What enables low-capacity SMEs to innovate in collaboration with academic partners?

Research Papers by:
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Composition-European-Union.jpg
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Estonia- borderline between West and East

- 2004 joined the North Atlantic Treaty Organization (**NATO**) and the European Union (**EU)**, from 2011 belongs to the Euro-zone.
- **Russia recognized Estonian independence on 6 September 1991**
- **Russian occupation from September 22, 1944**

- Estonian provisional government 5 days (17.-22. September 1944)
- Disaster struck Estonia on 17 June 1940 when the Russians invaded
- 24 February 1918 the Estonian parliament declared Estonia independent
- in 1721 the Swedes ceded Estonia to the Russians
- The Swedes drove out the Russians in 1582
- In 1558 the Russians invaded Estonia
- 1217 The Germans then captured Estonia.

britannica.com/place/Estonia/Trade

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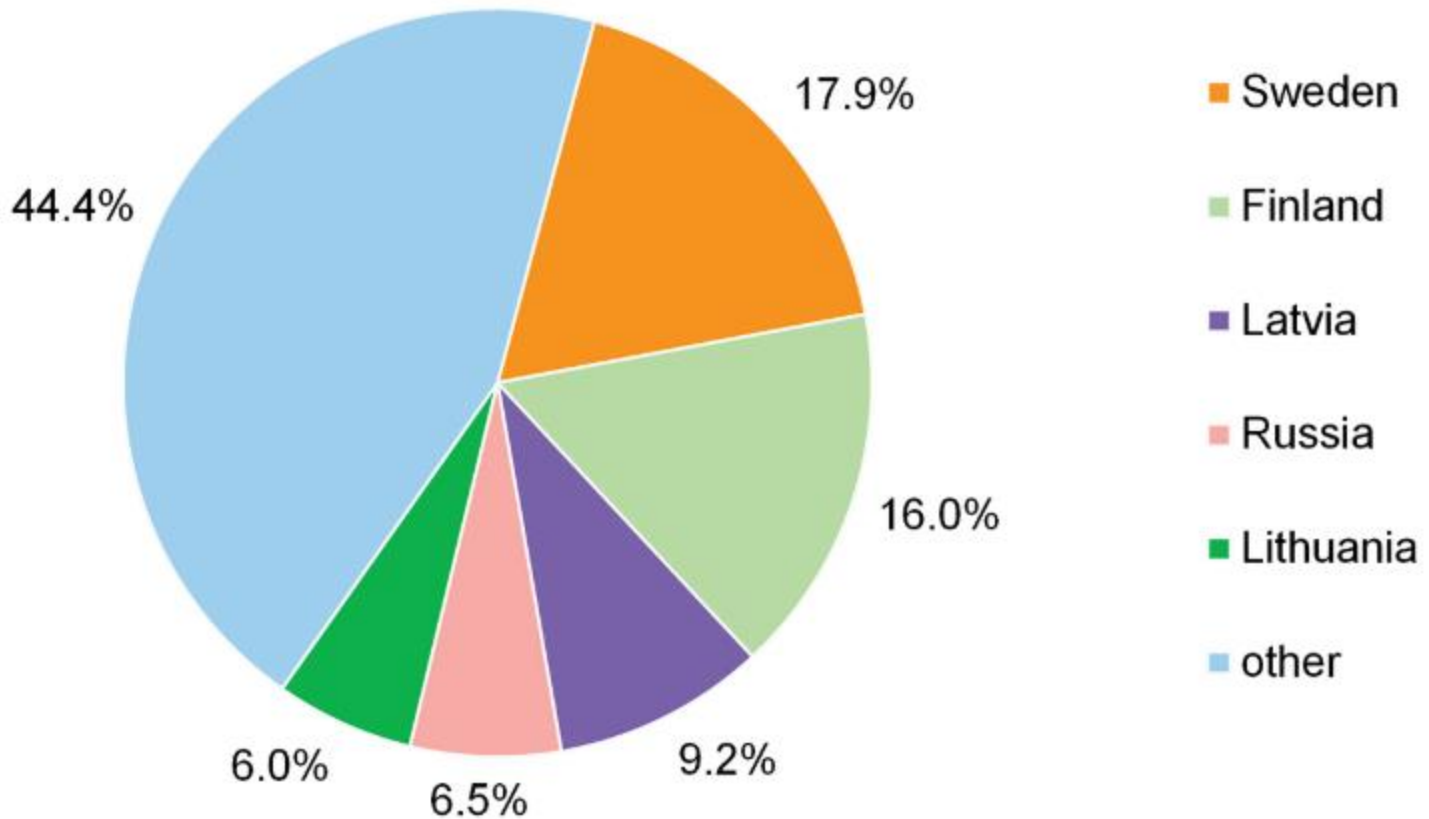
Estonia major export destinations (2016)



