PRODUCT INNOVATION AS THE CAUSE OF EXPORT PROPENSITY IN THE CAUCASUS: EMPIRICAL EVIDENCE FOR ARMENIA, AZERBAIJAN AND GEORGIA

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A B S T R A C T

Despite the extensiveness and abundance of empirical research in the existing literature, there is no clear view or position with respect to the role of innovation in exporting, especially regarding the heterogeneous impacts of different types of innovations (product, process, organizational and marketing innovations) on exporting. The objective of this article is the empirical verification of innovation as the cause of export propensity in firms from the South Caucasian countries (Armenia, Azerbaijan and Georgia). The empirical investigation is based on the data collected by the Enterprise Survey (World Bank Microdata), conducted among companies located in the Southern Caucasus. Seven hundred and seventy-six firms were selected through an appropriate procedure, including 279 from Armenia, 236 from Azerbaijan, and 261 from Georgia. Logit regression models were applied to determine the chances of exporting, depending on the type of innovations implemented by each company. The results of binomial logistic regression analysis demonstrate that product innovations play an important role in explaining SMEs' export propensity in the South Caucasian countries. Moreover, the likelihood of export is seen to be positively related to the share of foreign capital in company structure. The general level of economy innovativeness in the Cau-

casus is low, but the share of foreign ownership in companies under consideration was relatively high, so the foreign investors probably played a key role in the innovations implemented by local ventures. It is most likely due to Armenia, Azerbaijan and Georgia going through an early stage in economic transition, in which soft innovations (organizational and marketing innovations) lag behind hard innovations. There is an evident lack of empirical studies of the role of innovation in the development of export in emerging countries, including the South Caucasian countries, and it still remains largely underexplored; therefore, the novelty of this research lies in the exploration of the Caucasian countries as emerging markets.

Introduction

Despite the vast amount of international economics and international business literature and an abundance of empirical research, there is no clear view or position regarding the role of innovation in exporting or the more general process of the company's internationalization.[1] The numerous empirical attempts to verify this relationship have been unable to fill this research gap. The earliest empirical studies were conducted in developed economies (North America, Western Europe), and later the attention of researchers focused on emerging markets, mainly China,[2] and more recently—on Central and Eastern Europe.[3] Most of emerging markets still remain unexplored, and the extension of empirical research and a test of the hypotheses from the well-developed economies to the Southern Caucasus is needed and anticipated. Larisa Korganashvili noticed that this particular region lacks sufficient innovation for a comprehensive integration of its countries' foreign trade with the global economic system.[4] Kiss, Danis and Cavusgil note that the problem lies in the extent of applicability of research results from developed economies to the realities of emerging markets,[5] so there is an evident lack of empirical studies on emerging countries, including the South Caucasian countries (SCCs).

In a recent study, Edeh, Obodoechi, and Ramos-Hidalgo[6] emphasize that the heterogeneous impacts of different innovation types on export performance, especially in the case of small busi-

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[1] See: J.P. Damijan, C. Kostevc, S. Polanec, "From Innovation to Exporting or Vice Versa?" *The World Economy*, Vol. 33, No. 3, 2010, pp. 374-398, available at [https://doi.org/10.1111/j.1467-9701.2010.01260].

[2] See: A. Cieślik, Y. Qu, T. Qu, "Innovations and Export Performance: Firm Level Evidence from China," *Entrepreneurial Business and Economics Review*, Vol. 6, No. 4, 2018, pp. 27-47, available at [https://doi.org/10.15678/EBER.2018.060402].

[3] See: S. Bertarelli, C. Lodi, "Innovation and Exporting: A Study on Eastern European Union Firms," *Sustainability*, Vol. 10, No. 10, 2018, p. 3607, available at [https://doi.org/10.3390/su10103607].

[4] See: L. Korganashvili, "Georgia in the World Merchandise Trade: Main Trends and Problems of Development," *European Journal of Economics and Business Studies*, Vol. 4, No. 3, 2017, pp. 52-60, available at [https://doi.org/10.2478/ejes-2018-0058].

[5] See: A.N. Kiss, W.M. Danis, S. Cavusgil, "International Entrepreneurship Research in Emerging Economies: A Critical Review and Research Agenda," *Journal of Business Venturing*, Vol. 27, No. 2, 2012, pp. 266-290, available at [https://doi.org/10.1016/j.jbusvent.2011.09.004].

