
Model of Creation and Management of the Process of Technological Projects Development

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Abstract:

The purpose of the article is to determine and describe main principles and model of development of regional business accelerator on the basis of technical university for development of innovational startups. The research included the work on identification of the problems of the process of commercialization of technological developments, which business accelerator should solve. One of the basic purposes of creation of business accelerator is increase of the flow of prepared projects for consideration by investment committees of funds of early stages. Accelerator can be a full-scale unified mechanism of formation of deals flow from diversified mass of completed R&D. As a result of the research, the authors come to a conclusion that the process of creation of value and movement from prototype to entering a market supposes long chain with formation of various risks at each stage – scientific, financial, administrative, etc. Minimization of such risks requires from partners, involved with the work of business accelerator, solving emerging problems together. Such motivation could be formed by development of business accelerator by the principles of partnership and creation of equal access and rights for basic members.

Key Words: *technological innovations, commercialization, innovational infrastructure, startup, venture investments, business model, business accelerator.*

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1. Introduction

In the modern world, innovations play an important role in development of economic systems. It should be noted that it requires not only the availability of innovational ideas but also their practical realization. At present, creation and management of the process of preparation of innovational technological projects are performed spontaneously in many countries, which reduces effectiveness of innovational projects and hinders their successful realization.

This stipulates actuality of development of a new systemic model of creation and management of the process of preparation of innovational technological projects. The purpose of the article is to determine and describe the main principles and the model of creation of regional business accelerator on the basis of technical university for development of innovational startups.

2. Materials and method

Theoretical basis of the research includes modern works by the authors in the sphere of study of theory and methodology of clustering of economy, preparation of innovational technological projects, role of financial innovations in development of the service sphere, and peculiarities of financial provision of innovational projects, among which are the works by (Klimova et al., 2015), (Pogodina et al., 2015), (Popkova et al., 2013), (Clement et al., 2015), (Laeven et al., 2015), etc.

The work also uses materials of research of modern authors in the sphere of study of models of management of innovational process and building business accelerator, among which the following could be distinguished: (Pfothenauer et al., 2016), (An & Ahn, 2016), (Shic et al., 2015), (Ooi & Nasiru, 2015), (Kolychev & Prokhorov, 2015), (Datta et al., 2015), (Bezrukova et al., 2013), (Nadtochey, 2012).

Methodological basis of the research consists of methods of systemic, problem, and structural & functional analysis, and synthesis, as well as method of induction and deduction. The study was conducted within the concept of innovational economy and the concept of small innovational entrepreneurship.

3. Results

This work distinguishes six main stages of activities of business accelerator: from 0 to 5. Let's view these stages.

Stage 0. "Input: search for ideas and developments".

Stage task: search and attraction of ideas from developers and beginning entrepreneurs from external environment, who possess innovational development or technology.

Business accelerator, being organizer of the whole process of acceleration, performs search and expert evaluation of technologies for participation in accelerator, this forming a flow of technologies.

Projects for consideration by business accelerator can come from several sources: basic members of accelerator and external partner structures – technological parks, incubators, other corporations with demand for innovations, competitors of technological ideas competitions, etc. These are all subjects which possess strong technical potential but lack competences in development of business.

For the purpose of increase of quality and volume of ideas which are accepted for expertise, it is necessary to take part in events and activities organized by external partners and attract the most interesting projects into business accelerator. This could be done through:

- competitions of technological ideas;
- competitions of open innovations of corporations;
- discussion clubs, exhibitions and presentations on topical issues and leading research;
- presentation of results of works of applied research laboratories, R&D institutes, etc.;
- review of projects of venture or seeding funds which have not been selected due to incompleteness of team or lack of business expertise, but have a potential of commercialization.

Flow of high-quality technical solutions in business accelerator increases the flow of deals at output.

Thus, presence of 200 technologies at input can provide around 40 applications for consideration by the Expert council, 8-12 projects for elaboration within business accelerator, and 4-8 investment application at output.