University of Tartu

Established in 1632 by Swedish King Gustav II Adolphus

Around 13 200 students, inc. 1183 Ph.D students

1464 foreign students

193 professors

62 researchers belong to the 1% most cited researchers of the world in their fields (T*homson Reuters Web of Science)*

timeshighereducation.com/world-university-rankings/2020/subject-ranking/business-and-economics#!/pag

THE WORLD UNIVERSITY RANKINGS

PROFESSIONAL JOBS EVENTS RANKINGS STUDE

Rank	Name Country/Region	Overall	Citations	Industry Income	International Outlook	Research	Teaching
201–250	University of Tartu Estonia	37.2–40.5	94.8	40.7	46.0	13.7	18.9
501+	Tallinn University of Technology Estonia	9.8–24.6	46.7	33.4	28.6	9.9	9.9

Research topics by Maaja Vadi

1. University-industry collaboration and innovation

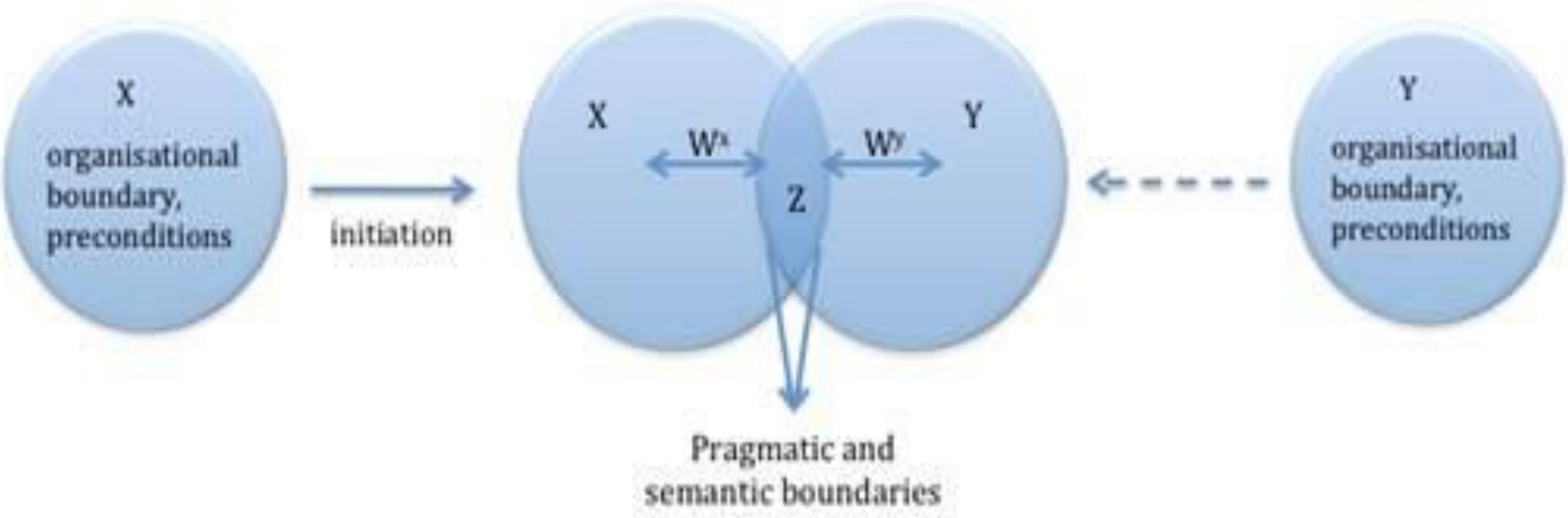
2. Honesty/corruption & individual values & workplace bullying