[6] See: J.N. Edeh, D.N. Obodoechi, E. Ramos-Hidalgo, "Effects of Innovation Strategies on Export Performance: New Empirical Evidence from Developing Market Firms," *Technological Forecasting and Social Change*, Vol. 158, 2020, pp. 120-167, available at [https://doi.org/10.1016/j.techfore.2020.120167].

nesses, and in particular in developing countries or emerging markets, remain largely underexplored. The novelty of this research lies in the exploration of the South Caucasian countries as emerging markets, which are seldom explored in the literature on the subject of international economics. The role of innovation differs in the times of economic revivals or booms and economic slowdowns or crises.[7] The results of prior empirical research have prompted us to pose the following two research questions:

RQ1: What is the role of different types of innovations for exporting by firms from the three South Caucasian countries (Armenia, Azerbaijan, Georgia)?

RQ2: What is the role of foreign capital in teaching companies from these three South Caucasian countries to innovate by developing their export activities?

The objective of this article is the empirical verification of innovation as the cause of export propensity in firms from Armenia, Azerbaijan and Georgia as three countries of the Caucasus, which is explored as a distinct region with specific characteristics. We will investigate these issues on a more appropriate research sample from these countries, one that is more uniformly distributed and includes all companies (of all sizes: micro, small, medium-sized and large, as well as at early and slow stages of internationalization). We will also focus on various types of innovation, trying to explore this research gap in detail.

Literature Review and Hypotheses Development

Innovation has been one of the key issues in the abundant international business literature. Innovation-related models (i-models), which are one of the oldest approaches to explaining internationalization, introduced by Bilkey and Tesar, treat it as an innovation.[8] For the last two decades there have been various empirical studies exploring the role of innovation in exporting. Numerous theoretical concepts and empirical investigations treat this relationship as a bipolar one.[9] It means that,

- first of all, innovation can be the result of export activities, which means that firms learn to innovate by exporting. Thus, exporting or internationalization stimulate companies' innovative behavior due to different reasons.

- Second, innovation can make a contribution to exporting, which means that innovation is the cause of exporting or internationalization, and makes the latter processes faster, better or more intense, especially in the case of technology-based or high-tech "born global" companies.[10]

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[7] See: J. Kaszowska-Mojsa, "Innovation Strategies of Manufacturing Companies during Expansions and Slowdowns," *Entrepreneurial Business and Economics Review*, Vol. 8, No. 4, 2020, pp. 47-66, available at [https://doi.org/10.15678/ EBER.2020.080403].

[8] See: W.J. Bilkey, G. Tesar, "The Export Behavior of Smaller-Sized Wisconsin Manufacturing Firms," *Journal of International Business Studies*, Vol. 8, 1977, pp. 93-98.

[9] See: S. Tavassoli, "The Role of Product Innovation on Export Behavior of Firms: Is It Innovation Input Or Innovation Output That Matters?" *European Journal of Innovation Management*, Vol. 21, No. 2, 2018, pp. 294-314, available at [https:// doi.org/10.1108/EJIM-12-2016-0124].

[10] See: K. Wach, "Innovative Behavior of High-Tech Internationalized Firms: Survey Results from Poland," *Entrepreneurial Business and Economics Review*, Vol. 4, No. 3, 2016, pp. 153-165, available at [https://doi.org/10.15678/ EBER.2016.040311].

In the existing literature there is no unequivocal standpoint on the relations between innovation and exporting. Despite the abundant literature and numerous empirical investigations, Zuchella and Siano observed that "the links between innovation and internationalization tend to be less clear."[11] Nonetheless, we will apply the latter approach, claiming that innovation impacts exporting.

Innovations and technological progress are important for company development and the growth of economies, especially in the era of economic globalization. Based on his extensive empirical studies for Italian exporters, Basile proved that innovation is a key factor that explains the intensification of exporting[12]. He also observed that innovators are better at trading goods abroad than non-innovators, and the latter are forced to rely solely on the fluctuations in exchange rates to obtain profits.

There are various classifications and typologies of innovations. Schumpeter identified five forms of innovations, namely

 (i) product innovation,

(ii) process innovation,

(iii) marketing innovation,

(iv) organizational innovation and

(v) supply innovation.[13]

Whereas the *Oslo Manual*, the most popular classification applied in various empirical studies, mentions only the first four of them.

