aspects and experiences of stakeholders will be taken into account, a small but detailed questionnaire survey among the entrepreneurs (25 interviews) and 15 deep interviews with senior experts involved in the financing of the enterprises was conducted.

One of the research goals was to provide more precise recommendations, regarding which are those phases of the enterprises lifecycle where the importance of using crowdfunding can be paramount. This article summarizes the results of the research that outlines the role and potential benefits of crowdfunding amongst the traditionally known sources of entrepreneurial financing, integrating related findings of the primary research.

Though low sample size does not allow to consider the results representative, a significant part of the key players of the Hungarian start-up ecosystem contributed with their insights and experiences, and international mentor and accelerator house experts helped to draw conclusions, resulting a new, and more accurate outlook on the topic.

About crowdfunding

Understanding crowdfunding and refining its system of recommendations receives more and more attention, as this alternative form of financing can fill the gap that exists today in the financing of small enterprises with little developmental experience and insufficiently strong background, or engaged in shifting of their developmental profile (Valanciene – Jegeleviciute, 2014). This alternative financing scheme offers an opportunity to improve enterprises and finance new jobs without involving the traditional state or financial sectors (Crowdfund Capital Advisors, 2014);

Crowdfunding research fundamentally served the exploration and drivers of crowdfunding opportunities (De Buysere et al., 2005; Freund, 2010; Cumming et al., 2014) (Agrawal et al., 2014). Studies where guidance is offered on opportunities of utilizing crowdfunding platorms for

[1] By the term innovation project, we imply those projects and organized efforts whose goal is the achievement of a result that complies with the critera of innovation – expressed in the creation of a new or further developed product, technology, service, organizational method (OECD, 2005). Technology type" – as defined by the OECD (2005) – process/technology or technological product, or developmental initiatives or projects in the „other creative product development" category.

a special segment have only appeared in recent years (Cordova et al., 2015; Gleasure, 2015; Joenssen et al., 2014).

Research results in recent years have greatly contributed to an understanding of the phenomenon, including the motivational drivers of the actors (Agrawal et al., 2014; Mollick 2014), and the social and product development aspects, but *knowledge continues to lack insofar as how it might be worthwhile fit it onto the lifecycle of a startup or growing enterprise (Cordova et al., 2015) and what combination of factors might allow an enterprise to anticipate a suitable outcome.*

Relevant definitions

Depending on the perspective structure in which the phenomenon is studied, definitions of the operations and objectives of the process, as well as definitions that separate crowdfunding from other financing mechanisms are delienated.

Schwienbacher and Larralde (2010) defined crowdfunding as „an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes."

According to financial definitions, crowdfunding is *„internet based interpersonal loan or credit"* (Lin –Viswanathan, 2013), *from a broad circle of small sum contributors instead of a select, sophisticated financer group* (Belleflamme et al., 2012; Riedl, 2013) (Cordova et al., 2015), *„...for the purpose of financing, evaluation by the market, and communications* (Joenssen et al., 2014, p. 6.).

According to Mollick's 2014 definition with entrepreneurial angle „Crowdfunding refers to the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries" (Mollick, 2014, p. 2.).

Operation, major types and models

Crowdfunding is tied to the activities of three types of stakeholders. The project initiator – the initiator and originator of the project or idea awaiting funding, the supporting and financing private individuals and groups (so called backers), as well as the organization (platform), which enables the implementation of crowdfunding. (Ordanini et al., 2011)

Types and models

A significant deviation can be observed between the types and categories of „crowdfunding" as far as the nature of the support form and the services offered are concerned. Not counting the characteristic inclusion of the broad scope of financiers and the intermediary organization, the most commonly known major categories are the following:

1. Equity-based,
2. Peer-to-peer 'P2P' lending,
3. Donation based, and
4. Reward based crowdfunding.

With the first two types, a business – investor aspect dominates, while with the latter two, it is patronage and support.

Compared to donation based, reward based, and lending based models, according to the academic literature, the level of investor rationality is the highest with equity based crowdfunding, with external financial motivations expressed at the time when the investment decision is made; it is within this financing type that the proportion of technological projects is the highest, while reward based funding appears to be popular over the course of developing specific products (Kuppuswamy – Bayus, 2015) (*Table 1*).

Table 1 An Overview of the Main Types of Crowdfunding

Characteristic	Donation-based	Reward-based	Lending-based	Equity-based
Consideration	None	Product, Gift	Interest	Equity stake, dividend
Size	$18.5 billion	$3 billion	$16.3 billion	$4.73 billion
Platforms	Crowdrise, GlobalGiving	Kickstarter, Indiegogo	Lending Club, Funding Circle, KIVA	Crowd-Cube, Seedrs
Motivations	Internal, non-financial motivations (assistance)	External financial motivations (reward)	External financial motivations (earning profit/charity)	External financial motivations
Level of rationality	Low	Medium low	High	High
Legal regulation	Permitted	Permitted	Permitted with limitations	Strictly regulated
Impact	Handling global problems	Launch of enterprises, expansion of scope of activities	Transformation of P2P lending	Launch of multiple funding start-ups