3. Organizations, path dependency

4. National culture & organizational culture

Presentation outline

1. University-industry innovation collaboration: Reconceptualization
2. Open innovation in SMEs and preconditions for innovation collaboration
3. Venue of research:
    - Innovation voucher program
    - Study site: Estonia
4. Data and methodology
5. Findings
6. Conclusion



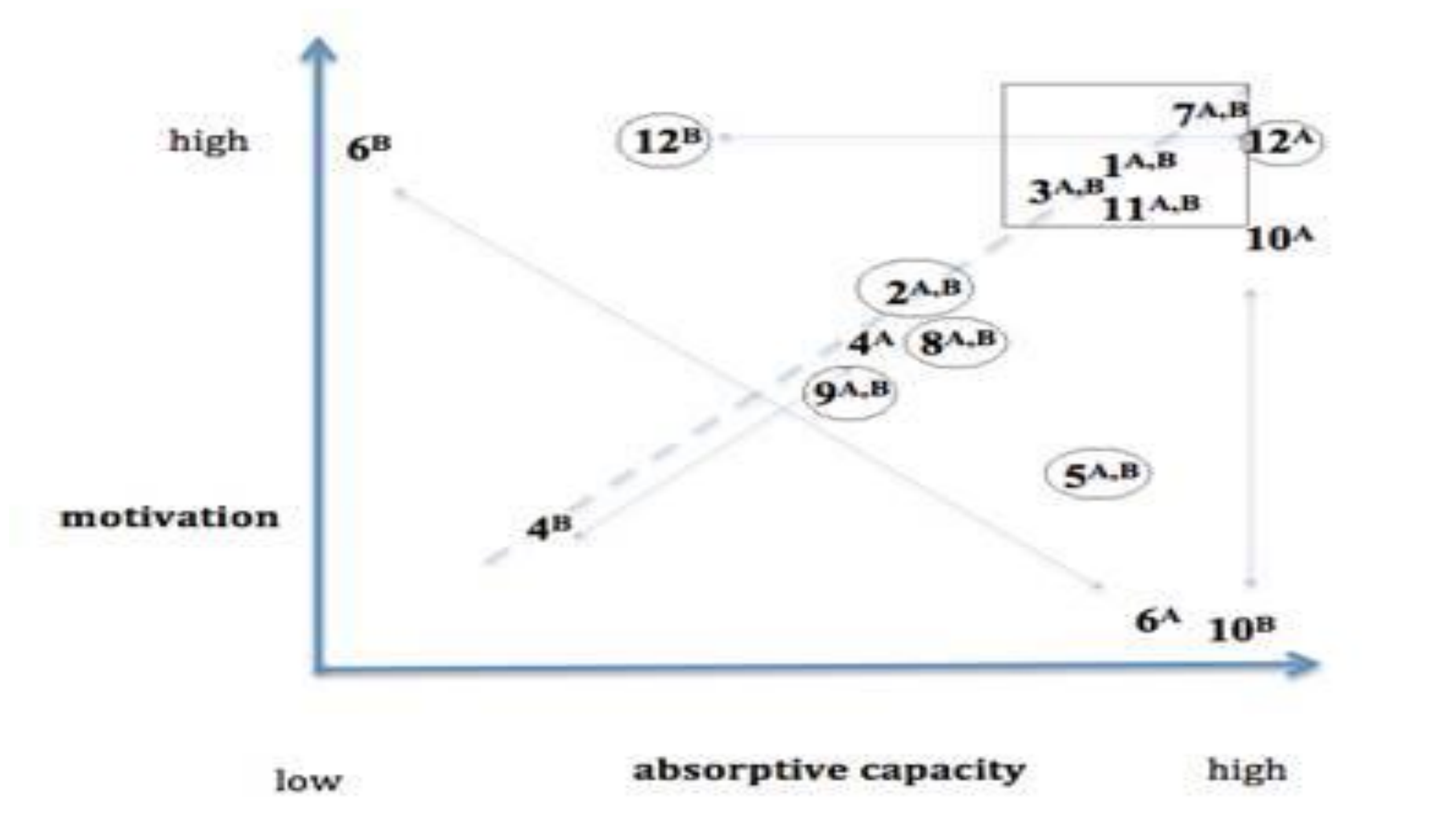
X = partner in the innovation process that incorporates the unknown for Y and therefore potential input to the innovation process. X identifies the organisational boundary in the initiation phase and thus initiates the collaboration.

