

Quotation

Consultancy services concerning the measures of Work Package 3 of the FLINC project (Financing Large Infrastructure Investments)

Kvarken Bridge – Benefits and costs with wider impacts: Impact assessment of the wider benefits of large-scale cross-border infrastructure

Research and assessment plan

University of Vaasa

Table of Contents

1. Objectives.....	2
2. Scope.....	3
3. Methodology	4
Cost-benefit analysis	4
Traffic Modeling	4
Environmental Impact.....	4
Economic Valuation and Sensitivity Analysis	5
Labour market assessment: Accessibility, Employee mobility.....	5
Innovation-spurring effect assessment.....	7
Business area expansion assessment.....	7
4. Data.....	7
5. Expected Outcomes and Deliverables	8
6. Timeline.....	9
7. Total cost of work	9
8. Experience of researchers.....	9
References	11
Bridge Proposal	11
Articles	11

1. Objectives

The Vaasa region is recognized as one of the leading energy clusters in the Nordic countries, hosting over 160 companies and institutions focused on energy technology, sustainability, and innovation. This cluster contributes significantly to regional development through high-value exports, research partnerships, and employment. The proposed Vaasa–Umeå bridge (Kvarken bridge) could further strengthen this ecosystem by better educated labor mobility with new commuting opportunities. Improving logistics and facilitating cross-border collaboration with Swedish energy firms and universities can benefit the cluster by enabling faster movement of goods, personnel, and ideas. Enhanced connectivity may also support joint innovation projects, shared infrastructure, and sustainable transport solutions aligned with EU climate goals. The potential for economic growth is significant, and the bridge could be a catalyst for further development in the region.

The objectives of the Kvarken Bridge project are clear and significant. The aim is to evaluate the economic, environmental, and social impacts of improving transport connections to Umeå by using a fixed bridge, in addition to ferry service, that connects Vaasa in Finland and Umeå in Sweden. The aim is to quantify benefits in terms of cost savings, traffic growth, emissions reduction, and long-term value. The aim is to compare costs and benefits using discounted cash flow analysis and to analyze the broader effects, focusing on benefits achieved in the Energy cluster in Vaasa or in transportation services operating on an international-national scale. Gothenburg is the only harbor that operates ocean liners directly from Finland or Sweden to Asia, including China. Umeå would establish a direct railway link to Gothenburg with one stop less than the current ferry connection, leaving open capacity. In addition to this, Finland is one day closer to international markets compared with Sweden, and improved access to Gothenburg harbour would enhance the competitive position of the Finnish export industry. The objectives of the project are ambitious, but with the right approach and commitment, they are achievable and will bring significant benefits to the region.

Improving accessibility increases the flexibility in choosing housing and workplace locations, which enhances the functionality of the labor market. This, in turn, increases the employment rate and lowers unemployment. Better employer-employee matches include matches between inventors or scientists and high-tech firms, increasing innovativeness within a region. Improving accessibility increases the flexibility in choosing housing and workplace locations, which enhances the functionality of the labor market. This, in turn, increases the employment rate and lowers unemployment. Better employer-employee matches include matches between inventors or scientists and high-tech firms, increasing innovativeness within a region. Piekkola (2016) analyzed the economic benefits of a one-hour train from Helsinki to Turku that shortens the railway distance between these two cities by about 40 km. A traditional cost-benefit analysis yielded net returns of €30 million. However, gains from new intangible capital and human capital are significantly higher at €40 million when a performance-based evaluation of new HC and intangible capital is used in the valuation.

Review literature on the economic effects of transportation infrastructure investments has only recently focused on the benefits from labour market integration and innovative clusters, especially using microdata on firms that can be used for analysis of industry clusters such as the energy cluster in Vaasa, see (Laakso Seppo & Kostianen Eeva, 2016) and Andersson et al. (2015) for an overview. In contrast to benefits from mere human capital mobility and reallocation between regions, intangibles and innovations create new value added to the economies. Conventional cost-benefit analysis (CBA) focuses on construction and operation costs and travel-time savings. In contrast, the Kvarken bridge will form an entirely new economic area in the northern parts of Finland and Sweden, with important industry clusters and innovation on both sides of the Kvarken. The aim is to quantify the value added from enhancing the mobility of highly educated employees. Piekkola (2016) analyzed the benefits of a one-hour train between Turku and Helsinki and estimated that it would create 500 new high-value-added jobs, valued at 100,000€ for the firms. The Kvarken Bridge project has the potential to create a similar or even greater number of high-value-added jobs, further boosting the local economy.

