JYU REPORTS 32

Anne Lyytinen Tuula Oksanen,
Assessment panel & Assessment units

RESEARCH ASSESSMENT EXERCISE 2023

A Report

JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

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Cover illustration: Jari Kivelä, University of Jyväskylä

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Permanent link to this publication: http://urn.fi/URN:ISBN:978-951-39-9867-7

ISBN 978-951-39-9867-7 (PDF)
URN:ISBN:978-951-39-9867-7
DOI: 10.17011/jyureports/2023/32
ISSN 2737-0046

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ABSTRACT

In 2023, the University of Jyväskylä conducted a comprehensive assessment of its research activities over the period from 2018 to 2022, with the faculties acting as the units of assessment. Independent institutes were included as a part of a faculty according to their discipline. The subjects of the assessment were the research environment, doctoral training and the societal impact of research conducted at the University of Jyväskylä. The primary goal of the assessment was to facilitate the development of the key preconditions for high-quality, high-impact research and doctoral training. One way to achieve this goal is to use the outcome of the assessment for the planning and strategy work of the units as well as that of the University.

The assessment consisted of a self-assessment as well as an external assessment by an 11-person international multidisciplinary panel. To support the assessment, the units of assessment and the assessment panel were provided with background material that consisted of statistics on funding, research personnel, mobility, doctoral training, and publishing. In addition to statistical data on the units, the panel received the units' self-assessment reports and research development plans. Development plans describe the actions each unit is taking to develop the areas for improvement they have identified. In May 2023, the assessment panel visited the University, where it met members of the units of assessment, the rector and the vice rectors, interviewed the research personnel and leadership of each unit, and visited research facilities. After the visit, the panel authored a joint report on each unit of assessment, where it gave constructive feedback on the units' research development plans and assessed the units without giving a numerical rating or ranking them. The units received recommendations and ideas on how to further strengthen the quality of their research environments and doctoral training, as well as the societal impact of their research. The units used the feedback to finalize their research development plans.

In addition to the unit-level recommendations, the panel pointed out overall challenges the University should address and provided suggestions for overcoming them. It suggested, among other measures, that the University review its tenure track system, reconsider moving some key administrative services back to the faculties, strengthen post-award support, develop a research leave scheme, and continue the JYU Visiting Fellow Programme. The panel also identified challenges the University should address to develop its well-functioning doctoral training.

These challenges included the structure of the Graduate School, the number of doctoral students, and the sense of isolation experienced by some doctoral students. The panel saw that the potential for societal impact of research conducted at JYU could be boosted through, for example, training, support, and encouragement. For detailed feedback and recommendations, see Section 4 of the panel report.

The final report presents the principles, process, and results of the assessment. The report contains summaries of the research development plans but not the complete plans and the self-assessment reports, as these are intended for internal use only.

FOREWORD

Research assessment processes play a pivotal role in upholding the excellence of research, serving as a cornerstone in the progression of research organizations. A university-wide assessment is a substantial undertaking, however, that demands meticulous structuring to extract the maximum benefits for enhancing research performance. Equally crucial are the strategic and operational functions intertwined with the university's research capabilities. Instead of offering a mere snapshot of the present, the assessment should act as a lens and provide valuable insights to shape the future. The basis and goals of such assessments have sparked extensive discussion, and universities conduct them with varying focuses based on their specific needs.

The 2023 research assessment at the University of Jyväskylä has followed a methodology akin to the one carried out in 2018. Rather than emphasizing comparisons between the achievements of different disciplines, the process aims to support each academic unit of the University in recognizing their strengths and weaknesses within their research environment, strategies and processes. This approach encourages units to define the most relevant measures needed to facilitate changes in their research environment, fostering an atmosphere where they can reach their full potential in scientific research. With this tailored and supportive assessment strategy, academic units are empowered to make informed decisions and propelled toward achieving excellence in their research pursuits.

A central input in the assessment process was provided by the external assessment panel, which featured esteemed scholars from institutions such as Liverpool John Moores University, Aarhus University, Scuola Normale Superiore, the Technical University of Munich, and the University of Oslo, among others. As in 2018, the panel was chaired by Professor Sue Scott. Their diligent work, involving a thorough review of background materials and a fruitful site visit to Jyväskylä in May 2023, has contributed immensely to the assessment process.

The panel's review offers a valuable external perspective. It serves as the opinion of a critical friend while providing essential guidelines for improvements. We deeply appreciate this constructive feedback and warmly thank the panel for its commitment and effort in undertaking this demanding task.

Finally, I want to thank the people from the faculties, University Services and the Open Science Centre for their excellent cooperation in this project. Senior

Specialist Anne Lyytinen deserves special thanks for implementing the assessment and compiling the report together with Graduate School Coordinator Tuula Oksanen.

Vice Rector Henrik Kunttu

1 UNIVERSITY OF JYVÄSKYLÄ

1.1 Organization and management

The University of Jyväskylä (JYU), founded in 1863, is a corporation under public law. As defined in the Universities Act [1], JYU has the University Board, the rector and the University Collegium (Figure 1). In addition to the Act, the University of Jyväskylä Regulation defines their duties and stipulates other academic and administrative (University Services) bodies of the University [2]. The highest decision-making body of the University of Jyväskylä is the seven-member University Board, whose tasks include definition of the University's key operational and financial targets, strategy and management principles and election of the rector. The University Board elects the rector who appoints the vice rectors. During the Research Assessment Exercise, the position of the rector was held by Keijo Hämäläinen (until 20 April 2023) and Marja-Leena Laakso (from 21 April to 14 August 2023). The positions of vice rectors were held by Marja-Leena Laakso (freed from the duties of vice rector while acting as rector), Henrik Kunttu, and Peppi Taalas (from 21 April to 14 August 2023). The changes of personnel were due to the appointment of Rector Hämäläinen as the rector of the University of Tampere in March 2023.

The University Collegium has 30 members, representing the professors, the teaching and research personnel as well as other staff, and the students. The two personnel groups elect their 10 members for a four-year term and the Student Union of the University of Jyväskylä elects 10 student members for a two-year term. The current University Collegium started its term of office in 2022. The University Collegium elects the University Board members from outside the university

community and decides, for example, on the number of University Board members and the duration of term for the Board and members. The role of the Collegium is also to transmit information between the university community and the University Board as well as the rector. For example, the JYU community members can propose issues to be discussed in the University Collegium, which decides how the initiatives will be addressed.

The University consists of six faculties and five independent institutes (Figure 1). The faculties are headed by the dean and departments by the head of department. The faculties of Information Technology, Sport and Health Sciences, and the Jyväskylä University School of Business and Economics do not have departments. Two of the independent institutes conduct research, the Kokkola University Consortium Chydenius and the Finnish Institute for Educational Research, and they are led by a director. The Open Science Centre is constituted by the University Library and University Museum. It provides, for example, training in information seeking and open science practices, and advice and assistance in research data and data management planning. The Centre for Multilingual Academic Communication develops and offers communication and language courses for the students and staff and promotes the internationalisation of the University. The Open University of the University of Jyväskylä has annually 16,000 students, making it the largest open university in Finland. Most of these courses are in Finnish, but the Open University also has courses in English.

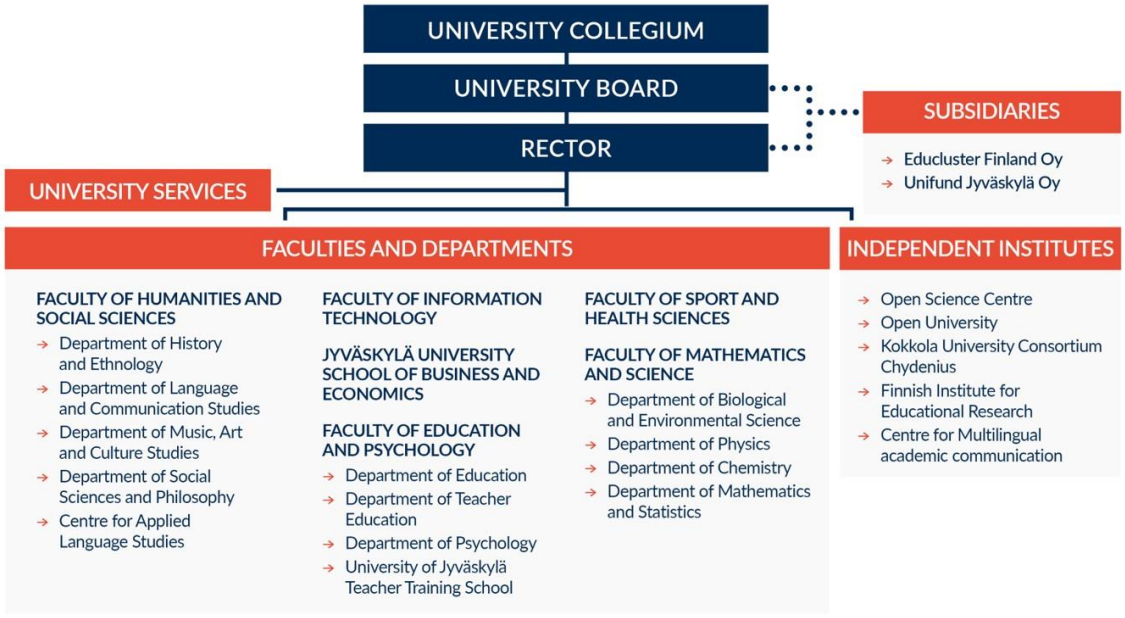

Figure 1. Organization of the University of Jyväskylä.

Administrative services have been centralized in the University Services, whose services are grouped into eight entities: Communications and Community, Digital Services, Division of Policy & Planning, Financial and Facility Services, HR Services, Management Support Services, Student and Academic Services, and Research and Innovation Services.

1.2 Research profile and strategy

In 2019, the University of Jyväskylä launched its new strategy for 2019–2030 "Wisdom and wellbeing for us all" [3], in the preparation of which the University community, regional influencers and partners took part. The university community also participated in the refreshment of the strategy in 2023. JYU steers its operation in the direction outlined in the strategy through five development programmes that develop research, education, digitalization, the campus, or the University community. Each development programme defines the target state, the main strategic goals, and the expected results. The research development programme focuses especially on promoting research activities and the position of researchers, with a strategic vision of "putting the researcher first" [4]. Its main strategic goals are (1) motivating and attractive research careers, (2) researchers' competence and the quality of research develop continuously, and (3) high-quality research services and research infrastructure. JYU explores the implementation of the strategy twice a year.

JYU is a multidisciplinary university, which is reflected in the publication output (Figure 2) and in the JYU research profile. The six core fields of research (Table 1) are based on multidisciplinary collaboration within and outside the University. JYU has strengthened its core field of research with a competitive profiling funding (Profi). Since 2015, the Academy of Finland has been providing Profi funding for the development of profiling areas that a university has selected according to its strategy [5]. The funding granted to JYU has been from €3.7 to €5.7 million for a funding period of 4.4 (in years 2015–2019) or 6 years (in 2021). Additionally, JYU supports its profiling areas by continuously updating research infrastructure, strengthening research services, and awarding doctoral researcher positions and grants to talented applicants whose research is linked to a profiling area.

Table 1. Core fields of research at the University of Jyväskylä.

Core field of research	Focus	Key contributors
Basic natural phenomena and mathematical thinking	The basic natural phenomena of physics, chemistry and biosciences, research in mathematics	Natural sciences, mathematics
Information technology and the human in the knowledge society	Promotion of the digitalization of society and helping understand society better by combining scientific computing, data analysis, information systems, cyber security and digital services with research in digital culture, communication and marketing, education, wellbeing and economics	Computer sciences
Language, culture and society	Global change processes from the perspectives of research on language, culture and the functioning of communities and the economy	Linguistics, history, musicology, social sciences
Learning, teaching and interaction	All phases of the life span, on psychological processes and mechanisms, on digital and multilingual learning, growth and work environments, and on societal issues related to education	Education, psychology
Physical activity, health and wellbeing	The interaction and promotion of physical activity and health	Sport sciences, health sciences
Sustainable business and economics	Sustainable business research, especially in business ethics, stakeholder management, and corporate environmental management	Management sciences, economics, research network on Resource Wisdom

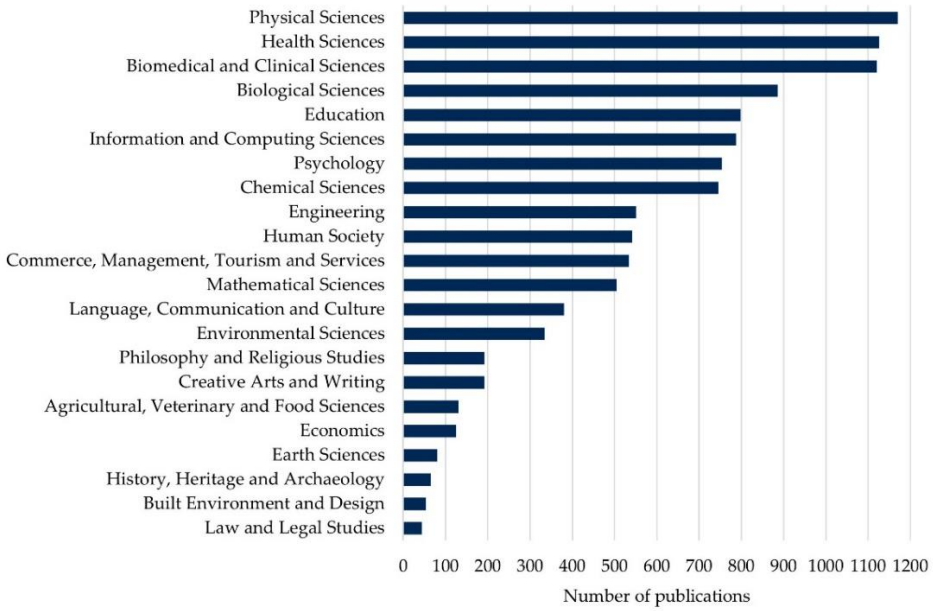

Figure 2. JYU publication output in 2018–2022 (n = 8,746) by the field of research. The field of research of a publication is based on the categories, into which a publication is classified in Dimensions database (ANZSRC 2020). The categories are not mutually exclusive. Source: Dimensions (3 March 2023).

1.3 Research infrastructure

The University of Jyväskylä houses a versatile research infrastructure, including both physical (e.g. research equipment, instruments, and facilities) and digital (e.g. databases, software, computing systems, material banks) infrastructures as well as supporting services (e.g. Open Science Centre, Digital Services). Information about the most important infrastructures is available online, but there has been no university-wide reservation system. The situation is about to change. In 2023, JYU introduces an electronic reservation system for research devices and infrastructures to make the reservation and management of infrastructures easier.

JYU is involved in four research infrastructure networks selected by the Finnish Research Infrastructure Committee (FIRI Committee) at the Academy of Finland to Finland's national research infrastructure roadmap 2021–2024: Accelerator Laboratory of the University of Jyväskylä, Common Language Resources and Technology Infrastructure, Finnish Biodiversity Information Facility, and Finnish Computing Competence Infrastructure [6]. The roadmap status indicates that these research infrastructures are nationally significant.

JYU monitors the lifecycle and renewal needs of its research infrastructures. In line with the strategic goal of the research development programme [4], JYU invests in the research infrastructure development and maintenance. In addition to separate infrastructure funding, JYU allocates funding, using the university's funding model, to faculties to cover smaller infrastructure purchases and their lifecycle costs. JYU also applies for external funding for the upgrading and building of its research infrastructures. In 2018–2022, JYU obtained FIRI funding from the Academy of Finland for its research infrastructures totalling €2.3 million.

1.4 Funding

Three JYU service units provide researchers with support at the idea and application phase of the external research funding. Research and Innovation Services arranges, among other forms of support, funder-specific training and information events, helps in finding suitable funders and in interpreting their terms, and comments on research proposals from the perspective of the funder's evaluation criteria. Project controllers at the Financial and Facility Services help applicants with budgeting in the application phase and provide post-award services. The Open Science Centre helps applicants with a data management plan, which is required by some funders.

In addition to these support services, JYU offers financial support at the application phase. Researchers may apply for one month of leave to prepare a European Research Council ERC application, during which they do not have teaching or administrative duties. They may also have a mentor, who helps to strengthen the scientific content of the application and whose fee is paid by JYU. Furthermore, JYU provides funding for preparation of large international consortium projects. The amount of the preparation funding depends on whether JYU is a coordinator (€3,000) or a partner (€1,000) in the consortium.

The Ministry of Education and Culture awards Finnish universities core funding, the total amount of which is decided by Finland's Parliament [7]. The ministry allocates the core funding to the universities using a financing model which takes into account teaching and research performance, a university's strategy, and its national tasks and duties (Figure 3). The universities decide on the internal allocation of the core funding. The core funding constitutes slightly less than 70% of the total funding of the University of Jyväskylä (Table 2), which the university allocates to its faculties and independent institutes using the internal funding model. One element in JYU's internal funding model is strategic funding, which includes funding for infrastructures, doctoral training, and the Centres of Excellence.

Based on annual use, the competitive research funding constitutes about one-fifth of JYU funding (Table 2). The most important external funding source is the

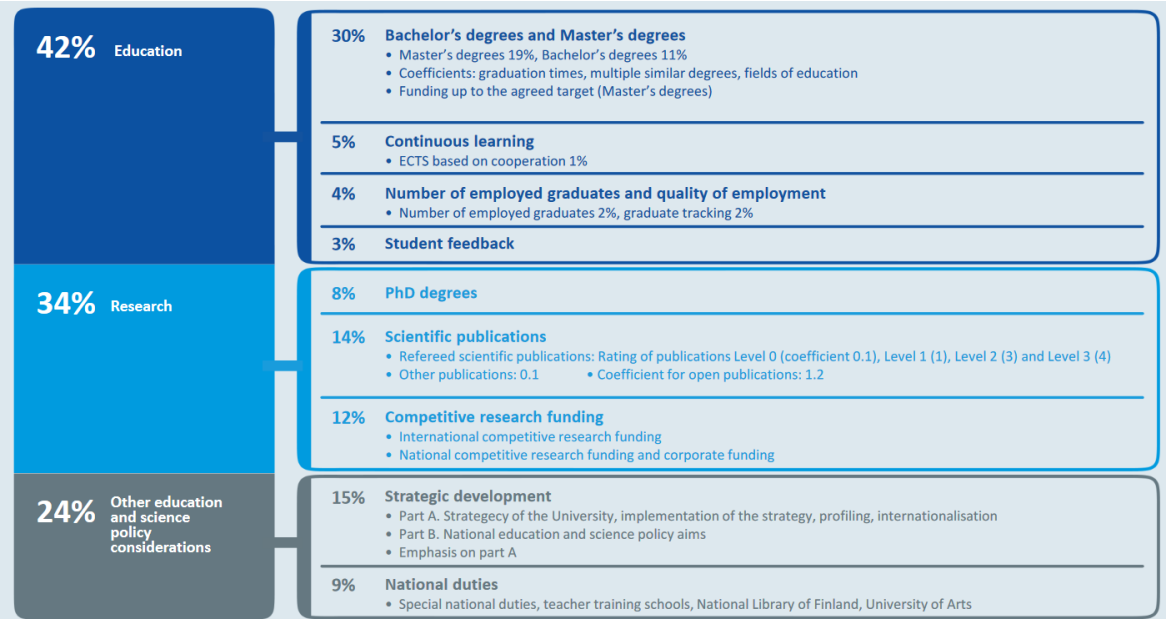

Figure 3. Universities core funding model from 2021 to 2024 [7].

Table 2. Funding (annual use) in 2018–2022 and changes from 2018 to 2022 in JYU. Note that cut-offs are not taken into account in the figures. Source: SAP Finance, Converis (22 February 2023).

	2018	2019	2020	2021	2022	Change (%)
Total funding (M€)	204.3	204.3	201.5	216.7	222.2	9
Core funding (M€)	132.2	131.6	137.2	148.8	145.4	10
Share in total funding (%)	65	64	68	69	65	
Supplementary funding (M€)	72.1	72.7	64.3	67.9	76.8	7
Share in total funding (%)	35	36	32	31	35	
Competitive research funding (M€)	39.3	37.4	33.1	36	40.3	3
Share in supplementary funding (%)	55	51	52	53	53	
Share in total funding[1] (%)	19	18	16	17	18	

[1] Total funding excluding income from investment and financial activities.

Academy of Finland (as of June 2023, its new name is the Research Council of Finland), with a share of 35%–37% of JYU's supplementary funding (Figure 4) and about 70% of competitive research funding. In 2018–2022, JYU was successful in obtaining funding from the Academy's funding instruments, which are highly valued. Competition for the Academy's funding is intense and applications are peer-reviewed by international panels. Therefore, success in the Academy's funding call can be regarded to demonstrate that JYU research is of a high international standard. Seven Centres of Excellence (CoE) (Table 3), four of which are coordinated by JYU, and three Academy Professors (Table 4) started at JYU in 2018–2022. There was an increasing trend in the number of and JYU's share of funded Academy Research Fellows from the year 2018 (6%) to 2021 (16%) (Figure 5b). The number of research posts as Postdoctoral Researcher affiliated to JYU remained relative constant over the corresponding period, although the JYU' share of all granted posts grew steadily, being 9% in 2022 (Figure 5a). In 2018–2022, the share of Academy Projects hosted by JYU has been 5%–8% of all granted projects and 6%–8% of granted funding (Figure 5c).

The second largest external funder is the European Union, representing about 10% of JYU's supplementary funding (Figure 4). JYU researchers have received funding mainly from Pillar I of the EU's Horizon Europe. In 2018–2022, the European Research Council (ERC) awarded eighty-five ERC grants to Finland [8], of which seven went to grantees at JYU (Table 5, Table 6).

Other funders, such as the Ministry of Education and Culture, Business Finland and Finnish foundations and trusts, each account for less than 10% of JYU's supplementary funding (Figure 4). The significance of foundations and trusts as funders of research may even be greater because the reported amounts contain only

funding allocated through the university's accounting. In other words, the researchers' personal grants paid into the grantees' bank accounts are not recorded in the statistics.