Y = partner in the innovation process that incorporates the unknown for X and therefore potential input to the innovation process. Y either accepts or declines X-s proposal to collaborate.

Z= shared area of X and Y encompasses preconditions**: 1) absorptive capacity, 2) motivation**

W^x, W^y = the process of applying boundary-crossing mechanisms to overcome pragmatic and semantic boundaries.

Theoretical-conceptual framework of U-I innovation collaboration, composed by authors, based on **Lotman** (2009), Rau*et al.* (2012) and **Santos and Eisenhardt** (2005)


high
motivation
low
absorptive capacity
high
6B
12B
7A,B
12A
1A,B
3A,B
11A,B
10A
2A,B
4A
8A,B
9A,B
5A,B
4B
6A
10B

Types of U-I collborations

Type I – Excellent collaborators All Type I collaborators shared the similarities of considerable high level of motivation and absorptive capacity opposed to the other two types.

Type II – Promising collaborators had moderate levels of preconditions or their levels did not match. In one case both partners showed lower level motivation, but at the same time higher level of absorptive capacity. In this type either one or both partners had shortcomings in preconditions, but the collaboration proceeded as there were no serious deficiencies in either precondition and the partners addressed boundaries.

Type III – Modest collaborators faced mismatch in both preconditions. Collaboration faced serious deficiency in some or both preconditions from one or both partners. All cases demonstrated lack of trust as an underlying mechanism that negatively affected their collaboration regardless of preconditions and boundary-crossing mechanisms.

SME case

What inspired our research:

Few studies have been conducted about **SMEs with low innovation capacity**.

Open innovation in SMEs and preconditions for innovation collaboration

- Open innovation context (Chesbrough, 2003) – companies need to **internalize external knowledge** as a path to innovate.
- **SMEs are losing their main competitive advantage** against larger firms – flexibility and responsiveness to rapid changes – due to their inability to network efficiently with heterogeneous knowledge providers (Narula, 2004).
- Preconditions: **absorptive capacity and motivation**
- Model proposed by Rajalo and Vadi (2017) identified three types of university-industry collaboration (**excellent, promising, modest). Modest – asymmetry of preconditions between partners**.

In brief

- **The aim** of this study is to investigate what enables these SMEs to innovate in collaboration with academic partners.
- Based on a survey among SMEs who used publicly funded innovation vouchers in Estonia.

Research venue

Innovation voucher program

- SMEs lack internal innovation capabilities and resources to outsource. Market failure ⟶ government intervention scheme.
- Vouchers to collaborate mainly with R&D institutions

Study site: Estonia

- 99,8% are SMEs, of which 90,8% are micro-sized
- % on SMEs introducing different categories of innovation is below EU average.
- Estonian innovation voucher 4000 euros.

Data and methodology

Survey (July 2015) among SMEs who used Estonian innovation voucher in 2009–2015 to collaborate with an academic partner. 715 firms contacted, 229 questionnaires returned (response rate 31%).