Source: Edited by the author on the basis of Kuppuswamy – Bayus (2015), Geiszl (2017), Mollick (2014)

The domestic overview of crowdfunding with scientific thoroughness was first performed by Kuti and Madarász in 2014. According to their summary, reward based crowdfunding can be used to obtain funding for startups, for the expansion of existing companies, or for personal creative projects as well. Here, supporters generally receive real products or services for the support. When it comes to the financing advantages, from a certain perspective it can be considered a pre-

purchase, a customer loan, in which shipping and communication toward the customer is of particular importance. Today we can talk about serial crowdfunding, and suppliers who do a good job can repeatedly expect the support of future customers (Mollick – Kuppuswamy, 2014; Mollick, 2013, 2014).

For entrepreneurs, the most important issue is the payment or funding drawdown model, this can be the „all-or-nothing" – in the event of an unsuccessful campaign, the collected money is reimbursed to the supporters, while in the „keep-it-all" model the platform transfers the money even in those cases where the set amount had not been collected.

Role and positioning of reward based crowdfunding compared to traditional forms of entrepreneurial financing

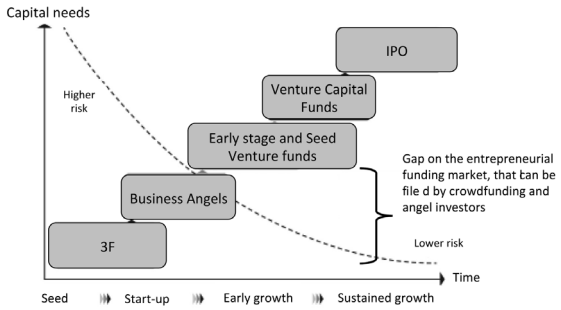
When we examine the relationship between innovation and crowdfunding, the question that arises is how it relates to traditional sources of financing; whether a period or life-cycle stage can be defined where it has exceptional importance.

In the interest of assisting innovation activity, Deffains-Crapsky and Sudolska (2014) studied capital financing opportunities for enterprises implementing radical innovation during the early stages of their life cycles, including the advantages and opportunities inherent in equity based crowdfunding.

Among equity financing opportunities that are available to enterprises, crowdfunding might be a good one for a number of reasons: on the one hand, as it is a quasi-form – informal – it is not subject to strict institutional regulations, and on the other hand, the investors can be more open towards revolutionary ideas.

The authors have examined the question of radical innovation funding form the perspective of positive management, assuming that when comparing crowdfunding with external capital financing opportunities that are available to enterprises today, crowdfunding offers a more favourable alternative for new startups in certain cases (*Figure 1*).

Figure 1 Innovation Funding Steps of Enterprises



Source: modified version as edited by the author of the figure by Klein (2013) and Deffains-Crapsky – Sudolska (2014, p. 11.)

Based on Shirky's finding in 2012 – according to which the group of enterprises that utilizes crowdfunding does not overlap those that select from traditional sources, like venture capital or angel investors. The analysis of Crowdfund Capital Advisors (2014) also references this finding, stating that enterprises that eventually decide on crowdfunding could only utilize personal loans or credit from among traditional sources.

As studied by Valanciene and Gimszauskiene (2012), for more than half of the enterprises that utilize crowdfunding, this was the first opportunity to acquire funding, while in a similar situation only personal loans or credit was available for enterprises that were thinking of traditional financing formats. Angel investors and venture capital investors might also conceivably wait for enterprises to prove their growth potential, *thus crowdfunding provides an indirect opportunity to provide pre-financing of riskier or more uncertain technological developments through the platforms, thereby reducing the risk for more profit oriented capital investors.*

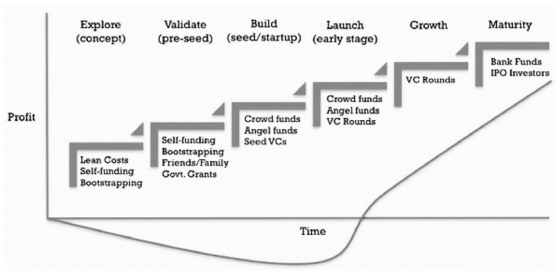
Prior to 2010, crowdfunding was not taken into account in Hungarian sources on entrepreneurial financing. This shortcoming has already been overcome by the case study volume of Csubák and Szerb in 2013 (Béza et al., 2013) – in their pathfinder work they had presented the applicability of various equity type funding forms. Additionally, the authors also positioned crowdfunding in relation to other sources of funding in case of enterprises possessing varied levels of activity and growth potential.

Building on the comprehensive body of work of Szerb (2013), in her recent study on the financing opportunities of enterprises, Geiszl (2017) made a recommendation on how to define the category of companies that build exclusively upon (equity based) crowdfunding opportunities. According to the employed terminology and results, *crowdfunding is the jumping off point for ambitious enterprises with limited growth.* These enterprises due to their favourable parameters and low risk – can take part to a sufficient degree from angel investor and venture capital funding sources as well.