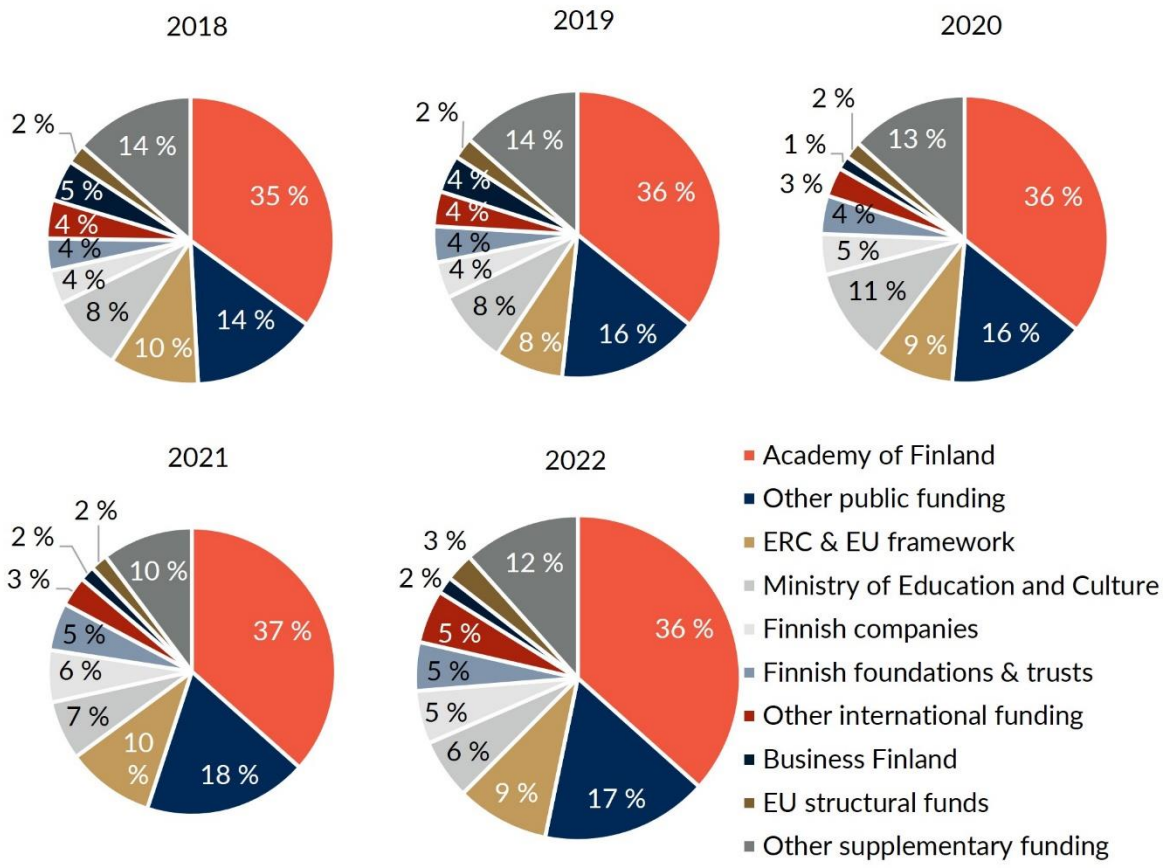

Figure 4. Sources of external funding at JYU in 2018–2022. The percentages show expenditure financed by a funder of costs covered by supplementary funding. Other public funding includes funding by Finnish ministries (excluding the Ministry of Education and Culture), municipalities and other public sectors. "Other international funding" includes EU funding other than the ERC and EU framework, foreign foundations, international trusts, international companies, and other international funding. Note that cut-offs are not taken into account in the figures. Source: SAP Finance, Converis (22 February 2023).

Table 3. Centres of Excellence (CoE) where JYU is either coordinator or partner in years 2018–2022.

Funding period, CoE	Partners	JYU department	Head of the CoE
2014–2019			
Analysis and Dynamics Research	JYU, UH, UO	Mathematics and Statistics	Antti Kupiainen (UH)
2018–2025			
Aging and Care	JYU, TAU, UH	Social Sciences and Philosophy	Teppo Kröger (JYU)
Inverse Modelling and Imaging	JYU, UH, AU, LUT, TAU, UEF, UO, FMI	Mathematics and Statistics	Matti Lassas (UH)
Game Culture Studies	JYU, TAU, UTU	Music, Art and Culture Studies	Frans Mäyrä (TAU)
2022–2029			
Quark Matter	JYU	Physics	Tuomas Lappi (JYU)
Learning Dynamics and Intervention Research	JYU, UTU	Psychology	Paavo Leppänen (JYU)
Music, Mind, Body and Brain	JYU, UH	Music, Art and Culture Studies	Petri Toiviainen (JYU)
Randomness and Structures	JYU, UH, AU, UTU	Mathematics and Statistics	Eero Saksman (UH)

Abbreviations: AU = Aalto University, FMI = Finnish Meteorological Institute, JYU = University of Jyväskylä, LUT = LUT University, UH = University of Helsinki, UO = University of Oulu, TAU = Tampere University, UEF = University of Eastern Finland, UTU = University of Turku

Table 4. Academy Professors funded by the Academy of Finland in 2018–2022.

Academy Professor	JYU Department	Funding Period
Petri Toiviainen	Music, Art and Culture Studies	2014–2018
Hannu Häkkinen	Chemistry, Physics	2016–2020
Sara Heinämaa	Social Sciences and Philosophy	2017–2021
Johanna Mappes[1]	Biological and Environmental Science	2019–2023
Pasi Ihalainen	History and Ethnology	2021–2026
Otso Ovaskainen	Biological and Environmental Science	2021–2026

[1] Until August 2020 at JYU

Table 5. Number of ERC grantees by funding scheme, decision year, and location of host institute at time of application in 2018–2022. Only years when there were grantees at JYU are included. Source: European Research Council [8].

Decision year & funding scheme	Grantees at JYU	Grantees in Finland	Grantees in total
2018			
ERC Proof of Concept Grant	1	5	160
2019			
ERC Starting Grant	1	5	407
ERC Synergy Grant	1	2	37
2020			
ERC Consolidator Grant	1	6	327
2022			
ERC Starting Grant	2	7	397
ERC Consolidator Grant	1	7	313

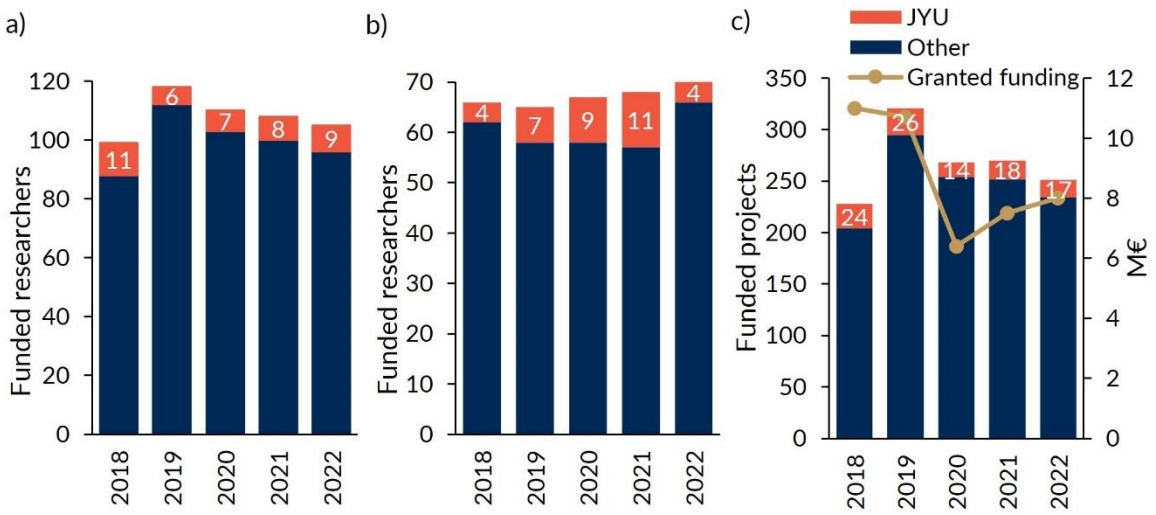

Figure 5. The number of funded (a) Postdoctoral Researchers, (b) Academy Research Fellows and (c) Academy Projects by decision year. In Academy Projects, consortium subprojects have been counted as separate projects and the line indicates the amount of granted funding to JYU (M€). The data include all organizations. The figure at the top of the bar shows the number of the funded researchers/projects hosted by JYU. Note the different scales on the *y* axes. Source: Academy of Finland [9,10].

Table 6. European Research Council (ERC) grant holders at JYU in 2018–2022.

Grant holder	ERC grant	JYU department	Funding period
Marja Tiirola	Consolidator Grant	Biological and Environmental Science	2014–2019
Tuuli Lähdesmäki	Starting Grant	Music, Art and Culture Studies	2015–2020
Jari Kaukua	Consolidator Grant	Social Sciences and Philosophy	2016–2021
Tuomas Lappi	Consolidator Grant	Physics	2016–2021
Taina Rantanen	Advanced Grant	Faculty of Sport and Health Sciences	2016–2021
Eric Le Donne	Starting Grant	Mathematics and Statistics	2017–2022
Anu Kankainen	Consolidator Grant	Physics	2018–2023
Anna Kuparinen	Consolidator Grant	Biological and Environmental Science	2018–2023
Mikko Salo	Consolidator Grant	Mathematics and Statistics	2018–2023
Marja Tiirola	Proof of Concept	Biological and Environmental Science	2018–2020
Heikki Tuononen	Consolidator Grant	Chemistry	2018–2023
Juho Muhonen	Starting Grant	Physics	2019–2024
Otso Ovaskainen	Synergy Grant	Biological and Environmental Science	2020–2026
Minna Torppa	Consolidator Grant	Teacher Education	2021–2026
Veli-Matti Karhulahti	Starting Grant	Music, Art and Culture Studies	2022–2027
Shawulienu Kezilebieke	Starting Grant	Physics	2022–2027
Suvi Saarikallio	Consolidator Grant	Music, Art and Culture Studies	2022–2027

1.5 Doctoral training

In Finland, doctoral training is highly research-intensive, contains only a little coursework and does not have a time limit for completing the doctoral degree, although doctoral students are expected to graduate within four years of full-time study.

JYU has a university-wide graduate school, the University of Jyväskylä Graduate School for Doctoral Studies (JYUGS), consisting of six faculty-level doctoral schools, the doctoral programmes, and support services for doctoral training [11] (Figure 6, Table 7). The vice rector responsible for research serves as the head of the JYUGS, and the Research Council serves as the JYUGS steering board. The university-level responsibilities include assessing and developing doctoral training at the university, steering the operation of the doctoral schools, making a proposal to the Rector on the funding of the doctoral schools and supporting the doctoral schools and programmes in clarifying conflict situations in doctoral training. The structure and general principle of JYUGS [12] have recently been revised and approved by the University Board.

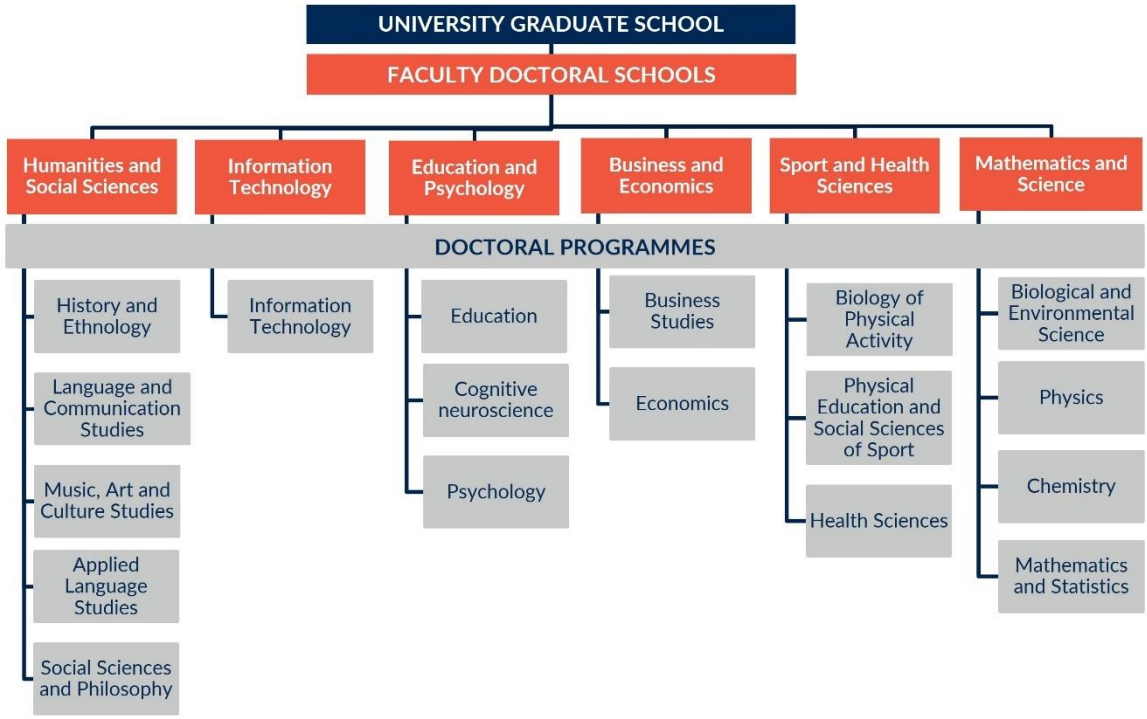

Figure 6. Structure of the JYU Graduate School for Doctoral Studies.

Table 7. Key figures on the doctoral training at the University of Jyväskylä in 2018–2022. The number of doctoral students refers to doctoral students registered for attendance. Source: Vipunen and JYU data warehouse (15 February 2023).

	2018	2019	2020	2021	2022
Number of doctoral students	1,302	1,299	1,320	1,362	1,401
Women (%)	58	59	58	58	58
International (%)	20	20	20	21	21
Completed doctoral degrees	139	127	174	136	116
Women (%)	54	55	57	56	53
International (%)	30	26	21	20	21
Average completion time (years ± SE)[1]	6.4 ± 0.3	6.8 ± 0.4	7.0 ± 0.3	7.2 ± 0.4	7.3±0.5
Median of completion time (years)[1]	5.4	5.6	5.6	5.9	5.7
Enrolment number of new doctoral students	126	177	192	237	219
Women (%)	55	66	50	59	56
International (%)	26	29	27	25	25

[1]Includes part-time and full-time doctoral students

Each of the six faculties has its own doctoral school which are led by the vice dean responsible for research, who is also a member of the Research Council (Figure 6). The faculty-level responsibilities include, for example, providing education and awarding doctoral degrees, assessing and developing doctoral training in the faculty, steering doctoral programmes, making a proposal to the dean on the allocation of doctoral school funding and resolving conflict situations in doctoral training. The funding allocated to the doctoral schools is used for hiring doctoral researchers and grants awarded to doctoral researchers.

At present, there are one to five doctoral programmes per faculty doctoral school, for a total of eighteen programmes (Figure 6). The approach to doctoral training is structured. Admission to doctoral programmes follows the general principles of the JYUGS [12] and the Rector's decision on the general admission criteria. The application periods and the application and admission process are uniform in all doctoral programmes [13]. Each doctoral programme has a curriculum that describes the competence the student will achieve and the structure of the doctoral programme [14]. The general learning outcomes include not only discipline-specific expertise but also research and communication skills, and other competence to support the construction of professional expertise [15].

A doctoral programme comprises a dissertation and doctoral studies. The dissertation can be either a monograph or an article-based dissertation. All dissertations must fulfil the university-level dissertation requirements [16] and the examination of the dissertation follows the Regulations and Degree Regulations of JYU [17]. The programmes include doctoral studies consisting of thirty to sixty

credits (ECTS) of course work, the number of required credits varying by faculty. Each doctoral researcher has a personal study plan that is updated in the study information system and is based on the curriculum of the doctoral programme [18]. In addition to the courses offered by the doctoral schools, there is a variety courses offered to all doctoral researchers of JYU by, for example, the Open Science Centre, the Methodology Centre for Human Sciences, and the Centre for Multilingual Academic Communication. These courses are designed to strengthen the research and communication skills of doctoral researchers. Doctoral studies and dissertation work are planned so that full-time students can complete their degree in four years.

Each doctoral researcher has a designated supervisor-in-charge. The doctoral researcher and the supervisor-in-charge annually confirm a supervision document [see 19] compiled and saved in an online service designed for this purpose. To ensure the continuity of supervision, the JYUGS recommends designating one or more other supervisors in addition to the supervisor-in-charge. In addition to the supervisors, the doctoral researcher has a follow-up group with at least one member who may be from outside JYU [20]. The follow-up group meets the doctoral researcher and the supervisors annually to monitor and promote the progress of the doctoral researcher, as well as to offer support for career planning.

In addition to the supervisors and follow-up groups that monitor the progress of individual doctoral researchers, the doctoral schools have access to an up-to-date online progress report of all their doctoral researchers. The report is produced by the JYU data warehouse and includes information on the study attainments, funding, publications, and supervision of doctoral researchers. It serves as a tool for visualizing the overall view of doctoral training as well as for identifying doctoral researchers whose studies do not progress on schedule.

The support services for doctoral training are organized by the different divisions of the University Services. At the Student and Academic Services, there is a designated team of Coordinators offering study administration support services for doctoral schools and programmes from the admission phase to the completion of doctoral studies and the public defence of doctoral dissertation. The team works in cooperation with the other teams and divisions of the University Services as well as with the doctoral schools.

The quality management of doctoral training at JYU includes self-assessments and a doctoral degree survey that has been conducted every three years since 2016. JYU has recently conducted a self-assessment of doctoral degree programmes as part of the curriculum work carried out in 2021–2024 for the curriculum period of 2024–2027. The self-assessment covered five sections: (1) curriculum policies, (2)

identity and profile of the program, operating environment, and cooperation, (3) management of degree programmes, teaching staff, and supervision, (4) student admission, progress of the studies, and degrees and (5) competencies produced by the education, and employment of graduates. In 2016, JYUGS conducted an internal assessment of doctoral training focusing on the realization of the operating principles of JYUGS [21]. The assessment resulted in several development goals and a detailed development plan [21] that has guided the development of doctoral training at JYU during 2016–2020. Due to the internal assessment conducted in 2016, doctoral training was not in focus in the previous research evaluation in 2018. In the present research assessment, the development of doctoral training is one of the three goals of the exercise and due to the recent self-assessment of doctoral degree programmes, the focus is on the conditions for dissertation research.

1.6 Research personnel

In its recruitment process, the University of Jyväskylä has committed to following the principles of the Declaration on Research Assessment (DORA) [22], the Recommendations for the responsible evaluation of a researcher in Finland [23] and the Agreement on Reforming Research Assessment (signed in October 2022) [24]. The recruitment process of JYU is open, transparent and merit based (OTM), and applicants are treated equally, following the principles of the JYU Equality Plan [25] and legislation. Since 2013, JYU has had “The Human Resources Excellence in Research” (HRS4R) award, which the European Commission granted as acknowledgement to JYU for aligning its human resources policies with the Code of Conduct for the Recruitment of Researchers.

As in other Finnish universities, JYU uses the four-stage career model [26]. The first stage consists of doctoral researchers and project researchers, the second stage of postdoctoral researchers and other researchers who have recently completed their doctorate, the third stage of associate (tenure track) professors, senior lecturers, and senior researchers, and the fourth stage of professors. Career stages I and II are usually fixed-term posts (Figure 7f).

The University of Jyväskylä has a tenure track model for professors, which has three steps (Figure 8). A person is recruited to the position of assistant professor or associate professor through an open international recruitment procedure. After the fixed-term professor period, a person proceeds to the next step if an external review

finds that person meets the criteria in terms of scientific merits, teaching merits, and impact on society and community.

Among the thirteen Finnish universities, JYU, with its 2,800 employees, is the seventh largest university. JYU employs about 1,700 researchers and teachers, which constitutes about 60% of JYU's total personnel (Figure 7a) and 10% of research personnel in Finnish universities [27], calculated in terms of full-time equivalents (FTE). In addition to the employed staff, JYU has about 550 grant researchers (Figure 7b) and about 1,300 doctoral students (Table 7).

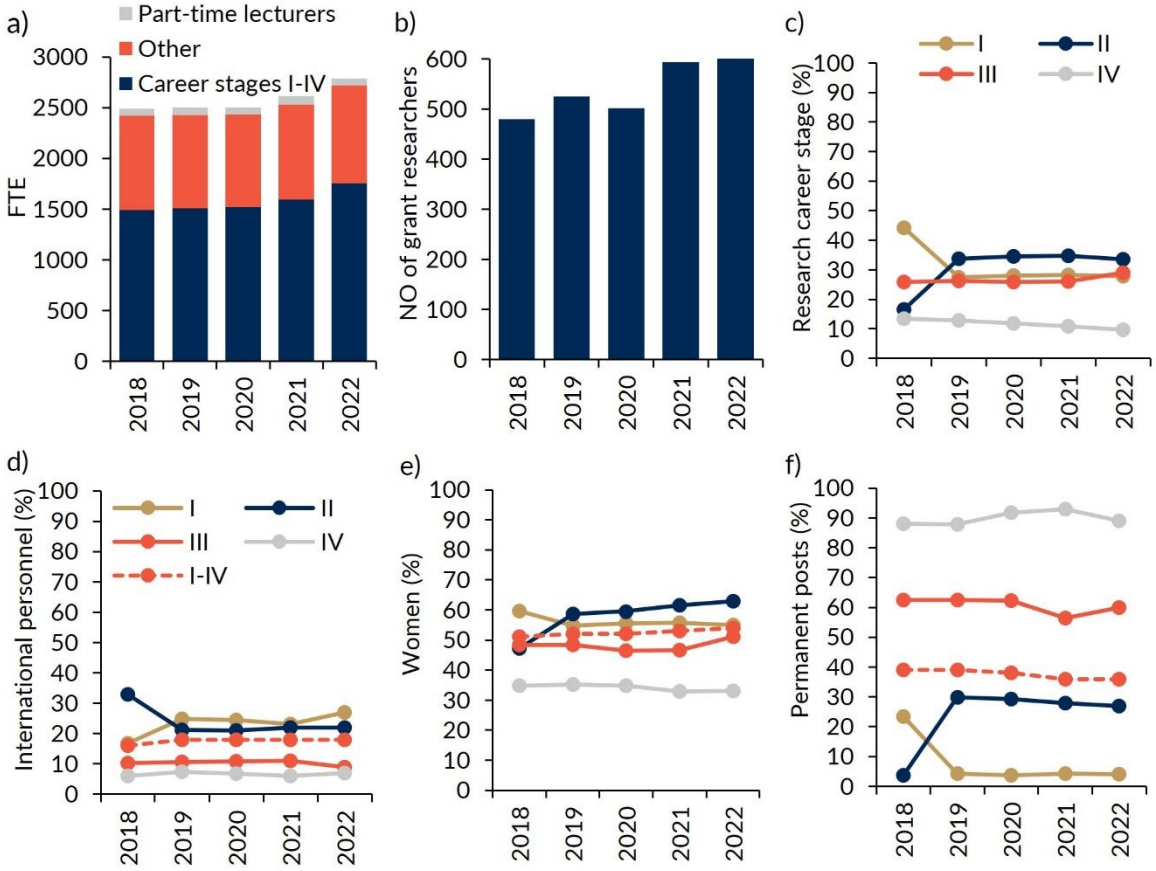

Figure 7. JYU personnel with a contract of employment and grant researchers in 2018–2022. (a) Research career stages I–IV, other staff, and part-time lecturers in full-time equivalent (FTE). (b) Number of grant researchers. The proportion of (c) researchers at each career stage, (d) international personnel, (e) women and (f) permanent posts of the total FTEs at career stages I–IV employed by JYU. Researchers' and other personnel's FTEs are based on data on December 31 of the statistical year. Part-time lecturers' data include the FTEs of part-time lecturers employed by JYU at any time during the statistical year. Note: A change in statistical practice occurred in 2019, when university teachers were moved from research career stage I to II. Source: JYU data warehouse, MEPCO HRM and payroll administration system (22 February 2023).

Figure 8. JYU tenure track model.

Compared to the previous assessment period of 2010–2017 [28], the key figures for the JYU personnel are quite similar. The proportion of permanent employment differs with research career stage, being the lowest at career stages I and II (Figure 7f). This is typical for Finnish universities, where early-career research posts are usually fixed term [27]. The proportion of JYU women researchers, 52% of FTE (Figure 7e), is more gender-balanced than the average in Finnish universities (47% of FTE in 2018–2022) [27], in OECD countries (17%–42% of total researchers in headcount in 2019) [29] or in the higher education sector in the EU (43% of the total researcher population in 2018) [30].

JYU's gender distribution has been stable during the last five years (Figure 7e). A significant change occurred only at career stage II where the proportion of women increased from 47% in 2018 to 63% in 2022. However, this, along with the change in the proportion of permanent posts at career stages I and II (Figure 7f), is partly due to a change in statistical practice, as the increase levelled off after 2019. In 2019, university teachers with a high proportion of women were moved from research career stage I to career stage II.