Most of the value added from the Kvarken Bridge project will come from 'learning by doing' spillovers, where knowledge from previous occupations carries over to new job positions. When educated workers switch jobs, they engage in a dynamic process of 'learning by doing' that enhances both their own capabilities and those of the organizations they join. As they adapt to new environments, they apply existing knowledge in unfamiliar contexts, which forces them to refine techniques, absorb new practices, and solve novel problems (Westerman, 2021). The knowledge gained from previous jobs is crucial for control, as the presence of high-quality peers in new jobs can create negative competitive pressure for inexperienced workers (Cornelissen et al., 2025). Given unique knowledge from past jobs, experiential learning will even deepen their expertise and often leads to the development of more efficient or innovative approaches. The act of performing tasks in a new setting — especially under different constraints or with new technologies—stimulates cognitive flexibility and accelerates skill acquisition. It has also been found that knowledge spillovers occur more across industries than within them (Ugur et al., 2020), suggesting that knowledge flows not known within the industry can be the source of the greatest innovations.

2. Scope

Cost-Benefit Analysis

CBA is a widely accepted economic tool in transportation and infrastructure investment (European Commission, 2014a, 2014b); for a critical assessment, see (Gössling et al., 2019). CBA is not a comprehensive solution to understanding a project's impacts (Hanley & Spash, 1993). Combined with favorable interest rates on loans, the presently expected pay-back time is 50 years based on an average 3.5% interest rate (Öresund Consortium, 2010). Knudsen and Rich (2013) find that the bridge from 2000 to 2010 generated a consumer surplus of 2 billion € in 2000 prices discounted at 3.5% p.a., which should be compared with a total

construction cost of approximately 4 billion €. Many significant impacts also emerge from large labor market areas for innovations (Andersson Åke E. et al., 2013).

The cost-benefit analysis covers international benefits accruing to Finland from the Kvarken bridge (road-based) in terms of commuting and transport. These include assessing the benefits of time and cost savings in accessing Gothenburg. The wider impacts are evaluated in the geographic region of the Kvarken (Vaasa, Finland ↔ Umeå, Sweden), with special concentration on the Vaasa energy cluster. Temporal effects cover a 30-year horizon, and model comparison is made between Ferry vs. Bridge (road-based). However, when larger impacts accompany CBA, its weaknesses can be mitigated (Söderbaum, 2007).

The starting point for assessing regional economic effects is the analysis of the expansion of labor market areas and companies' business areas, as referred to in the literature review (e.g., Andersson et al., 2005). Its basic ideas can be summarized as follows.

3. Methodology

Cost-benefit analysis

Traffic Modeling

The first step involves estimating both current (baseline, e.g., 71000 commuters, freight 400000) and future (projected) volumes of commuters and freight. This step includes analyzing how demand responds to changes in travel time, cost, or infrastructure—using elasticity of demand and induced demand models (with a baseline around -0.5). Additionally, the model should account for modal shifts (baseline around 0.1), such as travelers switching from road to rail or other transport modes, which can significantly affect traffic patterns and infrastructure needs.

The cost analysis quantifies the generalized cost per commuter and per ton of freight, incorporating time, fuel, tolls, and other user costs. The estimates are based on actual costs in firms within the Vaasa energy cluster and acknowledge the average high value of the cargo. It also includes capital investment and ongoing maintenance costs for infrastructure, with reference to other bridges in use (Örebro bridge, others). These costs are essential for comparing the economic efficiency of different transport scenarios or policy interventions.

Environmental Impact

Environmental analysis estimates annual emissions of key pollutants—CO₂, NO_x, and PM—for each transport mode. By comparing baseline and projected scenarios, the analysis identifies total emission reductions resulting from shifts in traffic volume, mode, or efficiency improvements. This step is crucial for evaluating the environmental benefits of proposed investments or policies.

Economic Valuation and Sensitivity Analysis

To translate environmental and operational impacts into monetary terms, emissions reductions are monetized using damage cost estimates (e.g., €/ton CO₂). The analysis then applies discount rates (commonly 3% and 4%) to calculate the Net Present Value (NPV) of benefits and costs over time. This allows for a consistent comparison of long-term impacts in today's terms. Finally, a sensitivity analysis tests how robust the results are to changes in key assumptions. This includes varying the discount rate, traffic growth rate, emission factors, and value of time. It helps identify which variables most influence the outcome and ensures that the conclusions remain valid under different future scenarios.