Complementarity to other financing sources

An overview of the funding sources in various life-cycle stages of the start-ups (Leba et al., 2015) clearly shows that crowdfunding are highlighted during the seeder and early growth stages, where it appears as the capital alternative/ supplemental funding of angel investment or venture capital. (*Figure 2*)

Figure 2. The Start-up Funding Lifecycle



Source: Balatti, 2014[2].

[2] https://albertobalatti.files.wordpress.com/2014/08/maltaway_balattiboardmember_startup-funding-lifecycle-venture-capital.png

Based on the exponential growth of the amount of the outsourced funding, we can assume that compared to traditional funding sources, crowdfunding possesses characteristics that make it appealing to enterprises.

In 2015, a third of enterprises had indicated that they had tried to utilize funding from a crowdfunding source (Statista, 2015).

According to the statistics, in 2017 the entire global volume of crowdfunding – including interpersonal loans – was USD 34 million in 2017 (Fundly, 2018), comprising one quarter of the volume of global venture capital investmen (KPMG, 2017).

In connection with crowdfunding, it is exceptional that this form of financing might not just be suited to the mitigation of risks that naturally arise with innovation, but can also be utilized alongside the characteristics that derive from the extreme youth of the enterprise (or due to potential shortcomings).

This means that alongside state subsidy structures (OECD, 2002) such financing opportunity has become available that was only partially covered previously by a few special investors during the most vulnerable stage of the enterprises, so it harbours significant economic potential.

Eligibility in technological innovations

Over the course of studying the financing opportunities of radical innovation implementing enterprises, in addition to affixing them to company life cycle stages, also examined whether there are special characteristics arising from the nature of innovation, characteristics to which crowdfunding can offer a solution. The radical nature of innovation was defined as „abandoning tradition in the industry and changing consumer expectations." Based on Rosenberg's 2004 work, they summarized the risk factors of radical innovation – which influence the financing opportunities of the enterprise – in the following points:

1. The results of the innovation activity/project is unpredictable.
2. Significant R+D costs may arise – resulting in substantial financial risk, as the efficiency of the research and development activities and their industrial-market potential are equally uncertain.
3. The product-level economical aspect of the product or service is questionable.
4. The ability of the enterprise to „appropriate" the market utilization of the innovation.
5. In technology intensive, high-tech sectors, the risk that results from the short product and technology life cycle graphs.

In summary, they find that the inclusion of crowdfunding and platforms assists in the reduction of uncertainty factors that go fundamentally together with innovation – *practically every above question can be answered by a successful crowdfunding project.*

Examining the innovativeness of the product or solution, according to Lukrainnen et al. (2016), comprehensibility of the product (being a B2C solution on its own) shows a positive correlation with campaign success, and even among B2C projects, the probability for of a project's success rises along with comprehensibility. The easier to understand the more odds for success a campaign may have.

The Venture Bonsai equity crowdfunding portal performed a survey among investors, where 61% of the responders replied that they had been motivated to make the investment by "an interesting product or service", referring to novel ways of application, or new services.

Mukherjee et al. (2017) examined the correlation between the innovativeness of the project (novelty, utility) and success. The innovation content of the project was measured by whether the description or the text of the video contains at least one expression regarding novelty or usefulness, that relates to innovation or improved utility. Results showed that the funding level of the project increases with the frequency of statements regarding utility or regarding novel content. In the event that both were present together in the campaign, however, the combination has had a negative effect on project funding (Mukherjee et al., 2017).

Authors expressed the assumption that the exaggerated degree of innovation decreases the supporter's sense of security, as they might deem the delivery of the product too uncertain.

In Chan and Parhankangas's 2017 study, impact of incremental and radical innovation on the outcome of the campaign was examined. Analyzing 334 technological projects by private individuals evaluating the campaign videos according to a given set of criteria, their findings showed that consumer utility and implementability are important considerations for supporters, with innovation having a positive impact on the amount of the sum that is collected through crowdfunding.

It was unequivocal, however, that on the Kickstarter platform, supporters preferred incremental innovation, as they had found it to be viable, and would rather obtain radically innovative products through channels that provide more consumer protection guarantees (Chan – Parhankangas, 2017). Overall, studies confirmed that reward based funding can be applied with success – that may have a positive correlation with the innovativeness - in case of technological projects.

Recommendations of use and limitations

Literature already provides an established basis regarding potential benefits and drawbacks. Specially in the case of technological innovation projects, important aspects are, that *the expected market success of the product/ innovation can be improved by early market feedback prior to the actual development.* Joenssen et al. (2014) studied the potentially common aspects of crowdfunding and new product announcements with product development marketing and market analysis methodology, and concluded that it was advantageous for enterprises when an opportunity could conceivably arise on the basis of the desire to support or advance purchase for the purpose of validating the estimated market potential (assuming this had not yet taken place).

A successful – potentially many previously successful – crowdfunding campaign can play a value-creating, promotional role. In case of successful implementation, it can improve the chances of the enterprise for the inclusion of other

funding sources, as well as for the generation of additional sales. (Henderson, 2013).