There seems to be a leakage between the research career stages. Although women make up the majority at career stages I and II, they are in the minority at career stages III and especially at IV (Figure 7e). One third of JYU professors (career stage IV) are women, which is at the same level as the average in Finnish universities [31]. Thus, the under-presentation of women in the highest academic positions is not only an ongoing challenge at the University of Jyväskylä but also at the national [31] and European level [30]. Another common challenge is gender segregation by field. The gender distribution varies with a field of science at JYU, as it does at Finnish universities [31] and universities abroad such as in Sweden and Norway [32].

International researchers employed by JYU account for about one-fifth of the total FTEs at research career stages I–IV (Figure 7d), which is lower than the average in Finnish universities (24%–29% in years 2018–2022) [27]. The most international research career stages at JYU, as well as in other Finnish universities [27,31], are I and II. In general, Finnish universities have fewer international researchers than, for example, Swedish and Norwegian universities [32].

1.7 Publication

JYU has committed to following “Responsible conduct of research and procedures for handling allegations of misconduct in Finland” [33] and “Agreeing on authorship - Recommendation for research publications” [34]. These provide the basis for the documents which guide publishing activities at the University of Jyväskylä: JYU’s publishing policy [35] and ethical principles of publishing [36]. The publishing policy contains general principles of publishing, such as the aim of openness of science, principles of publishing with JYU affiliation and freedom of researchers to choose a publication channel. It also defines principles for acting as a publisher. The ethical principles of publishing address ethical issues such as policies related to the authorship of publications.

Openness is a fundamental value in JYU’s strategy [3] and research development programme [4], which sets a goal of exceeding 70% in the openness level of publications by 2020. JYU indeed achieved this goal. Currently, over 80% of peer-reviewed articles and reviews are openly published (Figure 9c). JYU’s openness has also been acknowledged in the evaluation of openness. In 2019, the Ministry of Education and Culture evaluated the openness in strategic steering, policies and principles, supporting and promoting openness, and the development of openness-related expertise at Finnish universities [37]. The Ministry found JYU’s performance on openness to be at the highest possible level. JYU maintained the level in the monitoring on open science and research carried out in 2022 [38].

As a sign of its commitment to promote openness, JYU has signed the national declaration for open science and research [39], which sets a common vision and objectives for openness in the Finnish research community. JYU follows national and international policies and requirements for openness in scholarly research. In line with JYU’s publishing policy [35], all research publications are parallel published and available in the university digital repository JYX, which has been in use since 2016 [40]. In addition, JYU has open access agreements with some academic

publishers and has journal subscriptions that include open access, which enable open access publication without payment of an article processing charge or at a discounted price. As defined in JYU's research data policy [41], JYU applies FAIR (Findable, Accessible, Interoperable, Reusable) and open science principles to research data as well. Metadata are gathered in research information system Converis, data are stored centrally and securely, and published when possible. JYU's Open Science Centre provides consultation and university-wide training on open science.

The volume of publications by JYU remained roughly the same between 2018 and 2022 (Figure 9a). JYU produces almost 4,000 publications annually, which accounts for 7%–8% of publications by all Finnish universities [42]. The publication volume peaked in 2020, the first year of the COVID-19 pandemic, being 6% higher than in 2019. In particular, the number of non-reviewed scientific articles (16%), scientific books (25%), and doctoral theses (Table 7) increased. The increase in the number of peer-reviewed scientific articles was more moderate (7%). It is worth noting that the proportion of peer-reviewed scientific articles in JYU publication output has continually increased over the last five years from 61% to 69% (publication type A in Figure 9b). The peak in 2022 is partly due to a change in

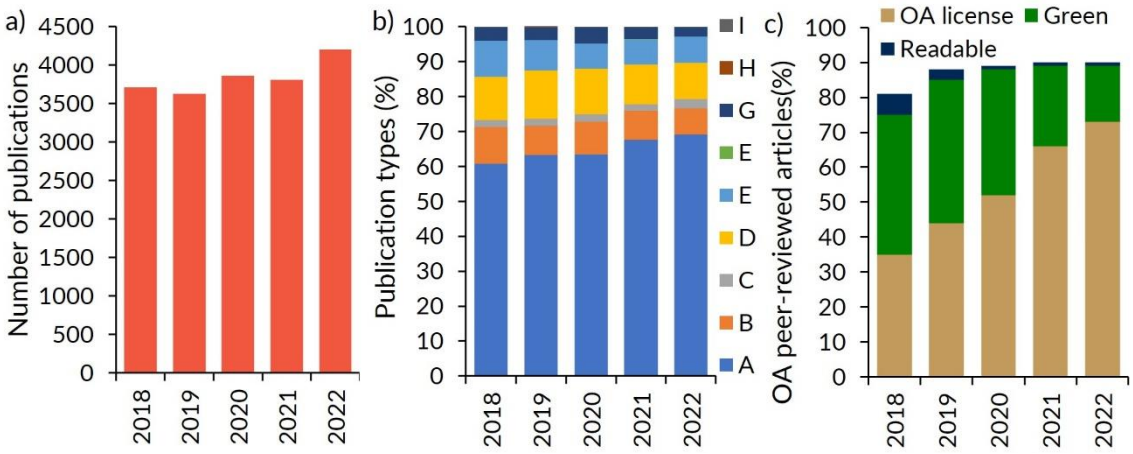

Figure 9. Publication output at the University of Jyväskylä in 2018–2022. (a) Number of publications (full-count). (b) Proportion of publications by classification by the Ministry of Education and Culture [43]. Publication type G includes only doctoral theses. (c) Proportion of open access publishing to peer reviewed scientific articles and review articles (publication type A) by open access type. The open access type is determined by the situation at the time of data collection. Note: A change in statistical practice occurred in 2022, when early publication articles began to be recorded according to their online publication date. Source: Converis (3 March 2023).

Table 8. Proportion of publications (%) by publication language in 2018–2022. Category "other publication types" includes publications intended for professional communities, publications intended for the general public, public artistic and design activities, theses, patents and invention disclosures, and audiovisual material & ICT software. Source: Converis (2 March 2023).

Publication type and language	2018	2019	2020	2021	2022
All publications					
English	62	65	67	67	68
Finnish	36	34	31	32	31
Other	2	1	1	1	1
Peer-reviewed scientific articles					
English	87	88	89	87	88
Finnish	11	11	10	12	11
Other	1	1	1	1	1
Non-refereed scientific articles					
English	30	35	36	36	38
Finnish	66	63	62	63	60
Other	4	1	2	1	2
Scientific books (monographs)					
English	58	63	71	57	65
Finnish	38	34	25	36	35
Other	5	3	4	7	0
Other publication types					
English	18	20	22	21	31
Finnish	81	79	77	78	68
Other	1	1	1	1	1

statistical practice, when early publication articles began to be recorded according to their online publication date. Subsequently, articles will be moved to the year when they are finally issued (a final publication version is published).

The majority of JYU's publications are peer-reviewed scientific articles (publication type A in Figure 9b), written in English (Table 8), openly published (Figure 9c), and produced in collaboration. The figures on the open access publishing refers to the situation at the time of the data collection, which may differ from what it was at the time of the publishing. The difference may be due to the expiry of the embargo period, after which the article can be made available as open access.

The number of countries with which JYU has published in collaboration over the last five years shows a diversity of collaborations. JYU has research collaborators across the world, in a total in 142 countries (Figure 10). Most of the publications were written in international collaboration, most commonly with the US- or Europe-based researchers, such as from the United Kingdom, Germany, Sweden, France, Italy, Norway, and Switzerland. China and Russia are also among the top 10 collaboration countries. The volume of collaboration with Russia may change as JYU,

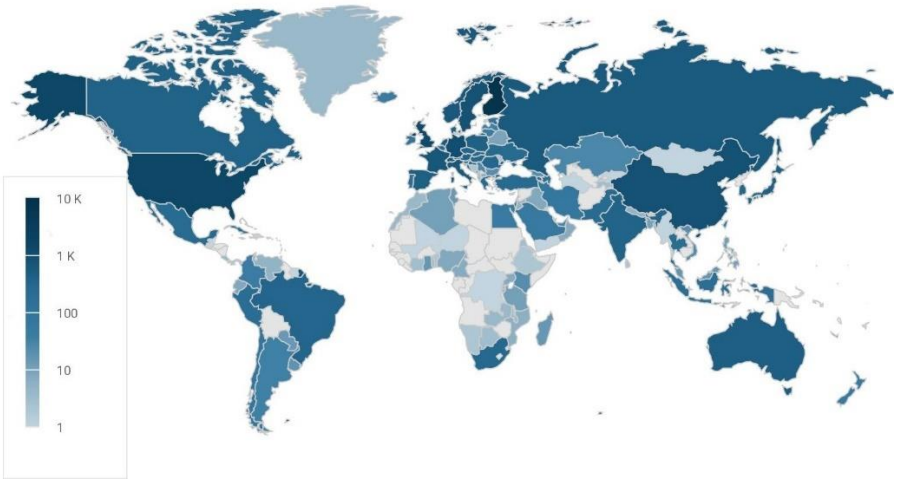

Figure 10. Map showing the volume of JYU's collaboration based on the number of co-authored publications by country in 2018–2022 (n = 8,760 publications). Source: Dimensions (20 March 2023).

in compliance with the recommendation of the Ministry of Education and Culture [44], froze institutional collaboration with Russia in 2022.

JYU also does a significant amount of research nationally. The national collaboration is most intensive with other Finnish universities. JYU also has research collaboration with Finnish organizations beyond academia such as hospitals, the Central Finland Health Care District, the Natural Resources Institute Finland, and the Finnish Institute for Health and Welfare. In addition to the external collaboration, JYU is engaged in-house collaboration.

1.8 Societal impact of research

The JYU strategy 2030 states that the mission of JYU is to be a university with societal impact [3]. JYU was ranked in the 401–600 range in the THE Impact Ranking 2022, which assessed societal impact, sustainability and responsibility of 1,406 universities against the United Nations' Sustainable Development Goals [45]. In 2023, JYU improved its ranking, being placed in the 301–400 range [45].

The self-assessment reports showed that JYU researchers are engaged in activities aimed at the general public. They actively take part in public debates at public events, in the media and on social media as well as in the dissemination of research results to the general public. Most of the publications is openly published (Figure 9) when they are available to everyone, such as policymakers, non-government agencies, and the media. Over 2,000 policy documents published

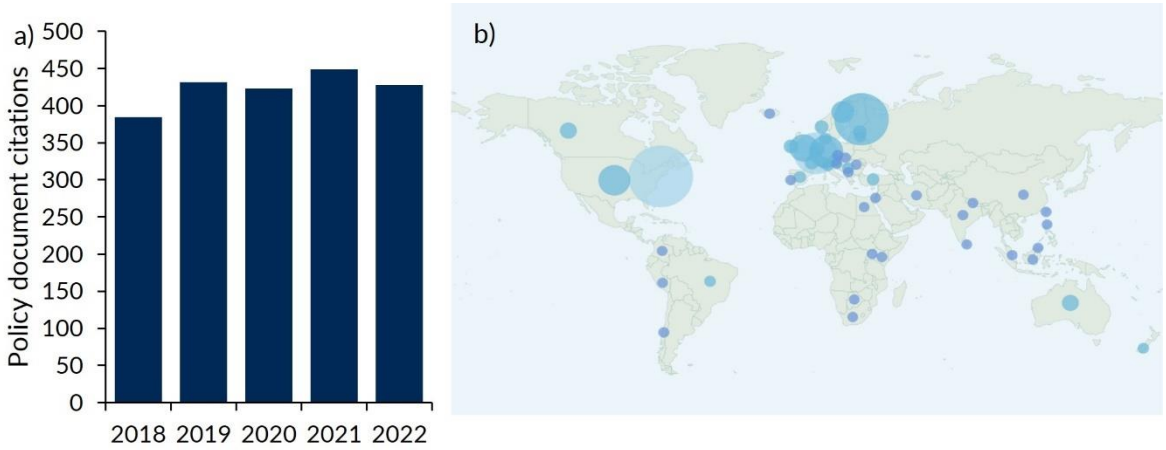

Figure 11. a) Annual number of citations of JYU publications in policy documents published in 2018–2022 and (b) the countries where the policy document come from. In the map, the size of the dot corresponds to the number of policy documents from that country. Source: Overton (28 February 2023).

between 2018 and 2022, in a total of fifty-one countries, have cited JYU publications (Figure 11). The majority of them were policy documents published by governments (56%) and the rest by IGOs (21%) or think tanks (19%).

Annually, JYU has about 1,300 registered doctoral students (Table 7) and 12,500 undergraduate students (Table 9). Research-based education is at the core of teaching at JYU where researchers act as teachers and theses supervisors. Research projects provide undergraduate students with hands-on experience in conducting research as trainees and thesis writers. After graduation, students enter the workforce, conveying skills and knowledge outside the university community.

Table 9. Key figures on bachelor and master students at JYU in 2018–2022. The number of students refers to students enrolled as present or absent according to the situation on 20 September of the statistical year. Source: Vipunen (17 February 2023).

Type of degree	2018	2019	2020	2021	2022
Bachelor students	6,942	6,972	7,053	7,053	7,125
Women (%)	54	56	56	57	58
International (%)[1]	0.3	0.3	0.3	0.3	NA
Completed degrees	1,221	1,236	1,416	1,275	1,200
Master students	5,406	5,406	5,466	5,520	5,697
Women (%)	66	64	63	63	65
International (%)[1]	7	5	4	4	NA
Completed degrees	1,512	1,575	1,863	1,539	1,446

[1] Nationality other than Finnish

The Open Science Centre coordinates the Science for All platform for the outreach activities of the University of Jyväskylä [46]. The aim of the platform is to make activities easily accessible and lower the threshold to participation and engagement. It collaborates with faculties, researchers and students at the university, with local businesses and organizations, volunteers, and the City of Jyväskylä. Science for All organizes numerous science communication and science education activities, such as science events, special exhibitions, university for children and the third age, workshops, citizen science, information services, collections services and lifelong learning services. An example of its activities is JYUnior, which provides science education by organizing, for instance, various multidisciplinary workshops, camps, events, and lectures for children and youth aged 5 to 18.

The biggest single university-wide public outreach is the Researchers' Night event, which JYU hosts yearly [47]. An audience record was achieved in 2019 when about 14,500 visitors (corresponding to 10% of the population of Jyväskylä in 2019) got acquainted with research conducted at JYU. Due to the COVID-19 pandemic, the event was held completely online in 2020 and as a hybrid event in 2021. In 2022, the Researchers' Night was organized as a live physical event, receiving over 8,600 visitors.

In addition to public outreaches, researchers provide research results that can be utilized elsewhere beyond academia. An example of the economic dimension is entrepreneurial activities where research results have been converted into products and services [see 48]. JYU provides support in the different phases of establishing a company and issues related to intellectual property rights. JYU Innovation Services helps researchers to exploit their research results commercially [49] and the JYU-owned financing company Unifund Jyväskylä Ltd invests capital into new, selected companies [50]. Additionally, the Startup Factory (Jyväskylän Yritystehdas Oy), which is partly owned by JYU, provides training and coaching intended for business ideas and companies, and product development funding [51]. Its services are available to the university's students, staff, and grant researchers. JYU is also one of the owners of the education export company EduCluster Finland, which has co-created Finland International schools and provides training for educators, school directors and managers [52]. JYU coordinates the KEHO Central Finland Health and Wellbeing Ecosystem, which is an interdisciplinary network with the aim to improve and promote health and wellbeing [53].

1.9 Impact of the COVID-19 pandemic at the University of Jyväskylä

1.9.1 Crisis management steering group

The University of Jyväskylä formed a crisis management steering group at the very beginning of the pandemic. The steering group's decisions were guided by national and regional restrictions, recommendations, and guidelines. Internal decision-making was guided by a protocol in which different levels of criticality were assigned to different functions.

The priorities of steering operations at JYU during the coronavirus pandemic were

1. By its own actions, JYU aims to prevent the expansion of the pandemic in general and in the university community.
2. JYU secures its statutory operations and other activities and supports them in compliance with the national hybrid strategy.
3. Continuity of operations through remote connections.
4. Continuity of prioritized operations on the campus by minimizing possible infection risks.
5. As the pandemic continued, supporting the wellbeing of students and staff.
6. Preparation for the time after the pandemic.

In the decision-making protocol, the continuity of critical research was the top priority. In other words, long-term research at risk, for example, of losing continuity or the usefulness of research data, was to be protected by all means.

1.9.2 Impact on operations

Due to the COVID-19 pandemic, Finland was in the state of emergency from 16 March to 16 June 2020 and from 1 March to 27 April 2021 [54]. On 16 March 2020, the Finnish government outlined that university facilities had to be closed and contact teaching ceased from 18 March to 13 April 2020 [55]. JYU had proactively adjusted its research and teaching activities by giving its first instructions during the COVID-19 pandemic before instructions from the authorities, in mid-March 2020. All JYU premises were closed from 17 March 2020 until 13 May 2020. From 14 May 2020, the premises were open only for research and limited teaching purposes.

On 13 March 2020, JYU decided to suspend contact teaching and move to remote teaching. The University continued teaching mainly remotely in the spring 2020 until the end of the academic year 2019–2020. The University returned to

partial contact teaching on the campus from 3 August 2020. In the academic years 2020–2021 and 2021–2022, teaching was still mainly arranged as online and only necessary contact teaching, such as laboratory teaching, teaching of practical and art subjects, was arranged for a limited number of participants. Teaching was implemented primarily remotely until 27 February 2022.

From 17 March 2020, research and working took place as remote work. The University returned to partial working on the campus on 3 August 2020 when only necessary work took place in the JYU's premises. The principle was that half of the staff worked on-site while the other half was working remotely. Remote work was the primary way of working until the end of October 2021 after which working on-site was possible. Due to worsened pandemic situation, the University took in use the remote work recommendation again on 7 December 2021. The recommendation was valid until 27 February 2022.

Since the partial opening of JYU's premises on 14 May 2020, only essential research was allowed to take place on the campus during the pandemic. The vice deans and directors of independent institutes made a plan for implementing research and the use of facilities on the campus in their academic units. They were instructed to prioritize research that essentially requires presence in JYU's premises, such as laboratory research, to take into account the maximum occupancy defined for each facility and to follow other safety instructions. Conducting human participant research was allowed by the decision of the vice rector responsible for research.

During the pandemic, JYU modified its travelling instructions in accordance with the Finnish authority regulations and restrictions, which reflected the pandemic situation in Finland and abroad at the time. On 13 March 2020, JYU decided that all trips abroad related to work or studies must be cancelled until the end of May 2020 and that it would not receive international visitors (employees, grant researchers, visitors and doctoral students) until 30 June 2020. JYU instructed its employees to consider the necessity of travelling, to postpone non-critical trips abroad, and to avoid travelling to and from the epidemic areas. In December 2021, the pandemic situation worsened and consequently JYU tightened its travelling instructions. In January–February 2022, JYU only allowed essential trips to and from abroad, which could not be implemented online.

Assembly restrictions during the pandemic affected the organization of on-site events from March 2020 to the end of February 2022. The number of people allowed to participate in an event varied from 10 to 500, depending on the current

Table 10. Key COVID-19 restrictions at JYU.

Restriction	Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Premises at JYU													
Premises closed	2020												
Assembly & occupancy restrictions	2020												
	2021												
	2022												
Teaching at JYU													
Remote teaching	2020												
Primarily remote teaching	2020												
	2021												
	2022												
Working at JYU													
Remote working	2020												
Remote work recommendation	2020												
	2021												
	2022												

pandemic situation. JYU decided not to organize international congresses as on-site events in 2020 and 2021 and to hold meetings primarily online. Events were also organized primarily online and, as restrictions allowed, as live physical events by following the national recommendations. The opportunity for a remote connection had to be offered for all meetings. This meant, among other things, that the public defences of dissertations were arranged with a limited amount of audience on site and the rest of the audience followed the defence online.

JYU removed its COVID-19 restrictions in February 2022 (Table 10). The remote work recommendation ended on 27 February 2022. Facility-specific occupancy restrictions were removed and JYU returned to normal practices in domestic travelling as of 21 February 2022 and in travel abroad as of 8 April 2022.

1.9.3 Impact on research activities and output

In the midterm research evaluation in 2021, the units expressed their concern about the impact of the pandemic on research [56]. The travelling restrictions complicated international research collaboration, research visits, networking, hiring international researchers according to the plan and attending scientific meetings. Although conferences, workshops and meetings with collaborators were organized online, the units did not consider online meetings as corresponding completely to in-person meetings. On the other hand, attending virtual events was seen to be easier. It did not require travel and was viewed as supporting environmentally sustainable practices. The reported pros and cons of the online meeting are in line with the

results of a survey which asked about researchers' experiences with virtual scientific meetings during the pandemic [57].

Facility-specific occupancy restrictions led to cut down of research activities via disruptions to laboratory activities and fieldwork. This, along with supply chain disruptions and the introduction of new modes of work, was seen to slow down the progress of research [56]. The transition from contact to online teaching with relatively short notice was done at the expense of research, as teachers had to allocate more working time than planned for the planning and preparation of teaching. In addition, remote working conditions were worried to cause isolation and increase stress. To mitigate the negative impact on well-being, the units organized online get-together events.

The number of peer-reviewed publications by JYU in 2020 increased from previous years and the total number of scientific publications reached a record high (Figure 9). This suggests that researchers may have been able to concentrate on writing and finishing manuscripts at the beginning of the pandemic. This is in line with the finding that the number of manuscripts on all subjects submitted to scientific journals increased globally in 2020 [58] but contradicts a survey reporting the moderate decline in the number of publications and submissions in 2020 compared to 2019 [59]. However, since we do not know the submission dates of publications with JYU researchers as authors and given that the duration of journals' publication process is typically long, we cannot conclude that the observed increase is exclusively related to the pandemic. If an article was related to the pandemic, especially medical studies [60], it may have gone through an accelerated publication process. The medical field is not, however, in the core of JYU research (Figure 2).

It seems that the pandemic had no immediate negative impact on publishing activity. However, the negative impacts of the pandemic may manifest itself in the coming years. The time lag may result from the fact that the uncertainty caused by the pandemic lowered the propensity to submit funding applications. The number of funding applications submitted by JYU showed a downward trend during the pandemic compared with the pre-pandemic three-year period and was the lowest in 2022 (Figure 12a). The funding calls of the Academy of Finland, JYU's main external funder (Figure 4), attracted almost one-fifth fewer applications from JYU in 2022 than on average in 2017–2019. The decline may, however, also reflect the reform of the funding instruments for early-career researchers launched by the Academy of Finland in autumn 2022 [61]. If the decline in the number of funding applications leads to a decreased amount of external funding, it may be reflected in

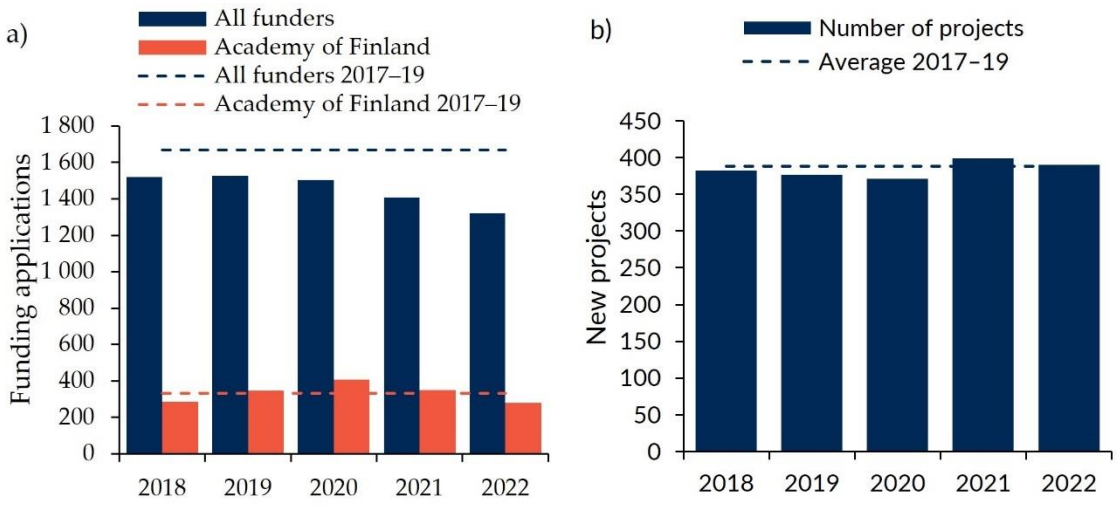

Figure 12. Submitted funding applications and new projects at JYU in 2018–2022. a) Number of funding applications submitted by JYU in total and to the funding calls of the Academy of Finland in 2018–2022. The dash lines show the average number of submitted applications in 2017–2019. Year refers to the call year. b) Number of new projects initiated in 2018–2022 at JYU. The dash line shows the average number of new projects in 2017–2019. Source: Converis (15 March 2023).

the number of publications and other research output. The scenario of a decrease in external funding was not realised in the Academy's September call 2022 (decision year 2023). The Academy granted 10 M€ for 22 Academy Projects hosted by JYU [62], which is slightly more than in previous years (see Figure 5c). Furthermore, the Academy selected 19 JYU researchers to receive Academy Research Fellowship funding. Due to the Academy Research Fellow reform [61], it is not appropriate to compare these figures with the outcome of previous calls.

