The impact of strengthening and hampering innovation factors on firm's performance - a comparative analysis of EU and non-EU countries

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Literature review – Innovation

- Peter Drucker (1985) defined innovation “as change that creates a new dimension of performance.”
- Damanpour (1996) conceived innovation as a means of changing an organization, either as a response to changes in the external environment or as a pre-emptive action to influence the environment
- Schumpeter (1934) defined innovation as “new combinations” of existing resources.
- Examples of innovation (Schumpeter, 1934):
  - new products,
  - new methods of production,
  - new sources of supply,
  - exploitation of new markets and
  - new ways to organize business.

Literature review – Different facets of innovation

- Product and process innovation (Schumpeter, 1934; Kimberly, 1981; Djellal, Gallouj 2015)
- Administrative and technical innovation (Daft, 1978; Damanpour and Evan, 1984; Evan, 1966)
- Management innovation (Stjernberg and Philips, 1993; Birkinshaw, Hamel, and Mol, 2008).
- Marketing innovation (Chen, 2004).
- Financial Innovation (Allen and Gale, 1994)

Literature review – relevance of innovation

- There is a positive impact of innovativeness on firm performance (Damanpour, 2009).
- The contribution of innovation to national economic growth, both theoretically (Solow, 1956; Romer, 1986) and empirically (Mansfield, 1972; Nadiri, 1993).
- Innovation as a very important source of sustainable competitive advantage (Porter, 1990; Drew, 1997; Tushman and Nadler, 1986).

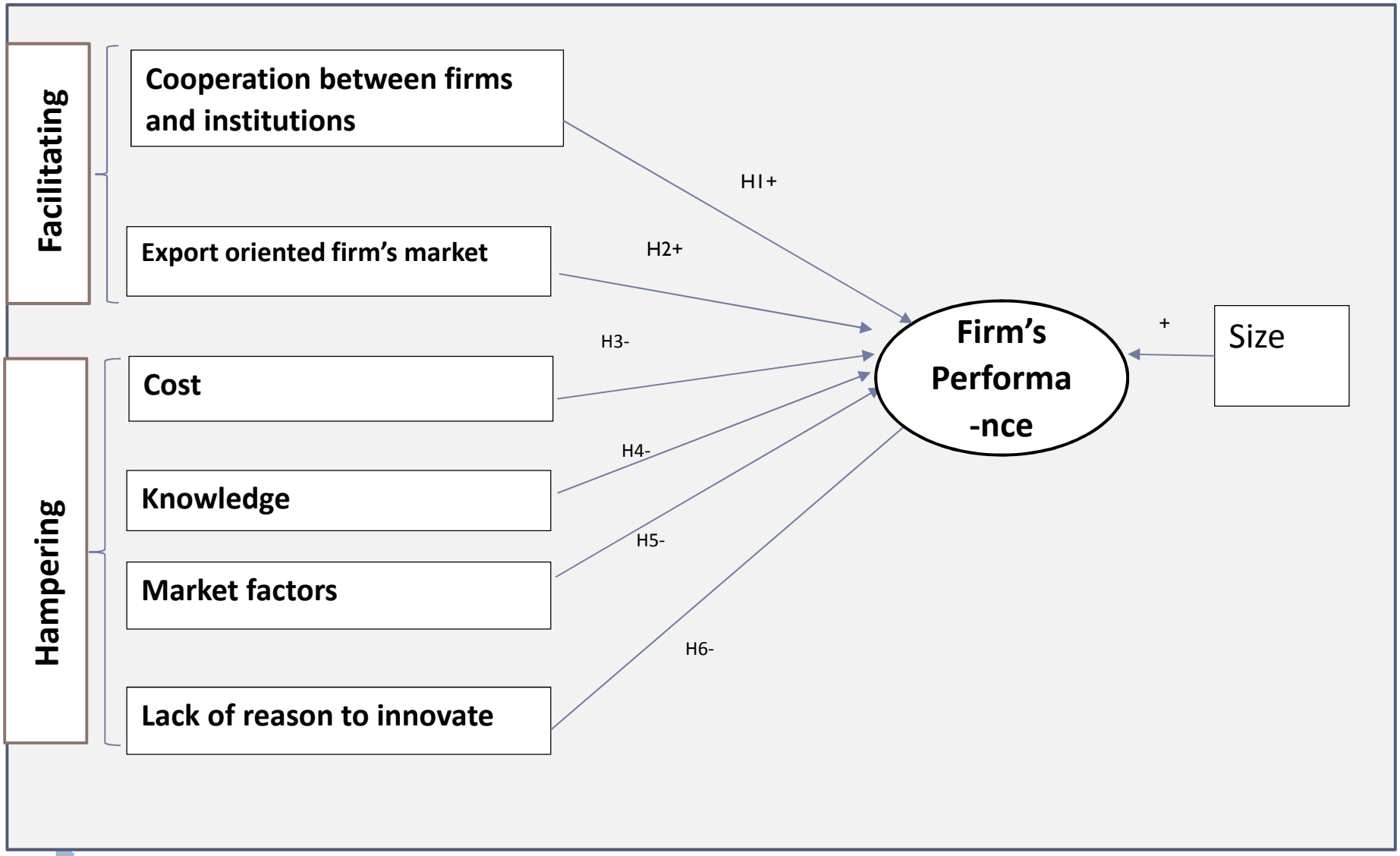
Literature review – factors hampering and facilitating innovation

