



# Collaborative capacity as an institutionalized practice for sustainable travel

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## ARTICLE INFO

### Keywords:

Academic, collaboration capacity  
Collaborative practices  
Commitment-trust  
Goodwill trust  
Non-academic  
Public transport  
Sustainable travel

## ABSTRACT

Collaboration between different stakeholders is argued to increase the efficiency and quality of the transition to sustainable mobility by supporting the diffusion of knowledge and fostering innovation. In this paper, we examine the important role of collaborative capacity as an institutionalized practice in public transport by providing a 10-year collaborative academic and non-academic partnership case study from Sweden, including interviews with key non-academics. Three different collaboration working-forms are identified, exemplified, and discussed: joint efforts, parallel projects, and collaboration loops. It is shown that collaboration and research communication can be a very valuable asset that benefits all parties if it is done systematically and responsibly. However, if the translation from research to managerial implications does not materialize, the benefits of collaboration may get lost. Building upon Commitment-Trust theory, it is shown that even if dialogue between academics and non-academics may be exposed to pressure and challenged in different ways, if carried out responsibly it builds trust and respect for different knowledge horizons, problem formulations, time logics, and working methods. Over time goodwill trust may evolve. Although collaboration loops may be the most promising method to aim to develop collaborative capacity, general learnings are that small projects are equally important, especially if clustered, to provide benefits to both non-academic and academic partners. It is concluded that developing a collaborative capacity among both non-academic and academic partners can create new collaborative practices, increasing the possibility of contributing to difficult societal challenges, such as achieving a sustainable future.

## 1. Introduction

Sustainable economic and social development is dependent on mobility services. As economic activity is about matching people with goods and resources, it is difficult to envisage a prosperous economy without a functional transportation system. Transport is however not just a matter of matching. People, also in their leisure time are dependent on transportation for consumption, for family, and social life; and sometimes travel is performed due to the joy in itself (Ory and Mokhtarian, 2005). Hence, it has been argued that the transportation system is a critical enabler, a resource that does obtain its value primarily through facilitating daily activities (Lättman et al., 2016a, Lättman et al., 2016b). This is especially noticeable in public transport which is important for facilitating the development of social capital and the achievement of other government social policy goals (Stanley and Stanley, 2007). Thus, public transport is seen as an important tool for creating a sustainable society (Gärling et al., 2014).

To understand how public transport can be used as a spur for growth

and wellbeing among its citizenry, a collaboration between academia and practice may be a pathway for success. An understanding of value creation and wellbeing will provide an invaluable resource for reforming the transport sector (Friman et al., 2018), enabling a move from a focus on vehicles and passenger kilometers respectively, to mobility services encompassing complete transport solutions integrated into, and actively contributing to, a sustainable society of tomorrow. In a future characterized by pluralism and individualism, demands for customer orientation and flexible transportation systems will increase. This entails new issues and challenges that practice needs to deal with to achieve the goals of public transport as an attractive alternative in daily mobility.

Academia with unique expertise can contribute to solving complex challenges, but need to work in close collaboration with transportation companies, transport authorities, agencies, and other decision-makers in the transport sector to be relevant, to co-create, reach out, and eventually make a change. Collaboration between different stakeholders is argued to increase the efficiency and quality of the transition to sustainable mobility by supporting the diffusion of knowledge and fostering

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<https://doi.org/10.1016/j.cstp.2023.100954>

Received 16 June 2022; Received in revised form 28 December 2022; Accepted 12 January 2023

Available online 16 January 2023

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innovation (Smith et al., 2018). At the same time, collaboration could also act as a means toward the professionalization of all parties – academia as well as practice. It is hence a win-win situation. The range and density, and the degree of trust and translatability between actors in such collaboration, have been labeled ‘institutional capacity’ (Amin and Thrift, 1995; Healey, 1998). In 2016, Sallis et al. (2016) published an article in *The Lancet*, highlighting case studies of planning for healthy and sustainable cities from around the world, where translational communication of research into practice was shown to be highly successful. While arguing for the importance of such translational knowledge, they also call for a better understanding and development of a more systematic approach to research translation that not only involves the translation of research knowledge, but also a deeper understanding of close collaborations among researchers, practitioners, and policymakers.

Although collaboration is a recognized priority, current practices do not fully support this goal. A barrier is that stakeholders differ in their understanding of what “collaboration” means. Collaboration between operators and public transport authorities has been studied (e.g., Hrelja et al., 2018, Pettersson and Hrelja, 2020, Paulsson et al., 2018), but less is known about collaborative practices including academics and practice in public transport settings. The present study examines the important role of collaborative capacity as an institutionalized practice in public transport. In doing so, the paper includes a presentation of theoretical and empirical studies in the area, a 10-year case study from Sweden, interviews with key non-academic persons, and lessons learned.