About 400 new research projects are started at JYU every year. During the pandemic, the annual number of new projects decreased in 2020, after which it returned to the average level of the pre-pandemic three-year period (Figure 12b). The decline in new projects has also been observed worldwide. There are indications that the pandemic reduced the number of new project initiated by US- and European-based researchers between April 2020 and January 2021 [59].

Although the pandemic posed challenges to research and studying, JYU clearly increased its performance for all degrees produced in 2020. The University produced 174 doctoral (Table 7), 1,863 master's (Table 9) and 1,416 bachelor's degrees (Table 9). The increase was transient. In 2021 and 2022, the number of degrees returned to the level of previous years.

2 PREVIOUS RESEARCH EVALUATIONS AT THE UNIVERSITY OF JYVÄSKYLÄ

The University of Jyväskylä (JYU) has conducted comprehensive research evaluations since 2005. The research evaluations of 2005 [63] and 2010 [64] focused on the quality of the research activities in the years 2000–2004 and 2005–2009, respectively. These evaluations as well as the subsequent evaluation (except the mid-term evaluation in 2021) have employed an external evaluation, which was preceded by self-evaluation.

The most recent comprehensive research evaluation took place in 2018 [28]. It covered the period of 2010–2017, with a focus on the research environments that are conducive to producing research of high quality. For the evaluation, JYU grouped its academic faculties and departments into 11 evaluation units. Based on the self-evaluation and the report by the external evaluation panel, the evaluation units drew up their research developments plans 2018 where the units describe development actions they are going to take to enhance the quality of research environment. The development plan included the goals and schedule for each development action.

In 2021, the mid-term evaluation focused on the research development plans 2018, aiming to determine the implementation stage of development actions in 2018–2020 [56]. The ultimate goal was to promote the successful implementation of the research development plan and consequently, to maintain an encouraging and facilitating environment for research. Instead of an external evaluation panel, this time internal peer reviewers conducted the peer review, which allowed good practices to be shared among the units. Based on the self-evaluation, the units updated their research development plans, which were exposed to internal peer reviewing. Based on the peer reviewers' statement, the units revised their research

development plans. The mid-term evaluation revealed that the units had used the results of research evaluation 2018 in their planning and strategy work, and that the implementation of most development actions had progressed on schedule.

JYU has developed its assessment process and so the research evaluations in 2018 and 2021 differed fundamentally from those conducted in 2005 and 2010. First, the object of the evaluation has changed. Evaluations in 2005 and 2010 focused on the quality of research whereas those in 2018 and 2021 evaluated the research environment. By focusing on the development of the research environment, the research evaluation aimed ultimately to strengthen JYU's research. Second, unlike in 2005 and 2010, neither of the evaluations in 2018 and 2021 ranked the evaluation units or gave numerical evaluations on their research performance, which was not seen to be appropriate or useful. Instead, the units received constructive feedback on the attributes of the research environment and their research development plans. This approach acknowledged disciplinary differences, for example, in the prevalence of research collaboration [65], citing practices [66], publication behaviour [67] and annual publication output [68]. The mid-term evaluation 2021 showed that the approach used was fruitful [56]. Third, the definition of the evaluation unit differs between evaluations. In the first two evaluations, the departments made up the evaluation units. For the evaluation 2018, the units of JYU were grouped into eleven evaluation units, which ranged from a single department to the whole faculty or independent institute. This grouping was slightly modified for the mid-term evaluation 2021 to reflect the number of research development plans, resulting in 13 evaluation units. In addition, organizational changes had occurred as JYU reorganized its structure in 2017. The Department of Psychology and the Department of Social Sciences and Philosophy, which had constituted the Faculty of Social Sciences, were transferred to the Faculty of Education and Psychology, and to the Faculty of Humanities and Social Sciences, respectively. As a result of the restructuring, the Faculty of Social Sciences was abolished. Another major change was that the Faculty of Sport and Health Sciences and the Faculty of Information Technology no longer have departments.

3 RESEARCH ASSESSMENT EXERCISE 2023

3.1 Principles

The assessment process was designed and conducted in line with the San Francisco Declaration on Research Assessment (DORA) [22], the Recommendation for the responsible evaluation of a researcher in Finland [23] and the Agreement on Reforming Research Assessment [24]. The general principles of the national recommendation are transparency, integrity, equity, competence, and diversity.

The Research Assessment took a developmental perspective, did not produce a ranking or numerical assessment, and employed both self-assessment and external assessment. The assessment guidelines, which describe and provide a basis for the objectives and methods as well as background material, were available to the units of assessment (21 February 2023) and the assessment panel (28 March 2023) well in advance of the assessment.

The background material was compiled by specialists and in accordance with the recommendations. For example, the Open Science Centre performed bibliometric analyses in accordance with the National recommendations on the responsible use of publication metrics, which is a part of the national recommendation [23], and provided support for both the units of assessment and the assessment panel in the interpretation of the results of the analysis. The background material was compiled so that it aimed to support the set goals of the assessment and contained information on research outputs in different formats (see 3.7.1). The large amount of research output did not allow the assessment of content and therefore the research assessment employed research metrics. However,

supporting arguments may also have been qualitative in nature and the assessment of societal impact was based on both quantitative indicators and case studies. Information on the potential limitations of background material was described to be considered in the assessment (see Section 3.7.2).

The assessment was conducted in a participatory manner, and researchers at all career stages were invited to participate (see Section 3.3). The units of assessment were involved in the planning of the assessment process (mainly via the Research Council) and site visit programme as well as in the nomination of the assessment panel. They took part in the implementation of the assessment by conducting self-assessments, writing research development plans, and by participating in the panel's site visit. Units had an opportunity to supplement and check the background material and to correct potential factual mistakes or misunderstandings in the preliminary panel report. The units of assessment received constructive feedback (a panel report), which they may use in finalizing their research development plans and in planning their strategies.

The procedure for designating the assessment panel ensured the panel members have no conflict of interest, possess the expertise relevant to the objectives of the assessment (such as extensive experience in academic leadership), are both from Finland and abroad, and that their expertise areas and research fields cover JYU's disciplines as widely as possible.

3.2 Objectives

As mentioned above, the Research Assessment Exercise 2023, in keeping with the spirit of the research evaluation 2018, took a developmental perspective. The main goal was to facilitate the further development of the research environment at JYU and thus to create conditions promoting research of high quality. To achieve this goal, we needed first to define the state of those elements of the research environment, which are considered to impact the quality and quantity of research. This was done by the units of assessment by making self-assessments and the external assessment panel by conducting an external assessment. As a proxy for scientific quality and quantity, we used bibliometric indicators and other statistics, which, more importantly, provided information on changes and trends in research activities during the assessment period. This information, combined with the information on the research environment provided by self-assessment reports, was expected to contribute to identifying strengths and key challenges as well as to

planning potential development measures to overcome challenges. The second goal was to enhance JYU's capability to address societal needs and to facilitate the utilization of research findings beyond academia. The assessment of the impact of JYU's research beyond academia (i.e. societal impact) leaned both on statistics and the narratives written by the units of assessment. The third goal was the development of doctoral training at JYU, which was last evaluated in 2016 [21], and therefore was not in focus in the previous research evaluation 2018. The research evaluation 2018, however, indicated that the units see doctoral researchers and the doctoral training as an integral part of research and its development at JYU [28]. Therefore, it was natural to assess the doctoral training in the present research assessment. Due to the recent self-assessment of doctoral degree programmes in 2022, the focus was on the conditions for dissertation research.

The assessment period was from 2018 to 2022. The assessment process consisted of a self-assessment and an external assessment. In the self-assessment, the units assessed the research environment, doctoral training, and socially orientated activities from the perspective of their own needs and goals. The units of assessment were provided with a set of data, which consisted of statistics on funding, research personnel, mobility, doctoral training, and publishing (see appendices). The background material acted as a reference point, against which the unit may reflect the features of the three assessment areas. Each unit of assessment prepared a self-assessment report on its observations (Appendix 6). Additionally, they drafted research development plans where they described the actions they plan to take to develop the research environment, including from the perspective of doctoral training, and to enhance societal impact of their research. An external assessment was performed by international peer reviewers nominated by the Research Council. In addition to assessment, the role of the assessment panel was to give constructive feedback on units' self-assessment reports and research development plans. Self-assessment reports, research development plans and background materials were provided to the assessment panel to support its assessment. The panel visited JYU, conducted group interviews, and wrote a panel report on its observations and recommendations. Based on this, the units finalized the research development plans.

The outcome of the assessment may be used for the planning and strategy work of the units as well as that of the university. The assessment also produced information, which can be utilized in other assessment exercises, such as in the "HR Excellence in Research Award" assessment, as well as in the JYU strategy refreshment in 2023.

3.3 Tasks of the participants

3.3.1 Research Council

The Research Council (2018–2021, 2022–2025) planned, led, and supervised the research assessment as well as nominated the members of the assessment panel.

3.3.2 Research and Innovation Services

Research assessment team at the Research and Innovation Services

- coordinated the research assessment
- compiled background material
- instructed and advised the units of assessment and the assessment panel
- planned the programme for the site visit together with the Research Council and units of assessment
- organized the site visit of the assessment panel (including logistical and other practical matters)
- sent the material for the assessment panel
- communicated with the assessment panel and the units of assessment
- compiled and edited the final report.

3.3.3 JYU Graduate School for Doctoral Studies

The University of Jyväskylä Graduate School for Doctoral Studies planned the assessment of the doctoral training at JYU.

3.3.4 Open Science Centre

The Open Science Centre (OSC) performed bibliometric analyses and provided support in the interpretation of the results of the analysis. OSC gave a presentation on the results of the analysis in the units and held an online meeting on the results with the assessment panel prior the panel's arrival in Jyväskylä.

3.3.5 Division of Policy and Planning

The data team from Division of Policy and Planning compiled the following background material: information on core funding, supplementary funding, doctoral training, research personnel and mobility.

3.3.6 Units of assessment

Unit of assessment

- nominated a contact person at the unit
- proposed candidates for the assessment panel
- drew up a self-assessment report and research development plan
- was responsible for the practice arrangements of self-assessment
- planned the programme for the site visit at its unit and booked the lecture rooms for it
- participated in the site visit of the assessment subpanel (incl. group interviews)
- nominated its representatives for the interviews conducted by the subpanel
- commented on the preliminary panel report regarding mistakes and misunderstanding
- based on the panel's comments, revised its research development plan.

3.3.7 International assessment panel

The assessment panel, consisting of eleven members (Figure 13), familiarized itself with the background material, and reviewed the units' self-assessment reports and research development plans. The panel visited the University of Jyväskylä when it conducted interviews. After the site visit, the panel wrote a joint panel report on each unit of assessment. One of the panel members, Sue Scott, acted as a chair of the panel. In addition to the above-mentioned tasks, the chair was responsible for organizing the panel´s work, chairing the panel meetings during the site visit, and ensuring that the jointly written panel report will be submitted to JYU on time.

3.4 Nomination of the international assessment panel

To set up an international assessment panel to carry out an external peer assessment, the faculties and independent institutes were asked to nominate up to four candidates for the assessment panel, listed in order of preference, by 8 March 2022. The requirements for the candidates were as follows:

- be independent. The candidate does not have, for example, co-authored publications or research collaboration with a JYU researcher in 2018–2022, has not been employed (including working on a grant), awarded an honorary doctorate degree, or the title of docent by JYU

– have extensive experience in academic leadership. The candidate has acted as, for example, as the vice rector of a university, or dean of a large and preferably multidisciplinary faculty
– commit to attending a site visit to the University of Jyväskylä in May 2023
– preferably from Europe.

The Research Council discussed the proposed candidates and decided on the members and the chair of the assessment panel in its meeting on 17 March 2022. In addition to the requirements listed above, the Research Council considered research areas and the number of researchers in the unit of assessment when nominating the panel members. Thus, it nominated three members from the candidate lists of the two largest units of assessment (HUMSOC, MLTK) and two members from the candidate lists of four units of assessment. Thereby, the expertise areas of two to

Figure 13. The assessment panel in the Research Assessment Exercise 2023. Backrow from left: Professor Bill Baltzopoulos (Liverpool John Moores University, UK), Professor Tor Eriksson (Aarhus University, Denmark), Professor Luigi Ambrosio (Scuola Normale Superiore, Italy), Professor Helmut Krcmar (Technical University of Munich, Germany), Professor Peter Maassen (University of Oslo, Norway). Front row from left: Professor Eero Kasanen (Aalto University, Finland), Professor Katharina Fromm (University of Fribourg, Switzerland), Professor Sofia Lundberg (Umeå University, Sweden), Professor Sue Scott (University of Newcastle, UK), Professor Elizabeth Lanza (University of Oslo, Norway). Professor Anna Mauranen (University of Helsinki, Finland) is not in the photo. Photo: Iida Källroos (JYU Communications and Communality).

three panel members cover the research areas of one assessment unit. After receiving replies to its invitation to act in the assessment panel, the Research Council confirmed the composition of the panel in its meeting on 18 May 2022 (Figure 13). Due to the cancellations, the number of members of the assessment panel reduced from 13 to 11. Most of the panel members came from abroad. The panel had two members from Finland, who brough knowledge of Finnish universities and academia. Professor Sue Scott acted as the chair of the panel.

3.5 Units of assessment

The faculties made up the units of assessment. The independent institutes did not constitute units of assessment on their own, but they were included as a part of a faculty according to their discipline. The Finnish Institute for Educational Research (FIER) was evaluated as a part of the Faculty of Education and Psychology. The Kokkola University Consortium Chydenius (KYC) conducts research in five disciplines, of which information technology, education, and social sciences are under the auspices of JYU. Thus, KYC was assessed as a part of the Faculty of Information Technology, Faculty of Education and Psychology, or Faculty of Humanities and Social Sciences. As KYC is a consortium of the universities of Jyväskylä, Oulu and Vaasa, the assessment included only the research activities of those researchers who are affiliated with JYU.

The units of assessment and their departments (in alphabetical order):

1. Faculty of Humanities and Social Sciences (HUMSOC) & Kokkola University Consortium Chydenius (social sciences): Department of Social Sciences and Philosophy (DSSP), Department of History and Ethnology (DHE), Department of Music, Art and Culture Studies (MACS), Department of Language and Communication Studies (LaCos), Centre for Applied Language Studies (CALS)
2. Faculty of Information Technology (ITK) & Kokkola University Consortium Chydenius (information technology)
3. Faculty of Mathematics and Science (MLTK): Department of Mathematics and Statistics (Maths), Department of Physics (Phys), Department of Chemistry (Chem), Department of Biological and Environmental Science (BIOENV)
4. Faculty of Sport and Health Sciences (Sport)
5. Finnish Institute for Educational Research (FIER), Kokkola University Consortium Chydenius (education) & Faculty of Education and Psychology

(EDUPSY): Department of Education (EDU), Department of Teacher Education (OKL), Department of Psychology (PSY)

6. Jyväskylä University School of Business and Economics (JSBE)

3.6 Schedule

Self-assessment by the units of assessment took place in January–March 2023, followed by an external assessment (Figure 14). The assessment panel visited the University on 8–11 May. In June, the assessment panel handed over the preliminary report to be presented to the units of assessment for factual corrections. After considering the comments, the panel finalized the report and handed over the final version on 29 June. Based on the panel report, the units of assessments completed revised research development plans in November.

Figure 14. Schedule of the main stages in the research assessment exercise 2023.

3.7 Background material

3.7.1 The content of and compiling the background material

The units of assessment and the assessment panel were provided with background material to support their assessment. Research and Innovation Services, together with the Open Science Centre and the data team from the Division of Policy and Planning, compiled the background material taking into account the unit's potential requests. In addition, the unit of assessment could supplement the background material with the information it saw as essential for the assessment.

The material from the three previous assessments provided a background for the assessment. The final report on the previous research assessment, which was carried out in 2018, contains the description on the assessment process, a review of the University's accomplishment as an academic research institute in 2010–2017, and the panel report [28]. The units' research development plans 2021, which are revised versions of the plans drawn up in the research evaluation 2018, describe development actions with their goals and schedule. The units and the assessment

panel were also given relevant results from the self-assessment of doctoral degree programmes, which JYU carried out in 2022 (see Section "Doctoral training").

The background material included two reviews written by the research assessment team to facilitate the research assessment. The review of the University of Jyväskylä gave basic facts about the University, such as organization, research personnel, and doctoral training, and described JYU's research environment following the structure of the self-assessment template (see Appendix 6). It also discussed the impact of the COVID-19 pandemic on operations and research activities at JYU. The review titled "Background and guidelines" contained not only instructions on the research assessment but also its theoretical background. The theoretical background dealt with the selected elements of the research environment, which have been associated with research performance. The issue was addressed also from the perspective of doctoral training. The review aimed to facilitate the units of assessment to make self-assessments and strategies for improving their research environment and consequently their research performance. The awareness of the factors relevant to the successful doctoral process may help the university and its units to design well-functioning doctoral training. In addition, the review contained a chapter on societal impact of research with definitions. Its aim was to help the units of assessment to identify and articulate the potential and realized societal impacts of research conducted in their units. Part of the content of the reviews is included in the present final report.

The statistical data covered the years 2018–2022. Data on research personnel were based on data from JYU data warehouse, MEPCO HRM and payroll administration system and funding (used funding) from financial and human resources information system SAP Finance and JYU research information system Converis. The background material also included statistics on doctoral training and mobility to and from JYU. Publication information was collected from the Converis research information system, Scopus database (analytics tool: SciVal) and Dimentions (analytics tool: JYUcite). When using the databases, publications with affiliation with JYU were included. Thus, the previous publications of a researcher who has published with affiliation with some other institution than JYU were not included. We also reported another citation impact metric for a publication, a Co-citation Percentile Rank (CPR), which JYUcite calculates using the Dimensions database [69]. The Overton policy database was used to assess the impact of JYU research on policy.

Background material consisted of

- Research Evaluation Report 2018 [28]
- Research development plans 2021
- Outcome of self-assessment of doctoral degree programmes 2022
- Review of the University of Jyväskylä
- Review “Background and guidelines”
- Amount of supplementary funding (SAP Finance, Converis) (Appendix 1)
- Amount of core funding (SAP Finance, Converis) (Appendix 1)
- Publication output (Converis, Scopus, Dimensions) (Appendix 2)
- Number of research personnel (JYU data warehouse, MEPCO HRM, payroll administration system) (Appendix 3)
- Statistics on doctoral training (JYU data warehouse) (Appendix 5)
- Statistics on mobility to and from JYU (TUTKA, SAP Travel) (Appendix 4)
- Number of undergraduate students (JYU data warehouse)
- Societal impact of research (Overton)
- Other material selected by the unit

The units of assessment received background material on 21 February and the assessment panel on 28 March 2023. The Open Science Centre visited each unit of assessment to present the results of the bibliometric analysis and their interpretation. It also held an online meeting on the results with the assessment panel prior the panel’s arrival in Jyväskylä. If the unit detected errors in the background material or had a request for additional background material, it was advised to contact the assessment team at the Research and Innovation Services.

3.7.2 Limitations of the background material

The number of grant researchers, which is based on the number of grant researcher agreements, is most likely underestimated. This is because the database used does not contain information about personal grants, which foundations pay directly into grantees’ accounts. Furthermore, funding which is not managed by JYU is not included in the reported external research funding sums.

Data on the 2022 publications is preliminary, because not all data had yet been recorded in the databases at the time the data was compiled. On the other hand, a change in statistical practice took place in 2022, when early publication articles began to be recorded according to their online publication date. This contributed to the observed peak in publication volume, which will level off later when articles are

Table 11. Coverage of the Scopus and Dimensions databases by unit of assessment.

Unit of assessment	Scopus	Dimensions
Faculty of Humanities and Social Sciences	29	56
Faculty of Information Technology	74	87
Faculty of Mathematics and Science	90	99
Faculty of Education and Psychology	58	75
Faculty of Sport and Health Sciences	82	93
Jyväskylä University School of Business and Economics	53	78
Finnish Institute for Educational Research	45	67

moved to the year when a final publication version is published. Bibliometric analysis itself also has limitations. Data was collected from the Scopus and Dimensions databases, the coverage of which differed with discipline (Table 11). The lower the coverage is, the less reliable the interpretation made based on the data is. The present assessment used Co-citation Percentile Rank [69] as an indicator for scientific impact and above all to complement and support the panel assessment. The validity of citation indicators to indicate scientific impact or research quality has been criticized, but arguments supporting their use have also been presented [70]. Criticism stems from the fact that observed differences in indicators are not necessarily related to performance differences but are due to other reasons. An example of this are discipline-specific differences in citation [66,67,71] and publication behaviour, such as different preferences for publication modes and national vs. international orientation [67]. Furthermore, it is known that the prevalence of collaboration differs by discipline [65,72], which in turn may be reflected in the number of citations received by the publication [72,73]. The positive effect of collaboration on citation count is further strengthened by international [74–76] and by external collaboration [72], the prevalence of which also varies by discipline [72]. A factor affecting citation count, which is common to all disciplines, is citation patterns. The citation time-lag [77], that is, the time elapsed from the publication of the paper to citation, may lead to an underestimation of the scientific impact of the most recent publications. On the other hand, the citation counts first increase over time but then tend to level off after reaching a peak [78]. There are also other factors associated with citation count but which do not indicate quality, such as the type of the publication [77,79], author affiliation [79,80] and experience (number of previous publications) [81] as well as an author's and a journal's reputation [82]. Overall, there are a variety of reasons why to cite, some of which are even non-scientific [77,79,80,83].

Table 12. Finnish sources and number of documents by source in the Overton database (27 February 2023).