Main product: pool of technological developments which are to be evaluated by the Expert council of business accelerator.

Stage resources:

- **managing team:** manager of business accelerator, project manager;
- **services:** advertising;
- **material infrastructure:** premises, equipment, software.

Stage 1. “Expertise and exclusion”.

All projects are prepared with the help of informational systems, realized in the Internet and Intranet; preparation of idea is performed with specially developed

application form with description of the sense of innovational development, scientific and technical novelty, competitive advantages of received product, existing patents (if available), and direction of commercialization.

Projects which enter accelerator should conform to the following requirements (Minaeva, 2013):

- R&D works are completed;
- development works are completed (availability of prototype);
- approximate understanding of future products and set of value characteristics;
- possibility for patenting;
- scientific and technical expertise;
- preliminary understanding of market and its volume.

The expert council evaluates projects according to the following criteria:

- correspondence of project's stage to the requirements of business accelerator;
- novelty and competitive advantages, including as compared to foreign analogs;
- possibility of transition of development into product;
- possibility for technical realization of project and absence of contradiction to basic scientific principles;
- potential of commercialization: analysis of potential consumers of development and preliminary analysis of commercial perspectives (volume of market);
- possibility for protection of intellectual property.

Stage main process: input – technology or development, received or recommended by members of business accelerator, output – expertise of idea, recommended by the Expert council for implementation.

Stage main product: expert decision in the form of protocol of the Expert council, plan of realization of project and KPI.

Stage resources:

- **managing team:** manager of business accelerator (1), project manager (1), operation manager (1), guest experts (pool of 20 experts);
- **services:** legal support;
- **material infrastructure:** premises, equipment, software (system for receipt and tracking of applications).

Stage 2. “Start of project work. Creation of product (1 month)”.

Converting development into product

Transformation of development into product is the most problematic stage of commercialization, for creation of technological product means overcoming the gap between research activities and industrial activities. Presence of such gap leads to impossibility to count for successful determination of possible market and product

by developer. Moreover, application of technology is uncertain, it can turn into product in completely different industries.

There are three types of members in the process of technology's translation into product:

- **scientists-engineers**, who create technologies which could be then transformed into applications in market;
- **industrial experts**, capable of articulating the problems of industry, forming description of product on the basis of idea of existing technologies;
- **entrepreneurs-managers**, who ensure completion of the way from description of product to sales, possess competences in the sphere of technological marketing, development of strategy, monetization, and development of consumer.

Main process of stage: input – technology or development which has received positive expert evaluation and plan of works on the project, output – prepared presentation of product which has received first reaction of market and potential client.

Main product: product with a set of economic characteristics (technical and economic indicators, quality, security, cost), team with basic set of competences which allows approaching development of concept of business.

Stage resources:

- **managing team:** manager of business accelerator (1), project manager (2), operational manager (1), pool of 40 guest experts;
- **services:** patent search, legal practice;
- **material infrastructure:** premises, equipment, software.

Stage 3. “Business modeling” (1 month)”.

The stage supposes work with project team on the basis of constantly working infrastructure of business accelerator, which can organize development of project taking into account requirements of investors.

Main process of stage: input – product with a set of value characteristics, output – description of business model, tested on a key group of clients and complete project team.

Main product of stage: formalized business, which is at the stage of issue of prototype or testing model, before the issue is already issued in the market, ready for further financing and sales.

After all the necessary works in formation of high-quality business plan, the project goes to the next stage.

Resources of stage:

- **managing team:** manager of business accelerator (1), project manager (2), operational manager (1), pool of 40 guest experts;
- **services:** patent search, marketing, legal support, financial modeling;
- **material infrastructure:** premises, equipment, software (program for creation of models of business plans).

Stage 4. “Creation of company and search for investor (1 month)”.

This stage includes creation of company and protection of project at panel of investors.

