Horizontal Ties of Innovators in the Educational System

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Abstract

This paper investigates the emergence and development of horizontal ties between educational innovators, their role in disseminating educational innovations and maintaining grassroots dynamism in the educational system. Though the significance of horizontal ties in innovative economies is highlighted in earlier studies, the findings of their impact on educational innovation outputs are not definite. Taking into account a strong centralising tendency in the Russian educational system, this research question seems to be of high relevance. Employing empirical data and qualitative analysis we built a coherent model of the collaborations and partnerships that provide resources, knowledge, promotion and informational support for innovative projects in education. As a main result, we identified formats of innovators' horizontal ties in the educational sphere and the difference between the effects of internal and external ties. The analysis showed that the conception of explorative and exploitative learning is relevant to the educational system and allows researchers to explain a range of patterns. Furthermore, we argue that under resource constraints, educational innovators take on new roles related to fundraising educational initiatives, creating active communities and supportive expert groups.

1. Introduction

The traditional model of the educational system has long been invariable, stable and based on assumptions of industrial development. These assumptions included a limited set of educational service providers that were functioning on the basis of established rules and provided unified educational results. Also, access to open resources was restricted, and up to the 1990s, the educational system was closed.

Nowadays, the situation in the educational sphere has dramatically changed and we have new assumptions of ecosystem development. First, new actors appear and transcend the borders of educational institutions with distance learning. Second, they transform educational products, providing cross discipline projects, creating complex educational events with business partners, and organising community-based educational activities. To summarise, they suggest radical educational innovations. As a result of new development assumptions, the educational system requires additional potential for transformation.

Additional potential of the educational system development could be found in grassroots dynamism. Grassroots innovations are presented as the initiatives of individuals who fulfil innovative projects in education, and create new pedagogical and technological solutions. They contribute both to the teachers' personal growth and to the diversity of innovative solutions in education. The potential of grassroots innovation relates to the speed and flexibility of responses to educational problems that public institutions cannot afford [1]. Thus, grassroots innovations become an important development driver in the educational sphere under the conditions of limited resources and global challenges.

Grassroots educational innovations in Russia experience a set of contradictory tendencies. On the one hand, the increase in communication media provides great opportunities for developing innovative educational solutions. On the other hand, we witness a number of barriers that prevent grassroots dynamism in education. Individual innovators in education often get into a situation of resource shortage and they have to find new ways to provide their initiatives with finance, as well as expertise, marketing and human resources. We can classify barriers for grassroots innovations into three groups.

The first barrier is the lack of institutionalised channels of interaction among innovators in education. Such channels are designed to support horizontal ties, provide peer-to-peer support and crowdsourcing of ideas [2]. A number of studies show that the diversity of horizontal ties is seen as a way to avoid failure in innovative business as a whole [3]. Previous studies confirm that innovators in education also have a significant demand for networking and access to the professional community [4]. Thus, the cumulative benefit of grassroots dynamism is significantly limited because of fragmented support and scarce partnerships.

The second barrier for grassroots dynamism is the high degree of centralisation of the innovation policy in education. World experience shows that exclusively unidirectional top-down transfer (centralisation) of initiatives through formal channels does not use the full potential of transformation

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innate to the educational system [5]. Elements of decentralisation, on the contrary, help to increase the stakeholders' involvement in the decision-making process, both at the institutional and regional levels of the educational sphere [6]. Community participation is another advantage due to the decentralisation principles in education [7].

The third barrier is related to the lack of trust between different levels of management in the educational system. Trust is considered as a key component that we need to overcome information asymmetry in any innovation system [8]. Some researchers put focus on the strong interdependency between the level of trust in the educational space (interpersonal, interorganisational, institutional and social) and the intensity of grassroots dynamism and innovation transformations [9]. Trust determines the quality of collective decision-making, the level of stakeholders' involvement in the development of educational institutions [10].

The aim of the study is to reveal how horizontal ties provide necessary resource and expertise support for grassroots dynamism to thrive. We pose the following research questions:

Question 1: To which extent may grassroots innovations be considered as development drivers of the educational system?