Source	Type	Number of documents
Bank of Finland	Government	1,736
Current Care Guidelines	Government	107
ETLA Economic Research	Tink tank	799
European Centre of Excellence for Countering Hybrid Threats	Tink tank	59
Finnish Environment Institute SYKE	Tink tank	41
Finnish Institute for health and welfare	Government	3,452
Finnish Institute of International Affairs	Tink tank	625
Finnish Medicines Agency Fimea	Government	147
Government of Finland	Government	11,135
Martti Ahtisaari Peace Foundation CMI	Tink tank	34
Natural Resources Institute Finland (Luke)	Government	734
Parliament of Finland	Government	289

The societal impact of research was assessed using the Overton database of policy documents. The database provides a proxy for the uses of the research in policy, as it is unable to capture all impacts. Overton does not capture societal impact that takes place through informal interactions or if a policy document does not refer to a specific publication although it has utilized its findings [84]. Another limitation concerns the data source. Overton uses information from publicly accessible policy documents [85], and due to this some of the documents are beyond its reach and thus Overton is unable to measure impact of research from these documents. In addition, Overton's coverage is biased in favour of North America and governmental sources, and varies by discipline [86]. Overton contains documents from twelve Finnish organizations, the majority of which represent governmental sources (Table 12). One should also note that societal impact may not be captured because of the time-lag of impact [87,88]. The uptake of research results, in terms of policy citations, has been reported to take place an average of ten years after publication [86] and to peak two to seven years after publication year [84,86]. Furthermore, the rate of citation accumulation varies by discipline [86].

3.8 Self-assessment

3.8.1 Objectives

The aim of the self-assessment (23 January–24 March) was to provide information on the current state of the research environment and doctoral training from the

perspective of the unit of assessment as well as to assess and demonstrate the societal impact of its research and identify areas which need improvement.

3.8.2 Self-assessment report

The unit of assessment decided upon the way in which it conducted the self-assessment and selected who participates in it (Appendix 7). It was recommended, however, that participants represent all research career stages (including grant researchers), so as to provide the most complete and diverse picture of the assessment areas. On the other hand, the self-assessment should be a light procedure, which may have limited the number of participants.

Based on the self-assessment, the unit of assessment wrote a self-assessment report using the report template (Appendix 6). Although a unit of assessment may have consisted of several departments, the unit was assessed as a whole. That is, each unit of assessment wrote one self-assessment report. The self-assessment report included a brief description of the unit of assessment and the self-assessment procedure, the names of participants, and the unit's responses to the questions in the report template. The unit of assessment submitted the self-assessment report along with the research development plan and extra voluntary background material of its choice no later than 24 March 2023.

The units of assessment were provided with background material related to ten topics of the self-assessment (see Section 3.7). The relevant topics had also to be considered from the perspective of doctoral training and doctoral researchers.

1. Research leadership
2. Current follow-up practices
3. Academic culture
4. Recruitment
5. Career and mobility
6. Infrastructure (including administrative support and materials bank)
7. Funding
8. Research collaboration
9. Publication
10. Societal impact of the research

The complete self-assessment reports and research development plans are not published. They are for internal use. In addition, they were a part of the background material of the assessment panel.

3.8.3 Research development plan

Based on the self-assessment, the unit of assessment wrote a research development plan (one plan on each unit of assessment), describing the areas where improvement is needed, actions to strengthen the areas in question and the schedule. When writing the development plan, the unit of assessment was advised to consider, for example, the following questions:

- In what way could your current approach be further improved?
- Are there any other ongoing or planned new initiatives?
- Please focus primarily on what can be done – and improved – by the unit itself. In addition, you may suggest changes that have to be decided upon – or made – at other levels within the university, and/or by external bodies (e.g. changes in government regulations, policies of funding agencies).

The unit of assessment submitted the research development plan no later than 24 March 2023.

The development plan was given to the external assessment. After external assessment, the unit of assessment revised its research development plan, taking into account the assessment panel's comments (See Section 5).

3.9 External assessment

3.9.1 Objective

The main objective of the external assessment was to give constructive feedback to the unit on the research development plan and to assess the research environment, doctoral training, and societal impact of research.

3.9.2 Site visit

The external assessment included a site visit from 8 to 11 May 2023. One of the panel members, Anna Mauranen, attended the site visit remotely. The purpose of the site visit was for the panel to gain direct contact with members of the units of assessment and to enable the panel to have internal meetings when it could discuss its findings and draft the panel report. Prior to the site visit, the assessment panel received the units' self-assessment reports, research development plans and background material. Due to the time constraints, the panel was unable to visit the Kokkola University Consortium Chydenius.

Table 13. Dates for the site visit and composition of the subpanels.

Unit of assessment	Subpanel
Date for site visit 9 May	
Faculty of Humanities and Social Sciences	Luigi Ambrosio, Elizabeth Lanza, Peter Maassen, Anna Mauranen, Sue Scott
Faculty of Information Technology	Katharina Fromm, Eero Kasanen, Helmut Krcmar
Faculty of Sport and Health Sciences	Bill Baltzopoulos, Tor Eriksson, Sofia Lundberg
Date for site visit 10 May	
Faculty of Education and Psychology & Finnish Institute for Educational Research	Helmut Krcmar, Peter Maassen, Anna Mauranen
Faculty of Mathematics and Science	Luigi Ambrosio, Bill Baltzopoulos, Katharina Fromm, Sue Scott
Jyväskylä University School of Business and Economics	Tor Eriksson, Eero Kasanen, Elizabeth Lanza, Sofia Lundberg

The site visit started with a half-day session during which the assessment panel was given a general overview of the University of Jyväskylä and its academic structure (Appendix 8). The session was followed by a meeting with the rector and the vice rectors. In addition, time was allocated for the panel internal meeting, which allowed the panel members to discuss the assessment procedure.

For the following two days, the panel was divided into three subpanels of three to five members, depending on the size of the unit of assessment (Table 13). Members were assigned subpanels according to the following criteria: (1) the member's discipline, which either matches with that of the unit or complements expertise or perspectives of others, for example, by bringing perspectives from outside the unit's discipline; (2) where possible, each subpanel included a member who is from a Finnish university or who is otherwise familiar with Finnish universities and academia; (3) the unit's suggestions; and (4) balanced geographical spread of subpanel members' affiliation.

Each subpanel member visited two units of assessment (one unit per day), which gave a short overview of the unit (Figure 15). When the unit felt it was relevant, the unit of assessment also introduced its research facilities and research activities to the subpanel. The subpanel interviewed the representatives of the unit of assessment, which enabled the subpanel to make questions and the unit to complement the information provided by the written materials. In each unit of assessment, the group interviews of the research personnel were conducted in three groups: (1) early career researchers, (2) senior researchers, and (3) department/faculty/independent institution leadership

Figure 15. The assessment panel visiting the University in May 2023. Photo: A. Lyytinen & T. Taskinen.

The unit of assessment appointed interviewees, who may be either grant researchers or researchers with an employment contract with JYU (Appendix 9). The number of interviewees was not limited, but it was nevertheless recommended to be reasonable in view of the time available. The interviews lasted forty-five minutes, including the subpanel's internal discussion. The list of the interviewees was provided to the assessment panel before the site visit. Each day ended with subpanel meetings where the subpanel members could discuss their findings and conclusions and draft the panel report.

The last day of the visit was reserved for a panel internal meeting and a closing session. The site visit ended with the closing session, where the panel gave a preliminary verbal summary of its feedback (e.g. the main findings, conclusions, and recommendations) to the units of assessment and the University of Jyväskylä.

3.9.3 Panel report

The panel prepared a joint report on each unit of assessment based on the site visit, the unit's self-assessment report and research development plan, and background material. Although a unit of assessment may have been consisted of several departments, the panel assessed the unit as a whole. However, it was allowed to highlight and comment on departments separately when appropriate. The panel was not asked to grade the research performance or rank the units of assessment but to give constructive feedback.

A report template along with instructions was provided for the assessment panel (Appendix 10). A panel report template contained questions which were intended to facilitate the assessment. From these questions, the panel may have

selected the relevant ones and also comment on other aspects. The panel was expected to describe its observations and recommendations on the state of the research environment, doctoral training, and societal impact of research. The panel was asked to list the main strengths and weaknesses in bullet points and consider if there are challenges or obstacles which potentially prevent the unit of assessment from realizing its full potential. In addition, the panel was asked to assess the feasibility of the proposed development actions. Whenever relevant, the panel gave further insights into the development measures not touched upon in the research development plan that the unit should take to further improve these areas. The panel submitted its preliminary report on 9–16 June, depending on the unit of assessment.

The unit of assessment received the preliminary panel report for potential comments. At this stage, the unit had an opportunity to correct any factual mistakes or misunderstandings in the panel report. The unit of assessment had one week to submit its comments, which were forwarded to the panel. The assessment panel modified its report based on the unit's comments and submitted the final panel report on 29 June.

3.10 Revised research development plan

Based on the panel report, the unit of assessment revised its research development plan including the modifications of the original development actions, revised schedule, and additional development actions (if identified). The unit submitted its revised research development plan no later than 3 November. The research development plans are only for internal use.

3.11 Final report

The Research and Innovation Services compiled the final report, which includes the panel report.

4 EXTERNAL PANEL REPORT

4.1 Background to the 2018–22 assessment

The University of Jyväskylä (JYU) Research Assessment Exercise 2018–22 follows on from that conducted in 2018 covering the period 2010–17. Whereas the earlier exercise focused specifically on 'The attributes of the research environment that are conducive to producing research of high quality and renewal' the one covered by this report took a developmental perspective with the goal of enhancing the quality of the University's research environment and its Doctoral Training as well as its capability to address societal needs. The University had undertaken a restructuring process since the earlier period and this exercise covers six units of assessment:

- The Faculty of Humanities and Social Sciences
- The Faculty of Education and Psychology and the Finnish Institute for Educational Research
- The Faculty of Sport and Health Sciences
- Jyväskylä University School of Business and Economics
- The Faculty of Mathematics and Science
- The Faculty of Information Technology

Each unit of assessment prepared a self-assessment report and a preliminary research development plan. The latter was intended to delineate planned actions to improve the quality of its research environment, doctoral training and to enhance the societal impact of its research. An international assessment panel was appointed (see below) during 2022. The panel familiarised themselves with the documentation, which they received in March 2023, and conducted a site visit from 8–11 May 2023. The Panel was supported throughout by JYU research office staff, who were

exceptionally efficient and diligent both before and during the site visit. We had access to all the necessary documentation through MSTEAMS. This jointly produced report is the outcome of that process. It is important to stress that this assessment process did not entail any grading or ranking of the units. It is our aim to give constructive feedback taking the role of 'critical friends' and to make recommendations as to how best JYU can further develop both the context and impact of its research.

4.2 The 2018–22 panel and the assessment process

4.2.1 The panel

Professor Sue Scott Chair of the Panel (University of Newcastle, UK and University of Helsinki)
Professor Luigi Ambrosio (Scuola Normale Superiore, Italy)
Professor Bill Baltzopoulos (Liverpool John Moores University, UK)
Professor Tor Eriksson (Aarhus University, Denmark)
Professor Katharina Fromm (University of Fribourg, Switzerland)
Professor Eero Kasanen (Aalto University, Finland)
Professor Helmut Krcmar (Technical University of Munich, Germany)
Professor Elizabeth Lanza (University of Oslo, Norway)
Professor Sofia Lundberg (Umeå University, Sweden)
Professor Peter Maassen (University of Oslo, Norway)
Professor Anna Mauranen (University of Helsinki, Finland)

A larger panel had been planned but unfortunately two members had to withdraw, one due to extra work commitments and the other due to illness.

4.2.2 The assessment process

Prior to the site visit the Panel participated in an online meeting about the use of bibliometrics. During the site visit the Panel was divided into sub-panels in order to cover all the evaluation units in the time available. For each set of meetings with a unit one panel member was designated as chair and responsible for feedback to the whole Panel. Over the three days panel members met with the:

- (Acting) Rector and the Vice Rectors
- Deans and Vice Deans for Research
- Heads of Department/Discipline

– Academic staff, who are engaged in research, across the range of grades
– Post Docs and Doctoral Students

We also visited or were informed about a number of key research areas and projects.

The panel had time between these meetings and at the end of the visit to receive feedback and discuss the issues raised.

4.3 General feedback and recommendations

The University of Jyväskylä is performing very well overall for a medium sized university outside of a metropolitan area with some units that are internationally excellent. The University has clearly both consolidated and developed since the Research Evaluation in 2018 but progress in research often includes regressive steps as external demands increase and the competition for limited funds becomes tougher. This means that JYU should congratulate itself for doing as well as it is, but at the same time must not be complacent. The process of research development and improvement is like a spiral which means that there is often a return to the same issues and problems albeit from a better position than previously experienced, which is why many of our comments and recommendations reiterate those made in the 2018 Panel report. This being the case, the response to some of the recommendations in this report will probably be 'but we are already doing that'. The Panel appreciates the hard work that is going on in research across all areas of the University, but our response is that in some respects there is still room for improvement. We have been critical, we hope constructively so, in order to encourage the University to develop further and to be as good as it can be within the limitations of its size and the opportunities available.

In the following section we have used the structure of the template which the panel was given, for the reports on each Faculty, in order to raise issues that are cross-cutting and therefore more appropriately addressed by the senior leadership of the University.

4.3.1 Research leadership

Research leadership at JYU appears to be well respected and its contribution valued by all staff. We did not find the kinds of negativity and criticism of leadership roles and structures that is often the case in Universities and in general, as has been outlined above, the academics that we met did not complain about management. However, lines of strategic decision-making pertaining to research were not clear to

all those at JYU nor to the Panel. The decision-making line from Rector to Vice-Rector for Research to Dean and then Vice-Dean for Research and on to heads of department, centre and project leaders is a long one and it was not always clear who could decide what. It may be that one size doesn't fit all and that in a small Faculty research can be led by the Dean whereas in a large one the Vice Dean role could be distributed to research leaders in each Department. JYU is entering a new phase of leadership and, therefore, has an opportunity to develop new strategic thinking and to introduce greater clarity into how research is structured and supported. Reiterating the comments of the 2018 Panel, we also consider that the leadership of research can occur at all levels if colleagues are supported and consider that their views will be taken seriously. In our meetings with staff, we saw both the practice and further potential for such leadership – such energy and enthusiasm need to be further utilised.

Recommendations

1. Make clear decisions about the division of labour between the University, Faculty, Department and Project levels and make this more transparent. If this needs to be different for various Faculties make this clear as well. This includes transparency about where the financial resources are held.
2. Ensure that there is transparency in relation to the use of overheads etc.
3. Fully utilise JYU Wisdom as a cross-university framework in which to discuss multi and interdisciplinary research developments and opportunities and establish clear leadership for whatever plans emerge.
4. Accept that developing new areas may mean that some other things need to come to an end and develop 'fade out' plans where appropriate. This process should not be short-sighted but part of longer-term strategic planning.
5. Consider establishing Research Institutes, led by the Vice Dean, or equivalent, as umbrella homes for all projects and active researchers. These could each sit within one Faculty but be open to academics from other areas of JYU.
6. Make a strategic decision about the balance between teaching and research in different areas of the University. The panel considers it appropriate that all permanent members of academic staff undertake some teaching unless the level of external funding that they hold makes this impossible. This process may well entail addressing the very varied SSRs.
7. That leadership training be continued and extended in order to ensure wider strategic engagement and strong succession planning.
8. Ensure support for outreach and knowledge transfer.

4.3.2 Academic culture

Overall, the academic culture at JYU appears to be very strong. In the main, the academics we met seem to enjoy working in the University and want to stay. It is usual for academics to identify first with their discipline or research field and then with their Department and much less strongly with the University so the strong positivity and sense of belonging at JYU is an excellent basis on which to build greater research strength, resilience and sustainability. Unlike the situation in many other Universities, we did not identify any problems in relation to staff well-being withing the units we visited. This is not however, a reason for complacency as many academics, especially those in marginal and precarious positions, do need support systems, both formal and informal, to be in place and accessible.

4.3.3 Recruitment, careers and mobility

While there was not as much focus on 'staffing' matters as is apparent from the 2018 Panel's report, this was still a widely discussed issue across all units. The Panel welcomes the increase in full-time, potentially permanent, appointments which have come with the rolling out of the tenure-track system but is concerned for the degree of confusion and potential for inequity which has attended it. While the final decision about appointments rests with the Rector, it does seem that there have been different decisions within Faculties and Departments, as to what level tenure track appointments should be made at. This has led, in some cases, to a raft of Assistant Professorships which skews the staff profile and will, assuming that they are all eventually promoted, result in a top-heavy profile in the future. There is also an issue in relation to staff who already have permanent appointments but without the opportunity for promotion, and who are either left in a second-class position, or who move onto the tenure track while their previous post is kept open, as a fail-safe, and filled on a temporary basis, and therefore, increasing the number of staff on short term contracts.

The developing tenure track system coupled with pressures to internationalise has created tensions, in Finnish universities, with regard to appointing international academics versus those already in the Finnish system. It is important in this context to strike a balance between being overly parochial on the one hand and disadvantaging 'homegrown' academics on the other.

There was also much discussion of the career challenges faced by post docs who have only limited opportunities for career development at JYU and while we

understand that it is not possible to create ever more permanent positions, their concerns do need to be addressed.

However, a crucial aspect of recruitment is strategic planning. We were not presented with a clear long-term workload and staffing plan by the Faculties, although in several cases they raised problems relating to the division of labour and the effect of teaching loads. The staff student ratios are very variable from department to department, and this has in impact on the potential for research. While we understand the limitations of budgets and the overall Finnish context, we think that JYU could take the opportunity to be somewhat more innovative and strategic in this regard.

Recommendations

1. It is important that the University leadership works with the Deans (as a group) to determine plans for the optimum structure and staffing plan for each Faculty and that a roadmap is developed for how to achieve it with key milestones along the way.
2. We recommend reviewing the current tenure track model with a view to ensuring its long-term viability. This could be done in conjunction with other Finnish universities so that experiences can be shared.
3. We recommend that if someone on a permanent contract is worthy of promotion then they should be promoted thus keeping the tenure track position open for someone else.
4. We recommend (as did the previous Panel) using the same standard nomenclature across the University, for all staff who undertake both teaching and research: either Full, Associate, Assistant Professor or Lecturer, Senior Lecturer, Professor.
5. There needs to be a strategic discussion, in the context of the internationalisation strategy, about the balance of Finnish and international appointments and where the latter can make the greatest impact.
6. With regard to post docs and other early career academics, especially where the likelihood of being able to develop a career at JYU is low, there should be more support for mobility – encouraging and supporting them to spend time in other Universities and research centres and also in non-academic contexts. This type of experience will be useful if they do stay at JYU but will also enable them to consider other options including utilising their skills and knowledge outside of the Academy.

4.3.4 Research infrastructure

Overall, the research infrastructure is very good at JYU, and we saw highly suitable buildings (with one notable exception – see below) and impressive technology and equipment. However, this situation is never entirely stable and there are always new and competing demands. This means that good communication and forward strategic planning is needed to anticipate where funding is needed and where money needs to be spent. We heard many positive comments about the Research Support staff and the panel's experience would confirm this, but again if JYU is to develop its research profile further both nationally and internationally this needs to be strongly underpinned by the support of professional staff. There is always a tendency to focus on ensuring that funding applications are successful, but if there is insufficient follow through then this creates more work and will affect outputs and potentially capacity for future applications. However, we cannot overstate the need for both a clear decision in relation to, and an actual move from, the current Sport and Health building which is clearly not fit for purpose. The current situation is detrimental to staff health and well-being and therefore to the future of research in this area.

Recommendations

1. We would recommend some additional support in the Research Office. While it is clear that there is excellent support for the research funding application process, the perception of academics is that staff are overstretched, and this affects the amount of support available post award. This is not, in any way, a criticism of the staff, but rather a recommendation for a review of the tasks and responsibilities with a view to expansion.
2. We recommend that urgent attention is given to the need to move the Faculty of Sport and Health Sciences. There is a need for both a clear decision in relation to, and an actual move from, the current building which is clearly not fit for purpose. The present situation is detrimental to staff health and well-being and therefore to the future of research in this area.
3. Research infrastructure needs to be fully maintained and operated and this cost should be covered from the central budget.

4.3.5 Funding and finance

With regard to the funding of research JYU has, in a number of areas, been more successful than might be expected for a university of its size, both with regard to projects that are entirely 'in-house' and research collaborations with other

Universities. As has already been mentioned, the support of the Research Office is important in the continued effort for successful grant applications. Also, the development of more inter and trans disciplinary cross Faculty projects may be a way of increasing success. We have already recommended increasing support in the Research Office and for increased access to English language support for funding applications which are in English, and we have further recommendations below.

In relation to finance, we have the impression, based on our discussion, that there is a lack of transparency and understanding of JYU's budget model and the ways in which this impacts on research. It seems that overheads, at least in part, are returned to the relevant unit in some areas but not in others. This may be a misunderstanding, but it does suggest a need for further discussion and clarification.

Recommendations

1. Consider locating at least some part-time administrative support for research within the Faculty structure so that expertise can be further developed in specific areas.
2. Ensure that all staff understand the budget model and there is transparency in funding allocations.
3. Ensure that there is equity across Faculties and Projects in relation to the disbursement of overheads.
4. Retain a transparent percentage of all overheads for strategic research developments.
5. Explore a more equitable system for transferring a portion of the overhead back to the researcher(s) to encourage future developments.

4.3.6 Research collaborations

JYU has several good examples of collaborations within the university, including those across Faculty borders and at national and international levels. Such collaborations develop, and function best, when they are researcher-driven. However, strong collaborative work is not equally distributed across Faculties. It is very important for strategic collaborations with EU partners to be encouraged and supported.

Recommendations

1. Revisit the decision to discontinue the 'incoming researcher programme'.
2. Engage staff in discussion about where the collaborations should be – this could be linked to benchmarking (see below).

3. Some national collaborations are crucial, for funding and impact, and there could be more, but there could, and should, be more international collaborations.
4. Revisit the internationalisation strategy and decide just how 'international' to be alongside being as strong as possible nationally.
5. Be more internationally ambitious in key areas.
6. Set up a campus wide conversation which includes international staff and students.
7. Engage a 'mystery shopper' to spend time at the University seeing it through the eyes of an international member of staff and a doctoral student.
8. The overseas visiting professor scheme seems to have worked well and should be extended and fully supported.
9. Establish a central scheme for JYU staff, administrators as well as academics, to encourage visits and exchanges. Mobility is important whatever the strategy.

4.3.7 Publication

In the main we found the quantity and apparent, quality of publications to be very good, with a sizeable number in English and published in international journals – for detailed discussion see the reports on the individual units. We understand that JYU has accepted DORA, along with other Finnish Universities, however, exactly what this meant did not always seem to be clear to the academics that we spoke to so further clarification is needed across the University. As one might expect, Panel members views differed about this decision with some still holding to the view that journal rankings and traditional citations can be helpful. However, we are agreed that there needs to be a pragmatic approach which is flexible enough to fit different disciplines and fields appropriately. Open Access is still evolving and at this stage we would advise against avoiding what are viewed as 'top' journals in a given field just because they don't offer gold Open Access. Rigorous peer review is still crucial for the maintenance of quality, and it is under pressure due to journals being overloaded. Not all OA journals are equal by any means, so DORA needs to be applied judiciously. Good international benchmarking of publications continues to be important, and the high quality of publications can be supported by supportive internal peer review based on reading. The best way to ensure that publications are as good as they can be is not to over publish and for authors to spend time responding to both internal and external peer review.

Post publication assessment seems likely to continue as an aspect of assessment and in this context, we were introduced to the JYU Bibliometric Analysis by the Open Science Centre that has been developed to determine the volume of the publications, open access publications and international collaborations in published outputs. These analyses were very useful in identifying disciplinary differences and publication language, type and volume trends in the different faculties but also showing the general progress with open access and papers co-published with international collaborators (with Sciences and Sport & Health the top faculties, both exceeding 60% of international co-published outputs). The JYU bibliometric analysis also examined the coverage of publications in different indexing services and fields of science (that show differences between the assessment units as expected), top collaborating countries and universities and the academic and policy citation impact of publications. The JYU collaboration analysis is useful but only at faculty level and the policy citation impact was considered by the Panel as an excellent metric to assess the influence of policy and practice by JYU research using the Overton toolkit that indexes citations in policy documents. The assessment of academic citation impact was based on a new metric, the Co-citation Percentile Rank (CPR), that was developed by the Open Science Centre team at the University of Jyväskylä (Seppänen et al., 2022, Scientometrics 127:3523–3541; https://doi.org/10.1007/ s11192-022-04393-8). Although the CPR does have some advantages over traditional academic citation impact metrics such as journal quality ranks, impact factors, h-index etc, it also has some flaws related to interdisciplinary influences, and most notably the distortion of rankings in the co-citation set by methodological papers that are cited extensively due their methodological nature, especially in natural sciences, medicine and engineering as discussed by Seppänen et al. (2022). A number of different citation metrics (as opposed to a single metric given that all have different flaws) must be included in a general bibliometric analysis. However, the assessment of publication quality should always be based on peer review by experts in the academic field or discipline with any bibliometric analysis used only as a supplementary and optional input to inform such peer review.