Dohse and Niebuhr stress that there are "only few studies that investigate the different impact of distinct kinds of innovation on exports, and the evidence provided so far appears rather inconclusive."[14] This encouraged us to research the impact of various types of innovations on exporting in the countries of the Southern Caucasus.

Product innovations and process innovations are sometimes collectively referred to as technological innovations. Cassiman, Golovko and Martínez-Ros,[15] who used a panel of Spanish manufacturing firms, as well as Becker and Egger,[16] who used secondary data from Germany in their empirical investigations, confirmed that product innovations propel export propensity, whereas process innovations have no important effect on exporting. Recently, Dohse and Niebuhr,[17] who also used German data, found that incremental innovations have a significant positive impact on export propensity, whereas radical innovations only affect exporting with a time lag. On the contrary, Damijan, Kostevc and Polanec[18] using panel microeconomic data for Slovenian firms found no evidence that product or process innovations increase export propensity. Studies of literature, and especially the review of various empirical studies, resulted in the following hypotheses to be tested:

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[11] A. Zucchella, A. Siano, "Internationalization and Innovation as Resources for SME Growth in Foreign Markets: A Focus on Textile and Clothing Firms in the Campania Region," *International Studies of Management and Organization*, Vol. 44, No. 1, 2014, pp. 21-41, available at [https://doi.org/10.2753/IMO0020-8825440102].

[12] See: R. Basile, "Export Behavior of Italian Manufacturing Firms Over the Nineties: The Role of Innovation," *Research Policy,* Vol. 30, No. 8, 2001, pp. 1185-1201.

[13] See: J.A. Schumpeter, *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*, Transl. into English by R. Opie, Transaction Publishers, New Brunswick, London, 1934/2008.

[14] D. Dohse, A. Niebuhr, "How Different Kinds of Innovation Affect Exporting," *Economics Letters*, Vol. 163, 2018, p. 183, available at [https://doi.org/10.1016/j.econlet.2017.12.017].

[15] See: B. Cassiman, E. Golovko, E. Martínez-Ros, "Innovation, Exports and Productivity," *International Journal of Industrial Organization*, Vol. 28, No. 4, 2010, pp. 372-376, available at [https://doi.org/10.1016/j.ijindorg.2010.03.005].

[16] See: S. Becker, P. Egger, "Endogenous Product Versus Process Innovation and Firm's Propensity to Export," *Empirical Economics*, Vol. 44, 2013, pp. 1-26, available at [https://doi.org/10.1007/s00181-009-0322-6].

[17] See: D. Dohse, A. Niebuhr, op. cit.

[18] See: J.P. Damijan, C. Kostevc, S. Polanec, op. cit.

H1: Product innovations have a significant positive impact on propensity to export in firms from the Southern Caucasus.

H2: Process innovations have a significant positive impact on propensity to export in firms from the Southern Caucasus.

Unlike technological innovations, referred to as hard innovations, there is relatively little empirical evidence in literature on the relationship between soft innovations and exporting. Non-technological (soft) innovations comprise organizational innovations and marketing innovations. D'Attoma and Ieva[19] urged that treating all kinds of marketing innovations as innovations of the same type, as well as being similar to technological innovations that lead to similar consequences, could be misleading. Based on German data, they empirically found that innovations in product packaging and design are positively related, while promotion innovations are negatively related to the company's performance.

On the sample of 573 Swedish firms Azar and Ciabuschi[20] empirically discovered that organizational innovations enhance export performance both directly and indirectly, but only by propelling technological innovations. Using a sample of 299 firms from three countries from the emerging South American economies (Colombia, Peru, Chile) Pino *et al*.[21] found that organizational innovations have a greater impact on market performance than marketing innovations.

It is also important to note that non-technological innovations (especially marketing innovations) are seldom compared with export dynamics in empirical studies, which is why we attempted to fill this research gap by dealing with this issue. Thus, we will test the following research hypotheses:

H3: Organizational innovations have a significant positive impact on propensity to export in firms from the South Caucasus.

H4: Marketing innovations have a significant positive impact on propensity to export in firms from the South Caucasus.