Question 2: What formats of horizontal ties may support grassroots dynamism in the educational space?

Question 3: What are the main impacts of horizontal ties on the diffusion, replication, sustainability, diversity and overall quality of grassroots innovations?

On the basis of the research questions listed above, we formed a thematic framework of our study. This framework was used both in forming interview guides and in coding transcripts:

- external and internal horizontal ties in the innovative sphere;
- explorative and exploitative learning as two aspects of knowledge and experience exchange.
- interpersonal and inter-institutional trust development based on innovators' horizontal ties.

Our specific avenues for research include looking at peer-to-peer learning and informational support, such as advice and experience sharing. Employing empirical data and qualitative analysis, we built a coherent model of the collaborations and partnerships that assure resources, knowledge base, promotion and informational support for innovative projects in education.

2. Methodology

The empirical study is based on data obtained from the semi-structured interviews. Since the research was designed to study cooperative ties among innovators, the guides for the interviews covered the following topics. The first section contained items to elicit respondents' demographic information, including their professional status in the educational system, as well as the basic information about their innovative project in education. The second section contained items to reveal their motives and barriers for creating an educational project. The third section contained items to describe the exchange and dissemination of innovative ideas in the educational community, the stable and temporary partnerships, and the channels that innovators use to obtain resources, information and expertise.

In total, we established 4 different guides for different types of respondents. The research setting chosen for the study consisted of teachers and administrators in schools, regional authorities in the educational sphere, individual innovators (authors of commercial and non-commercial educational initiatives), and representatives of museums that carry out educational activities.

There has been much discussion about how to measure innovativeness and how to classify projects as innovative. Conventional measures of a firm's innovative activity are not relevant for educational organisations, especially for those within the formal system. The formal status of federal or regional innovative platforms seems to be an evident criterion, but this approach would exclude a lot of grassroots innovations and informal initiatives. Finally, we define educational innovation as a new local practice or approach in the educational process (new educational product, new methodological process or new approach to interact with the community of learners). Thus, we considered all organisations and individuals which implemented these new practices in the fields of general and extra-curricular education.

The research used a non-random sample. To improve the completeness and relevance of the data, we followed 4 principles:

- We included representatives from both formal and non-formal education;
- The geography of the study covered towns of different types and sizes within the same region;
- At least 2 organisations participated in the interview process in each town;
- At least 2 respondents participated in the interview process in each organisation.

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The data were collected in the Perm Region during the field expedition. We conducted 150 interviews with specialists from 65 organisations. The research team conducted 75 interviews in 26 schools: 49 interviews with teachers and 26 interviews with school administrators. We conducted 35 interviews in 14 organisations of supplementary education: 19 with educators and 16 with administrators. In 9 museums, we interviewed 18 educators. Finally, we conducted interviews with 12 individual innovators and 10 representatives of regional authorities. The geography of the study included 9 towns and cities of the Perm Region, such as Perm, Chaikovsky, Kungur, Lysva, Chusovoy, Berezniki, Solikamsk, Kudymkar and Polazna. Within the same region, such a distribution of entry points allows us to identify patterns of grassroots innovations according to the distance from the region's capital.

The collected data were processed using two-stage thematic coding. First, we identified descriptive codes and categorised them into five sub-themes. Then, we built second-level codes to describe the full range of practices concerning survival, strengthening and dissemination of educational initiatives.

3. Results

In this paper, we present the following three main results of our study.

3.1. The types and formats of innovators' horizontal ties in the educational sphere

First, we explored the differences between internal and external horizontal ties.

Internal ties with partners within the educational system rely upon joint commitments to similar problems and projects, mutual trust and understanding because of common values and experience. These ties strengthen educational initiatives in an exploitative way through in-depth methodological and contextual elaboration of existing educational products. The focus of partnerships shifts to testing the project ideas in partner schools. Partners collect pilot results for further replication at the regional or national level. Pedagogical universities or school-based research centres carry out the expertise of individual initiatives, transfer them to the next level, ensuring their methodological growth and dissemination. This further increases the cohesion of the initiatives in the educational system.