Step I – validating the relevance of sample

"modest" collaboration⟶ lack of absorptive capacity

- 65% - first time innovation collaboration
- 93% - no network with an academic partner
- 66% - would not have collaborated without the voucher
- 31% - would have carried out the project on smaller scale

SMEs relatively young and small – 53% established 5 years earlier, 25,8% younger than 1 year; 77% micro-sized

Step II – focusing on motivation

Table 1. The motivation for business practitioners and researchers to collaborate

	Business practitioner motivation to collaborate, frequency	Researcher motivation to collaborate, frequency	Business practitioner motivation to collaborate, %	Researcher motivation to collaborate, %	Business practitioner motivation to collaborate, cumulative %	Researcher motivation to collaborate, cumulative %
5	133	122	58.1	53.3	58.1	53.3
4	81	68	35.4	29.7	93.5	83
3	12	27	5.2	11.8	98.7	94.8
2	2	7	0.9	3.1	99.6	97.9
1	1	5	0.4	2.2	100	100
Total	229	229	100	100		

Levels of motivation were evaluated by the business practitioner on a 5-point Likert scale, the higher the number, the higher the perceived motivation of the firm itself and of the academic partner in the eyes of the business practitioner. Respective questions 5 and 10 in Annex 1.

Data and methodology

Step II – focusing on one existing precondition – motivation

- SH = **symmetrical high motivation**. Combined scores of “5”.
- SL = **symmetrical medium to low motivation**. Combined scores of “4” or lower.
- **ARH = asymmetrical, high researcher motivation**. The academic researcher was perceived as having greater motivation to collaborate than the business practitioner. The business practitioner perceived the academic researcher as having scored “5” for motivation and their own motivation to be lower than “5”.
- **ASH = asymmetrical, high firm motivation**. The business practitioner was perceived as having higher motivation to collaborate than the academic researcher. Combined scores of “5” for the business practitioner and lower than “5” in the case of the academic researcher’s perceived motivation.

Step III – analyzing the effect of symmetry of motivation on the collaboration outcomes, Two categories:

The nature and process of the collaboration

- collaboration as partnership or client-service provider relationship;
- how well partners understood each other needs and the essence of such a collaboration;
- tension and management of problems.

Gains for the firm

- improvements in the firm skillset and knowledge;
- impact on the firm;
- time invested profitable or not.

Findings

1. **Symmetrical high motivation** in both partners is a very strong determinant of an overall smooth and successful collaboration. Furthermore, the results clearly indicate that symmetrical high motivation (SH) in both parties is essential for SMEs to invest time in a collaboration that is rather perceived as an equal partnership than a regular client-service provider relationship.
2. The collaboration outcomes were perceived to be better and the firm can benefit when the researcher has **asymmetrically higher motivation** (ARH) than the business practitioner.
3. **Symmetrical medium to low motivation** (SL) of both partners and the business practitioner's asymmetrically higher motivation (ASH) yielded a more complex collaboration and lower gains for the firm.
4. As the **majority of the differences appeared between the SH and SL** groups, it can be concluded that **symmetry of motivation** between partners is crucial in determining the process and outcomes of the collaboration.

Findings

Perceived motivation could explain not only the perceived success, but also the collaboration process.