The countries of Central Asia and the Caucasus are still undergoing economic transformation and are considered economies in transition, nonetheless, these countries have been actively increasing their international trade since the early 1990s, mainly by increasing mineral export. As Amirbek, Makhanov, Tazhibayev and Anlamassova observed,[22] trade between the Central Asian countries has been and remains negligible, whereas a much larger share in foreign trade of Central Asian countries is taken up by the EU, China and Russia. The main factors hindering economic cooperation in Central Asia are

(i) weak institutions that are not conducive to the development of the private sector and entrepreneurship, and

(ii) poorly developed infrastructure and innovation.

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[19] See: I. D'Attoma, M. Ieva, "Determinants of Technological Innovation Success and Failure: Does Marketing Innovation Matter?" *Industrial Marketing Management*, Vol. 91, 2020, pp. 64-81, available at [https://doi.org/10.1016/j.indmarman.2020.08.015].

[20] See: G. Azar, F. Ciabuschi, "Organizational Innovation, Technological Innovation, and Export Performance: The Effects of Innovation Radicalness and Extensiveness," *International Business Review*, Vol. 26, No. 2, 2017, pp. 324-336, available at [https://doi.org/10.1016/j.ibusrev.2016.09.002].

[21] See: C. Pino, C. Felzensztein, A.M. Zwerg-Villegas, L. Arias-Bolzmann, "Non-Technological Innovations: Market Performance of Exporting Firms in South America," *Journal of Business Research*, Vol. 69, No. 10, October 2016, pp. 4385-4393, available at [https://doi.org/10.1016/j.jbusres.2016.03.061].

[22] See: A. Amirbek, K. Makhanov, R. Tazhibayev, M. Anlamassova, "The Central Asian Countries in the Global Economy: The Challenges of Economic Integration," *Central Asia and the Caucasus*, Vol. 21, Issue 1, 2020, pp. 90-101, available at [https://doi.org/10.37178/ca-c.20.1.09].

These conditions add further significance to the empirical study on the interdependence of innovation and foreign trade, and thus allow this article to fill the research gap.

Very recently Bigos and Michalik[23] have published their empirical results for 906 small and medium-sized enterprises (SMEs) from 19 post-Communist countries of Central and Eastern Europe, Central Asia and the Southern Caucasus, including businesses from Armenia (9), Azerbaijan (25) and Georgia (65). Their research sample from the Southern Caucasus was relatively small (99 firms) and included only SMEs, thus, it is impossible to generalize their results over all of the companies from this region. They proved that process and organizational innovations stimulate the exports of "born globals" (firms whose share of exports in the total sales exceeded 25% during the first three years), while there was no such empirical confirmation for marketing innovations. What is more, there was no statistical significance for product innovations.

Research Methodology

The empirical study is based on data obtained from the Enterprise Survey, which covered the period of 2008-2019 and was conducted jointly by the World Bank Group, the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), and the European Commission (EC). The survey sample includes SMEs operating in the South Caucasian region, namely, in Armenia, Azerbaijan, and Georgia. The survey process was supported by representatives of several business organizations and government agencies, and respondents were typically senior managers.

Initially, 3,514 business entities from the SME sector were selected for the study from the public database available. Subsequently, we eliminated the entities that did not have complete information on domestic and foreign sales or specific types of innovations, which consequently resulted in the remaining 776 entities that were selected for the empirical analysis, with 36.0% of firms being from Armenia (279 firms), 30.4%—from Azerbaijan (236 firms), and 33.6%—from Georgia (261 firms).

The binomial logistic regression model—also known as the logit model—was used to verify the previously stated hypotheses. Its advantage is that the dependent variable (Y) may take dichotomous measures, depending on exogenous (independent) variables, which, in turn, may be quantitative or qualitative[24]:

$$Y = \begin{cases} 1, & \text{phenomenon occurs} \\ 0, & \text{otherwise.} \end{cases} \qquad (1)$$

Moreover, logistic regression is usually recommended when the assumption of a normal distribution of variables cannot be met[25]. The estimation of logit model parameters is based on the maximum likelihood method[26]. Finally, the logistic regression model can take the following form[27]:

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[23] See: K. Bigos, A. Michalik, "The Influence of Innovation on International New Ventures' Exporting in Central and Eastern Europe and Central Asia Countries," *Entrepreneurial Business and Economics Review*, Vol. 8, No. 3, 2020, pp. 47-63, available at [https://doi.org/10.15678/EBER.2020.080303].

[24] See: J. Hair, R.E. Anderson, R.L. Tatham, W.C. Black, *Multivariate Data Analysis with Readings*, Macmillan Publishing Company, New York, 1998.