Labour market assessment: Accessibility, Employee mobility

The cost-benefit assessment CBA was already based on labor mobility created from improved accessibility, and this section evaluates the larger effects on the employment rates in the area. The improvement of traffic accessibility between the regions enables those in the labor force to search for work and work in a wider area, which promotes the meeting of the demand and supply of labor and the availability of specialized labor. Accessibility is of great importance for families choosing a place to live, as well as for job hunting and going to work. Families with several family members who belong to the workforce can work in different municipalities or regions in the zone of good accessibility. Improving accessibility increases the flexibility in choosing the location of housing and workplace, thereby enhancing the functionality of the labor market. The expansion of labor market areas and the resulting improvement in matching labor demand and supply increase the employment rate and reduce unemployment and non-labor force participation. We analyze whether inflows of human capital to the region (Duranton & Turner, 2011).

Standard CBA fails to account for increasing returns that are external to the firm and thus would not feature in the willingness-to-pay approach that underpins calculations of consumer surplus (Graham & Dender, 2011). Agglomeration economics relate only to population density; however, they fail to account for the potential benefits of industries in Vaasa and Umeå. We value the agglomeration of cluster-specific employment and knowledge. The greatest benefits are potentially reaped from the industry cluster in Vaasa, particularly in the labor market of high-value-added sectors, such as the energy cluster.

A simple approach would use the observed mobility of workers across regions and the decay parameter to determine how the distance between the two regions affects the labor mobility. Piekkola (2016) estimated that in a one-hour train study between Helsinki and Turku, about 500 more educated employees will annually commute/go to work in the Greater Helsinki area when a one-hour train is built. This commuting and mobility of labor create valuable new intangible capital. In the Kvarken bridge, we do not have such information on cross-border mobility. It is also important to value the mobility of educated and uneducated workers differently. Anderstig et al. (2012) analysis based on changes in existing travel costs over time and their income effects when accessibility is improved. Such a model indicates

that time saving in transport investment is more valuable for educated workers. The willingness to pay for access through the Kvarken bridge is thereby also higher. Unfortunately, these data are absent here as the Kvarken bridge does not exist.

The estimates for employment creation and employee mobility in Vaasa, both across borders and in other directions, are generally uncertain, but the calculations allow for sensitivity analysis under alternative scenarios. Wider effects are calculated as before based on improved efficiency when new intangibles are created. Employees have knowledge and skills from their former jobs that they utilize in their new jobs spreading new knowledge. Piekkola (2016) found that relocating each educated employee to the greater Helsinki area creates new knowledge stock valued at 100,000 € in 2015. The essence of the wider impact here is to obtain comparable estimates when an educated workforce relocates to cities like Vaasa or Umeå, or when new connections encourage labor mobility to larger cities such as Helsinki. The evaluation will first be made based on the new intangibles and value added created when jobs are created in the Vaasa energy cluster.

The intangibles are a substantial part of GDP because we rely on occupational intangibles, which encompass a major portion of the tertiary-educated workforce responsible for a large share of GDP creation. Occupation intangible capital covers over 10% of GDP. The traditional R&D survey captures only 3% of GDP and leads to a downward bias in quantifying the true effects. The occupation intangible method was developed in EU projects Innodrive (2007-2011) and Globalinto (2019-2022), coordinated by Hannu Piekkola. It is also part of the international cooperation of its assessment proceeds in the Strategic Council-financed Transform-AI project, set for 2025-2031 in Finland, Denmark, Norway, and Slovenia.

The study will also greatly improve the larger impacts model used in the study of a one-hour train from Helsinki to Turku in Piekkola (2016). Along the lines suggested by Tambe and Hitt (2014), the project employs modern panel data methods (Arrelano-Bond and system GMM) in robustness testing. These are specifically developed to address the endogeneity of job mobility or network interconnection, e.g., with job mobility from non-intangible intensive but high-productivity firms.

It is also essential to observe the knowledge spillovers generated over a long time, as the movement of talent fosters knowledge spillovers and raises the collective competence of the workforce. In sectors where innovation and adaptability are key, mobility-driven learning by doing becomes a powerful engine for innovations, which is further analyzed here using innovation survey data. Tambe and Hitt (2014) also offer several other methods to check robustness. They find that firms derive significant productivity benefits from the Information and Communication Technology (ICT) investments of other firms from which they hire ICT labor. We extend the analysis to R&D and organizational capital, as well as labor, all of which have much wider impacts.

Innovation-spurring effect assessment

Innovations increase because knowledge flows more efficiently into the region. The relative importance of the innovation spurring effect has significant and distinctive implications for policy, as higher innovations bring new value added and do not merely attract human capital from other regions. Relatively recent literature has analyzed how transportation infrastructure affects innovations and hence productivity (Agrawal et al., 2017; Klein, 2003; Parent & Riou, 2005). This study will evaluate the potential of new intangibles using register-based employee-employer data and assess new product, process, and environmental innovations through innovation survey data. It will also examine the relationship between transport investments and innovations in the Finnish NACE-IV digit areas.