- The primary stimulus for organizational innovation and change comes from the external environment (Tornatzky and Fleischer, 1990).

- Important factors fostering innovation are:
  - Capability (Nelson and Winter, 1982)
  - Collaboration (Rothwell, 1991)
  - Export (Harris and Li, 2009)

- Important factors hampering innovation (D'Este, Iammarino, Savona, Tunzelmann, 2012; Șipoș, Bîzoi, Ionescu, 2013) are:
  - market factor,
  - technological factor,
  - human resource factor
  - relationship factor

Conceptual framework and research hypothesis



Conceptual framework and research hypothesis

- H1. Cooperation on innovation activities between firms or institutions increases firm's performance.
- H2. The more export oriented a firm's market, the higher the firm's performance.
- H3. The increase of cost factors hampering innovation lowers firm's performance.
- H4. The increase of knowledge factors hampering innovation lowers firm's performance.
- H5. The increase of market factors hampering innovation lowers firm's performance.
- H6. The lack of reasons to innovate lowers firm's performance.

Methods and procedures
Data

- The sample consists of 428 innovative firms randomly selected using stratified random sampling method.
- Criteria (50% production firms and 50% service companies and 15% micro, 35% small and 50% medium sizes).
- Instrument-structured questionnaire similar to the Community Innovation Survey (CIS).
- The sample has been divided in two subsamples;
  - the first, includes 231 firms located in four non EU countries, namely Albania, Bosnia and Herzegovina, Montenegro and Serbia;
  - the second, includes 197 firms located in EU countries, namely Italy, Greece, Slovenia and Croatia.

Methods and procedures
Measurement

		Variable	Number of items	Measurement
		<u>Dependent variable</u>		
Performance	a)	Market share compared to the most direct competitor	5	7-points scale (1 = much worse, 4 = equal, 7= much better)
	b)	Revenues compared to the most direct competitor		
	c)	Profit compared to the most direct competitor		
	d)	Cash flow compared to the most direct competitor		
	e)	Decrease costs compared to the most direct competitor		

- Performance was operationalized following Auh and Merlo (2012) and Slaten and Olson (2000).
- The construct yielded a Cronbach Alpha of 0.876 (standardized Cronbach Alpha coefficients), in accordance with the recommended criteria (Nunnally 1978).

Methods and procedures

Measurement

Variable			Number of items	Measurement
		Independent variables		
Cooperation	Active participation with other enterprises or institutions on innovation activities		1	Binary, 1= cooperation, 0 = no cooperation in the last three years
Export orientation	Current number of active export countries for 2013.		1	Continues
Cost factors	a)	Lack of funds within your enterprise or group	3	Continues based on ratio variable (4-points scale) (0-factor not experienced, 1 = low, 2 = medium, 3 = high)
	b)	Lack of finance from sources outside your enterprise		
	c)	Innovation costs too high		
Knowledge factors	a)	Lack of qualified personnel	3	Continues based on ratio variable (4-points scale)
	b)	Lack of information on technology		
	c)	Lack of information on markets		
Market factors	a)	Difficulty in finding cooperation partners for innovation	3	Continues based on ratio variable (4-points scale
	b)	Market dominated by established enterprises		
	c)	Uncertain demand for innovative goods or services		
Lack of reasons to innovate	a)	No need due to prior innovations by your enterprise	2	Continues based on ratio variable (4-points scale)
	b)	No need because of no demand for innovations		
		Control variable		
Firm size	Number of employees		1	Logarithem of number of employees