## 2. Collaborative academia – non-academia partnership in public transport

The nature and role of academic – non-academic collaboration in the public transport sector are not well understood. This is confirmed in an international survey (including Europe, Asia, and North America) showing that academic-practice collaboration for sustainability most typically targets energy, buildings, governance, and social systems (Trencher et al., 2014). Common drivers assisting collaboration according to this study are synergy, strong leadership, external funding, and administrative support, whereas common barriers are related to time restraints, lack of funding, communication difficulties, and lack of unity. An example of lack of unity was described very perspicuously by an industrial manager: *“From an academic perspective, it can be more interesting when things are not working than when they are. In industry, we don’t find that interesting, only frustrating”* (Sannö et al., 2019).

Turning to business research which has focused on collaboration and relationship building for many years, the Commitment-Trust theory (Morgan and Hunt, 1994) confirm that trust and commitment are fundamental aspects of long-term relationships. The Commitment-Trust theory has been used as a theoretical framework to understand a variety of business relationships such as online retailing (Mukherjee and Nath, 2007), nonprofit organizations (MacMillan et al., 2005), and international business relationships (Friman et al., 2002). Davenport, Davies and Grimes (1998) argue that collaboration can occur without trust, e.g. if there is no risk involved, but that trust is important for successful collaboration over time. They identified four forms of trust: (i) character-based trust – built with others that are socially similar, and conversely if “cultural clashes” occur trust is harder to establish; (ii) contractual trust – built on contractual safeguards against abuse of the relationship; (iii) competence trust – built on (research) competence, that relevant results will be achieved; and (iv) goodwill trust – although not as straightforward defined, it is trust based on feelings of faith, confidence, expectation, reliance, and security, built gradually over time with repeated interactions.

Empirical findings show that termination costs, benefits, and shared values have a positive impact on the degree of commitment. Shared values also have a positive impact on trust as well as communication, while opportunistic behavior harms trust. In line with these findings,

Plewa et al. (2005) showed that the academia’s ability to work and go along with the non-academic’s values and aims was relevant to the development of trust. In particular, the reputation of an academic partner regarding previous or current relationships emerged as a starting point for trust-building. In face-to-face interviews, commitment was described as closely associated with value creation. An important contribution is the understanding that collaborative relationship is interpreted differently depending on who is asked. Values that the academia promotes are retention, strategic aspects, knowledge advancement, and additional funding, while the industry emphasizes technology gain, knowledge gain, human capital gain, retention, and contacts/networks. Also, Mora-Valentin et al. (2004) noted this in their analyses of 800 collaborative agreements (1995–2000) between Spanish firms and research organizations. Non-academic partners valued clear definitions of objectives and conflict, whereas academic partners valued communication, trust, and reputation.

Crespin-Mazet and Ingemansson-Havenvid (2021) analyzed a seven-year collaboration relationship (2000–2007) involving one researcher and a large company in the construction sector. Early co-production of common-pool knowledge resources resulted in local theories at the company contributing to a unique specialization within construction (e.g., theory-in-use). For the researcher, this co-production contributed to a theorization (e.g., middle-range theory) providing input to a general academic theory. Despite the limited empirical material that only covers one researcher’s work, the study nevertheless highlights important contributions in terms of academic – non-academic collaboration work. An important contribution is that managerial and academic theorizing does not occur in a dyad, but requires the involvement of internal and external networks.

Several other studies have, based on other theoretical foundations than the Commitment-Trust theory, studied the relationship and interaction between academic and non-academic. Some have focused on knowledge translation (e.g., Bekkers and Freitas, 2008) while others have focused on the outcome, such as academic publication (e.g., Yoshioka-Kobayashi and Takahashi, 2022), academic motivation (e.g., Orazbayeva and Plewa, 2022) and some studies focus on the initiation process where the academy invites non-academics into research (e.g., Nenonen et al., 2017). Although outcomes or incentives are necessary ingredients, it is not adequate for building trust in collaboration (Harris and Lyon, 2013). Based on ten case studies from environmental research, Harris and Lyon also identified a need for information, a need to establish norms related to cooperation, a need for prior experiences of working together, and sometimes also a need for sanctions when partners break norms. Harris and Lyon (2013) argue that trust is built through the progression of projects.

We believe that it is of special value to study and understand relational aspects and collaboration between academic and non-academics in public transport to develop sustainable travel. Sustainable travel requires collaboration, not only between academia and public transport companies but also between public actors and authorities. Indeed, as indicated in interviews with operators and public transport authorities in Sweden and England, an increased ambition to share visions and find solutions with mutual benefits has emerged due to growing trust (Hrelja et al., 2018). The same authors further claim that such collaboration may develop and get deeper over time as people gain better knowledge of each other and their respective organizations, thereby creating positive judgments of trustworthiness in partners. Hence, this indicates that trust and collaborative practices may also emerge between public actors and authorities. The present study is novel with its focus on institutional collaborative practice in public transport among public, industrial and academic parties from a relational theoretical perspective.