Business area expansion assessment

Research analyzes how accessibility fosters the expansion of business areas by enabling firms to reach new markets, integrate supply chains, and establish cross-border collaborations. This is particularly relevant for knowledge-intensive clusters, such as the energy technology sector in Vaasa, where proximity to specialized suppliers and skilled labor enhances competitiveness. Reduced travel time lowers transaction costs and facilitates agglomeration economies, which amplify productivity through shared resources and innovation spillovers (Mackie et al., 2011). These effects are external to individual firms and therefore not captured by standard cost-benefit analysis (CBA).

We evaluate an agglomeration elasticity, which shows how firms in locations with a certain higher effective density can have higher productivity. The method is applied to the energy cluster and to the energy-intensive clusters in Finland. We follow Maré and Graham (2013) in regression estimates of agglomeration elasticities from a Hicks-neutral translog production function specification. We use the gross output specification because it is more general and, unlike the value added function, allows for possible substitutability between intermediate goods. Effective density is calculated for each of the four Nuts areas in Finland, based on plant-level employment, using information on all plants, and with a distance decay of $\alpha = 1$. The estimates allow for evaluating the gains from large business activity for the energy cluster in the Vaasa area. Such evaluations can be extended to the Umeå area in future assessments, while initial judgment of such effects can also be assessed.

4. Data

The impact assessment will be based on the following data and data sources:

Wasaline ferry statistics

Kvarken Council feasibility study

EU and Nordic transport emission databases

OECD valuation of air pollution

OpenStreetMap for distance

Finnish and Swedish transport agencies

Remote access to Statistics Finland data from the year 2000 onwards

Full firm-level financial statements data, including energy use, dividends, complementing data on fixed investments and energy, R&D and ICT, firm age, legal status, ownership, exports, imports, applied especially to Vaasa energy cluster data with 140 firms operating in the energy cluster (anonymous data).

Employee data: salaries, work time, profession, tenure, performance-related pay, linked to firm-level data

Innovation surveys data on product, process, marketing, organizational, and environmental investments

Full available regional Nace-4 level (työssäkäyntialue) data

5. Expected Outcomes and Deliverables

Summary tables and visualizations (traffic, cost, emissions)

NPV comparison charts

Wider impacts: benefit from induced commuting between Umeå-Vaasa and Vaasa, major cities (Helsinki, Tampere, Oulu), the latter mainly through railway

Benefits assessed especially to new jobs in the Vaasa Energy cluster

Potential benefits (time saving and stowage) to the Finnish industry from opening a new route via the Kvarken bridge to Gothenburg

Report / Policy brief and executive summary

Scientific Article on wider effects of building the Kvarken bridge

Optional: interactive dashboard or simulation model

6. Timeline

Phase 1: Data collection and literature review January-March 2026 (including transportation infrastructure and innovation (Agrawal et al., 2017; Klein & Luu, 2003; Parent & Riou, 2005); others

Phase 2: Model development and validation April-May 2026

Phase 3: Preliminary results, analysis and visualization June-August 2026

Phase 4: Report writing and dissemination, September-December 2026.

7. Total cost of work

The total cost of the proposed work amounts to 60 000 euros (including VAT). This consists of the following items:

Personnel work: 55 000 euros

Travel costs: 2000 euros

Other costs: 3000 euros (proof-reading and editing of report and presentation materials)

Professor Hannu Piekkola at the University of Vaasa will be project leader and main researcher responsible for the work. The University of Vaasa will utilize the services of Hereticum Oy (0799732-5) for carrying out the work.

8. Experience of researchers

Hannu Piekkola is a Doctor of social sciences (economics) and has worked as a professor in economics at the University of Vaasa since 2007. Before that, he was assigned as the Head of Unit (Labour Market Research) at ETLA, the Research Institute of the Finnish Economy, from 1999 to 2006, and as a Senior Researcher at PT Labour Institute of Economic Research from 1995 to 1998. He was Head of the Economics and Business Law unit from 2010-12, 2015-2018, and 2025-2026. He was part of the consortium promoting the One Hour Train between Helsinki and Turku. He published a report on the related benefits "Transport investment in railways to generate knowledge transfer from interfirm worker mobility". Department of Economics Working Paper No.24.

