
Small Firm's Cooperation for Innovation with other Firms and Research Units - Whether the Partner Matters for Product, Process, Marketing and Organizational Innovations?

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Abstract:

Purpose: The main purpose of the article is to determine the relationship between the firms' cooperation for innovation, as well as with other firms and research units. It was important to determine the cooperation partners influence on firms' innovations – product, process, marketing, and organization.

Design/Methodology/Approach: The study is based on a small firm survey (n=63) located in Poland. The research model defines the relationship between firms' cooperation and product, process, marketing, and organizational innovations. The multi stepwise regression modeling was used in the study and SPSS software.

Findings: According to the survey, there is a positive relationship between cooperation for innovation and marketing innovations only in the case of small firms' cooperation with other firms. All the rest types of innovation in the surveyed small firms are not determined by cooperation for innovation, non-horizontal and non-vertical.

Practical implications: As small firms' managers, practitioners should invest more effort in cooperation for innovations with partners such as other firms. Cooperation with research units is convenient in firms' innovativeness performance but in the case of surveyed firms is not crucial cooperation in innovation activity.

Originality/Value: That survey is one of the few studies examining the relationship between the small firms' cooperation for innovation (with other firms and research units) and its influence on product, process, marketing, and organization innovations. The measurement of firms' cooperation for innovation and the importance of the cooperating partners should be developed further as it is essential in the firms' performance.

Keywords: Cooperation for innovation, product innovation, process innovation, marketing innovation, organization innovation.

JEL Codes: O32, C00, L1.

Paper Type: Research Paper.

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1. Introduction

According to Grant (2002; 2013), firms' ability to innovate determines its sustainable competitive advantage, and knowledge is the critical resource (Hernandez-Trasobares and Murillo-Luna, 2020). Innovation carries on a fundamental economic concept that the business sector needs to adapt to societal changes and competition (Hermundsdottir and Aspelund, 2021). Thus, the implementation of new products, processes, marketing and organization innovation is crucial in firm competitiveness.

As firms' innovation activities are essential to bring new products to market and introduce new production processes, firms need to interact with partners to collaborate and exchange knowledge (Pedro *et al.*, 2020). Cooperation makes it faster and easier to innovate as it is a crucial factor for innovation (Triguero *et al.*, 2018).

The contribution of this paper is to extend the influence of the firms' cooperation for innovation on the product, process, marketing, and organization innovation. The article's main aim is to determine the relationship between cooperation with other firms and research units and product, process, marketing, and organizational innovation.

2. Theoretical Background

After Baregheh *et al.* (2009) and Nohria and Gulati (1996) innovation takes different forms, as it can be innovation in product processes, services, management methods, or organizational structures (Hermundsdottir and Aspelund, 2021). Product and process innovations are significant in the development of industry, increased production, and quality of people living standards (Antonelli, 2008). Product innovations are focused mainly on market needs and are driven by customers' behavior and needs - the recipients of innovations. On the other hand, process innovations mainly focus on improving the production process effectiveness and translating it into efficiency. Product innovations are new technological solutions or combinations of technologies used commercially to satisfy user and market needs. Process innovations mainly focus on improving the production process's efficiency and translating into productivity (Utterback and Abernathy, 1975). In a general sense, organizational innovations refer to the creation, introduction or adaptation of a new idea or behavior in an organization (Lam, 2004).

According to Lin and Chen (2007), marketing innovations explain the emergence of a new idea, that is, a breakthrough or an incremental modification of an existing concept for improvisation - incremental innovation (Suraksha *et al.*, 2016). To innovate firms cooperate with external partners (Frenken and Boschma, 2006). Many firms are connecting with external partners, with whom they exchange or share projects and information. In cooperation - as active participation in innovation projects with other entities - the firm may be involved with other firms or non-commercial institutions. All parties take an active part in the work undertaken.