Studies have been undertaken with regard to the success of crowdfunding technological projects; the correlation between the measurable indicators of given projects – such as the number of communications with financiers, the existence of the web site, communications activities, and timely performance, (Cordova et al., 2015), also an estimated imminent implementation period (Joenssen et al., 2014) was found to be in correlation with successful financing. *Their work suggests that when crowdfunding technological projects, it is worth defining a project that has tangible results for customers within a reasonable time.*

The compendium of the works of outstanding Hungarian academic authors Kuti and Madarász (2014) on crowdfunding, Pursuant to the work of Agrawal et al. (2013), the authors have summarized the drivers and inhibiting characteristics of crowdfunding, grouped by those who are directly effected by the process (*Table 2*).

Table 2 Advantages and Limitations of Crowdfunding

Advantages	Limitations, risks
• Necessary steps for financing are taken through a single channel, in a short period of time (Ahlers et al., 2012) • Product testing (the market validation of the product concept) (Schwienbacher – Lambert, 2010; Mollick, 2013) • Can offer inspiration for the continued development of the project (Ordanini et al., 2011) • Can simplify the inclusion of additional funding for the enterprise – an indicator of positive market reception (Mollick, 2013) • Over the course of involving financing, all control remains with the enterprise (Gerber et al., 2011)	• Carries patent risks (Riedl, 2013) • Financial-accounting regulations ae lacking (Jegeleviciute et al. 2013) • A reward based model can cause logistical problems (Sigar, 2012)

Source: edited by the author

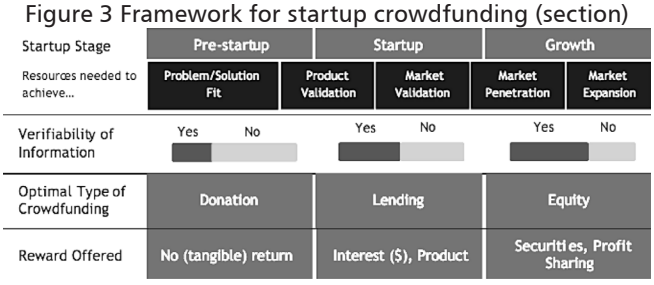
Relation to product development and company maturity phases

During the interview process experts were asked to identify the optimal product development phase, as well as the ideal phase within the corporate life-cycle, at which they would recommend the application of reward-based crowdfunding.

Analyzed papers of relevant literature (Schwienbacher – Lambert, 2010; Mollick, 2013; Ordanini et al., 2011; Sigar, 2012; Belleflame et al. 2014) have not provided detailed recommendations on prospective alignment of crowdfunding to given levels of product maturity or a point in the companies' life cycle, although they had defined some benefits of the application for the product and market development process (Mollick, 2016; Ordanini et al., 2011). Their results pinpoint the importance and benefits of crowdfunding, in collecting feedback from the market in the product development phase, for the validation and refining of the product concept and in building a direct communication channel with potential customers. It suggests that the primary area and purpose of the application is the support of development of the prototype phase; this was confirmed by the primary results of the research.

Regarding corporate maturity, *Figure 2* showed that in general, crowdfunding is positioned for the Seed (start-up) and the Early stages of companies' lifecycles. Klein (2013) and Deffains-Crapsky – Sudolska (2014) as seen on *Figure 2*, have set a range from very early pre-seed up to the later phases of venture capital funding. During this period, different types of crowdfunding can be applied. Authors have not, however, specified the cases or the respective frequencies of their application. Geiszl (2017) found that an equity based alternative may serve companies the best in the late start-up phase. Mollick (2014) also considered it as a tool for the late start-up phase. Paschel (2016) presented the first structured set of recommendations regarding the suggested purpose of crowdfunding in different start-up development phases. Her work focused exclusively on the start-up phases, and used a slightly different grouping for the periods and the types of crowdfunding - reward based crowdfunding is in the „lending" group.

Figure 3 Framework for startup crowdfunding (section)



Source: Paschel (2016, pp 186.)

To date, this framework was the most structured approach, filling a gap in the body of entrepreneurial management knowledge. Empirical results confirmed the high level applicability of Paschel's framework, and also allowed to differentiate between the methods and objectives of successful application in cases that have not been presented (e.g. using lending based crowdfunding methods in the pre-start-up phase, or in the growth period), that are presented in the conclusions (*Figure 3*).

Results of primary research

Data collection and sample

Methodology and questions

Expert interviews were designed based on the results of literature review. Candidates were selected with application of snowball sampling (linear and non linear, non-discriminative), due to the characteristics of the

domain. Since in this domain personal recommendations and insights on the expertise of others play a significant role, snowball sampling ensured that candidates were highly experienced and recognized in their domain, adding a proof of professional expertise and seniority. 30 candidates were contacted – some of them directly, via their social media profile, some by another professional. 19 interviews were conducted, and 17 were processed in this study. Questions explored the role, positioning, risks, benefits, optimal use cases of reward-based crowdfunding in the financing of technological innovation projects. Data was collected in interview templates, each containing 50 questions. Content was analyzed and data was restructured to database. Answers to questions with greater importance were summarized to short responses, allowing better visual interpretation. This study contains results from the descriptive analysis of the responses, sharing the answers in a structured form. Deeper statistical analysis is ongoing and will be published describing the broader context of the phenomenon, comparing the insights of the different stakeholders - those here referred as Senior Professionals – and the Entrepreneurs themselves, who are involved in the funding process.