Stage task: evaluation of performed work and perspective of working business, preparation of project and taking it beyond the program of business accelerator.

Company is ready for investments when:

1. Project team is completed.
2. There is confirmation of market attractiveness of product and feasibility of business model.
3. There is vision and strategy of company’s entering the market.
4. Resources and planned, and financial model is prepared.
5. Issues of intellectual property and licensing are elaborated.
6. Evaluation of risks and plan of their elimination are elaborated.
7. Investment offer is created.

Criteria of evaluation of project for determination of point of entering the investment panel:

- intellectual property, patents are registered for project initiator,
- positive feedback of consumers of product created within the project;
- staff is completed with necessary specialists;
- entering first sales (desirable);
- availability of presentation material of the company (web-site, leaflets, price lists);
- production platform;
- there is a need for transfer of investments for organization of mass production.

Investment panel requires a set of documents which includes presentation of business with description of a problem, solution, technology, team, intellectual property, and business offer for investor, as well as a package of legal documents.

If investment committee makes a negative decision, the project is forwarded to further elaboration or the initiator of the idea is offered alternative variants: co-financing, independent financing, etc.

On request, projects can receive further training for pitch of projects by investor, media-presentations, negotiations, time management, etc.

After completion of each stage (duration – 1 month maximum), projects are selected, and the ones that have not reached their indicators or have shown their inconsistency as a result of market check are left out.

After performance of calendar plan of development, the company is not an illusory idea but working business.

Main process of stage: input – description of business model and completed team, output – investment offer and selling share of business.

Main product of stage: newly established company with clear vision of strategy of entry in the market and business plan.

Stage resources:

- **managing team:** manager of business accelerator (1), project manager (2), operative manager (1), pool of 20 guest experts, mentors (15);
- **services:** marketing, legal support, financing modeling, personnel selection, consulting on issue of company creation;
- **material infrastructure:** premises, equipment, software (program for creation of samples of business plans).

Stage 5. “Retirement from project”.

Projects are supervised by business accelerator until the moment of selling the share of company.

Preparation for realization of the share and conclusion of a deal on retirement are performed in cooperation with developed and potential investor. After this decision is made, project manager, having performed all preliminary works, can prepare offers for investors on possibility of purchase of project which is for sale.

Before official announcement of sale, information on this project is forwarded to all members of business accelerator, as they have priority right for purchase of the project share.

Main steps at this stage:

- analysis of the market and company’s activities for the purpose of acquisition of information on project cost (audit, assessment);
- formation of offer on cost of share in the project;
- search for investor;
- preparation and conclusion of deal;
- analysis of executed deal, summarizing results of investing.

4. Conclusion

Thus, it is possible to conclude that one of the basic goals of creation of business accelerator is increase of the flow of prepared projects for consideration by investment committees by funds of early stages. The accelerator could be a full-scale unified mechanism of formation of the flow of deals from a scattered mass of performed R&D.

The process of creation of value and movement from the prototype to entering the market supposes a long chain with formation of various risks at each stage – scientific, financial, administrative, etc. In order to minimize such risks, the partners participating in the work of business accelerator should be interested in joint solving the emerging problems. Such motivation could be formed by building business accelerator by the principles of partnership and creating equal access and equal rights for basic participants.

The task of business accelerator is to take all organizational issues from the initiator of the idea, providing him a possibility to deal with development of business and providing support and consultations for all functional directions of the project, namely:

- legal issues (tax consultations and optimization of taxation);
- finances (investment consultations);
- HR (personnel selection, evaluation, personnel audit, preparation of development programs, etc.);
- PR, GR, targeted networking;
- protection of IP, acquisition of licenses and permits.

It should be concluded that despite detailed description of various stages of work of business accelerator, a certain limitation of the performed research is theoretical character of the development model of creation and management of the process of preparation of innovational technological projects on the basis of business accelerator. Perspectives of conduct of further research are connected to overcoming this limitation and implementation of the developed model into modern business practice.

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