[25] See: Ibidem.

[26] See: D.W. Hosmer, S. Lemeshow, R.X. Sturdivant, *Applied Logistic Regression*, John Wiley & Sons, Hoboken, 2013.

[27] See: P. McCullagh, J.A. Nelder, *Generalized Linear Models*, Springer US, Boston, 1989; S. Sperandei, "Understanding Logistic Regression Analysis," *Biochemia Medica,* Vol. 24, 2014, pp. 12-18, available at [https://doi.org/10.11613/bm.2014.003].

$$\pi = \frac{\exp\left(\beta_0 + \sum_{i=1}^{k} \beta_i x_i\right)}{1 + \exp\left(\beta_0 + \sum_{i=1}^{k} \beta_i x_i\right)} \tag{2}$$

$$\ln = \left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k \tag{3}$$

The proposed research model (see Fig. 1) suggests a positive relationship between the four main types of innovation[28] and export propensity. It means that firms implementing product innovations (H1), process innovations (H2), organizational innovations (H3), and marketing innovations (H4) are more likely to export.

F i g u r e   1

Proposed Conceptual Model for Hypothesis Testing

S o u r c e: Authors' elaboration.
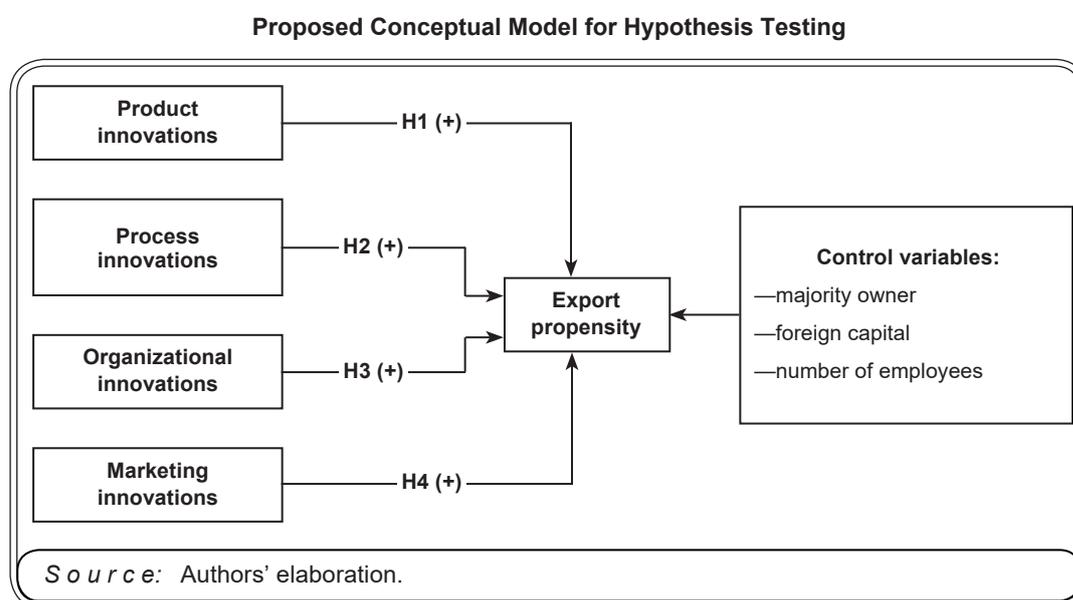
We used a total of ten variables in the research model (see Table 1), where the dependent variable represented firms' export propensity. Independent variables include four types of innovations.[29] We also included three control variables: share of the majority owner, foreign capital, and the number of employees. The research model consists of nominal (dummy) variables and continuous variables. The basic characteristics of the research sample are as follows:

— As for export propensity (d1), the sample contained 6.96% of exporters.

— The share of the so-called majority owner (c1) ranged from 9% to 100%, while the average share was 84.96% (std. dev. 24.84%).

— 2.45% of investigated firms had at least 50% of foreign capital (c2).

— The average number of employees (c3) in investigated firms equaled 17.31 (std. dev. 27.93 employees), whereas the smallest company employed 1 and the largest—220 staff members.

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[28] See: *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, 3rd Edition, OECD, Paris, 2005, available at [https://www.oecd-ilibrary.org/science-and-technology/oslo-manual_9789264013100-en].
[29] See: Ibidem.

— Product innovations (i1) were implemented by 9.28% of investigated firms.