He is currently a Member of the expert pool of the Research Council for Culture and Society of the Academy of Finland, a 2025 Member of the expert pool for the proposal of candidates

for the Nobel Prize in Economics, and a Member of the Vaasa University Foundation. He was also a member of the transport corridor delegation (Liikennekäytävävaltuuskunta) supporting the One-hour train from Helsinki to Turku.

Recent articles in refereed journals:

2025 R&D effort and knowledge sourcing: Searching for better profitability and high growth. Science and Public Policy 52.

2025 Intangibles from intangible capital work: Their valuation and technological change. Review of Income and Wealth 73(2)

2024 Piekkola, Hannu, and Jaana Rahko. The effects of environmental innovations on labor productivity: how does it pay to be green. Economics of Innovation and New Technology: 1-22. (with Jaana Rahko)

2024 Aineeton pääoma Suomessa edistämässä teknologista muutosta - kasvun haasteet. Kansantaloudellinen aikakauskirja 4, 380-397

All articles related to intangibles cover broader benefits related to knowledge spillovers, which have not been evaluated not only in Finland but also among Nordic countries and the EU area. The ongoing research covers energy sectors and related infrastructural investments, examining how they contribute to energy benefits, including those related to energy intensity. The research above also covers how environmental regulation boosts environmental investment and growth.

Project References

2025-2028 TRANSFORM-AI "Leadership, Intangible Capital, and Innovation for AI-Driven Growth" consortium party leader of the University of Vaasa.. The Strategic Research Council program SRC 2025: Economy and Welfare in an Era of Strategic Competition (WELEC)

2019-2022 Coordinator of GLOBALINTO EU Horizon 2020 Program "Capturing the value of intangible assets in micro data to promote the EU's growth and competitiveness"

2008-2011 Coordinator of INNODRIVE "Intangible Capital and Location and Growth in Europe" EU 7th framework project, project coordinator www.innodrive.org

Turku Chamber of Commerce financed study on "Helsingin- ja Turun välisen Tunnin junan kansantaloudellisista vaikutuksista"

2000-2008 AGIR, AHEAD, AIM EU 6th and 5th framework projects in Enepri network (www.enepri.org) and ActivAge project.

Language Proficiency

References

Bridge Proposal

- Kvarken Fixed Connection feasibility study completed in 2025 [vayla.fi]
- Talvitie, Eranti selvitys "Nordic connector" 21.8.2025_Options: Road, rail, or combination; cost estimates range from €4.9B to €28.9B
- Alternative environmentally friendly route through shallows using causeways (pengertie), not via Valassaaret, Holmögrads, Grossgrunder
- Travel time reduction: Estimated to cut travel time from 4,5 hours to ~1 hour or less, utilizing Umeå - Gothenburg railway in long-distance connections 1 day
- Strategic importance: Enhanced logistics, NATO mobility, and regional development [www.the-express.com]

Articles

- Agrawal, A., Galasso, A., & Oettl, A. (2017). Roads and innovation. *Review of Economics and Statistics*, 99(3), 417-434.
- Andersson, M., Dehlin, F., Jörgensen, P., & Pädam, S. (2015). Wider economic impacts of accessibility: a literature survey.
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- Anderstig, C., Berglund, S., Eliasson, J., Andersson, M., & Pyddoke, R. (2012). Congestion charges and labour market imperfections: wider economic benefits or losses? In: Centre for Transport Studies Stockholm, Swedish National Road & Transport
- Cornelissen, T., Dustmann, C., & Schönberg, U. (2025). Knowledge Spillovers, Competition, and Individual Careers. *RFBerlin Discussion Paper*, 80. <https://www.rfberlin.com/wp-content/uploads/2025/10/25080.pdf>
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- Hanley, N., & Spash, C. L. (1993). Preferences, information and biodiversity preservation.
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- Maré, D. C., & Graham, D. J. (2013). Agglomeration elasticities and firm heterogeneity. *Journal of Urban Economics*, 75, 44-56.
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- Tambe, P., & Hitt, L. M. (2014). Job hopping, information technology spillovers, and productivity growth. *Management science*, 60(2), 338-355.
- Ugur, M., Churchill, S. A., & Luong, H. M. (2020). What do we know about R&D spillovers and productivity? Meta-analysis evidence on heterogeneity and statistical power. *Research Policy*, 49(1), 103866. <https://doi.org/10.1016/j.respol.2019.103866>
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Professor

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School of Accounting and Finance

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Professional Summary

Professor **Hannu Piekkola** is a distinguished economist at the University of Vaasa, specializing in intangibles, competitiveness, innovations, and European economies. He has extensive research experience, having previously worked at renowned research institutes such as Labore and ETLA, the Research Institute of the Finnish Economy. Professor Piekkola has played a pivotal role in several EU-funded projects focusing on ageing, health, intangibles, and economic growth. Notably, he coordinated the EU Horizon 2020 project Globalinto (2019-2022) and the EU 7th Framework project INNODRIVE (2008-2011), both of which aimed at measuring intangibles and their impact on the EU27 economies. His research leverages remote access to linked employer-employee register data and employs AI to evaluate the involvement of intangible capital across various professions.