Regarding publication language, we understand that English language support is available to all Doctoral Students, but to other academics only if resources are available. While we recognise that in some contexts publishing in Finnish for a national audience is crucial, English language support is essential if all researchers are to be able to produce high quality outputs in internationally read journals.

Recommendations

1. That the implications of DORA are clarified across the University and that its impact is kept under review while continuing to stress the importance of internal and external peer review.
2. That central research resources are earmarked to support any researchers who require support with writing funding applications and publications in English. This will ensure equity as it seems not all Faculties have sufficient resource available.
3. Assessment of publication quality should always be based on peer review by experts in the academic field or discipline with any general bibliometric analysis based on a range of metrics used only as a supplementary and optional input to inform peer review by experts.

4.3.8 Doctoral training

While the Graduate School does appear to have developed further since the RAE in 2018, it has not had the impact that we might have anticipated, and this panel would reiterate most of the points made by their predecessors.

In many areas there are quite high numbers of doctoral students, but many of them have been registered for a PhD for a long time and are inactive with little sign of completing. There seems to be a view that this is inevitable and that they have a right to continue, but other Finnish universities are changing the regulations. Having high numbers and low completion rates does no look good in JYUs statistics and some of these students do take up academic and administrative time.

Many of the Doctoral students that we met seemed to be more isolated than would be expected in a multi-campus university, even allowing for the fact that doing a PhD can be a lonely process at times. There was a definite distinction between students who were attached to research projects or groups who, in the main, felt that they had a home, and those, especially non-Finnish students who only had their supervisors and advisors to support them. There was yet another perceived division between students with funding and those without. A worryingly high number of the students we met said they knew nothing about the University Graduate School. It may be that they didn't realise the context of the centrally provided training, but it does suggest that the Graduate School is lacking in profile and status. The majority of students said that they were happy with their supervision and the support they received at discipline level, but they were not in a position to realise what they were missing by not being part of a wider cross-disciplinary

community of early career scholars. The JYU website is somewhat confusing with regard to the Graduate School even the name is confusing as it is tautological to have both Graduate and Doctoral in the title and students can be forgiven for their blank looks when we asked them about it.

Recommendations

1. While we consider it appropriate that the Vice Rector for Research should have ultimate responsibility of the University Graduate School – this is a very busy role, and the next level of support is the coordinator in Student and Academic Services. We recommend that an Academic be appointed as Dean of the JYU Graduate School as soon as is feasible and a sub-group of the research committee established to support them. The website then needs to be updated with information about the positive aspects of belonging to the Graduate School community. Following this more attention needs to be given to the kinds of training and other activities – academic and social – offered by JYUGS. There are many good examples of University-wide Graduate Schools around Europe, and beyond, and links should be made in order to enable students to feel part of a wider academic community. We suggest that in the medium term the Faculty Graduate School title fades away and, that while support continues to be offered at the level of disciplines and grouping of disciplines, any course currently organised at Faculty level are coordinated by JYUGS and are open to students across the University. JYU is too small to have Doctoral training at three levels and there are many gains to be made by centralising the leadership and administration, while leaving the supervision in the appropriate place for the research being undertaken. JYUGS should become a key plank in the University's internationalisation strategy.
2. While, as far as we could tell, the central training on offer is appropriate, it is quite limited and not, yet, fully understood or even know about. We would like more training options in English and also more preparation for careers both in academia and beyond. The latter is particularly important as not all those with a JYU doctorate will be able to pursue a University career and other Finnish institutions have a good record of appointing those with PhDs. We would also encourage JYUGS to be a space for academic debate and the development of inter and transdisciplinary ideas and ultimately, projects.
3. Training and support for doctoral students across disciplines and groups of cognate disciplines should be strengthened at either Faculty of Department

level as appropriate as one size does not necessarily fit all, but some of these courses could also be offered more widely.

4. The University needs to make a strategic decision about 'ghost' students i.e., those who are registered for a PhD, but have no funding and are not really involved and seem unlikely to complete. These non-completions count against JYU and 'hanging by a thread' does the students no service. Firm completion dates need to be set and if they are not met then de-registration, is the appropriate solution. In parallel, JYU should consider creating a part-time registration option for those wishing to complete a doctorate who are working full-time with a longer, but nevertheless firm registration period – we would recommend six years. We also recommend a progress review, by a panel set up by the Graduate School, for each doctoral candidate after 18 months of registration with de registration as an option if no progress has been made without good reason – this would mee that there would not be 'ghost' students in the future.
5. In addition, JYU could consider developing a range of 'Professional Doctorates' for those working full-time in professional areas linked to the University's research strengths. Education is the obvious starting point, but Business, Social Work and Health and IT are also possibilities. Such doctoral schemes are well developed elsewhere so there is no shortage of models, and also advice, available.

4.3.9 Societal impact of research

JYU has a strong history of good connections with external organisations within the region and beyond and given its disciplinary mix and commitment, has the potential for further development across a wider range of partners and contexts. The panel encountered some very good examples of impact and knowledge transfer in the self-assessment reports and in our discussions with staff. Much of the research undertaken at JYU has the potential for impact in the areas of public and social policy and also in health, sport, business, technical and scientific contexts. It is important that the University has a Societal Impact Strategy, but this is only a starting point and needs to be regularly reviewed especially with regard to challenging researchers to ensure that their research outcomes have global reach, where applicable, as well as national significance.

Recommendations

1. Refresh Impact Strategy and ensure that the Faculties all have strategies which are appropriate for their fields but also relate to the wider strategy.
2. Offer training and support for staff (possibly reduced teaching) who undertake extra impact and outreach work which is in-keeping with the strategy.
3. Encourage the further development of relationships and partnerships with public and private bodies to support societal impact.
4. Encourage publication in widely read periodicals and professional magazines and the development of podcasts and social media.

4.3.10 Future developments

It is important for a medium sized university not to do too many things at once, but equally important not to focus so narrowly that embryonic new ideas have no chance to grow, and those who are not in the most successful areas feel diminished and lose ambition. This is a tight rope to walk. JYU has the distinct advantage of having committed staff, most of whom work on what is a compact campus. This makes good communication and the development of an even stronger identity much easier. It also makes multi/inter disciplinary research much more feasible. JYU is already quite good at cross discipline/Faculty links, but these could be further developed. The actual ideas need to grow from academic ideas but ensuring that there is sufficient support, and no barriers is very important. It is also important to have clear lines of communication and responsibility, for everyone to know who makes which decisions and for decisions to be made and outcomes expedited as speedily as possible. The panel appreciates that there has been a tendency, across the University sector, to centralise administrative and professional services. This can produce a much better breadth of experience and career structure for the staff concerned as well as sometimes producing cost savings. However, some universities which went down this road some years ago have moved some academic support staff closer to the academic activity and some have created Faculty administration teams – sometimes shared across two small Faculties. Centralisation always produces complaints from academics that they no longer have the support they need and are doing much more administration themselves, and to some extent this is an inevitable part of an adjustment process. Nevertheless, it is important to re-evaluate such changes in order to ascertain where these complaints might be

justified and consider de-centralised administrative services based in Faculties, at least in some key areas such research and grant support.

Recommendations

1. Develop a more distinctive identity for JYU – this means working on the overall image and brand of the University and the ways in which it is expressed via the Website and through all communications internal and external. This is not merely window dressing as it can be a way of bringing the whole University community together to discuss what is special and important about JYU, but it would entail engaging specialist expert advice as well.
2. Alongside the branding process decide on how to present the University's profile in order to further highlight its strengths – Education, Gerontology, Sport, Music, Ecology and IT/Information Systems, for example. Decide if there are other areas which can be developed to an international level. This should be done without designating the rest of the University as second class. It is not wise to try to do too many things at once but nevertheless the overall discipline mix is important and an interdisciplinary work which includes areas of strength and those not yet at the same level internationally can be a good way to develop.
3. Ensure that all research areas benchmarked regularly and appropriately against key international 'centres' in their field.
4. Consider the development of a University research leave scheme for active and successful academics who have an excellent research plan and high chances of funding success.
5. Review the role and structure of the Faculties and ensure that if the current structure is to continue the Deans are better connected with the senior team.
6. Review the structure of the administration and professional services in order to ascertain whether they are effective and fit for purpose and potentially where some administrative/professional roles which support research might be devolved to the Faculty level while still being connected to, and managed within, the central administration.

4.4 Faculty of Humanities and Social Sciences

4.4.1 Introductory remarks

The Faculty of Humanities and Social Sciences is relatively young, having been established in 2017, when the Department of Social Sciences and Philosophy was merged with the Faculty of Humanities. The previous research assessment of Jyväskylä University (JYU) was in 2018, only one year after the merger; hence this research assessment is the first for this new combined Faculty. The 2018 research assessment focused on the assessment of the departments, but now the assessment focuses on the Faculty as a whole. In addition, the Faculty is responsible for the social work unit within Kokkola University Consortium Chydenius (KYC).

The Faculty is a large academic unit, comprising five large departments, dozens of disciplines, approximately 400 staff members, about 500 doctoral students, and hundreds of research projects. The five departments are the following:

1. Department of History and Ethnology (DHE)
2. Department of Language and Communication Studies (LaCoS)
3. Department of Music, Art and Culture Studies (MACS)
4. Department of Social Sciences and Philosophy (DSSP)
5. Centre for Applied Language Studies (CALS)

Organizationally, KYC is an independent Faculty-level institution of JYU; however, it conducts its scientific activities in close collaboration with the Faculty, especially in doctoral training. KYC also shares the multidisciplinary research focus of the Faculty.

The management and leadership of research of the Faculty of Humanities and Social Sciences are outlined in the self-assessment and involve the following:

- A Dean is responsible for the quality of research, education and societal interaction at the Faculty.
- A Faculty Council evaluates and develops the education, research and societal interaction of the Faculty and makes related proposals, initiatives and statements. The members are elected for four years at a time and represent 3 different groups:
    - Professors
    - other teaching and research personnel, and
    - other personnel and students.

– A Head of Department is responsible for the quality of research, education and societal interaction at the department. Besides the Head of Department, the overall management of the departments also involves two Vice Heads:
    - one is responsible for education at the Bachelor and Master's level, and
    - the other one oversees research and innovation including doctoral training.

In CALS, which is a research-intensive department, the Vice Head of Education is responsible for doctoral training.

The Research Steering Group is an important organizational body with regard to the implementation of the Faculty's strategy to create a research environment where high-quality research can be produced, and research renewed. The Research Steering Group of the Faculty comprises:

– All Vice Heads of Research of the Departments
– the Vice Dean (Responsible for Research and Innovation) and
– the Coordinator of Doctoral Studies.

The Steering Group has many tasks, with its most important being to discuss and manage strategic and operational research issues at the Faculty level, as noted in the self-assessment. The Steering Group also furthers the implementation of the University Strategy, gathers relevant data on research performance and societal interaction, gathers and manages feedback from departments, researchers, and research groups, develops joint activities and monitors how strategic goals are achieved. Organizationally, the Research Steering Group is positioned between the departments, the Faculty, and the University Research Council as it gathers and communicates messages and initiatives from the grassroot level, but also oversees and manages University and Faculty-level research strategies.

In general, the Faculty's research profile and strategy have been to move from individual projects to more multidisciplinary research clusters. The Faculty has many strengths yet faces many challenges now and, in the years, to come. This assessment aims to highlight areas that the Faculty should consider in its strategic planning as it goes forward, and to give recommendations that could contribute to enhancing the Faculty as an outstanding institution of research and teaching.

4.4.2 General assessment

The Faculty has a number of excellent research units, teams, and groups, with several of them enjoying international status. The research profile of the Faculty is

to focus on multidisciplinary research and education in culture, the arts, history, languages and communication as well as social sciences and philosophy. This is not a very distinct profile for the Faculty as such, rather it is the result of the five Departments having their own research strategies in which they define profile themes and research areas. In general, the Faculty appears to lack an overall research strategy from 'above'. The organization of the governance of research at the Faculty appears opaque (some called it 'messy' during site visit interviews). In particular the role and function of the Research Steering Group is unclear, as is its accountability in regard to whom or which body the Group reports to.

The current research management approach is in essence 'bottom up', allowing a good deal of freedom for individual researchers and their projects. The vision of the Faculty is to promote co-operation in the humanities and social sciences (section 1.4 of self-assessment report). In this, the Faculty sees its role as enabling its departments to conduct high-level research. This was confirmed in the interviews during which also the Dean agreed that the Faculty has a facilitating (instead of a steering) role. Indeed, some researchers during the site visit expressed the desire to have a Faculty that was a 'facilitator' of the lower levels' strategies and visions for research. To sustain a vision of the future, the Faculty needs to demonstrate more leadership. A natural and effective way of accomplishing this would be to develop and implement a well-defined research strategy.

The Faculty highlights its focus on multidisciplinary research in a number of areas, including:

- Societal, cultural and linguistic change processes
- Wellbeing, inclusion and social justice

Each of the Departments presents a number of their own focal research areas in the self-assessment report. This gives overall the impression of a mosaic where it is somewhat difficult to identify the key research profile areas of the Faculty as a whole. This might be understandable given the recent history (and size) of the Faculty, but it also serves as an indication of a lack of a research strategy or a strategic research plan for the Faculty as a whole.

When it comes to the Faculty's focus on multidisciplinary research, it is of relevance that the self-assessment report (p. 6) states that "There is a need to strengthen the planning of cross-disciplinary research initiatives over the departmental borders." Why there is a need and what the Faculty is doing to satisfy the need in practice is not further elaborated in the report, and was also not convincingly explained during the interviews. Given the emphasis on multidisciplinary research in the Faculty's research profile, this should be addressed

more clearly in the Faculty's development plan, where in the current version a number of measures are presented to strengthen interdisciplinarity, but these do not include measures to strengthen cross-departmental research initiatives.

The research performance of the Faculty is on the whole good, although the bibliometric analyses show differences in publication output across the Departments. The overall funding situation of the Faculty in absolute terms has stayed stable since 2018 (both core and complementary funding). This implies that the funding situation is in practice deteriorating (given inflation and rising costs). Strong drivers for the Faculty's research activities are, on the one hand, the externally funded research projects (incl. the Academy of Finland and various ERC projects), and on the other hand, a number of Centres of Excellence.

The Faculty's infrastructure is overall of high quality, current, and relevant in enabling high quality research, amongst other things, in cognitive music research, and game studies.

Personnel composition. The Faculty's personnel comprise a variety of researchers at different stages of their career:

I. A group of senior academic staff in tenured (or tenure track) positions who are productive, with several at the international forefront of their research area of specialisation (e.g., in cognitive music research). Notably, not all of the departments have tenure track positions, for example, CALS.
II. A group of academic staff who are at the Faculty for a relatively long term, are in a tenured position (e.g., as senior lecturer), but who do not have career advancement prospects (not eligible for tenure track positions). No career advancement prospects can lead to stagnation and frustration.
III. Early career researchers/academic staff many of whom seem rather lost in their stage of career and indicate that they are not proactively supported in their stage of career by their Faculty or Department. Any career support that the staff in this group receives is from supervisors/project leaders. There was a feeling of 'sink or swim' among some doctoral students who were not part of funded research projects while those who were part of such projects were, in general, satisfied with their situation. The representatives of this group that the panel interviewed expressed a certain level of frustration and a number of them indicated that they assumed that their future career would not be at the Faculty.
IV. Finally, the Faculty has a relatively large group of grant researchers.

Short term contracts (often a repeated sequence of short-term contracts for some researchers) contribute to a general lack of well-being among research staff members. There is a large number of doctoral students, many of whom are so-called 'ghost' students in that they are registered yet they do not make notable progress in their work. This gives an imbalanced picture of the Faculty's cohort of doctoral students in training.

The response to the COVID-19 pandemic has been good, increasing the follow-up and remote activities and the investment in 2021–2022 in an inbound visitor programme to compensate for the limited outward mobility during the worst months of the pandemic.

4.4.3 Research leadership

Research leadership is formally in place at both the Faculty and Departmental levels, as noted above, but in practice this formal leadership (esp. at the Faculty level) is seen as having a mainly facilitating role. Academic research leadership is ostensibly mainly from Centre/project leaders and supervisors. The Research Steering Group (at the Faculty level and in four of five Departments) is an important research leadership body; however, it never became fully clear what the formal mandate and role of this group is (neither at the Faculty nor departmental levels), nor how the accountability of this group works in practice.

The follow up and evaluations of research outcomes are conducted at the Faculty but largely within the structures and processes introduced at the central University level. This gives the impression of a mainly routine or symbolic type of follow-up, which most likely does not take the specific circumstances of individual staff at the Faculty into account. The self-assessment report indicated the importance of follow up groups for doctoral researchers. However, a number of the doctoral researchers interviewed indicated that they had not met their follow up group in the past 12 to 18 months.

The vision of Faculty leadership with respect to research renewal is somewhat disappointing in the sense that it claims that research renewal is difficult to manage at the Faculty and department levels since it is strongly dependent on success in the competition for external research funding. This is clearly a vision of a Faculty leadership that sees the Faculty as a facilitator, and not as a strategic actor. This is also visible in the Development Plan that does not address research renewal. In this one could expect the Faculty leadership to be more strategic and proactive, for

example, by identifying key profile areas of the Faculty, and earmarking strategic Faculty funds for enhancing research capacity and output in these areas.

There were concerns expressed about the amount of bureaucracy in the past few years, and the difficulty to get more people involved. On the other hand, the preparation of the preliminary assessment report has been an important moment of engagement for a larger community.

Strengths

- The Faculty's main research foci on a whole are formulated convincingly, and they seem to cover the main lines of the Faculty's multifarious research sharply and succinctly.
- The Faculty's main goals and its focus on multidisciplinary are strong and clearly stated in strategic terms.

Weaknesses

- It is not quite clear where the strategic main weight should lie it looks like having settled at the department level rather than with the Faculty leadership.
- Given the emphasis on multidisciplinary research in the Faculty's research profile, this should be addressed more clearly in the Faculty's Development Plan. There measures are presented to strengthen interdisciplinarity, but these do not include measures to strengthen cross-departmental research initiatives.
- There is no apparent comparison with similar universities that could function as benchmarks.
- Unclear expectations about criteria for advancing in the tenure track system and uncertainty about when new positions will be announced and for which units.
- Unclear publication policy

Threats

- If the main weight of strategic research leadership lies with the departments, any focused Faculty research strategy may fall apart and not be possible to implement according to plan.
- Funding for multidisciplinary research has been slow to take off with funders despite avowed goals; it may not be as easy to obtain as the funding agencies make out.
- Research environments are changing on many fronts now, some with important consequences.
- Too strong focus on national standards and the DORA declaration. Although it promotes fair and transparent evaluation practices in academic research,

the in-house system for follow-up of research impact risks being too narrow (university and national level only).

Recommendations

1. Clarify the nature and role of strategic research leadership, that is, make the division of labour and responsibilities between Faculty, Departmental, research group and individual researcher level with respect to research leadership explicit and transparent.
2. Make careful plans for obtaining funding for multidisciplinary research, given its known challenges, and keep an eye on the ongoing changes implemented in its favour. Attention should be given to cross-departmental research initiatives.
3. Support structures in view of the changing research environment may be in order.
4. Clearer communication about expectations on performance in the tenure track system and a long-term plan for announcement of new positions.

4.4.4 Academic culture

The academic culture is basically non-hierarchical, with a large degree of academic freedom. According to the self-assessment report, the Faculty aims to maintain a multidisciplinary and non-hierarchical academic culture in which academic freedom is highly valued. However, some of the early career researchers interviewed indicated that academic freedom at the Faculty for them means that they have more freedom than they would like to have. They would prefer more steering and guidance from above.

When it comes to academic culture, the early career researchers interviewed indicated that they would prefer a more integrated structure instead of the current parallel lines that they argue break down the academic community at the Faculty: doctoral students on projects, doctoral students with JYU funding, and independent doctoral students. The senior researchers interviewed, on the other hand, indicated that for them the Department is the community.

Social justice, equality and equity, as well as diversity, are recognized as important elements for the development of a positive academic culture at the Faculty. However, it is also acknowledged that a lot of work needs to be done to strengthen the academic culture at the Faculty with respect to these components. Strikingly, the Development Plan does not explicitly present measures for

strengthening the academic culture, neither in general, nor with respect to these components.

While the Faculty's vision highlights its intended contributions to a sustainable society, the notion of sustainability and how it is expected to relate to the Faculty's academic culture is not addressed in the self-assessment report, nor in the Development Plan.

There is room for a more advanced use of digital technologies in strengthening academic culture (e.g., series of guest lectures by global top scholars).

On the other hand, overall, the Faculty has made laudable efforts to monitor the well-being of its staff during the COVID-19 pandemic. This has made it possible to address negative impacts among part of the staff (esp. early career researchers).

The large number of grant researchers forms a challenge for the Faculty. While the Faculty is aware of these challenges, it remains difficult (within the framework conditions for Finnish universities) to develop an effective approach aimed at solving the structural problems of grant researchers, which represent various forms of exclusion, including difficulties in access to health care services and inflexible IT services. The Faculty has to be complimented for the measures introduced to improve the situation of its grant researchers, even though the measures proposed in the Development Plan could have been more elaborated and bolder.

Internationalization and diversity were topics addressed at the meetings in regard to recruiting and hosting international researchers. One issue that was raised was whether and to what extent the use of Finnish is a barrier to the inclusion of international staff. While messages to staff are in both languages and the use of English is considered in meetings, with, as a minimum, PowerPoint slides being in English discussion would still usually be in Finnish. As a consequence, non-Finnish speaking academic staff are likely contribute less to work in committees and working groups, unless and until their Finnish reaches the necessary standard. This not only means that they become less integrated into the local working environment but also that their inputs in the form of valuable knowledge and information may be lost. Language, however, is not the only issue involved in integrating international personnel and making them feel welcome, regardless of how long they will be staying; there are other academic cultural issues as well that need to be considered so that newcomers may feel welcomed, included and acquire a sense of belonging.

Strengths

- Many people seem happy with their work situations.
- The variety of formal and informal organisational structures involves many people from different disciplines and career stages.

- From the interviews, an increased sense of community in the past few years was generally perceived, even though for some categories, such as doctoral students, there are still large margins for necessary improvement.
- The Faculty is aware that it needs to address diversity.
- Gender balance among research and teaching personnel appears to be good.

Weaknesses

- To some extent, some senior researchers feel held back in their career paths, because for those not eligible for tenure track, no advancement is in sight. Moreover, not all senior researchers have permanent positions, which further undermines their feeling of belonging.
- From the interviews, a general concern emerged about the precarity of working contracts.
- Reduced diversity among the staff members due to language challenges; however, academic culture comprises more than language.

Threats

- Perception of stagnation in career paths may cause frustration among capable staff, which may lead to either people leaving or reducing their work output due to a lack of motivation.
- The growing workload among senior staff may compromise their well-being.