At the same time, external ties provoke the emergence of new educational formats at the intersection of culture, technology, social and entrepreneurial spheres. In this case ties extend to cultural institutions (museums, libraries, leisure centres), public organisations (youth centres, non-profit organisations, charitable foundations), commercial enterprises in different spheres of activity, tourist agencies and volunteer movements. Teachers participate in various youth forums, industrial exhibitions, digital forums, high-tech weeks; they have membership in various professional communities of museum workers, tourists, local historians, media professionals, etc. All of this allows them to find new digital solutions for the educational process, build learning algorithms with the use of business frames and implement elements of social design in educational activities. Based on the interviews, we have reason to believe that it is the contact with external partners which stimulates a broader vision, fresh ideas and unusual innovations. Thus, heterogeneity and cross-disciplinarity of knowledge, skills, and experience reinforce the overall level of educational innovations diversity.

In summary, our results conform with earlier research that identified two mechanisms of organisational learning in innovative economics - exploitative learning and explorative learning. The logic of exploitative learning is based on adding competencies and skills of partners who are close to the current experience of the company [11]. Exploratory learning, in contrast, addresses radically new knowledge at a great cognitive distance from the company's intellectual capital and provides more radical innovations [12].

Second, we explored existing formats and types of collaboration within the educational sphere.

At the core of the educational system, we witness the intra-school format of professional experience exchange. It takes the form of periodical events (pedagogical councils, competitions of pedagogical skills), or some regular structures (school of young teachers).

Then, inter-school partnerships typically include methodological conferences and forums, professional skills contests for teachers and co-joint olympiads for learners. We also identified a lot of specific formats such as small creative groups on certain professional topics, pedagogical workshops, pedagogical market or the regional "Teacher of the Year" clubs (with expeditions to different regions with master classes). These formats provide peer-to-peer support, such as helping young teachers who have recently entered the educational sphere in problem-solving, engaging colleagues in new projects development, submitting suggestions on pedagogical events, encouraging young peers to participate in professional contests and so on.

Organisations of additional education are actively involved in partnerships with youth movements and adolescent leisure centres. This contributes to the prosperity of diverse educational content (media,

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robotechnics, IT, ecological etc.) as well as exchange of experience in social and humanitarian orientation.

It is important to note that innovators use both pre-established institutional structures and informal ties for ideas exchange and co-design in education. In some cases, schools obtain the formal status of federal or regional innovation platform and disseminate their experience to other schools through institutional channels: they publish their methodological guides and results, build databases of successful practices and cases, organise training sessions and internships. In other cases, schools pass on their experience to other schools and kindergartens informally - by inviting them for excursions, workshops and open lessons.

Further, we identified the role played by non-governmental organisations in these partnerships. They create communities to disseminate educational initiatives with a social impact. Such organisations interact with schools, universities, corporations, media and other influencers, forming an extensive network of leaders and ambassadors of change.

We also classified four types of individual innovators' interactions within the educational system. These main types are:

- Team work. This form of cooperation means involving new participants in joint projects on the basis of common interests and competencies independently of institutional structures.
- Formal and informal professional associations.
- Active engagement in these associations reinforces intra-community trust and motivates young teachers.
- Personal connections on different platforms. The authors of the projects are actively looking for networking and self-presentation on platforms. They also provide assistance for newcomers in submitting a grant application, preparing for competitions, etc.
- Event layer. This format provides extensive and sporadic exchange of experience through events such as festivals, exhibitions, meetings after professional championships etc.

Finally, we revealed two interesting phenomena.