— Process innovations (i2) were implemented by 6.35% of investigated firms.

— Organizational innovations (i3) were implemented by 4.53% of investigated firms.

— Marketing innovations (i4) were implemented by 6.87% of investigated firms.

T a b l e 1

List of Variables Used in the Calculations

Id	Variables	Measurement	Category
Dependent Variable			
d1	Export propensity	1 = export, 0 = no export	Dummy variable
Control Variables			
c1	Share held by Majority Owner	in percentage	Continuous variable
c2	Foreign capital	1 = at least 50% share of foreign capital, 0 = otherwise	Dummy variable
c3	Number of employees	in number	Continuous variable
Independent Variables			
i1	Product innovations	1 = firm introduced new products/services over the last 3 years, 0 = otherwise	Dummy variable
i2	Process innovations	1 = firm introduced new production/supply methods over the last 3 years, 0 = otherwise	Dummy variable
i3	Organizational innovations	1 = firm introduced new organizational/ management practices or structures over the last 3 years, 0 = otherwise	Dummy variable
i4	Marketing innovations	1 = firm introduced new marketing methods over the last 3 years, 0 = otherwise	Dummy variable

S o u r c e: Authors' elaboration based on OECD materials (2005).

Table 2 demonstrates that there is no strong correlation between the independent and control variables used in the analysis. The highest correlation exists between variables representing organizational innovations and marketing innovations ($r = -0.557$). In contrast, the lowest correlation exists between variables representing the number of employees and process innovations ($r = 0.000$).

In the proposed conceptual model (see Fig. 1), export propensity is the dependent variable, which is measured dichotomously, where number 1 was assigned to exporting companies, and number 0—to non-exporters. The study included three control variables and four independent variables. In reference to control variables, we presumed that the majority owner share (c1) can impact the implementation of innovation in each firm. We also control the presence of foreign capital (c2) (1 = at least 50% share of foreign capital, 0 = other) and the number of employees in each venture (c3).

T a b l e 2

Correlation Matrix for Control and Independent Variables

Id	c1	c2	c3	i1	i2	i3	i4
c1	1						
c2	−0.063	1					
c3	−0.051	−0.008	1				
i1	−0.236	0.093	−0.011	1			
i2	−0.145	−0.007	0.000	0.483	1		
i3	−0.093	0.006	0.076	0.380	0.480	1	
i4	−0.144	−0.010	0.027	0.354	0.455	0.557	1

S o u r c e: Authors' elaboration based on Enterprise Survey (N = 776).

In reference to independent variables, we took into consideration four types of innovations distinguished by OECD[30]:

■ **product innovations** (i1) refer to the introduction of a product or service that is new or substantially improved in terms of its characteristics or use;

■ **process innovations** (i2) refer to the implementation of a new or substantially improved production or supply method;

■ **organizational innovations** (i3) refer mainly to the implementation of a new organizational method in operational procedures adopted by the company in the workplace setup or relations with the environment;

■ **marketing innovations** (i4) primarily refer to the implementation of a new marketing method, which involves significant changes in product design, packaging, distribution, promotion, or pricing strategy.

Findings

We used PQStat v.1.6.8. software to construct the binomial logistic regression model. A properly adjusted logistic regression model should mainly meet two criteria: (1) the likelihood ratio test, estimated with the maximum probability, should be statistically significant, and (2) the Hosmer-Lemeshow test should be statistically insignificant[31].

In our model, the likelihood test was statistically significant (chi-square = 30.391, *df* = 7, *p* = 0.000), which is the desired result. In addition, Hosmer-Lemeshow test is statistically insignificant (chi-square = 6.344, df = 8, *p* = 0.609). Thus, the diagnostic tests allowed us to interpret the logit model.

Based on the binomial logistic regression model (see Table 3), we can observe that all the control variables are significant. Although the variables describing the share of the majority owner in the

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[30] See: Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data.
[31] See: J. Hair, R.E. Anderson, R.L. Tatham, W.C. Black, op. cit.

venture and the number of employees are both statistically significant, they play no crucial role in explaining export propensity in the South Caucasian countries as their odd ratios are close to 1. A different situation occurs about foreign capital where we can observe that firms with at least 50% of foreign capital share are almost 4.2-times more likely to export.