Sample characteristics - Institutions

Geographical distribution:

Of the 17 Senior Professionals, 13 (76%) were active in Hungary, 4 (24%) in other European countries, namely France, Poland and Portugal.

5 of the represented institutions were located in the capitals of the country (30%), 12 in regional centres (70%).

Aligned with the research focus on financing technological innovation projects, 65% of the Institutions (11) were specialized in a technology intensive domain, 5 (30%) had a mixed portfolio of innovative start-ups, and only 1 had a portfolio of low risk, traditional companies (*Table 3 and 4*).

Table 3 Distribution of Respondents by Institution Type

Type of Institution	Count	Percentage
Academy Incubator	5	29,4%
Accelerator	3	17,7%
Business angel	2	11,8%
Incubator	2	11,8%
VC	5	29,4%
		100,0%

Table 4 Specialization of the represented Intitutions

Profile of the Institution	Count
Biotech, Medtech	1
Deep tech, Fintech	1
Fintech	1
Hardware	1
Healthcare	2
IT, Green Energy	1
Medtech	1
Technology	1
Technology (HR, education)	1
Traditional, low risk	1
Wearables, Smart Hardware	1
General	5

Source: Edited by the author.

Sample characteristics – Expertise

Experts of different backgrounds, 6 had a specialized educational background in finance (35%), 6 in economics (35%) – with two of those 6 possessing other degrees in STEM fields – and 5 experts (30%) had educational backgrounds in STEM (biochemistry, engineering, and IT).

Regarding the roles of the 9 of the 17 Experts were managing directors or equivalent of the represented institutions, and one fourth (24%) of the Interviewees had mentoring type tasks in the ecosystem.

The 17 Expert brought close to 200 years (190) of experience in dealing with start-ups, with an average of 11, 2 years experience having each. Minimum value was 2 years of experience, the maximum 40, both from the academy related start-up institutions.

14 of the Interviewees had established altogether 61 firms (including subsidiaries), with an average of 3.8 each, with 3 lacking a business entity entirely, and one of the business angels founding 25 of them (*Table 5 and 6*).

Table 5 Roles of Respondents

Role	Nr.	%
Founder/Leader/ Director	9	53%
Innovation Director	1	6%
Mentor	4	24%
Senior Investment Analyst	3	18%
	17	100%

Table 6 Experience of the Respondents and the number of firms they established

Type of Institution	Average of experience in years	Average Number of Firms Established by the Respondents
Academy Incubator	14,4	2
Accelerator	14	4,5
Business angel	15	16
Incubator	3,5	2,5
VC	7,8	1
	11,2	3,8

Source: edited by the author

Sample characteristics – Awareness of crowdfunding

Regarding their knowledge of crowdfunding (especially, reward based crowdfunding), 14 of the interviewees knew the model pretty well, 3 at a high level (all of them

were active in the academic sector). On average, they have been aware of the model for 5.5 years, a figure that aligns with the first wave of significant media attention the major platforms were beginning to garner.

Respondents from VCs had an average 4 years and accelerators an average 7.3 years of high level awareness of this funding opportunity. 4 experts - 23.5% - had personal experiences launching crowdfunding campaigns, with 1 having their own successful campaign in 2012, with 2 others taking part in recent launches, while the 4th case has not been specified.

The listed characteristics leave no doubt that the experts have a deep understanding of entrepreneurial financing, mentoring, and a strong understanding of the needs and characteristics of start-ups dealing with technological innovation projects.

Role and positioning of reward based crowdfunding amongst traditional entrepreneurial financing tools - findings

Complementary with traditional funding tools

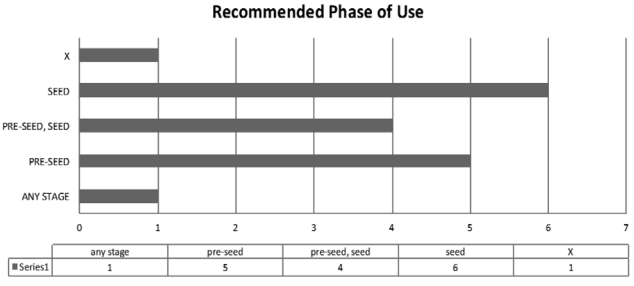
100% of responders labeled crowdfunding as a rather supplemental source of funding. Typically, it was positioned within the seed – pre-seed period, mainly over the course of the development of tangible B2C products. The responders of academic accelerators and business incubators have typically considered the inclusion of smart-money as compared to crowdfunding, citing that in the early stages the capital investor network of contacts and know-how can significantly aid the successful growth of enterprises.