To summarize, the first aim of the present study is to gain a better understanding of factors affecting the development of academic - non-academic relationships in the public transport sector. A point of departure is the Commitment-Trust theory. As this model is developed from a business relationship perspective, other factors may also be important. A

(more than) ten-year partnership is analyzed (2006–2017) to reveal critical criteria in the development of a collaboration capacity. Collaborative capacity refers to the capacity for different academic - non-academic partners to collaborate with each other. A second aim is to understand and give recommendations on how to increase collaborative capacity as an institutionalized practice (e.g., policies, procedures, and routines for collaboration) for sustainable travel in public transport.

Section 3 describes the case study method followed by section 4 describing the collaborative partnership analyzed in this study. The paper next focuses on different working forms in section 5, which is complemented with example cases illustrating collaboration as a working form in practice. Section 6 reports interviews with key non-academic persons, departing from significant factors according to the Commitment-Thrust theory. The paper ends with lessons learned and recommends steps that can be taken to foster an institutionalized collaboration capacity in public transport (section 7).

### 3. The case study method

A case study is “...an empirical enquiry that investigates a contemporary phenomenon within its real-life context ...” and it “...relies on multiple sources of evidence...” (Yin, 1994, p. 18). The case study method is particularly useful for understanding complicated phenomena and is thus well suited for our purpose. The case study’s closeness and focus on details are important and well-equipped to understand and provide a nuanced picture of the collaboration. In accordance with Gummesson (2003), in this longitudinal study, we have chosen to include our own experiences as academics (Margareta Friman and Lars E. Olsson) and as non-academic representatives (Lena Thorin). Our participation in the collaboration has brought us very close to the actors within the partnership studied and therefore we have chosen to benefit from this experience. Thus, we acknowledge that we are implicated in the phenomena being studied, by attempting to understand, describe and interpret the relationship between non-academic and academic partners. Furthermore, we have followed Gummesson’s recommendation to present the findings as a story, avoiding the fragmentation that is inevitable in research breaking down findings into tables.

In our analytical approach, we analyzed documents and transcribed interview data. As a first step, we analyzed how collaborative research was designed. Three types were illustrated and supported by specific project activities and interview quotes from key non-academic persons largely involved in the implementation of the collaborative research. Then, in order to better understand the relationship, we analyzed and categorized interview quotations from key non-academic persons based on elements of the commitment-trust theory.

### 4. A collaborative partnership between academic - non-academic actors in public transport

The VINN Excellence Centre program was inaugurated in 2005 and initiated by VINNOVA, a Swedish national research funder. In tough competition, successful centers received funding with one-third coming from VINNOVA, one-third from the industry or public-sector partners, and one-third from the hosting University with a total turnover of about EUR 21 million for ten years for each of the centers.

The SAMOT (Service and Market Oriented Transport Research) VINN Excellence Center research program at Karlstad University started in 2006 and ended in 2017. Its mission was to produce and disseminate scientifically-grounded knowledge of public transport and its circumstances. More specifically, the center focused on three research themes that were originally formulated at the inauguration of SAMOT and continuously refined and developed throughout the SAMOT endeavor: (1) Perceptions of Public Transport, (2) Customer Offerings, (3) Regulatory and Institutional Frameworks. These themes were determined as important conditions and driving forces when combining the individual’s requirements for simple, effective, and flexible transportation

with society’s goals regarding the long-term, sustainable development of cities and regions.

Throughout the ten-year of collaboration, there was a high degree of participation and engagement in the initiation, planning, and conducting of both the research program and separate projects. To build a consortium, early contacts were made between academic and non-academic partners in the public transport sector. These contacts were largely based on previous, personal relationships taken in small-scale research projects. According to our own experiences, the trust developed in these projects formed the basis and acted as a door opener into management teams and to the top management level in the public transport sector.

The vision and strategy of the center were developed in dialog with private and public-sector partners, including authorities, municipalities, service providers, and industry organizations. In total, 15 partners were involved in the Center. The partners were members of the Board with a high degree of joint ownership of the program and projects. There were partnership meetings regularly, at annual conferences, workshops, and seminars. Furthermore, different configurations of partners collaborated on separate research projects. The collaboration acted as a driving force both for the strategic development of research and innovation activities and for the effective implementation and use of research-based knowledge in process and service innovations. All in all, according to our experiences, the partners had far more opportunities to influence the research conducted at the center than industry-sponsored university research in general.

### 5. Designing collaborative research

Collaboration is a working practice whereby individuals work together for a common purpose. Collaborative capacity enables and drives this practice toward various benefits. SAMOT gathered practitioners (non-academic) and researchers (academic) with a joint interest in developing the public transport offer. The common purpose was to develop practice, although different interests were also present as is evident in interviewees with representatives of the non-academic group (section 4). SAMOT offered a meeting place where representatives of the academic and non-academic groups could come together and discuss knowledge formation within public transport. Collaboration required a high degree of involvement but, according to our experiences, could differ depending on the research and development (R&D) capacity of the non-academic partner.

In designing collaborative research, the SAMOT management group started by outlining three different working forms (1 – 3) which guided collaboration within the program. The different working forms are presented in the following section, accompanied by a short case description to illustrate the working form in practice. Section 3 concludes with a summary reflection of working forms 1–3.