T a b l e 3

**Binomial Logistic Regression Model
(Dependent Variables = Export Propensity)**

Variables	Coeff.	Std. Err.	Wald	Sig	Odd ratio
c1: Share held by majority owner	−0.013	0.005	6.158	0.013	0.987
c2: Foreign capital	1.432	0.568	6.362	0.011	4.187
c3: Number of employees	0.008	0.004	4.918	0.027	1.008
i1: Product innovations	0.949	0.447	4.513	0.034	2.582
i2: Process innovations	0.195	0.600	0.105	0.746	1.215
i3: Organizational innovations	0.247	0.676	0.134	0.715	1.280
i4: Marketing innovations	−0.105	0.617	0.029	0.866	0.901
Constant	−1.960	0.465	17.725	0.000	0.141

S o u r c e: Authors' elaboration based on (N = 776).

In terms of independent variables, it turned out that only one out of four types of innovations impacts export propensity. The results of our research confirm that the likelihood of export is 2.582 times higher in firms where product innovations are implemented than in those where there are no product innovations (coeff. = 0.949, p = 0.034). Thanks to that, we can only confirm the H1 hypothesis. The logistic regression model has not confirmed the statistical significance for process innovations (coeff. = 0.195, p = 0.746), organizational innovations (coeff. = 0.247, p = 0.715), and marketing innovations (coeff. = –0.105, p = 0.866) as predictors of export propensity, hence hypotheses H2, H3, and H4 should be rejected.

Discussion

Our empirical calculations proved that product innovations have a significant positive impact on propensity to export in firms from the Southern Caucasus (Armenia, Azerbaijan and Georgia). Our results are in line with previous empirical evidence for Spanish manufacturing firm by Cassiman, Golovko and Martínez-Ros[32] and for German firms by Becker and Egger.[33] This is an expected result from the viewpoint of existing literature. The general level of innovativeness of Caucasian economies is low, but the share of foreign ownership in investigated firms was relatively high, thus, we assume that the foreign investors probably played a key role in innovations implemented by local ventures.

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[32] See: B. Cassiman, E. Golovko, E. Martínez-Ros, op. cit.
[33] See: S. Becker, P. Egger, op. cit.

Our results do not support the impact of process, organization and marketing innovations on export propensity of the South Caucasian firms. We need to underscore that there are also opposite cases in literature, which means that some researchers have found proof of these relations. Based on a sample of 19 post-communist countries of Central and Eastern Europe, Central Asia, and Southern Caucasus, Bigos and Michalik proved that process and organizational innovations stimulate exporting activities of international new ventures. Nonetheless, our empirical results seem to be in line with most of the empirical evidence from around the globe. In any case, the existing literature is non-conclusive, which means there is little empirical evidence, and there is a need to continue further empirical investigations.

C o n c l u s i o n s

Innovation, innovativeness, innovative resources and knowledge transfer and absorption are considered a major driver of internationalization of firms, both large corporations and small and medium-sized enterprises, which operate both in traditional labor-intensive industries and in high-tech industries, or at least in knowledge-intensive industries. Literature review reveals that both knowledge[34] and innovation[35] play a key role not only in supporting the propensity to export, but also impact export performance.

The conducted research confirms one out of four hypotheses. Hypothesis H1 posited that the implementation of product innovations by venture increases their likelihood to export, which has been confirmed. The binomial logistic regression model did not confirm hypotheses H2, H3 and H4. It turned out that process, organizational and marketing innovations do not play a crucial role in export propensity in Armenia, Azerbaijan and Georgia (variables were not statistically significant). Most probably, these countries are in their early stage in economic transition, in which soft innovations lag behind hard innovations.

Just like every empirical study, this one is not free of limitations. The research sample included SMEs heavily different in terms of sectors of the economy and particular industries, as well as location and country of origin. There is a limited number of studies measuring the influence of SMEs' innovativeness in the South Caucasian countries on their export propensity. Further research should account for, among other things, the sectoral and industry diversification of venture activity as one of the variables influencing the export-oriented—or even global—attitude of managers towards export.

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[34] See: A. Głodowska, M. Maciejewski, K. Wach, "How Entrepreneurial Orientation Stimulates Different Types of Knowledge in the Internationalisation Process of Firms from Poland?" *Entrepreneurial Business and Economics Review*, Vol. 7, No. 1, 2019, available at [https://doi.org/10.15678/EBER.2019.070104].

[35] See: K. Bigos, A. Michalik, op. cit.