Academic Qualifications

Title of Docent: Economic, <i>University of Helsinki</i> Finland	2006
Ph.D. (Economics), <i>University of Helsinki</i> Finland	1995
Lic. Sc. (Economics), <i>University of Helsinki</i> Finland	1989
M. Sc. (Economics), <i>University of Helsinki</i> Finland	1987

Certifications and Training

Sustainable Economic Policy Management, Economic Policy Courses 2005, 2015 <i>SITRA</i>	2005 - 2015
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Professional Experience

University of Vaasa, Department of Economics Professor (Economics) Professor (Economics)	May 2007 - Present
University of Helsinki, Department of Economics Docent (Economics) Docent (Economics) (tenured)	Sept 2006 - Present
The Research Institute of the Finnish Economy ETLA <i>Helsinki</i> Head of Unit Head of Unit Lönnrotinkatu 4B 00120 Helsinki, tel 358-9-609900, fax 358-9-601753	Sept 1999 - Apr 2007
Labour Institute of Economic Research PT Senior researcher <ul style="list-style-type: none">• Research (see Publications below)• In charge of quarterly economic forecast 1998-1999	Oct 1995 - Aug 1999

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Additional Skills and Languages

LINGUISTIC SKILLS Finnish native language

- English: sound command of professional
- Swedish: working knowledge (written and oral ability required in civil service)
- German: limited discussion ability

Courses Taught

Macroeconomics, Macroprudential Policy Master level, Public sector economics, Personnel economics
Bachelor level

Pedagogical Competence

Research

2025-2028 TRANSFORM-AI "Leadership, Intangible Capital, and Innovation for AI-Driven Growth". Consortium party leader of University of Vaasa. The Strategic Research Council program SRC 2025: Economy and Welfare in an Era of Strategic Competition (WELEC)

2019-2022 Coordinator of GLOBALINTO EU Horizon 2020 Program "Capturing the value of intangible assets in micro data to promote the EU's growth and competitiveness"

2008-2011 Coordinator of INNODRIVE "Intangible Capital and Location and Growth in Europe" EU 7th framework project, project co-ordinator www.innodrive.org

2000-2008 AGIR, AHEAD, AIM EU 6th and 5th framework projects in Enepri network (www.enepri.org) and ActivAge project.

1995- Referee of Research Policy, Journal of Technology Transfer, Technological Forecasting and Social Change, Technovation, European Economic Review, Scandinavian Journal of Economics, Bulletin for Economic Research, Finnish Economic Papers, Journal of Economics, Review of International Economics, Journal of Economic Behavior and Organization, International Journal of Manpower, Industrial Relations: A Journal of Economy and Society, Economics of Innovation and New Technology, Applied Economics, International Economic Review, Journal of Economic Behavior & Organization

Supervisions

2013-2024 Primary supervision doctoral students in University of Vaasa: Antti Norkio 2024, Carita Eklund 2019, Jari-Mikko Meriläinen (secondary supervisor) 2018, Jaana Rahko 2016, Mervi Toivanen 2015, Jarkko Heinonen 2013, Seppo Suominen 2013.

2017- Supervisor Master degree about 7 students yearly

2017- Supervisor Bachelor degree about 7 students yearly

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International Experience and Collaborations

2019-2022 Coordinator of GLOBALINTO EU Horizon 2020 Program "Capturing the value of intangible assets in micro data to promote the EU's growth and competitiveness"

2019- Head of Economics Research Group, School of Accounting and Finance, University of Vaasa

2010-2018 Head of Intangible Capital Research Group, Faculty of Business, University of Vaasa.

2015-2017 INNOMITTA II "Intangible capital - supporting knowledge and value added in Europe" financed by the Finnish Funding Agency for Innovations, Tekes, project manager

2013-2014 INNOEUROPE "Intangible capital - supporting knowledge and value added in Europe" financed by the Finnish Funding Agency for Innovations, Tekes, project manager

2008-2011 INNODRIVE "Intangible Capital and Location and Growth in Europe" EU 7th framework project, project co-ordinator www.innodrive.org

2000-2008 AGIR, AHEAD, AIM EU 6th and 5th framework projects in Enepri network (www.enepri.org) and ActivAge project. Projects deal with ageing, health, labour force participation and pension systems.