Firms are involved in open innovation models, collaborating with different partners, where the key advantages include reducing the risks associated with research and development and uncertain innovation activity (Chesbrough, 2010). According to that, firms seek ideas, inspiration, and technology from their external environment and engage in collaborations with external academic and research entities and firms. Protecting the innovation from the competition is less important than collaboration for gaining innovations. Collaboration works the other way as well.

In small and medium-sized enterprises, the outsourcing of research and development activity understood as cooperation between the ordering entity and the one executing the order is gaining importance. The cooperation in such a case is based on an agreement between the parties (Bradak *et al.*, 2012). The fundamental part of the innovation process focuses on searching out innovations and searching for a partner with firms developing new products and services, as it needs less money and time and other resources. According to Spencer (2001) the interaction between firms and universities increases the number of innovations firms produce (Janeiro *et al.*, 2013). A closer link between smaller firms and research institutions may require human capital and other resources and may seek research and development support from research entities to complement their in-house initiatives (Ghebrihiwet, 2020).

3. Data and Research Methods

The model was specified due to the description of cooperation for innovation and its specific aspects as well as the types of innovation appearing in the surveyed firm. There is one independent variable in the survey - cooperation for innovation and four dependent variables – product, process, marketing, and organizational innovations. The cooperation for innovation is described by horizontal cooperation between cooperating firms and vertical cooperation between cooperating firms with research units. The scheme of the research model of cooperation for innovation and all the dependent variables presents Figure 1.

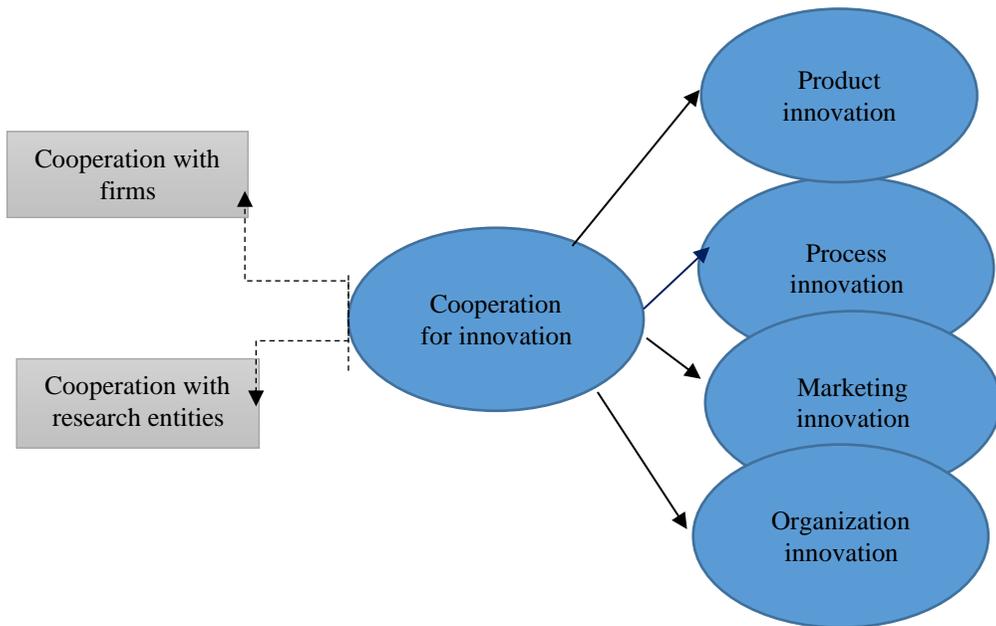
Data collection was conducted into three two stages, in 2015-2016 and in 2019. Data were collected according to PAPI and CAWI method, using the research questionnaire. The interviews were conducted with managers of 63 small firms located Poland.

4. Data Analysis and Results

Cooperation for innovation and product innovation:

To determine the relationship between the cooperation for innovation and product innovation in the surveyed firms, it was essential to determine which type of cooperation is statistically relevant for product innovation. The coefficient of regression equations between the size of the product innovation indicator and the statistically significant explanatory variable (at the significance level of $p < 0.05$) and the coefficient of determination (R^2) in the firms is presented in Table 1.