#### 5.1. Working-form 1 - joint efforts

Collaboration within working-form 1 was characterized by joint efforts, a high degree of involvement throughout the research process, and coordinated decision-making. Examples of such projects included industry Ph.D. students who worked side-by-side with non-academic partners in joint research projects (Fig. 1).

A regional public transport authority (Värmlandstrafik - VTAB) as a non-academic part, successfully implemented an industry-PhD program called “R3” (Riding, Research, Results). The Ph.D. students were enrolled in regular Ph.D. programs with both a university supervisor and a supervisor at VTAB. Karlstad University/SAMOT acted as a degree-awarding institution. The students had their office at VTAB but could also spend time in the research environment at SAMOT.

R3 was in the end described as a collective learning process within the organization, functioning as a proactive tool for internal cultural change. A representative of the Swedish Transport Administration, who

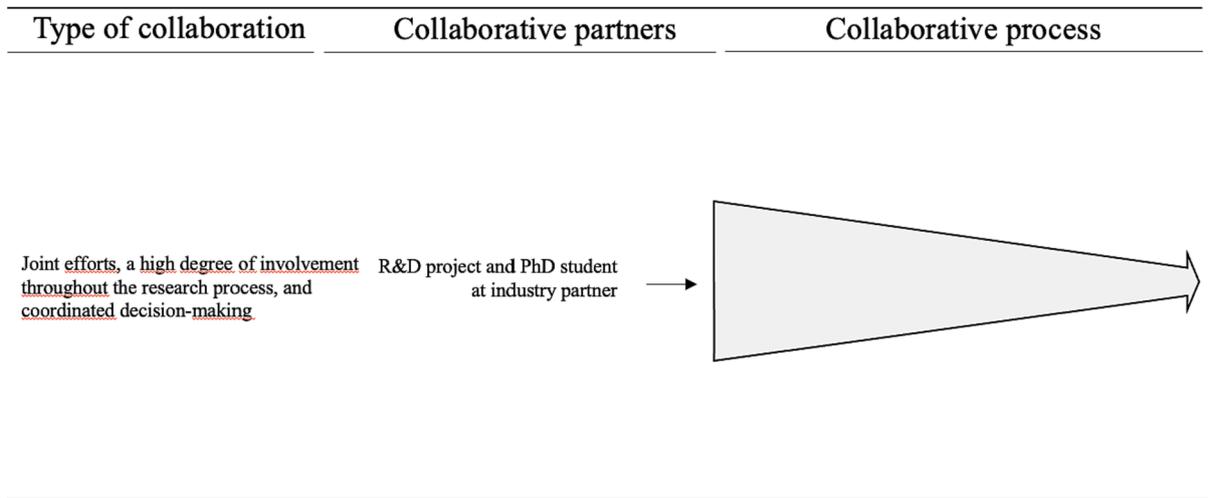


Fig. 1. Collaboration based on a joint project (working-form 1 – joint efforts).

monitored the project, made the following statement: “I’ve seen it as an interesting and instructive project. I think it’s the first time this working form has been tested outside the major cities. So, I think it’s brave, but also wise, of VTAB to coordinate R&D work with day-to-day operations. One lesson is that projects of this type are long-term and have to take their time. I’ve seen the project as a cultural journey when it comes to working form.”

The CEO at VTAB (2002–2014) concluded that an endeavor like this is a long-term commitment that leaves its mark on the entire organization. On the negative side is that industry-Ph.D. projects are bound up with a certain amount of risk-taking. Thus, a recommendation for the future made by the CEO, is that several non-academic partners should come together and initiate a mutual group of industry-Ph.D. students to share the risks and the benefits. Another important conclusion, based on our academic experiences, is that the industry-Ph.D. students have enjoyed greater opportunities than academic Ph.D. students as regards implementing their findings. The output of the R3 program is a market-driven transport planning approach (Högström et al., 2016), including cultural dimensions in transport planning (Bösch, 2008) and a systematic quality process applied to procurement processes (Rönnbäck, 2012). After the exam, the industry-Ph.D. students continued to jobs in the industry (e.g., consulting firms and other transport authorities).

5.2. Working-form 2 - parallel projects

Collaboration also occurred during parallel projects (see working-form 2, Fig. 2). Parallel projects entailed an R&D project at a non-academic partner ongoing simultaneously/in parallel with a research project in the academy. These were projects with a joint focus and clear interests. At certain time points, activities were conducted involving both partners within the projects. For example, when a non-academic partner conducted a data collection partly of interest to the academic partner or when academia invited the non-academic partner into a workshop to interpret and get a better understanding of findings made in the academic project. Thus, in contrast to working-form 1, collaboration in working-form 2 was encompassed by some parts/elements of the research process. Collaboration was characterized by, for example, joint problem formulation, the analysis of findings, the communication of results, and/or the implementation of research findings.