The optimal phase of application in the start-up lifecycle

With one exception, all Experts have named one or more phase of the start-up financing lifecycle where they see benefits of application. Upon a direct request to pick the phase where they see highest potential in the application of reward based crowdfunding for technological innovation projects, slightly more, 35% (6) of the Experts have chosen the pre-seed phase, 30% (5), while 24% (4) thought it can equivalently be used in either phase.

One respondent said that crowdfunding can be used at each phase of an Enterprise's lifecycle with success (*Figure 4*).

Figure 4 Recommended use phase of reward-based crowdfunding in the start-up lifecycle



Source: edited by the author

The delineation of seed and pre-seed varied to some extent, depending on which stage the responding expert was specialized in. Thus, the venture capital investors who were active in latter periods of the seed stage considered the manufacture of the prototype a task to be performed during the pre-seed period (including the establishment of the circumstances of manufacturing), while the business incubators dated this at a somewhat later date, at the beginning of the seed stage.

Table 8.: Phase of start-up lifecycle where reward-based crowdfunding can be best applied

Type Of Institution	All Stages	Pre-Seed	Pre-Seed, Seed	Seed	N.A.	Total
Academy Incubator	20%	20%	0%	40%	20%	100%
Accelera-tor	0%	67%	0%	33%	0%	100%
Business Angel	0%	50%	0%	50%	0%	100%
Incubator	0%	50%	50%	0%	0%	100%
VC	0%	0%	60%	40%	0%	100%
Total	**6%**	**29%**	**24%**	**35%**	**6%**	**100%**

Source: Edited by the author.

Moving in the direction of the latter stages of the seed period, responders reported that enterprises are getting progressively better at evaluating their funding needs, as by the end of the seed period, by the time of preparation for mass manufacturing and sales, their cost structure becomes more predictable. It is noteworthy that the more they can profit by avoiding a dilution of their stake and achieving a good bargaining position through the launch of a campaign at an early stage, the best outcome with the lowest risk can be achieved later, during the seed stage (*Table 8*).

Recommended alignment along Product Readiness and Pricing

Expert opinions *agree that without exception the B2C products were designated as optimal or recommended areas of application*. Over the course of the content analysis of 200 technology project database, it was indeed the B2C products that were typical, but at least 10% of the sample included solutions that targeted small or family enterprises, or explicitly addressed business customers as well within the framework of a B2C campaign – for example by case of a child development toy, issuing a separate offer for schools, but there was also an operating system developed to meet the needs of SMEs and a platform enabling client data management as well.

All in all, it is truly the B2C aspect and comprehensibility that is the defining characteristic, while at the same time campaign experience shows that certain B2B (typically small enterprises) can also be successfully expressed through the platforms. Alongside the pre-seed stage,

24% of responders recommended crowdfunding for the financing of the latter product line launch at the beginning of the seed or growth stage – as the enterprise is better capitalized, it can easily satisfy existing demand, risk accepted over the course of the process is reduced, but the enterprise acquires a marketing advantage that can be realized through crowdfunding (*Table 9*).

Table 9 Application of reward based crowdfunding – required product readiness

Product concept ready		Product ready for production	Prototype ready	N.a.	Total
Academy Incubator	20%	0%	40%	40%	100%
Accelerator	33%	67%	0%	0%	100%
Business Angel	0%	0%	100%	0%	100%
Incubator	0%	0%	100%	0%	100%
VC	0%	40%	40%	20%	100%
Total	**12%**	**24%**	**47%**	**18%**	**100%**

Source: Edited by the author.

What sum is it worthwhile to ask for? Responses collected over the course of the interviews reveal that the optimal price that can be requested for a product on the platform is a comfortably affordable B2C product between 30 and at most 300 USD, at such unit quantity which in the given period the enterprise can actually deliver without undue risk.

If the enterprise sets as its objective a lower target amount, they can still capture marketing and media attention (particularly if they launch their campaign from a country where this is unusual); additionally, there is a better chance of collecting the set goal and the enterprise can make the claim of having conducted a successful campaign, but due to the high campaign costs, it can only obtain limited net funding.

If a more serious amount is targeted, it is rational to involve a high-priced communications company, operating with a 10-30% success fee; it is not unheard of to encounter over-financing of 1,000-10,000%, it may worth the higher campaign cost, but this case there is a serious risk in the manufacture and delivery of the products (there have been multiple examples of this error occurring, resulting a decline in the reputation of reward-based crowdfunding).

All three of the information sources applied in the research - the senior experts, the entrepreneur interviews, and the analysis of 200 projects - *underlined, that no way should one be overly optimistic with regard to the difficulties of manufacturing and shipping when planing a reward-based crowdfunding campaign.*

Can crowdfunding outrule any of the traditional entrepreneurial funding sources?

With regard to the replacement nature of crowdfunding, typically negative responses have been received.