- Institutional isomorphism. Due to the lack of infrastructure support and grant programs in the educational field, many innovators enter into partnerships with non-profit organisations, cultural institutions, youth and public organisations to co-finance their educational initiatives. They link their initiatives to cultural and socio-demographic projects, and apply for grants designed to support these cross-disciplinary projects. Thus, educational projects could be presented as an ethnocultural initiative or a career guidance program of a community centre. This multifunctional strategy saturates educational projects with different values and strengthens weaker ties of innovators within the periphery of the educational sphere.
- Ties based on personal innovator's brand. Expertise and co-creation, as the most valuable results of horizontal partnerships, are significantly based on personal trust. We further propose that an innovator's personal experience and trustworthiness is an important contingent factor influencing others' entrepreneurial and project competencies. By communicating with innovators, newcomers feel linked to their immediate experience and, thus, become more susceptible to multiple and diverse perspectives and more ready to be engaged in innovative tasks.

3.2. Effects of horizontal ties and their impact on innovative projects in education

In this section, we examine what effects innovators expect and gain from building partnerships in their projects. We identified several effects of horizontal ties for grassroots innovations: they provide resources, peer-to-peer support and crowdsourcing of ideas, help to avoid failure, give access to the professional community, and strengthen the level of trust.

First, one of the most widespread resources that organisations exchange are facilities for educational events or regular educational activities. On the one hand, formal educational institutions offer premises for non-systemic educational initiatives. While the innovator gets some facilities for free or on very favourable terms, the formal institution benefits from new educational courses that complement their core program or expand the overall range of educational opportunities for their students. On the other hand, cultural institutions provide premises for educational projects and involve learners in a wide range of their own activities.

Second, horizontal ties mediate financial support of the initiatives - in a form of direct investment in the project or sponsoring some needs, such as the repair of premises, purchase of necessary equipment, travel grants, participation fees, or professional training. Such arrangements might be supplemented with mechanisms to reward businesses for their help. For example, school or university may solve some real exploratory tasks of the industrial partner. Business also benefits from early recruitment opportunities, identifying the most prospective students.

Third, the next effect consists of informational support, which provides innovators with an additional opportunity to promote their project and find followers or new audiences. Our results also uncover the internal mechanism of audience

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exchange: one project inherits the loyal participants of a co-joint project by disseminating information through common channels. This mechanism illustrates the crucial role of participation in the activities of other innovators (educational fairs, festivals, workshops) that increase their own visibility and broadens their audience. In addition to the informational channels access and networking, participation in co-joint events enhances the status of the innovator as being a trustworthy and reliable partner, thereby bringing various benefits for further development. For example, joint research projects with the university are perceived as a way of raising status in the educational community. This effect is particularly important for non-profit and private initiatives.

Fourth, horizontal ties and informal connections both facilitate access to human resources for the project. This effect refers to the difficulties that innovators face in finding personnel and forming an innovative team for their projects. This problem is due to the overall deficit of human resources in the educational system and the diverse competencies that are necessary in innovative projects. For example, conducting joint olympiads with the school allows the media studio to attract the most creative teachers in their educational initiatives.

Fifth, innovators collaborate to involve physical, organisational, and expert support for their educational initiatives. For example, professional musicians and theatre artists curate educational projects within art-laboratories and creative summer camps. Writers, representatives of museums and art associations act as jurors at different events arranged by educational organisations, they supervise scientific studies of schoolchildren. Thus, multiple experts cooperate to generate new value through their voluntary contribution in the interrelation of pedagogical, social and cultural aspects of the project. The series of co-designed educational events contributes to intensive exchange of cross-disciplinary educational practices and methods. Beyond this, collaborative efforts form joint vision and values in the educational sphere. In addition, this collaboration provides utilitarian and emotional benefits for students by improving their learning experiences, providing them with customised feedback and support from professionals, and offering them a wide choice of learning trajectories.

In conclusion, our findings help develop a deeper understanding of formats of horizontal ties that play a key role in supporting the grassroots dynamism in the educational sphere. They provide multiple effects, having a large impact on quality, diversity and creativity of educational initiatives. The key insight is that intra-industry ties allow a more focused understanding of processes and overcoming resource constraints, whereas extra-industry ties provide heterogeneous knowledge, attenuate value inertia and contribute to radical innovations.

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