Figure 1. Cooperation for innovation and product, process, marketing, organization innovation - research model.



Source: Based on author's research.

Table 1. Coefficient of the regression equation between product innovation and statistically significant independent variables is cooperation for innovation in the surveyed firms.

Indicator	B	Standard error (b)	t(61)	p
Free expression	4,23	0,41	8,32	0,00
Cooperation with research entities	0,82	0,33	1,56	0,09
Cooperation with firms	0,53	0,42	1,62	0,12

Note: $R^2=0,22$; adjusted $R^2=0,19$; Significance $F(1,82)=7,2$.

Source: Author's elaboration.

The verified model is statistically insignificant (Table 1) and is characterized by a lack of statistical relationship between firms' product innovation variables and vertical cooperation for innovation ($p=0.09$) as well as the horizontal cooperation for innovation ($p=0.12$). The explanatory variables within the model do not determine product innovation in the surveyed firms.

Cooperation for innovation and process innovation:

To determine the relationship between the cooperation for innovation and process innovation in the surveyed firms, it was essential to determine which type of cooperation for innovation – horizontal and vertical is statistically relevant for process innovation. The explanatory variables verified model – horizontal and vertical cooperation for innovation and the explained variable - process innovation, turned out to be statistically insignificant and characterized by the lack of statistical dependence between the defined and explanatory variables. The explanatory variables within the model do not determine process innovations in the surveyed firms.

Cooperation for innovation and marketing innovation:

To determine the relationship between the cooperation for innovation and marketing innovation in the surveyed firms, it was essential to determine which type of cooperation for innovation – horizontal and vertical is statistically relevant for marketing innovation.

Table 2. Coefficient of the regression equation between marketing innovation and statistically significant independent variables is cooperation for innovation in the surveyed firms.

Indicator	B	Standard error (b)	t(61)	p
Free expression	4,12	0,32	7,32	0,00
Cooperation research entities	0,21	0,11	2,12	0,06
Cooperation with firms	0,18	0,06	1,23	0,04

Note: $R^2=0,22$; adjusted $R^2=0,23$; Significance $F(2,91)=13,52$

Source: Author's elaboration.

The verified model is statistically significant with a statistical relationship between marketing innovation variables and horizontal cooperation for innovation undertaken with scientific units ($p=0.04$). There is no statistical significance in the collaboration for innovation with scientific entities.

Cooperation for innovation and organization innovation:

To determine the relationship between the cooperation for innovation and organization innovation in the surveyed firms it is essential to determine which type of cooperation for innovation – horizontal and vertical is statistically relevant for organizational innovation.

The explanatory variables verified model – horizontal and vertical cooperation for innovation and the explained variable - organization innovation, turned out to be statistically insignificant and characterized by the lack of statistical dependence between the defined and explanatory variables. The explanatory variables within the model do not determine organization innovations in the surveyed firms.

5. Conclusions

In the surveyed small firms, both horizontal and vertical cooperation for innovation does not determine product innovation. Also, as the model of cooperation for innovation and process innovation is not statistically significant, there is no relationship between small firms' cooperation for innovation with other firms or research units and process innovation. Also, the model of firms' cooperation and organizational innovation is statistically insignificant. Only in the case of marketing innovations, the model was statistically significant, and from both types of cooperation only the small firms' cooperation for innovation with other firms determines the marketing innovations. The cooperation for innovation with research units is not significant for marketing innovations in the surveyed firms as well.

Regarding the survey, practitioners like managers of small firms need to put an effort into cooperation for innovations with other firms, as that is the only type of cooperation for innovation that determines the marketing innovations.

There is a need for future research. The essential points to future analysis are the other sources of innovation in a small firm that influence the implementation of material and non-material innovations. Also, other partners of cooperation, like customers, deliver are essential to examine in gaining firms' innovation.

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