Several projects in the SAMOT program focused on soft policy measures (e.g., information campaigns, free public transport, coaching) for changed travel behavior (e.g., Richter et al., 2010; Richter et al., 2011) receiving input from non-academic partners. Furthermore, during this time, one non-academic partner (municipality) redesigned the route network and improved transfers between different routes. The changes implemented included a system map with a simple and clear layout.

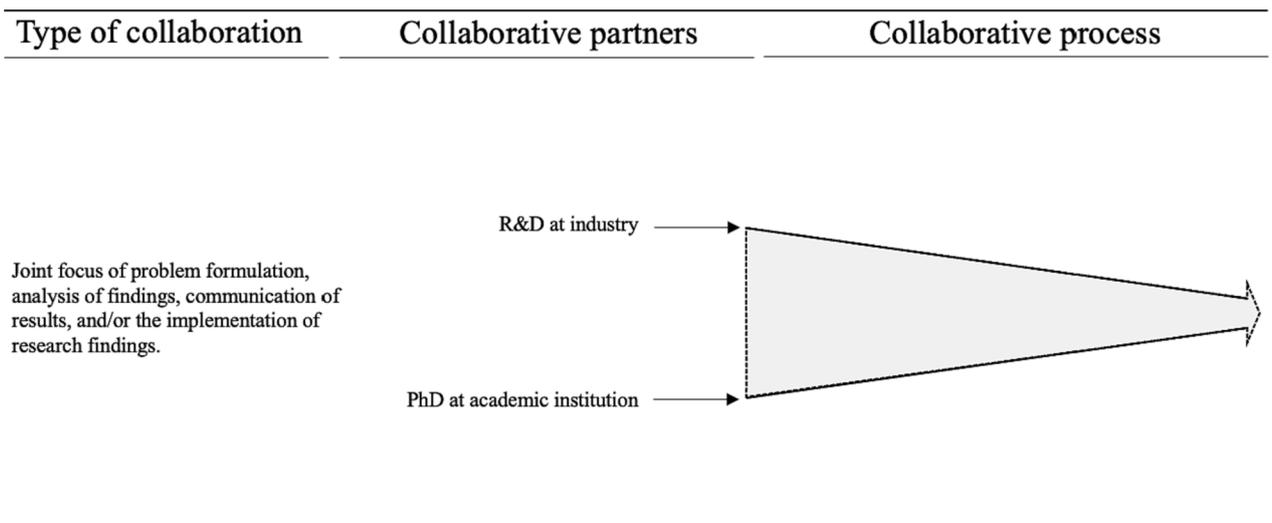


Fig. 2. Collaboration based on parallel projects (working-form 2 – parallel projects).

Also, the physical design of bus stops was redesigned, and a real-time information system was introduced. The bus fleet was replaced by new biogas buses, with improved air conditioning, low floors, free Wi-Fi, and Bus TV. The buses were equipped with surveillance cameras. Also, incentives in tendered contracts were set up with bonuses and penalties linked to service quality as well as to the number of travelers. Since some of the academic researchers had a special interest in travel experiences, parallel projects were set up. In the academic project, two measurement scales were developed: the Satisfaction with Travel Scale (Ettema et al., 2011) and the Perceived Accessibility Scale (Lättman et al., 2016a, Lättman et al., 2016b). During and after the implementation phase, academics were invited to evaluate the changes made which included an implementation of the two measurement scales. These parallel projects resulted in several touch-points where academy and non-academy partners met and discussed various angles using the respective project as inputs. This dialogue continued even after the initial projects ended.

5.3. Working-form 3 - collaboration loops

R&D-like research projects were an important basis for collaboration under working-form 1 and 2. Collaboration under working-form 3 included proximity during day-to-day operations. The focus was on continual social and economic processes, both in and outside the non-academic partner. Collaboration during day-to-day operations gave access to processes, background information, narratives, and the prevailing culture and praxis. The collaboration between authorities, companies, sector organizations, and academia resulted in different collaboration loops, as illustrated by Fig. 3. Solid lines symbolize formal collaboration agreements, while dashed lines symbolize contacts of a more informal nature. These informal contacts varied in strength, which is illustrated by different types of dotted lines. In several research projects, these loops were of great relevance and value to follow. In the end, several academics and non-academics witnessed how the processes to some extent affected the prevailing praxis in the sector.

For illustration, one longitudinal academic project focused on value networks and value co-creation for sustainable business (e.g., Enquist et al., 2015). It was a project that lasted for many years. Primary data in the project included interviews and workshops with key executives in public transport, combined with secondary data such as annual sustainability and corporate governance reports, unpublished documents, internal memos, strategic reports, contractual agreements, official public transit developing programs, and letters to stakeholders. In dialogs, academic and non-academic partners assessed social processes to understand why and how value is created and networked within public

transport. This working form created many touch-points including meetings between academic and non-academic partners with and without R&D resources.