Recommendations

1. Secure research possibilities for all academic staff, even basically teaching staff, so that teaching is truly research based.
2. Remove structural obstacles from the career paths of academic staff, perhaps by opening full professorships for competition.
3. Enhance the mentoring system for early-stage researchers and minoritized members of the academic community, also in view of increasing their percentage in future recruitments.
4. While the precarity of working conditions could and should be seen as structural in the early stages of the academic career, more efforts in the direction of mentoring and well-being would surely help to alleviate this critical aspect.
5. Work with the University leadership to restore a sabbatical system.
6. Devise steps for enhancing an academic culture that assists and includes international staff.

4.4.5 Recruitment

The recruitment policy of the Faculty is strongly embedded in the "University of Jyväskylä Equality Plan 2022–2023". This indicates the Faculty's desire to make sure that its recruitment processes are transparent and provide equal opportunities to all applicants. Overall, the Faculty's recruitment policy and practice seems to work well for positions in career stages III and IV. The Faculty is apparently an attractive employer especially for senior career researchers.

As in other JYU Faculties, this Faculty's tenure track system blocks career advancement opportunities for part of the senior staff. The early career researchers that were interviewed did not feel that the Faculty has a recruitment strategy including them. It was claimed that there is no information available, nor is there any Faculty policy in place, for supporting early career researchers in the next steps of their career, when it comes to the requirements for postdoctoral positions, or access to tenure track positions.

Strengths

- Transparency, gender balance and equality seem well observed in recruitment; calls are open as a rule.
- The recruitment policy appears focused in view of strategic objectives.

Weaknesses

- The proportion of permanent staff is rather low and shows no signs of rising. Non-permanent senior staff may suffer from reduced well-being.
- The Faculty's international recruitment policy is somewhat inconsistent: on the one hand, positions are opened to international candidates; on the other hand, international applicants are not seen quite welcome, since they cannot teach in Finnish. However, the proportion of international research staff is higher in the junior than in the senior categories, which may augur change.
- Research renewal through replacing staff in the same age group by a new lot of tenure trackers, again the same age group, may renew the problem.

Threats

- The model for tenure track in its current form.
- The Faculty may lose out in the competition for international students if it cannot offer enough teaching in English, say at the Master's level.
- The Faculty may not appear attractive to international researchers if a welcoming academic culture is not cultivated.

Recommendations

1. Develop a strategy to reduce temporary contracts, aiming at more permanent contracts.
2. Set clear targets for international recruitment, appropriate to the disciplines.
3. Consistency in international recruitment: not to advertise internationally, or accept that international recruits do not initially speak Finnish.
4. Review the pros and cons of the tenure track model and decide what needs to be done to make it viable.
5. Devise a personnel diversity strategy.
6. Attend to filling funding gaps for doctoral researchers and early career researchers.

4.4.6 Career and mobility

From the interviews, a general sense of concern emerged due to the introduction of tenure-track positions, mostly aimed at quite young scholars, that seems to leave senior lecturers or even senior researchers very little possibility to aspire to career development.

There is a need for a more organized form of mentoring for postdocs. While various forms of mentoring provided for researchers are regarded to be a key strength of the Faculty (see self-assessment report, p. 17), the Faculty acknowledges that career development activities, especially for early career researchers, could be improved and increased. The Faculty currently lacks a sabbatical system, which is a serious weakness in its personnel policy practice. There is a mentoring system for supporting staff in transitions in their career, but many of the early career researchers interviewed indicated that this system had not reached them. Consequently, these interviewees were rather sceptical about the career support practices of the Faculty.

Information on funding possibilities and career planning are available at the Research and Innovation Services of JYU. However, easily accessible basic information on career planning is claimed to be lacking at the Faculty.

The teaching load of university teachers is in practice so heavy that it leaves little or no time for research. This also applies to some of the postdoctoral staff, which forms a major barrier for their further academic career.

There is a major imbalance in the Faculty between the number of doctoral graduates and the number of postdoctoral positions. This is addressed in the Development Plan, but only in very general terms.

The Faculty leadership seems to be very positive about the tenure track system, even though it blocks career advancement opportunities for part of the senior staff.

There is support for international mobility (incoming and outgoing) at the Faculty and Departments, but also information about these support options might not be as easily accessible as one might expect. In addition, the Faculty acknowledges that the funding situation is such that mobility support is not available for all doctoral students.

The number of incoming and outgoing mobilities of academic staff was in 2022 not yet at the pre-pandemic level (2018/19). There were 19 incoming mobility stays at the Faculty in 2022, compared to 35 in 2019; and 54 outgoing mobilities, compared to 126 in 2019. The most common length of outgoing mobility is between 5 days and 1 month.

In the Development Plan, the Faculty indicates that it wants to use the opportunities offered by FORTHEM (the European University alliance of which JYU is member) to increase the number of short-term staff mobilities.

Strengths

- International researcher mobility to JYU seems fairly lively.
- Mentoring systems are in place and appear helpful.

Weaknesses

- Not all junior researchers seem to find opportunities for international research periods away from JYU.
- International exchange visits are mostly very short.
- Grant researchers' position is unduly precarious. Given their importance to the research output, this requires more attention.

Threats

- Talented researchers may get disillusioned with the opportunities offered by an academic career.
- The tenure track system blocks career advancement opportunities for part of the senior staff.

Recommendations

1. Consider helping junior researchers fill gaps in their funding; for example, when they have completed their theses and intend to pursue academic careers. International students may need special attention.
2. Develop a sabbatical system for all academic staff.
3. Reconsider the tenure track system in light of career development for already employed researchers.

4.4.7 Infrastructure

The Faculty of Humanities and Social Sciences at JYU is rather unique in housing top-level laboratories for innovative and experimental research. There are three top-level laboratories: cognitive and psychological musicology, Game studies, and the Multimedia Studio. In addition to these laboratories, the Faculty's infrastructure also includes collections, archives and scientific data; computing systems and communication networks and other research and innovation infrastructure that is open to external users. This includes parts of the National Research Infrastructure for Social Sciences and Humanities, the FIN-CLARIAH consortium, the Corpus of Finnish Sign Language, and National Certificates of Language Proficiency.

One of the Faculty's distinguishing features is that more experimental work is carried out and well-equipped laboratories maintained than is characteristic of the humanities and social sciences fields generally. The Faculty seems to continue playing an active role in the national consortia for research infrastructure in the humanities and social sciences domains.

The Faculty's infrastructure is overall of high quality, up to date, and relevant in enabling high quality research, amongst other things, in cognitive music research, and game studies. The music research laboratories were updated in early 2022. The panel had the pleasure of being invited to a demonstration in one of these laboratories, and a demonstration of the GraphoLearn game.

There is an understanding among the Faculty leadership that communication about the infrastructure (from laboratories to data management) has to be improved in order to make sure that a wider group of researchers (including doctoral researchers and grant researchers) will use the infrastructure. However, this issue is not addressed in the Development Plan.

Strengths

- The recently renovated music laboratories and the other sizeable and multifarious research infrastructure serving a variety of aspects of music research constitute a major investment. The University's commitment to funding this infrastructure by 100,000€ annually lends the work a promise of stability and continuation.
- The Faculty's gaming equipment can also be used for other data analysis requiring heavy computing power, which is a major advantage in seeking to meet the increasing need for analysing large databases in many humanities and social sciences fields.

- The studios for mainly teaching in Language and Communication can be used for recording for instance Sign Language data, thus enhancing the important corpus work.
- Both the Finnish and Finland-Swedish sign language corpora are important for research that extends beyond the boundaries of this university.
- The Finnish learner corpus has potential for throwing new light on adult L2 learning.
- There seems to be support staff, such as a coordinator together with technical staff, for running research work in the laboratories.

Weaknesses

- It is not clear exactly how long the University is committed to the funding of the music research infrastructure.
- How far the NC data is available for general research is not clear.
- To make full use of the available infrastructure, extensive research collaboration would be required, and the existence of such collaboration around the infrastructure may not be in place yet in all cases.

Threats

- The expected renovation of the building where the MACS laboratories are located is a threat to a smooth continuation of the important research work carried out therein.
- The extensive data compiled and held in the Faculty may remain underused if there is not sufficient research interest and requisite skills to support its use.

Recommendations

1. Important infrastructure is best utilised in (mostly fairly large) collaborative projects that are jointly planned and shared across institutional boundaries that not only cross Faculty-internal but Faculty external, as well as university-external boundaries. While this seems to be going on in some infrastructure-heavy domains within the Faculty, especially Music labs, it is less obvious in other domains.
2. The availability of the research infrastructure at the Faculty for researchers outside the Faculty and outside the University should be made generally known where relevant. For instance, the databases could benefit from collaborative projects and gain from relevant other databases to enable varied and interesting research.
3. Language support and proofreading for publications is an important infrastructure that requires funding in order to the enhance internationalization of research in publications. While we were told that it is

available to doctoral students the ones, we met did not seem to know about it. It seems that staff can access such support if finances permit, and we would suggest that this be made a priority.

4.4.8 Funding

The core funding and the complementary funding have in absolute terms been stable at the Faculty since 2018, which in practice (because of growing costs, e.g., for energy) means a slight diminishing of the funding situation. As a consequence, the Faculty is strongly encouraging its academic staff to become more active in the external competition for research funding. The Faculty boasts of 5 ERC projects (2 Starting Grants, 3 Consolidator Grants), 3 Centres of Excellence (2 from the Academy of Finland), and a stable share of supplementary funding. Grants per year increased from 1.2 in 2019 to 2.3 in 2020.

External (referred to as supplementary) funding comprised 29%–33% of the total annual budget (in 2018–2022). The by far largest single source of external funding (as measured in the annual use in euros) is the Academy of Finland (ranging from 55%–65% of the total amount of external funding in 2018–22), followed by EU funding (ranging from around 10% to >30%) and various Finnish Ministries, municipalities, and other funders from the public sector (ranging from around 8% to around 15%).

The level of EU funding is moderate (compared to Academy of Finland funding), and includes various ERC projects. Overall, the Faculty has an unclear strategy when it comes to funding opportunities in Pillar II of the EU Framework Programmes (currently HORIZON Europe). Marie Curie Individual Fellowships are a fairly more accessible source of European funding and should be encouraged, not only to attract international young scholars but also as a means for postdocs to have research mobility outside of Finland and thereby enhance their CVs. The funding situation of doctoral education is unclear, with many doctoral students dependent on external stipends and grants. From a funding perspective, the gap between supervisory and infrastructure capacity at the Faculty and the funding situation, on the one hand, and the number of accepted doctoral students is unexplainably large.

The size of the financial reserve (and therefore financial vulnerability) of the Faculty is unclear. The funding challenges of the Faculty are only marginally addressed in the Development Plan.

Strengths

- The level of both internal and external funding has remained stable.

- The level of EU framework funding, including ERC, has grown.
- The university provides adequate support for researchers in search of funding.
- There is some collaboration with the private sector, for example, the GraphoLearn game, which is made available widely through a collaboration with the private sector.

Weaknesses

- Missing versatility in funding sources.
- While collaboration with the private sector is promising, there is room for improvement.
- Necessity to find additional sources of external funding, besides Pillar 1 of Horizon Europe, the Finnish Ministry of Education and Culture and the Academy of Finland.

Threats

- Unpredicted policy changes in the funding agencies most relied on.
- Growing competition under diminishing resources of funding providers.

Recommendations

1. Broaden funding scope and make it strategic also in terms of, for example, how risky vs. established the research is and find relevant funding sources.
2. Think of expanding your collaboration to relevant countries where joint funding sources exist (such as Nordic countries).
3. Strategic funding could be announced not only for planning of research grant proposals, but also for small-scale pilot studies.
4. Strategically organize applications for Marie Curie Individual Fellowships, which are more easily accessible than ERC grants and which can be strategically planned research wise. This can be done through Master classes at JYU for potential candidates who wish to work with current staff. This will also increase international collaboration at the same time that it will generate revenue. There are models for this at Scandinavian universities.

4.4.9 Research collaboration

Internal collaboration among the Departments is good in projects and in the Centres of Excellence. However, there is a need for more structural long-term funding to make sure that the strategic, multidisciplinary collaboration within the Faculty avoids a lack of continuity/sustainability (as is currently the case for most of the internal collaboration in JYU profile areas).

Inter-Faculty collaboration within JYU is strong, and takes place mainly in the School of Resource Wisdom (JYU.Wisdom) and the School of Wellbeing (JYU.Well). There is room for further development of the multidisciplinary research activities within JYU, for example, in the area of sustainable development.

Collaboration in Finland is very strong. Bibliometric analyses show that the most important institutional affiliations for all five departments are with Finnish universities, research institutes and other organizations. This applies especially to the Department of Social Sciences and Philosophy.

The US is the main country for collaboration (in the form of co-authorship) for the Department of Language and Communication Studies; Denmark and Norway are the main countries of collaboration for the Department of Music, Art & Culture Studies; Sweden is the main collaboration country for the Department of History and Ethnology; China, Pakistan, the UK and the USA, are the main countries of collaboration for the Department of Applied Language Studies; and the UK and Norway are the main countries of collaboration for the Department of Social Sciences and Philosophy.

While the Faculty seems to have developed an appropriate strategic understanding of the opportunities offered by FORTHEM (and other strategic university partnerships), it is not clear how far it is proactively using these opportunities.

Furthermore, it is not clear how far international collaboration aimed at applying for EU funding in Horizon Europe Pillar II is part of the current collaboration strategy of the Faculty.

There are important research collaborations going on at a national level (School of Resource Wisdom, School of Wellbeing, Finnish Music Campus, Language Campus). Moreover, there is an increase in multidisciplinary research, also due to the introduction of the Research Steering Group.

In a long-term view, the collaborations with India and Africa are fundamental, also given the demographic trends in Finland (and the other EU Member States).

The FORTHEM European Alliance (at the University level) and its spin-off FIT-FORTHEM open new perspectives of collaboration within Europe that should be exploited as much as possible, also because in the next few years specific EU funding calls might be reserved for the European University Alliances. It can be a positive experience of international collaboration and benchmarking not only for students, researchers and professors, but even for the JYU administrative staff.

Strengths

- Several long-term collaborations

- Strong African collaboration
- Active collaboration both internationally and among Finnish universities
- Intra-university collaboration in some departments is strong. For example, the MACS seems well established in collaboration, and the Language Campus pools resources in an insightful way.
- There are plans to shift collaboration from Russia to eastern Europe for the time being without abandoning Russia in the long term.

Weaknesses

- Considerable variability among departments in collaborative activities, whether international, national, or university internal.
- The strategic goals for international collaboration are unclear: various collaborations exist, but the self-stated development goal names more regions (Asia, Global South). Is the purpose to cover as many parts of the world as possible, or are there guiding principles prioritising some areas or types of university or Faculty?

Threats

- Seeking to cover the world as widely as possible may stretch your resources too thin.

Recommendations

1. Invest in your focus areas for long-term collaborations that do not spread your resources too thin.
2. As in other countries, consider the possibility to open a few distinguished research or teaching positions, to allow the best international scholars to come to Finland, at least temporarily.

4.4.10 Publication

Overall publication output is strong (both academically -in English, and professionally- in Finnish). The number of peer-reviewed scientific articles published by Faculty staff has increased from around 500 (in 2018) to 637 (in 2022). All Departments have contributed to this increase (with the exception of the Department of History and Ethnology): with the Department of Social Sciences and Philosophy showing the strongest increase (an increase of almost 30% in peer-reviewed publications since 2018). The language of publications is very sensitive to as to whether there is a peer-reviewed process or not. This does not happen for monographs, mostly published in English.

There is no clear Faculty publication strategy, but that is not seen as a problem by the staff we interviewed.

There is an international co-authorship profile in part of publications at the Faculty (with 29% having a co-author from outside Finland). This level is the lowest of all JYU Faculties.

There is a clear commitment to, and effectiveness in, using Open Access principles (but not as strong as in some other JYU Faculties). 80% of the Faculty's publications are Open Access.

Strengths

- Open Access publications dominate.
- Support for publication has increased in the last few years.
- A very successful rate of 80% open access publications, given also the subjects covered by the Faculty, has been reached.

Weaknesses

- Relatively low proportion of international collaborative publications.

Threats

- Too strong focus on national standards and the DORA declaration. Although it promotes fair and transparent evaluation practices in academic research, the in-house system for follow-up of research impact risks being too narrow (university and national level only).
- If publication practices modelled on STEM areas are followed in the humanities and social sciences, the Faculty may want to monitor its traditions of single authorship and monographs.

Recommendations

1. Set a clear goal for the level of collaborative international publications.
2. Develop a publication strategy for the Faculty; take a deliberate stand on what your aims are with regard to international collaborative publication, monographs and single authorship. Devise a system of support and incentives to implement the strategy.
3. Promote activities for international as well as co-authored publications.

4.4.11 Doctoral training

The situation with respect to doctoral education at JYU is in general a major area of concern (see the overall recommendations in this report) as a result of various factors some of which especially affect doctoral education in the Faculty, for example, when it comes to:

– The lack of structured financial support for doctoral students
– The lack of easily accessible, transparent and focused information on career support for doctoral students
– The large gap between the total number of doctoral students registered and the number of doctoral graduates per year.

The doctoral education statistics of the Faculty give a quite unfavourable impression in the area of doctoral education, for those people who do not know the Finnish situation well. This impression was confirmed by the doctoral education students the subpanel interviewed. Doctoral education at the Faculty covers a number of divides, including between active doctoral students and inactive (ghost) doctoral students, and between students that receive funding from the Faculty and students that are dependent on external funding. There is also insufficient funding to allow all doctoral students to travel abroad (for conference attendance or study visits).

We also did not get the impression that the Faculty has a structured and transparent course offering for doctoral students (part of the 'academic freedom' of doctoral students). From the interviews, the doctoral students do not feel they belong to the same category, not even the ones among those of the same Faculty. Some of them interact essentially with their supervisor. This is partially due to a lack of representation in the governing bodies and to the nature of the funding they receive. They are encouraged to represent their group in governing bodies; however, no compensation or support is given to do so.

The support to doctoral students for scientific writing, methodology and ethics in research needs to be increased. The self-assessment, furthermore, emphasizes that measures to fund fresh doctoral researchers (0–2 years after graduation) also need to be introduced (p. 12). A strategy may be to link such funding as an incentive for a timely completion of the doctoral dissertation.

Strengths

– The doctoral school can give unity to doctoral training, and also provide representation to doctoral students, who seem to lack a clear slot of representation in the university organisational structure.
– 50% of the PhD dissertations are written in English, indicating a degree of internationalization of the research.

Weaknesses

– The three categories of doctoral students have very different positions within the Faculty structures, groupings and communities.

- It was not quite clear to all doctoral researchers that there was a Faculty doctoral or graduate school. There was no registered sense of belonging to a cohort of doctoral students at the doctoral school.
- The number of registered doctoral researchers is disproportionate to the number of completed doctorates per annum, and even the number receiving funding.
- Completion times are far longer than the stated goal.

Threats

- Gaps in doctoral funding can lead to inefficiency in doctoral studies and reduced well-being in doctoral researchers.
- If doctoral researchers do not have equal possibilities of security and continuation, this may undermine their sense of belonging and thereby well-being.
- Lack of institutionalized representation in the Faculty Council for doctoral students.
- Some doctoral students want to teach because they need funding/money, but this slows down their progress with the degree.

Recommendations

1. The policies and support systems with regard to the three categories of doctoral researchers should be made relevant and clear to each category. Yet all doctoral researchers should be made aware of, and included in the Faculty Doctoral School, and relevant research communities in the Faculty.
2. There are good practices in some departments; these could be shared across the doctoral school.
3. Notwithstanding the Finnish law, which ensures the right to defend the PhD thesis with no time limitation, there should be a clear difference in terms of rights, duties and representation between “ghost” doctoral students and the active ones, possibly using as criterion the time elapsed from their entrance into the program.
4. Implement a follow-up structure of the doctoral school that better reflects the reality of doctoral students’ participation in the programs, and facilitates strategic decision-making, for example, by presenting the numbers for the full-time doctoral students in one group and part-time doctoral students in another.
5. When it comes to figures, it is the number of most active doctoral students that are relevant for the evaluation of the PhD program, and the difference between those who have a grant and those who do not should be blurred as

much as possible. In this connection, a fixed, yearly, amount of support for travel should be granted to all doctoral students, independently of their sub-category, at least to those who are actively present at JYU and engaged in research.

6. A representation of doctoral students should be granted, both at the Department and the Faculty levels, and some incentive and reward for this active participation should be considered.
7. In connection with the long time elapsed from the entrance into the program to the submission of the thesis, which adversely affects future career perspectives, a dedicated fund for fresh doctoral students, thought also as an incentive not to delay the time of the thesis defence, should be considered.

4.4.12 Societal impact of research

The Faculty has its own Faculty societal impact strategy aiming at predicting and solving significant social problems and providing research-based information and new practices to support political and administrative decision-making and the activities of non-governmental organizations. It is somewhat confusing that the Faculty uses societal impact, social engagement and societal interaction to some extent as synonyms. It can be recommended to do justice to the difference between the three in the Faculty strategy for its relationship with society.

The Faculty's research is highly societally relevant and is likely to have a societal impact in various sectors. The Faculty (and its Departments) has a large and active set of collaboration networks with many key public Finnish organizations.

The public outreach activities of the Faculty are multiple, and range from press releases and newsletters, social media presence, and webinars, to the Faculty's sustained co-operation with various governmental organizations and NGOs.

Even though the societal impact activities of the Faculty are mainly non-commercial, there are examples of various types of innovation activities, aimed at non-profit applications of research findings. As indicated in the self-assessment report, the emphasis in the Faculty is currently on methodological innovations that may produce toolboxes and algorithms based on open code and available to everyone.

Strengths

- Much activity is directed toward societal impact as well as toward social engagement.

– Publications in Finnish directed at policy makers, stakeholders and the public at large hold a good position in the Faculty's publication profile.
– Several national tasks have been assigned by the Ministry of Education.
– A number of non-academic collaborations increasing the impact in society.

Weaknesses

– Societal impact and social engagement are not clearly distinguished; departments tended to talk about their important nationally assigned tasks, often by the Ministry of Education, while junior researchers were talking about presence in social media.

Threats

– The tasks commissioned by the Ministry of Education may reduce the Faculty's (especially the relevant departments') independence in developing their research in directions that arise from research logic and curiosity-driven research, reducing their work to service research.

Recommendations

1. Faculty members should continue to engage with society through their publications and their involvement as experts at the local, national and international levels.
2. Strengthen strategic cooperation and partnership with NGOs and other stakeholders.
3. Reward the personnel engaged in outreach activities, which will strengthen the incentive to do this work. Since part of the JYU funding from the Ministry of Education is related to technological transfer and outreach, one should try to design a large part of these activities according to the Ministry of Education evaluation criteria.

4.4.13 Development plan

Overall, the development goals are stated clearly, and the proposed actions support them reasonably well, petering out at the end, so little seems to be left for 2026.

The first three years seem to emphasise interdisciplinarity, which is in line with the Faculty's general strategy. The 2023 and 2024 plans stress methodological skills for doctoral researchers. Attending to career transitions and breaks as well as grant researchers' situation is important.

While the Faculty's vision highlights its intended contributions to a sustainable society, the notion of sustainability (for example, the United Nations' Sustainability

Development Goals) and how it is expected to relate to the Faculty's academic culture is not addressed in the self-assessment report, nor in the Development Plan.

The suggested actions are not quite clearly targeted. That is, it is not always obvious for whom the activities are intended. It is not clear what the measures entail – for example, does enhancing working life connections for doctoral students mean support for their finding career paths outside academia, engaging in societal impact or social engagement on behalf of academia, or what?

Many of the recommendations in this assessment figure in the Development Plan. We would like to direct special attention to the plight of the doctoral students, who now in 2023 reiterated the frustrations and insecurities that were present already in 2018, as documented by that assessment.