Consulting - Boards - Committees - Positions of Trust

2025- Member of the expert pool of the Research Council for Culture and Society of the Academy of Finland

2025 Member of the expert pool for proposal of candidates for Noble price winner for Economics

2023- University of Vaasa, Member of Vaasa University Foundation

2018-2021 University of Vaasa, Chairman of University Collegium

2014-2017 University of Vaasa, Member of University Collegium

2011- University of Vaasa Accounting and Finance School, Economics research group coordinating professor (formerly Intangible research group)

2009- Associate Research Fellow ETLA and Etlatieto

2007-2009 Member of SATA committee on social protection set by Prime Minister's Office

Awards, Merits and Prizes

Publications

Articles in refereed journals

- 2025 R&D effort and knowledge sourcing: Searching for better profitability and high growth. *Science and Public Policy* 52.
- 2025 Intangibles from intangible capital work: Their valuation and technological change. *Review of Income and Wealth* 73(2)
- 2024 Piekkola, Hannu, and Jaana Rahko. The effects of environmental innovations on labor productivity: how does it pay to be green. *Economics of Innovation and New Technology*: 1-22. (with Jaana Rahko)
- 2024 Aineeton pääoma Suomessa edistämässä teknologista muutosta - kasvun haasteet. *Kansantaloudellinen aikakauskirja* 4, 380-397

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- 2021 Innovative competences, the financial crisis and firm-level productivity in Denmark and Finland. *Economics of Innovation and New Technology*: 1-15. (with Carter Bloch, Carita Eklund)
- 2020 Intangibles and innovation-labor-biased technical change. *Journal of Intellectual Capital* 21(5) 649-669.
- 2020 Intellectual capital, firm's innovation growth and emerging value spaces Editorial. *Journal of Intellectual Capital* 21(5) 641-647 (with Ahmed Bounfour and Carter Bloch).
- 2019 Innovative growth: the role of market power and negative selection. *Economics of Innovation and New Technology*: Sep 6 1-22. (with Jaana Rahko).

Date
17.6.2024

THE POSITION OF THE UNIVERSITY OF VAASA

The University of Vaasa is a corporation under public law referred to in the Universities Act (558/2009). Defining provisions have been laid down in the Regulations of the University of Vaasa. The University of Vaasa was given a business ID on 30 June 1978. Operating as a corporation under public law, the University of Vaasa is not registered in the trade register.

Under section 19 of the Universities Act, the rector or the board represents an university operating as a corporation under public law and the university rules may have more specific provisions on the rector's right to represent the university. Under section 3 of the Regulations of the University of Vaasa, the rector represents the university in all matters, and, under section 9, the vice-rector can resolve a matter falling within the rector's remit if the rector is temporarily unavailable.

Samu Leskinen
Director, Strategic Planning and Legal Affairs

Appendixes:

- Printout from the Business Information System June 17, 2024
- Extract from the University of Vaasa Regulations September 14, 2020

Tämä dokumentti on allekirjoitettu sähköisesti UWasa Sign-järjestelmällä
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Samu Leskinen

Johtaja

Organisaation varmentama (UWasa-käyttäjätunnus)
Certified by organization (UWasa user account)
Certified by organization

Details retrieved 17.06.2024 at 10.49

Vaasan Yliopisto

	Latest detail	Start date	Information source
Business ID	0209599-8	30.06.1978	Business Information System
Company name	Vaasan Yliopisto	01.01.1991	Tax Administration
Company form	Other juridical person under public law	01.08.1977	Tax Administration
LEI code	743700CAZ8UCN3B7NP80	31.10.2017	Business Information System
Home municipality	VAASA	01.08.1977	Tax Administration
Language	Finnish	30.06.1978	Tax Administration
Main line of business	85420 Tertiary education	31.12.2007	Tax Administration
Postal address	P.O. Box 700 65101 VAASA	05.04.1995	Common

Registrations in force

Register	Status	Start date
Tax Administration	Registered	30.06.1978
Prepayment register	Registered	01.03.1995
Value added tax-liability	VAT-liable for business activity	01.01.2010
Value added tax-liability	VAT-obliged for the transfer of rights to use immovable property	11.01.2010
Employer register	Registered	01.08.1977

Prepayment register check dates:

1 March, 1 June, 1 September and 1 December

Business ID history

Date	Transaction	Description
30.06.1978	ID given	

LEI details

LEI code	Status	Start date	Register
743700CAZ8UCN3B7NP80	Issued	31.10.2017	Business Information System

LEI code history

Current status of LEI code

Date of last update	31.10.2023
Next revision date	31.10.2024

EXTRACT 14 September, 2020

UNIVERSITY REGULATIONS

The University's Board approved these University regulations on 22 June 2017 on the basis of Section 14, Item 2, Point 8 and Section 28 of the Finnish Universities Act (Yliopistolaki, 558/2009). The University of Vaasa may also have other University regulations approved by the Board.