Within the SAMOT program, industry-oriented higher education was also an activity of interest. Thus, a course program was developed based on IT tools and the use of Open Educational Resources. During the pre-development of this program, 21 interviews and 13 focus groups were carried out at companies from various industries, including public transportation. Additionally, 831 questionnaires were sent out to the defined target groups. Two workshops were also organized, with a total of 230 participants from major corporations, trade associations, and small businesses. This approach provided good insight into the needs of business, as well as beneficial input for the course content. As a direct result, the course program (“USE.IT”) was designed in a way that allowed participants from the industry to combine studies and work. The content of the program reflected important needs in business divided into four online modules: (1) Service Logic (1.5 credits), (2) Understanding the Customer Experience (6 credits), (3) Service Innovation (6 credits), and (4) Service Business - Strategy and Operations (6 credits). It is worth noting that this endeavor took place at a very early stage of the new era of MOOCs (Massive Open On-line Courses) in Sweden.

5.4. Summary reflection of working forms 1–3

Working forms 1–3 illustrate how collaboration between academics and non-academics in public transport can take different forms. Collaborative research did not only include specifically demarcated projects (as described in working forms of joint efforts and parallel projects), but also various activities and processes of a more general nature (illustrated in the working-form collaboration loops). A conclusion is that management and academic researchers must possess a broad knowledge of collaboration to be able to manage and develop all three or some of these working forms. Another conclusion based on the included cases is that all forms are needed as they generate different types of academic and non-academic results. Finally, the importance of describing these working forms at the beginning of the program should be emphasized. When non-academic partners are not used to and/or do not have their own research and development resources it becomes even more important to facilitate the collaboration by clarifying roles and expectations.

6. Interviews with non-academic partners

Semi-structured interviews were conducted with a strategic sample

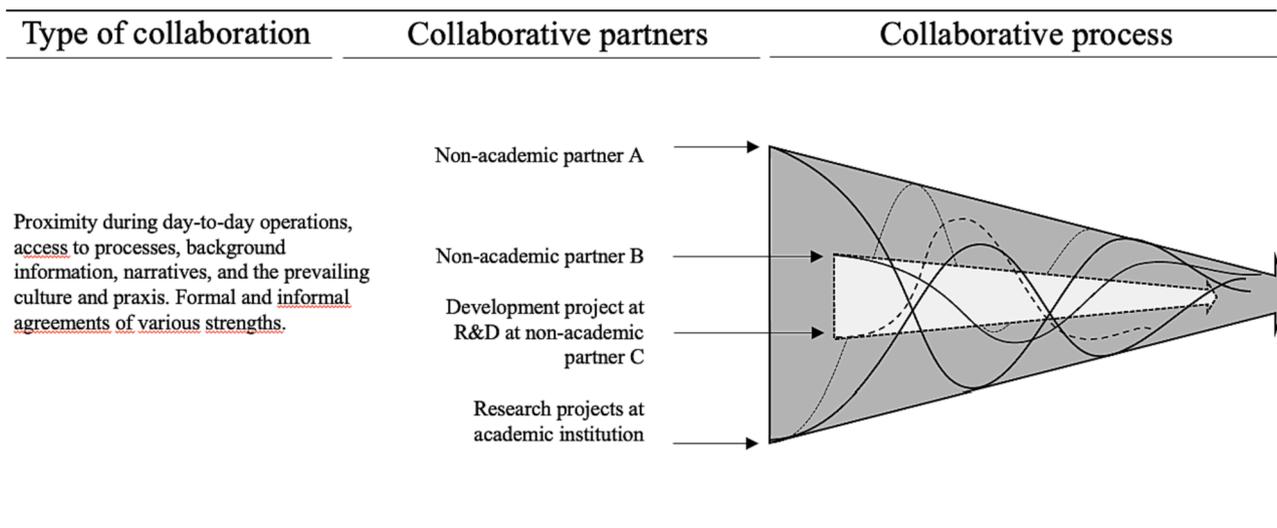


Fig. 3. Collaboration based on a joint knowledge interest (working-form 3 – collaboration loops).

of five non-academic key persons. The strategic selection included an assessment of which people in the non-academic partner group could provide in-depth and comprehensive insights into the collaborative relationship. The people selected are named “key persons” throughout the paper to underline that they were highly involved in the implementation of the collaborative research. The selected key persons worked at a management level and acted as contact persons between the own (non-academic) organization and the academic partner. Data collection was conducted between March 30 and April 15, 2010, and the length of the interviews was 45–90 min. In this section, findings will be presented that have bearings on the elements of the commitment-trust theory.

### 6.1. Opportunistic behavior

The interviews did not support that opportunistic behavior is a strong driving force for a relationship between the academic - non-academic partnership. Above all, collaboration was about developing and securing new knowledge that could lead to business and/or service development. A representative describes it in a simple way: “We want to understand how we can get more customers .....”. A somewhat opportunistic behavior could however be detected since a common desire was a need for a general increase in knowledge in the own business and not in the public sector as a whole. A key person stated that such an increase in knowledge depends on the ability to research the “right” things. Several key persons highlight the benefit aspect, which they thought was not always satisfactory. Key persons argued that the benefits (for the non-academic partners) must be clearer. They expressed a need to gain additional knowledge about how research and researchers can contribute to developing public transport. One key person described a certain frustration over not clearly understanding how the collaboration would benefit their business: “...the academia is terrible in highlighting the benefits of collaboration...”. For some key persons, it was a driving force to engage in dialogue so that the activities within the relationship were formed with benefit for both parties. The key persons were also self-critical and acknowledged that the interest in entrepreneurship and degree of innovation are low in public transport. This might be an explanation for the partly lack of understanding of the overall benefits of working in an academic – non-academic relationship.