For the question if crowdfunding can overrule the market, 60% answered „no", 30% replied „rather not" or „not entirely", and only 12% (2 responder) held the opportunity probable in a 5-10 years timeframe. Experts from the academic ecosystems and VCs were more opened to identify crowdfunding as a long term substitute of traditional tools of entrepreneurial financing (*Table 10*).

Table 10 Application of reward based crowdfunding – required product readiness

Academy Incubator		Accelerator	Business angel	Incubator	VC	Grand Total
Maybe	60%	0%	0%	0%	20%	**24%**
Rather yes	20%	0%	0%	0%	20%	**12%**
No	20%	100%	50%	100%	60%	**59%**
Not entirely	0%	0%	50%	0%	0%	**6%**
Total	100%	100%	100%	100%	100%	**100%**

Source: edited by the author

Although 100% of responders selected the answer ‚supplemental' in the question of whether crowdfunding was supplemental to or a replacement of traditional funding, Later on, however, 15 of 17 responders named a traditional source of funding when asked which traditional funding source could be replaced by a crowdfunding campaign.

Venture capital, business angel and bank financing were the three most often mentioned opportunities the respondents thought reward based crowdfunding campaign might substitute in the case of technological innovation projects. Employees and leaders of academy incubator houses voted the most for crowdfunding being a substitute of bank financing, VCs for a potential substitute of business angel funding. The 2 business angels argued that crowdfunding may not function as smart money on a way they and the VCs can support businesses, and crowdfunding can be substitute of other financing rather until the end of pre-seed phase.

CONCLUSIONS

Overview of application alternatives

We can summarize the status of enterprises that are about to launch a reward-based

campaign in accordance with the financial status of the enterprise - the availability of the funding necessa-

ry to launch the campaign - and the availability of the product, incorporating the previously intoduced recommendations and findings of the analysis of the interviews (*Table 11*):

Table 11 Recommended use cases of reward based crowdfunding during the development of technological innovation projects

	Budget for the campaign available	**No or limited budget for tha campaign**
Product is available[3]	Campaign: - Large budget marketing campaign - Can handle a larger supporter (sales) volume Goal: - Product validation tool prior to the launch of new product line; - More expensive products, larger requested sum (may increase risk); - High price, niche B2C product. Phase: Any phase – seed, or even growth - Can be a regular fundraising effort, a regular sales and communications channel - For operational small and medium enterprises, instead of any other funding source.	Campaign: - Low budget campaign - Lower price, lower volume of orders – otherwise very high risk - Smaller campaign budget - It can manage only a smaller order volume without risk (or in case of extremely simple product) Goal: - To acquire initial customers; - For the purpose of creating media buzz; - To estimate potential of the product and assess market value. Phase: Early (pre-seed, start-up stage) - In case of easy-to-understand, innovative, easily manufactured ideas; - In place of VC, or as a preemptive step (but it cannot substitute for smart money)
Product is not available[4]	Campaign: - High quality, more expensive campaign - High or moderate amount of orders (depending from the investment need of production) Goal: - Validation of product concept - Prior to the diversification of the product portfolio - Global reach, gaining media attention - Marketing tool to boost up initial sales Phase: Seed (later seed), substitutor of VC in case of moderate growth plans, complementer if high budget is necessary In the case of quickly manufacturable products, a larger campaign amount and number of orders can be managed timely, with existing abilities and capacities and company can handle delivery	Campaign: - DIY campaign, - Low campaing budget, - Low, manageable quantities - Rather low order volume (depending from the type of product) Goal: Validation of idea, improvement of entrepreneurial spirit Phase: Concept and pre-seed phase, as complementer or instead of 3F and bootstrapping In case of clearly understandable niche project with moderate manufacturing cost, potentially with strong fun or factor (hobbies where customers are extremely emotion driven) or non-profit characteristics (children education or medicine), and a personal anecdote attracting sympathy.

Source: edited by the author

[3] https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates

[4] Conceptual design exists, a few working prototype and visuald materials.

Risks of crowdfunding campaigns entrepreneurs shall be prepared to manage

Hortoványi studied the motivations and risk-taking attitude of the innovative entrepreneur (2012), highlighting that the drivers of innovations are those leaders who are willing to accept risks, while at the same time endeavouring to treat them reasonably (Hortoványi, 2012). Due to its low risk, crowdfunding might be an optimal choice for medium-risk averse, yet still innovative entrepreneurs.

Among the risks and disadvantages of utilization, it was mentioned that over the course of the 5 years since their launch, the defining platforms (Kickstarter, Indie-gogo), reward based community financing has receded from the former „garage" aspect. In many cases, successful campaigns can only be launched by marketing firms operating with a high success commission (20-30% of the collected amount).

According to estimates and indirect experience, an enterprise must have a budget of as much as 10 million to launch a truly compelling campaign. For many enterprises, this is a hard to jump barrier to entry.

Alongside the disproportionately larger costs – as estimates show that campaign preparations can take many tens of millions of Forints – even a smaller communications or timing error can result in the campaign's failure. Risk minimizing attitude of the backers leads to the rise of more mature projects – where maturity and trustworthyness is proven by a high quality (and usually expensive) campaign – including rendered 3D images, videos, customer opinions, and social proofs as well.

