Universität St.Gallen

SBB Research Fund: Research Topics Summer/Fall 2020

1) **Passenger Traffic: Customer Behavior**
   - How (transmission mechanisms, strength of effect) do different pricing frames and fences in collective transport affect purchase and use decisions of transportation (individual vs. bundled pricing)?
   - How and by what are individual mobility mode decisions affected?
   - Which actor of the mobility system do customers perceive as the "face"/single point of contact to them (is it the focal company or another actor)? What do they expect from the "face" to the customer?
   - To what extent does increased telework impact people's travel behavior?
   - What is the influence/role of the high convenience of "easy-ride" Ticket Apps on the acceptance of public transport travel passes?
   - What is the impact of super saver prices on the timing of the trip and the acquisition of new customers?
   - Development of a concept of a long-term panel of travel and activity behavior as a research tool.

2) **Passenger Traffic: Supply/Operations**
   - Development of a benchmarking concept for the different elements of the public transport value chain.
   - How to develop activity-based models from Microcensus data, and to make them operational for SBB?
   - How can daily schedules of activities and travels be modeled in activity-based models?
   - How can the coordination between construction/maintenance of tracks and scheduled services be optimized? Which instruments or tools could be implemented?

3) **Safety and quality**
   - How can we ensure good human-technology interaction with increasing digitalization and automation in railway operations? How can we prevent the ironies of automation by using techniques of design thinking and work design?
   - How can artificial intelligence, virtual and augmented reality be used as enablers to people in their work tasks? How can human and artificial intelligence be optimally combined and used for smart work processes?
   - Which are boundary spanning elements of a risk culture in different professional communities?
   - How should co-workers/employees be managed based do the expected trends and changes in society in order to achieve the punctuality, quality and safety goals?
   - What are the risks and opportunities of the planned data strategy of Switzerland for public transport (e.g. data sharing)?

4) **Real Estate**
   - Which long term trends influence the function of transport hubs (service needs, new forms of shared or individual transports (bike garages))? What could be a vision for a transport hub 2050?

- How should the scarcest resource in a transport hub (space) be allocated? How can it be optimally used during different times (night/day)?
- What are optimal and efficient strategies for managing pedestrian flows in train stations?

5) **Business Development**
   - How to strengthen the business ecosystem to grow innovation and reduce the dependency on monopolistic supplier markets?
   - Which forms of cooperation between contractors and SBB can be developed to meet the challenges of the future (cost pressure, use of railway track, new technologies/innovation)?
   - What are the opportunities of the energy-transport interface and its opportunities for further decarbonization of mobility?
   - How can alternative forms of transportation deliver satisfactory service quality on low demand lines with acceptable costs?
   - How to overcome internal borders in a company for driving innovation across divisions?
   - How can co-creation (SBB/customer) lead to novel solutions?

6) **General Management and Governance**
   - How can a focal company maintain its competence-based lead in a dynamic service network?
   - How to manage ambiguity in a public service context? How to span rationalities of future oriented (digital) divisions and traditional brick and mortar production units?
   - What are the implications of State-aid rules of the EU as applied to rail for SBB and/or the Swiss railway system?
   - What are the implications of new EU regulations under way regarding freight corridors?
   - Which are elements of a boundary spanning culture in a multi discipline/professional environment?
   - Which could be complementary forms of financing railway operation and future infrastructure projects?
   - How could workforce planning for specialists be optimized? E.g. for engine drivers?

7) **Sustainability**
   - Which existing circular business models (CBMs) from other resource-intense industries can be applied to the challenges at SBB?
   - Which alternative design options/implementation strategies exist for a selected Circular Business Models? Under which condition does one implementation strategy produce better performance implications than another one?
   - What are ecologically sustainable business models in future mobility?

Remarks: Expressions of interest have to be written in English.