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3. Representing the University

The Rector represents the University in matters within the remit of his/her position in accordance with the Universities Act, as well as in other matters relating to the University. The Rector decides who is entitled to sign on behalf of the University in addition to the parties stated in the Universities Act. The Board represents the University in matters falling within its jurisdiction in accordance with the Universities Act.

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9. Rector and Vice-Rector

The University has a full-time Rector.

The Rector's duties are stated in the Universities Act. In addition, the Rector takes on the management personnel directly subordinate to him/her. In addition, the duties of the Rector, Vice-Rector or Dean include representing the University in specific disciplines in the manner specified in detail by the Rector and taking responsibility for the consistent development of the disciplines.

The Rector may submit a matter for the Board to decide upon if the matter concerns several of the University's units, even if the matter is otherwise delegated to a different administrative body or director by these rules of procedure.

The University has one or more Vice-Rectors as decided by the Board on the Rector's proposal. The Board appoints the Vice-Rector for a term of up to five years on the proposal of the Rector from among those who have applied for the position or given their consent for the appointment. A person who is a professor or has a doctorate can be appointed Vice-Rector. On the proposal of the Rector, the Board can withdraw the appointment of the Vice-Rector on justified grounds.

The Rector defines a more detailed job description for the Vice-Rector together with the person elected for the position. The Vice-Rector can resolve a matter falling within the Rector's remit if the Rector is temporarily unavailable, as decided in more detail by the Rector.

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Entry into force, transitional provisions and amendments

34. Entry into force

The University of Vaasa's University regulations enter into force on 1 January 2018. At the same time, the University regulations approved by the University of Vaasa's Board on 25 September 2009 and subsequent amendments will be annulled.

35. Transitional provisions

Before these University regulations enter into force, measures required for their enforcement can be taken. Before these University regulations enter into force, matters within the remit of the University Collegium can be handled by the University Collegium as referred to in the University regulations approved by the University of Vaasa's Board on 25 September 2009. Before these University regulations enter into force, matters within the remit of the Council of Research and Education or Schools' management groups can be handled by Faculty Councils as referred to in the University regulations approved by the University of Vaasa's Board on 25 September 2009.

If a matter remains pending at the University when these University regulations enter into force, further measures will become the responsibility of the administrative body with a remit over the matter in accordance with these rules of procedure.

Language education for degrees at the University of Vaasa will be moved to the University of Jyväskylä on 1 August 2017, and the Faculty of Philosophy will cease to operate when these University regulations enter into force. The language degree programmes that remain ongoing during the transitional period at the University of Vaasa and the students who continue to study on these programmes will become members of the School of Marketing and Communication, and decision-making regarding degree programmes in languages will be arranged in accordance with these rules of procedure.

36. Amendments and their entry into force

Sections 10(1) and (2), 12(1), 13(1) and 20(3) of these University regulations have been amended and Sections 12(3) and 35 have been added at the Board meeting on 27 October 2017. The amendments will enter into force on 1 January 2018.

Sections 4(2), 12(1), (3) and (4), 13(1), 20(3), 23(1) and (2), and 28 of these University regulations have been amended, Sections 25 and 36(2) have been added, and Section 13(1)(12) has been removed at the Board meeting on 15 December 2017. The amendments will enter into force on 1 January 2018.

Sections 1(1) and (2), 4(3), 9(2), 10(1)(1), 10(2) and (3), 12(1)(1), (2), (3), (4), (5), (7), (8) and (9), 12(4), 13(1)(1), (2), (7), (10), (11) and (12), 15, 16(2), 20(1), 21(2), and 24 of these University regulations have been amended, Sections 20(4), 31 and 36(3) have been added, and Sections 10(1)(4) and 14(3) have been removed at the Board meeting on 22 February 2019. The amendments will enter into force on 1 March 2019, however, the amendments to Sections 10(2) and 12(1)(8) will enter into force on 1 January 2020

and will be applied for the first time when members and deputy members are elected for the Council of Research and Education, which starts its term on 1 January 2020.

Sections 9(4) and (5), and 20(4) of these University regulations have been amended, and Section 36(3) has been added at the Board meeting on 15 November 2019. The amendments will enter into force on 15 November 2019.