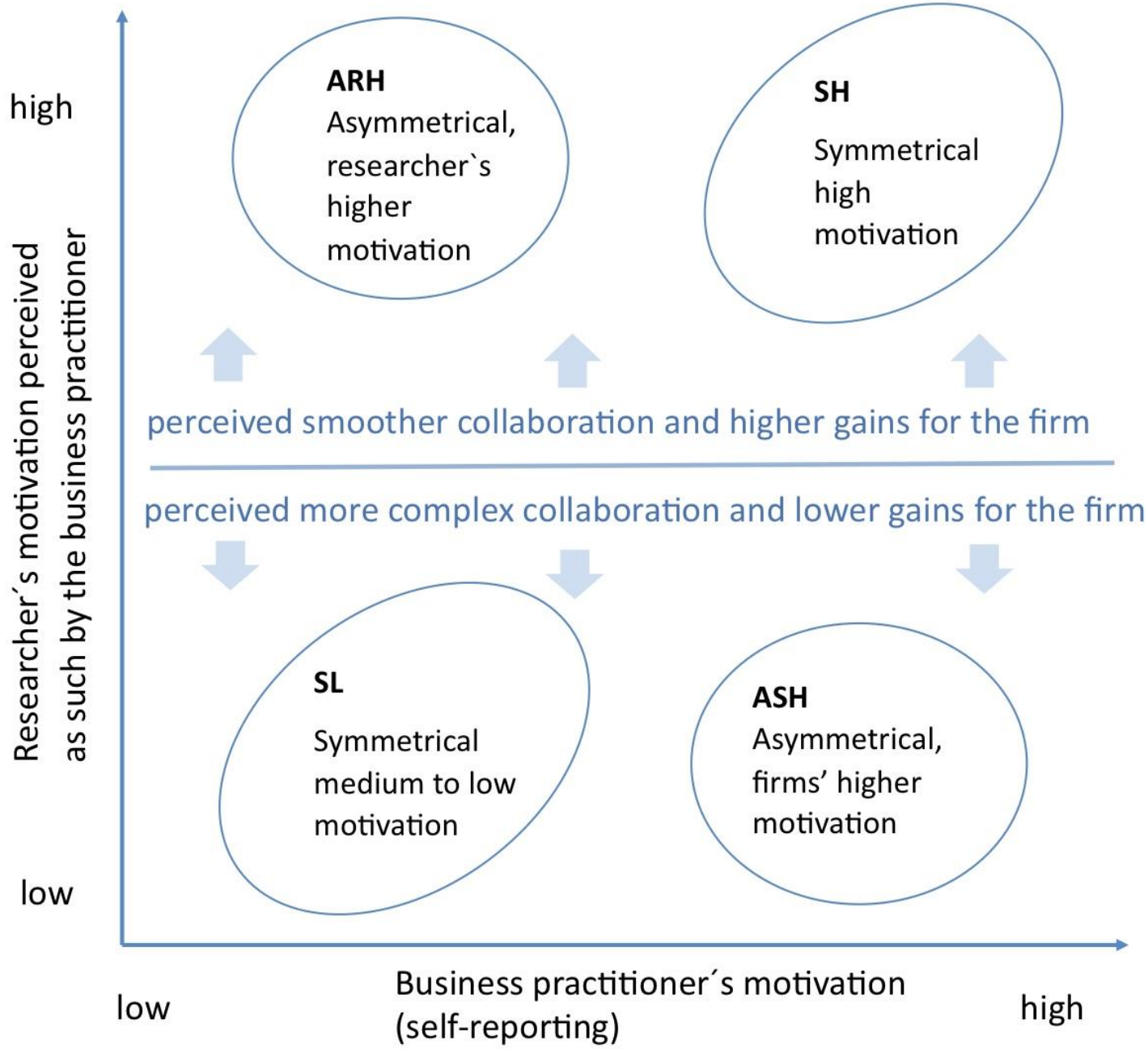


Figure 1. Symmetrical and asymmetrical motivation groups and their effect on the collaboration outcomes

Conclusion

- Results **are promising for low-capacity firms** in collaborative innovation projects. Enabler for these firms in **pursuing innovation regardless of their lack of capacity** appeared to be either sharing a symmetrically high level of motivation or an asymmetrically higher level of motivation in the researcher.
- Policy implications: in knowledge transfer situations where the knowledge bearers, often research institutes and universities, **are expected to empower other actor**s, the perceived motivation of the researchers is highly relevant for the smoothness of such a transfer and the expected positive outcomes.
- SME managers should **thoroughly assess not only their own level of motivation,** but also that of their academic counterparts.

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THANK YOU!

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