### 6.2. Shared values

Shared values as a basis for the development of the relationship include, among other things, sharing a common vision. Early on, all partners gathered around a mutual vision which was formed in harmony with non-academic partners and with other important (governmental) actors in the public transport sector. This vision was described as a shift in industry logic foreseeing a transformation from a production logic to a service logic with a focus on the value users create when using public transport. This vision underlined the value of co-creation and resource integration which not only were researched but also applied as a working method in the collaboration between academic and non-academic partners. Partners in the collaboration were expected to be active in this field by developing and disseminating science-based knowledge of public transport and its conditions. Key persons testified of the importance of a common vision to bring academia and non-academic closer together: “... user-driven research is important; it reduces the gap between research and practice...”. The importance of shared values was also expressed at a personal level, in separate projects where key persons tended to work closer to academia. In close collaboration key persons witnessed how academia had an influence on general thinking among staff in the operation. One key person expressed this as “...when our interests coincide in research, they (academia) can make us think in new ways...”.

### 6.3. Communication

Communication was both an opportunity and a major barrier to partner development. All five key persons had opinions on how to communicate within the collaborative relationship. Many expressed the view that high qualitative communication can increase the understanding and identity of the work carried out. Some witnessed how working in a long-term relationship provided good accessibility to other partners. Such close contacts facilitated in turn high qualitative communication. One key person said: “...the strength of the collaboration is the personal communication. They (academia) are easy to contact and you can get perspectives that you have not thought of ...”. Some felt that the communication was not always adapted for non-academics but was more or less directed toward the academic community. Several expressed how unclear purposes, content, and lack of timing resulted in confusion and a feeling of not understanding research work and communication. One key person expressed it as: “...the strengths of the collaboration are the credibility and scientificity, the common interest, and the motivation to reach out to the outside world. The weakness is that we do not succeed completely, the time aspect - it takes too long and one needs to think in new ways...”. All key persons believed that the communication barriers were best overcome with more physical meetings between academia and non-academic.

### 6.4. Trust

Trust was described as a force for development, often linked to transparency and openness: “...we have opened our company to them (academia), they get insight. They have interviewed our staff, been on-site visits and observed our activities...”. Trust is something non-academic partners value and appreciate. Non-academics ask for more dialogue and a higher degree of the physical presence of academia in their daily activities. The interviews also provide support for the association between trust, knowledge, and communication. When communication does not fully work, no knowledge transfer takes place and the benefit for the business is lost.

Communication and time are two key aspects of building trust. The consequences of research projects with a long timeline for completion are the long wait time for results and outcomes. This was perceived as a major barrier among key persons. The long waiting time did not match the need for instant input to business operations. One way to counteract this to maintain trust in the collaboration was to apply a “two-voice” technique in the internal and external communication. For instance, in the leaflets and brochures produced, both academic and non-academic were invited to participate to have their say on the research question. More specifically, this technique encouraged non-academics to tell how they had been tackling the issue, and whether they had any ongoing projects or results to present.

Trust is also about commitment, which is a recurring theme in the interviews. On the one hand, non-academics described their commitment, which was not always satisfactory, and on the other hand, non-academics spoke about academics’ willingness to commit and participate in dialogue with the key persons and their colleagues. The key persons concluded that commitment was a mutual barrier for academic and non-academic participants. And therefore, commitment issues needed to be solved together. Key persons raised a need for closeness and personal meetings to increase commitment among all participants. One key person stated: “... through collaboration, we have a better picture of academia and vice versa, this gives us a better starting point...”. Another key person expressed the value of being able to “... meet across borders in unforced ways.”

### 6.5. Termination cost

The key persons were very much interested in the managerial implications as an outcome of the academic and non-academic partnership.

If the translation from research to managerial implications does not materialize, the benefits of collaboration will be lost. The key persons did not directly express relationship termination costs but stated that they will not invest in research and development in the future if no managerial knowledge transfer occurs. All key persons agreed that the benefits of collaboration between academics and non-academics must be made clearer. Two key persons admitted that their organization would invest more money in research if the benefits were made clearer to them: "...when it comes to the general research question, the association to our business is too weak. We need to connect better with each other...". Termination cost is compared to anticipated benefits in a relationship. Although key persons did not always see clear benefits of being part of an academic – non-academic partnership, they did not express a wish for ending the relationship. This can be interpreted either as the benefits of continuing the relationship being somewhat larger than the cost of dropping out, or as a sign of goodwill trust and a belief that benefits will come at a later stage in the collaboration.