Disadvantages or risk factors of crowdfunding include that over the course of the campaign's implementation, in the case of an early phase and a small team, the focus of the enterprise can be shifted from other critical activities – even the development of the product.

Risks include potential damage to the reputation or professional renown of the enterprise in the event of an unsuccessful campaign. Of responders, this had only arisen among investors who operate in later phases of the seed stage, among stakeholders engaged in incubation and specialized in an earlier stage in no way was it considered as a factor for exclusion.

Transformation and future of reward based crowdfunding

The study findings have further narrowed the recommendations for the application.

Reward based crowdfunding in the case technological type innovation projects aiming the development of a "business to consumer" type of solution is one of the best opportunities to gain quick and valuable experience for those starting out – whether they start out on the path of becoming an entrepreneur as an individual, or as a team in the direction of market entry and growth. Through the platform, they can evaluate and comprehend the actual market power of their own product, including their customers and competencies, in the fields of marketing, design, strategy development, implementation, risk management, and communications alike.

The campaign is not always sufficient in and of itself (when we examine the recommendations alongside a risk minimization strategy, requesting a small campaign amount) to finance the launch of the enterprise, and is not enough without other motivations and appropriate attitude to enable one to become an entrepreneur. In the event that it is paired with the appropriate abilities, however, it can provide a significant boost to the situation of entrepreneurs and enterprises.

As one of the interview subjects explained, even though crowdfunding on its own does not help one become an entrepreneur, whether or not the campaign is successful, it helps those who apply them become genuine entrepreneurs.

With regard to the future of crowdfunding, every responder agreed that this form of financing is supplemental in nature, and may give enterprises that otherwise cannot or would not like to obtain funding any other way, and that we can expect continued expansion of the volume of crowdfunding.

Opinions are split with regard to whether an enterprise can acquire funding through crowdfunding when they are unable to secure it any other way and lacking a serious campaign budget. Experts assume the continued supplemental nature of crowdfunding due to the fact that this is not smart money, it does not replace an angel investor's networking capital or the contact synergies accessible through the entire portfolio of a business incubator. It may be enough, however, to ensure initial growth or the diversification of the subsequent portfolio. Even though this does not work for many, it was a genuine opportunity for some projects.

The significance of crowdfunding cannot be dismissed where such powerful validation can position the enterprise into a more favorable negotiating position prior to more serious fundraising efforts. Crowdfunding can also play a significant role in the reduction of risks arising in relation of information asymmetry in the process of financing innovation-driven enterprises.

In her work, Lovas (2016) examined the characteristics and management of the challenges of information asymmetry arising in the financing of innovation, detailing the emerging risks in the process and the possible points of state intervention. The cause of information asymmetry and moral hazard is that the project initiators posess the most information about their own development, insights of investors' risk capitalists, angel investors are limited (Lovas, 2016).

In-depth interviews with the entrepreneurial financing experts revealed that investors attempt to reduce these risks by lengthening evaluation processes that involve unexpected tasks for entrepreneurs (as requesting expert opinions, extending geographical scope of market surveys, asking for design strategic changes). In terms of reducing the risk on the investors side, almost all experts highlighted that a successful community financing campaign for capital investors is one of the highest quality safeguards in case of businesses that have not yet come to a serious background.

In spite of the fact that crowdfunding is typically considered a complimentary funding format, a significant proportion of stakeholders acknowledge that for certain enterprises in certain cases, reward-based crowdfunding can replace one or more type of traditional forms of entrepreneurial financing; in such event, in many cases they can obtain funding with better terms

than with the employment of traditional solutions. Even though the study has not focused on equity-based crowdfunding or the currently trending ICO fundraising, most stakeholders have also mentioned these as well as funding sources that could be recommended during the latter stages of company growth – at the end of the seed stage and the beginning of the growth stage.

It must be emphasized that reward based crowdfunding has undergone a significant transformation over the course of the past 7 years. It has shifted from hobby and garage projects to campaigns developed along a well thought-out strategy, possessing a serious communications and marketing budget. In many cases, these are launched by long-standing SMEs to aid the launch of their new products. Projects launched in 2016 and subjected to detailed content analysis, and feedback received from the campaign managers who had launched them, show that this remains the financing format where hobby projects get an opportunity to outgrow themselves, as credible personal anecdotes and good ideas find their respective audiences.

When we interpret it in the context of the lifecycle of technological innovations, crowdfunding as technology based innovation (via the application of a new solution along a new organizational model) is just now transitioning into the productivity period, where the players involved are seeing the cases and risks of application much more clearly, with its application and risks becoming more manageable, becoming accessible to a continuously expanding circle.

Additional research opportunities are outlined in the field were: (1) use of reward base crowdfunding in the transition between the pre-seed and seed stage, (2) how recommendations should be refined in case of different product types (software, hardware, application, consumer goods) (3) by which product type and stage of business maturity does it provide better viability, and (4) what strategies can be applied to minimize risks arising in the given stage and as a consequence of the product type.

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