Methods and procedures

Internal consistency and validity of constructs

- We operationalized the four factors hampering innovation, namely cost, knowledge, market and lack of reasons following Șipoșa, Bîzoib, Ionescu (2013).

- All constructs yielded a Cronbach Alpha above 0.7 in accordance with the recommended criteria of Nunnally (1978).
  - Cost factors - 0.765
  - Knowledge factors – 0.769
  - Market factors - 0.710
  - Lack of reasons to innovate - 0.804

- Varimax rotation was used to test the validity of our independent perceptual variables (weak correlation among variables) (Tabachnick and Fiddell, 2007).
  - Items measuring cost factors loaded reasonably high (.875, .860, .634) with one item - qualified personnel loading into the knowledge factor.
  - Items measuring knowledge factors(.795, .809, .701) with one item - difficulty in finding cooperation partners for innovation - loaded into market factors.
  - Items measuring market factors loaded high (.667, .785, .772).
  - The items for lack of reasons to innovate loaded high (.858, .875).

Methods and procedures
Empirical model

- We analyze the data using linear multivariate regression techniques. This model has the following form:

$$Y = b_0 + b_1X_1 + b_2X_2 + \ldots + b_kX_k$$

- Comparing coefficients of the two sub-samples needs:
  - large samples and
  - the inclusion of all k variables for each subsample in order to compare the fitted regression coefficients Cohen (1983).

Results

Variables	Dependent variable - Performance					
	Non-EU coutries			EU countries		
	B	S.E.	Beta	B	S.E.	Beta
Constant	5.076**	.370		4.626***	.276	
Ln (size)	.090	.062	.096	.083†	.061	.103
Cooperation	.067	.155	0.27	.348*	.150	.153
Export orientation	.118**	.043	.171	.040	.033	.090
Cost factors	-.100*	.038	-.183	-.115***	.030	-.276
Knowledge factors	.057	.040	.107	-.090*	.040	-.184
Market factors	-.136**	.041	-.241	.032	.039	.067
Lack of reasons to innovate	.079	.062	.092	.051	.049	.075
R Square	0.173			0.181		
Adjusted R Square	0.147			0.150		
F	6.684***			5.958***		

*0.01 ≤ p < 0.05, **p < 0.01, ***p < 0.001, †0.05 ≤ p < 0.1

Discussions, Conclusions, Implications, Extensions

- Cooperation between business partners and institutions appear to be a crucial factor to foster innovation among EU firms but not among non-EU countries.

- Export orientation of firms in non EU countries has a significant positive impact on performance.
  - Inclination to adopt innovation practices in order to compete.
  - Policy level implication – support high value added firms aiming to export.

- As expected, cost factors have a significant negative impact on firm's performance in non-EU countries and in EU countries.

- The lack of reason to innovate is not a significant factor for both sub samples.

Discussions, Conclusions, Implications, Extensions

- Knowledge factors have no significant effect on firm's performance in non-EU countries, while it has a significant and large effect (see beta (Keith's (2006)) for EU countries.
  - In efficiency lead economies of the four non-EU countries vs. Knowledge lead economies of EU-countries.
  - What about the role of human capital as a source of competitiveness in the long run? Longitudinal research is needed.

- Market factors have a negative and significant impact on firms performance in non-EU countries but not in EU countries.
  - High level of market concentration and lack of competition might create a substantial obstacle for firms competitiveness.
  - Implication at a policy level – improve market dynamics in non-EU countries.

Limitations

- Our sample suffered from missing data.

- More firm controls (i.e., strategy, investment in research, service vs. production, etc) are needed to ensure that the captured effect can be attributed to the independent variables.

Thank you!