## 7. Lessons learned

Over 10 years of collaboration in public transport have provided different insights. In this study, we have described and analyzed a collaborative partnership between academic and non-academic partners in public transport in Sweden. We have illustrated how to design collaborative research in the form of different working methods and we have interviewed some key people from non-academic partners to gain insights into the driving forces to engage in such a comprehensive collaboration program.

The interviews showed that spending time together is important. Together, one can lay the foundation for the relationship, create trust and develop shared values. Lessons learned from this study are that time spent together also needs to be meaningful for all to create trust and well-functioning communication. Managerial implications are important for non-academic partners who most likely are not prioritized by academics. Based on the outcome of different working forms it is therefore suggested to support collaboration based on a joint knowledge interest (especially the working form of collaboration loops). Such collaboration can happen if the non-academics invite academics to use their organization/business as a research arena where academics can conduct interviews, surveys, observations, and other test activities. In this way, academics can work naturally in the context they are studying and at the same time stay in close contact with key non-academic persons. A constant dialog facilitates conclusions of managerial importance during and after the research process. Trencher et al. (2014) and Sannö et al. (2019) highlight the downside of a lack of unity between industry and academics. This working form may be one way to reduce such lack of unity that otherwise may be harmful to trust, and is particularly beneficial in a sector like public transport with no or marginal resources for research and development.

As an example, an industrial doctoral student is a commitment that extends over several years with requirements that it should lead to academic publications and a dissertation. For it to work optimally, commitment and relationship building between the partners over a longer time is required. This type of exclusive project provides an opportunity for non-academics to specialize and to offer their staff development and further education. Provided that there is a high degree of commitment and a plan for knowledge building within the organization, it can have a huge impact on the operation and strategic planning.

As illustrated in this study, working forms 1–3 can result in several different types of projects, including research and education. Collaboration activities should include a broad spectrum and not be limited to research for general knowledge development. In this way, it was in the studied relationship for instance possible to develop open courses that matched public transport needs. Additional learning from working with collaboration loops is to develop a collaboration capacity based on broad participation and dialog between different actors. General

learning was also that small projects were equally important as larger projects, and by clustering small projects it was possible to provide non-academic as well as academic benefits. For instance, the clustering of small projects provided more frequent reporting to non-academic partners. This provided increased opportunities to implement new knowledge into practice. For the academy, small projects provide an opportunity to continuously build well-developed theories and models over time when small projects build on each other.

Previous research has highlighted different forms of trust (Davenport et al., 1998), and in the present case study, both contractual trust and competence trust may be seen. Although key persons did not always express a clear and direct benefit of the academic – non-academic collaboration, they still continued the relationship. We interpret this as a sign of the third form of trust, goodwill trust in relationships. Goodwill trust has been defined as trust based on feelings of faith, confidence, expectation, reliance, and security, and is something built gradually over time with repeated interactions. In goodwill trust, partners believe that other partners act in ways that, although not necessarily in the short time perspective, will lead to benefits in the future without specifically making collaborative agreements. We believe that this form of trust is what should be strived for in order to build effective long-term relationships and a well functioning collaboration capacity. We are aware that this takes time, that time is money, and that money (and time) is a scarce resource among practitioners in public transportation. However, if practitioners do not allocate time, although scarce, for collaborative activities with academia, the collaboration will not be initiated or sustained. Similarly, if academics cannot translate their ideas and findings into practice, no interest in collaboration will be achieved. The three working forms used in the case study seem to be good ways to build collaboration over time, potentially creating goodwill trust within both formal (institutionalized) and informal collaborative practices. We recognize that we have presented findings from one case study, and can therefore not yet make claims at a general level. We see thus a need for more research on goodwill trust among academics and public transport practitioners before such conclusive statements can be made.

Based on this long-term collaborative program, it is concluded that it is possible to collaborate and build relationships between various actors in the public transport sector. Collaboration and research communication can be very valuable asset that benefits all parties if it is done systematically and responsibly. However, if the translation from research to managerial implications does not materialize, the benefits of collaboration may get lost. Even if dialogue between academics and non-academics may be exposed to pressure and challenged in different ways, if carried out responsibly, it builds trust and respect for different knowledge horizons, problem formulations, time logic, and working methods. Developing a collaborative capacity among both non-academic and academic partners increases the possibility of contributing to difficult societal challenges, such as achieving a sustainable future. As described in the presented case, building collaborative capacity may form new processes that over time will be routinely integrated. In Practice theory, this is understood as the development of "shared templates (indicating how activities are, can, and should be carried out) that provide guidelines for activities as well as the performance of activities that such templates prescribe" (Skälén et al., 2022, p.4). Our recommendation and encouragement are to continue (or initiate) building a collaborative capacity as a natural part of future research and development projects, a collaboration that may evolve into new practices.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Acknowledgments

Financial support for this research was obtained through Grants 2004-0297 and 2014-05335 from the Swedish Governmental Agency for Innovation Systems (VINNOVA).

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