4.5 Faculty of Information Technology

4.5.1 Introduction

The Faculty is led by its management group with a Research Development team and an Education Development Team and has developed its own organizational structure with five divisions, nine research groups and four profiling areas. The divisions consist of four substantive units (Computational Sciences, Information Systems Science, Learning and Cognitive Sciences, and Software and Communications Engineering) with a fifth division focusing on education and is responsible for the faculty´s masters' and bachelors' programmes in: information systems, mathematical information technology, education technology, engineering, cognitive science, cyber security, and security and strategic analysis, as well as their international programmes in information systems and collective intelligence. There are currently nine research groups under or crossing the divisions: Cognitive Science (COG), Collective Intelligence (COIN), Computing Education Research (CER), Computing, Information Technology and Mathematics (CITM), Empirical Cyber Security and Software Engineering (ECSE), Human and Machine based Intelligence in Learning (Humble), Multi-objective Optimization, Secure Communications Engineering and Signal Processing (SCSP), and Value Creation for Cyber-Physical Systems and Services (CPSS). The profiling areas are Cybersecurity's, decision analytics (DEMO), multidisciplinary research on learning and teaching (MultiLeTe) and emergent work in the digital era (EWIDE).

4.5.2 General assessment

The Faculty educates more than 2600 undergraduate students, 204 doctoral students and employs 131 (FTE) researchers/teachers, resulting in undergraduate student/staff ratio of 15.5 for the year 2022. Of the total number of researchers 70 are at level I, 50 at level II, 20 at level III and 19 at level IV. The proportion of female research and teaching staff is 29% and 38% for doctoral students. The proportion of international staff is 24% for research and teaching, and 25% for doctoral students.

Organizational structure with division and research groups is adequate for the research domain. While at first sight the leadership structure is very complex after discussion and clarification the sub-panel concluded that this self-developed structure is adequate and positive for the research and teaching environments the faculty finds itself in.

The sub-panel was very satisfied with the collaboration and the engagement of faculty and students during the visit, information was obtained about the many Faculty assets and unique strengths, and there was also to an open and frank description of the critical issues and threats. The presentations and sessions were well prepared with a good cross-section of representatives, providing different perspectives. There were useful lab visits which provided additional insight into the diversity and quality of research and researchers in the faculty

- Excellent scientific output
- Highly agile and well positioned in research
- Some excellent long standing and well positioned fields such as DEMO and Cybersecurity, as well as new areas in data science and spectrography as well as quantum computing applications as well as in the renewed development of an Engineering area.

4.5.3 Research leadership

The leadership seemed well respected by the faculty as well as academic staff and demonstrated an open, respectful discussion style within each other.

They handled the academic diversity well: including the various staff levels, the relationship between teaching and research, the different sizes of groups, the management of the present and concern for the future.

They led the faculty successfully through the reorganization and corrected the first attempt to arrive at the present organizational structure, that is judged by all we met as an adequate solution to the challenges in this faculty.

Overall, a good atmosphere as well as general concern for wellbeing was noted.
Recommendations

1. Keep monitoring happiness and wellbeing at work.
2. Avoid developing in too many directions.
3. A clear and explicit quality publication policy is needed.
4. Improve the level of interconnectedness between the research fields.
5. Cooperation with the Business School in the management of technology would open opportunities for large multidisciplinary projects.

4.5.4 Academic culture

Both the leadership and academic staff showed great pride in the research achievements of the faculty overall. The leadership allowed for, and enabled, critical discussions during the visit and thus provided space for critical comments. There

was a positive, open, and respectful culture of academic discussion including about the future development of themes, faculty and staff. There was a respectful interrelationship also between teaching and research We noted curiosity between the departments on all academic levels.

Recommendations

1. Organized serendipity should be encouraged faculty wide: Events and other means for social interaction as well as academic interacting need to be organized in a family friendly way, connecting all levels.
2. Project overheads/ surpluses that come to the faculty budget should be shared with the research groups, recognition of exceptional performances in research, teaching, administration and outreach could be criteria for this. We understand that the Faculty has recently developed a tool to assess the 'profitability' of projects to indicate how project may retain surpluses and provide a mechanism for bridging contracts. We therefore recommend that this process is evaluated thoroughly and if successful then shared with the other Faculties.
3. Improvement of inclusion for international researchers on all level is needed.
4. Connections to other faculties in relation to research and teaching needs to be explicated.

4.5.5 Recruitment

The faculty follows the university's procedures for recruitment as they are expressed on the different levels. For new areas such as Quantum Computing and Engineering there is no experiences on how successful the present measures will be in attracting faculty. Recruitment on the doctoral level is mainly project driven.

4.5.6 Career and mobility

Over the last years the number of researchers and teachers has fallen slightly from 146 FTE in 2018 compared to 131 in 2022. However, the composition between the levels and the percentage of permanent posts has changed. The number of FTEs on each level seen a reduction from 81 to 41 on level I, an increase from 30 to 50 on level II, an increase from 13 to 20 on level III and a slight decrease from 21 to 19 on level IV. The percentage of permanent posts on each level has also changed: from 25% to 2% on level I and from 7% to 47% on level II, with the percentage on level III and IV remining roughly the same. This planned change to an implementation of the tenure track system has influenced the discussion within the faculty and will

have to be carefully managed in the future with regard to the balance of teaching and research-oriented staff.

Mobility

- Faculty members are well recognized and connected at international level, and a certain exchange seems to take place. However, in terms of mobility the number of incoming and outgoing international visits are below the pre-covid numbers. We understand that the University has decreased the funding available for incoming researcher visits and support the proposal that some additional funding is provided at Faculty level.

Careers

- The members of the faculty were united in agreement in their evaluation of the academic career structure seeing it as complex, not obvious to all, and with unclear long-term perspectives - particularly for postdoctoral researchers. Although this latter point did not seem to worry the junior researchers too much, because of the general positive outlook of the field.
- Contract duration for post docs is often short: raises issues in the competition for funds.
- Concern was voiced about whether the tenure track system was adequate, but this seemed to be from a minority at the leadership level.
- The issue of teaching loads was openly and respectfully discussed between the Dean of education and the Dean of research, and they outlined a bottom up /top-down negotiation process.
- With regard to conference participation members of the Faculty seem well represented at national and international conferences. However, there is a lack of transparency about how travel costs are allocated and by whom.

Recommendations

1. New hires, preferably at the assistant level should be allowed time to develop their research with a gradual increase in teaching load with support from experienced teachers.
2. Generally, all researchers should undertake some teaching (Humboldtian model).
3. While there is already a scheme (within the limits of the Faculty budget) for short-term, international, research visits longer ‘sabbaticals’, open to all faculty on long term contracts but awarded only on the basis of a strong research plan, could be extremely helpful for future research development.

4.5.7 Infrastructure

There were no complaints about any lack of research infrastructure. The existing infrastructure was well kept. Doctoral researchers were adequately equipped with IT-tools.

4.5.8 Funding

Overall funding has decreased between 2018 and 2022 from circa 15.5 MEUR to circa 14.2 MEUR with an increase of core funding from 8.5 MEUR to 10.3 MEUR and a decrease in supplementary funding from 6.7 MEUR to 4 MEUR. This latter being mainly due to a decrease in funds obtained from 'Business Finland'. International funding has increased from 380 TEUR to 950 TEUR. The faculty is however successful in establishing new funding opportunities, especially for the enrolment of new students in company related projects driven by 'Business Finland'. With many project opportunities in the IT field and those newer opportunities the Faculty remains optimistic about maintaining its funding levels

Recommendations

1. Carry over of financial balances to the next year should be enabled to allow better balancing between the years, and to provide funding continuity especially for the employment of doctoral student and post doc researchers without other funding.
2. Researchers with their own research awards should be able to keep a good overview of their budget and be able to decide on how to spend the money.

4.5.9 Research collaboration

The members of the faculty are involved in a large number of national and international collaborations. Researchers seem to perceive this global collaboration stance as 'normal' in so much as they perceive interaction with industry as a 'key component' of their impact in relation to both research and education. Groups seem to collaborate well at all levels, they receive international and national grants and are in good contact with industry for IT projects.

The Faculty displays a realistic perspective of the necessary balance between fundamental and applied research.

Recommendations

1. Organized serendipity should be encouraged Faculty wide: Events and other means for social interaction as well as academic interacting need to be organized, in a family friendly way, connecting all levels.

2. Projects overheads/surpluses in the Faculty budget should be shared with the research groups – especially in recognizing exceptional performance.
3. The inclusion of international researchers needs to be improved at all levels.
4. Connections to other faculties on the research and teaching side need to be explicated.

4.5.10 Publication

The faculty prides itself on its research and publication ranking and is successful in reaching its own stated publication goals “Aim to publish at the best possible outlet in your area of research and where your research audience is” with regard to various rankings. A comparison or benchmarking is mainly done by indicating the position on the AIS (Association for Information Systems) list. The number of articles has increased since 2018 and is more than 300, with more than 60% having a co-citation percentile rank better than 30. Regarding collaboration in publications more than 50% have international co-authors, from 56 countries with China and United States leading. The wide topical stance of the faculty is reflected in the optical variety of publications (computer science 67%, Engineering 31% Mathematics 31%, Social Sciences 16%, Business, Management and Accounting 12%, Decision Sciences 11%, Physics and Astronomy 7%, medicine 5% and Neuroscience 5%). The faculty publishes with regard to open access publications the average for peer-reviewed publications is at 77%, partly due to the fact that some publications organs in the management and IS filed do not (yet) support open access.

4.5.11 Doctoral training

The Doctoral programme is concerned with more than 200 students with about 20 annual completions. The enrolment numbers fluctuate between 30 and 40 depending on success of project proposals. Of the 28 new enrolments in 2022 46% were women and 29% international. The doctoral students the subpanel met were satisfied with procedures within the faculty and advice from the research staff, however issues mentioned were short (1 year) contract times. We commend the Faculty’s 1 + 3-year contracts scheme for those students who are funded by JYU as the review after one year should ensure a good level of completion. However, any students with other forms of funding, may need more support and advice. A need was expressed for another coordinator position to handle doctoral student matters better

– General sense of satisfaction

- University Graduate School of the University more or less unknown
- Not much general guidance perceived from the Faculty Doctoral School
- Guidance by research group leader / project manager and division leader is seen as positive

Recommendations

1. The large number of students on the doctoral list should be differentiated between active (with full support) and passive (with advisors in waiting, meaning only interacting when asked).
2. A full-time coordinator is needed.
3. Representation of Doctoral Researchers at the faculty management level

4.5.12 Societal impact of research

The Faculty assesses their social impact by the numbers of IT-capable students educated (even though not all take a degree). The relationship to industry plays a major role in obtaining impact to enhance the attractiveness for the region. No societal impact projects other the technology development and tech transfer, education itself and entrepreneurship were reported.

Recommendations

1. Identify opportunities for societal impact outside of tech development, education and entrepreneurship possibly in collaboration with other university-wide initiatives.

4.5.13 Development plan

The development plan identifies concrete areas for improvement and with AI, Student Dropouts, Sports Information Resource Management addresses relevant areas. The subpanel has identified additional issues that might be considered for further development.

Recommendations

Research Structure and Support

1. There need for better balance between fast moving and emerging topics and long-established topics: strategic decision on what to keep and then to adequately support (for example full prof plus 1 line by faculty plus external grant support).
2. The flexible and agile Faculty composition with fast moving research themes and “breathing” research groups seems adequate for the moment, but should be monitored over time to avoid biases and/or formation of static “super-

groups" (Large groups eating up others, which might nevertheless do excellent research – a good diversity is important).

3. Decision to fund or to not fund activities be made in a timely manner.
4. Calculate the minimal funding for full professorships and maintain for the productive period, thus supplying a sustainable funding for productive research during the whole life cycle and wellbeing in the faculty. Alternatively, merge individual professorships into research group that can provide the minimal funding.
5. Start and End criteria for research groups / research themes or projects need to be defined to reduce for the future further path dependencies.
6. New Research groups should not be exploited with regard to their teaching load but supported to gain enough profile.
7. Stay "focused on breadth and agility" by increasing/maintaining the interconnection between research groups as well as the divisions on a personal level.

Faculty Leadership Actions and Strategy

8. Establish a Faculty internal advisory board for long term structural plan (for example maintain a ten-year personnel development plan).
9. Create an external Faculty advisory board.
10. Identify a variety of indicators (other than funding successes or publications) to measure the successes for the faculty, and let that be self-developed.
11. Perform a friendly benchmark for each research group, what they want to contribute to the global state of knowledge in the next five years and on the long run.
12. Ensure the transparency is stablished/improved and maintained for:

– Decision making processes (for example for funding travel and conference visits) via documentation of processes and protocol
– Teaching load distribution

13. Resources (especially finances)
14. Use of project funds with regard to the responsibilities of the project owner and the division leadership for formal approvement.
15. Manage internationalization purposefully (visits and visitors, teaching in English, publications in English and Finnish.
16. Benchmark against departments and centres outside of Finland.
17. Ensure that all Faculty communication is truly bilingual in Finnish and English.
18. Ensure that role specialization between teaching and research is well - if all members teach and research (in different proportions and over time) and if

in the allocation of tasks is handled flexibly and transparently it will be perceived as fair.

19. Ensure transparency with regard to finances and financial decision making.
20. Decision making processes and outcomes should be clearly documented, with protocols, and be fair and transparent for:
    - Teaching loads
    - Travel and Conference funds
    - Utilization of project funds – it needs to be clear who can make decisions and what needs approval
21. Make a clear decision about the engineering division: what are the expected outcomes how should it be positioned and do not underspecify its charter.
22. Monitor staff to student ratio.
23. Study early leavers of the study programme. Talk to corporations about how to avoid “early hiring away” via part time offerings and introduce part time study programmes, possibly also for doctoral students.

Future Developments

24. Create an external Faculty advisory board.
25. Identify a variety of indicators (other than funding successes or publications) to measure the successes for the faculty, and let that be self-developed.
26. Perform a friendly benchmark for each research group, what they want to contribute to the global state of knowledge in the next five years and on the long run.
27. Carefully consider the development Cooperative university / university education with respect to Lifelong Learning. See for example of the Cooperative State University in Baden-Württemberg, Germany.
28. Set up an “Ideal worlds” task force to increase the faculty´s overall ambition with the broad participation of the faculty in order to:
    - Establish an Optimal faculty group and division structure
29. A map of retirement dates
    - The optimal size of doctoral program
    - Explore the development of new, and the possible retirement of existing, research fields.
    - Compare the research groups with regard to their input/output via a wide net of indicators. Ensure that this is a transparent process to encourage shared ownership and pride.

4.6 Faculty of Education and Psychology & Finnish Institute for Educational Research

4.6.1 Introductory remarks

The Faculty of Education and Psychology and the Finnish Institute for Educational Research (FIER) are separate units in the University of Jyväskylä (JYU) structure, but they are being treated as one unit of assessment in this research assessment exercise. It should be noted that there are considerable differences between them in their basic functions, for example, the Faculty has a high teaching load at both undergraduate, Masters and doctoral levels, while FIER does not have teaching responsibility (although FIER staff participate in the supervision of doctoral students). In turn, FIER conducts nationally and internationally relevant research both as its basic mission and as part of the national tasks assigned to it by the Ministry of Education and Culture. In this report the assessments of the Faculty and FIER are presented separately.

Faculty of Education and Psychology

The Faculty of Education and Psychology (FEP) is an important Faculty within JYU for various historical, societal and political reasons. It is an internationally high performing Faculty when it comes to its research productivity and volume of external research funding.

The Faculty consists of the departments of Education, Teacher Education, Psychology and the University of Jyväskylä Teacher Training School, and has approximately 315 staff members, about 270 doctoral students, and many externally funded research projects.

Furthermore, the Faculty hosts the Methodology Centre for Human Research, and has one Academy of Finland Centre of Excellence (Learning Dynamics and Intervention Research/InterLearn).

The combination of the educational science and psychology departments stimulates innovative research on learning (e.g., in the Jyväskylä Centre for Interdisciplinary Brain Research/CIBR), which makes the Faculty (together with FIER) one of the leading academic units in Europe if not the world in its research profile areas (focused on learning).

The Faculty has the following five key research focus areas:

1. Education, teaching and interventions
2. Psychological and neurocognitive basis of learning

3. Interactive and technology-enhanced learning environments
4. Childhood, family, interaction and wellbeing
5. Wellbeing, learning and interaction at work

Among the key structures for the faculty's research activities are on the one hand the research projects (incl. the ERC project "Pathways to math difficulties -A longitudinal study from birth to school-age), and on the other hand the Centre of Excellence (InterLearn).

The management and leadership of research in the Faculty are outlined in the self-assessment report and involve the following:

- The Dean has the overall responsibility for the governance of research, education and societal interaction at the Faculty. The Dean is assisted by a Vice Dean for Research and a Vice Dean for Education.
- A Faculty Council supports the deanship in its governance responsibility for education, research and societal interaction of the Faculty and makes related proposals, initiatives and statements. The members are elected for four years at a time and represent 3 different groups:
    - Professors
    - Other teaching and research personnel
    - Other personnel and students
- Each Department is led by a Head of Department who is responsible for the governance of research, education and societal engagement/interaction at the Department. The Head of Department is supported a Vice Head for research and the Vice Head for education.

The organisation of the research management structure varies slightly among the departments. At the Department of Teacher Education, the operational research leadership group (including professors, associate professors, two lectures and one doctoral researcher) supports the vice head for research. A similar kind of support group is operating in the Department of Education. In the Department of Psychology, the vice head for research organizes research development with researchers at different stages of their careers (annual Research Forum) and with doctoral supervisors (regular meetings of the Supervisors' College).

In general, the Faculty's research goal is to build, strategically, on its prior strengths, such as excellence in longitudinal developmental research, experimental and intervention research, top level methodological expertise, brain research, innovative process-oriented learning and pedagogical research and multidisciplinary approaches to further enhance its national and international impact. This is reflected in the status of the Faculty's research strengths at JYU. One of six research profile

areas of JYU is 'Learning, teaching and interaction'. This area represents a multidisciplinary research cluster at JYU with the Faculty of Education and Psychology, its three departments, and the Centre for Interdisciplinary Brain Research (CIBR) as the main academic units.

Part of the Faculty is housed in a modern and user-friendly new building on campus, with excellent facilities. The atmosphere during the visit to the Faculty and the interviews was very positive and constructive.

This assessment aims to highlight issues that the Faculty should consider in its strategic planning as it goes forward, and to give recommendations that could contribute to realizing the Faculty's strategic goal.

Finnish Institute for Educational Research

Established in 1968, FIER is operating as a self-standing research institute within JYU, strongly embedded in national and international networks. The Institute has currently around 80 employees. The current director started earlier this year (1 February 2023) in her position. Overall, a careful approach is used to describe the current situation at FIER in the SA report, lacking, for example, a discussion of strengths and weaknesses of the Institute.

FIER has three research focus areas:

1. Educational systems and society.
2. Education and the world of work.
3. Learning, teaching and learning environments.

These focus areas often overlap in the work of the FIER research teams and projects. Furthermore, three 'lines of research' can be identified: basic, contract, national tasks.

The Institute has a relatively high volume of external research funding. FIER presents itself on its website as "The Home of PISA studies in Finland", which refers to its role in international education assessment studies in Finland, which are part of part of the national tasks assigned to FIER by the Ministry of Education and Culture.

FIER is in a very good position to consolidate and possibly enhance its position (nationally and internationally) as a prime research institute in education research. At the same time, the current situation, with a new director in place, might offer a window of opportunities for evaluating its research organization and governance, as well as its personnel policies, and use such an evaluation to introduce appropriate changes.

– Organized around research areas (3) and teams (9) (see Figure 16); creates organizational challenges/does not really work

– National tasks: lot of intensive routinework, not very attractive and forms barrier for career development for many of the early career researchers involved.
– Compartmentalization between different types of research, different types of researchers, and four organizational levels (early career without PhD in projects; early career with PhD but no tenured position; senior without leadership role, senior with leadership role)

4.6.2 General assessment

Faculty of Education and Psychology

The Faculty has a number of excellent research units (including an Academy of Finland Research Centre of Excellence), teams, and projects (including ERC), with a high international status. The research profile of the Faculty is to focus on multidisciplinary research with areas of research strength summarized under the heading: Learning, Interaction and wellbeing. This represents a rather distinct profile for the Faculty as such, positively driven by the collaborations within and between the three Departments. At the same time, this research profile is realized without an apparent overall research strategy for the Faculty as a whole.

The organisation of research management varies slightly across the Departments. At the Department of Teacher Education, the operational research leadership group (including professors, associate professors, two lectures and one doctoral researcher) supports the vice head for research. A similar kind of support group is operating in the Department of Education. In the Department of Psychology, the vice head for research organizes research development with researchers at different stages of their careers (annual Research Forum) and with doctoral supervisors (regular meetings of the Supervisors' College).

At the same time, the current research management approach is in essence 'bottom up', with large freedom for individual researchers and their projects. The Faculty is aiming at managing its research activities in line with the overall vision "Learning and wellbeing in building a sustainable future society". The Faculty leadership sees its role in this as facilitating instead of steering high-level research. This was confirmed in the interviews during which also the Dean agreed that the Faculty has mainly a facilitating role. This is e.g., visible in the lack of specific incentives in research management in the Faculty.

Overall, the organisation of research activities in the Faculty is somewhat opaque and complex (research groups, research teams, profile areas, projects, etc.).

It is therefore not always clear where the research activities of the academic staff at the Faculty belong organisation-wise, which poses certain challenges for research management.

The Faculty's research performance is on the whole good to excellent, and its funding situation is relatively positive, with core funding increasing in 2019–21 and stable from 2021 to 2022. The Academy of Finland is the main source for external research funding.

Its research productivity positions the Faculty at the forefront of global research in a number of educational sciences/psychology areas, without the Faculty currently having a strategy for maintaining and strengthening that position. Amongst other things, there is currently no clear identification of central global partners for further developing the knowledge foundation of the core areas of academic strength of the Faculty.

The research performance of the Faculty is on the whole good, while the bibliometric analyses show differences in publication output across the Departments. The overall funding situation of the Faculty in absolute terms is stable since 2018 (both core and complementary funding). This implies that the funding situation is in practice deteriorating (given inflation and rising costs). Strong drivers for the Faculty's research activities are, on the one hand, the externally funded research projects (incl. the Academy of Finland and one ERC project), and the Academy of Finland Centre of Excellence for Learning Dynamics and Intervention Research (InterLearn), in which two of the Faculty's departments collaborate with a department from the University of Turku. Interlearn will receive funding from the Academy of Finland for the period 2022–2029.

The Faculty's infrastructure is overall of very high quality, up to date, and relevant in enabling high quality research. It includes behavioural neuroscience laboratories, and learning labs. The researchers of the Faculty (and FIER) also manage unique large-scale datasets.

Personnel composition

First, a group of senior academic staff (career groups 3 & 4) in tenured (or tenure track) positions who are productive, with a number of them at the international forefront of their research area of specialisation (esp. in educational sciences). Secondly, a group of academic staff who are at the Faculty for a relatively long term, are in a tenured position (e.g., as senior lecturer), but who do not have career advance prospects anymore (not eligible for tenure track positions). Thirdly, early career researchers/academic staff who seem somewhat lost in their stage of career

and feel not proactively supported in their stage of career by their Faculty or Department. Career support for this group comes currently mainly from their supervisors/ project leaders. Representatives of this group the panel interviewed indicated amongst other things that there is a lack of structured written information on career opportunities, support options and strategic choices.

At the same time, there is a clear understanding among the senior researchers that it is highly important to actively build a new generation of leading researchers at the Faculty, but this has seemingly not (yet) resulted in a strategic Faculty academic renewal policy and practice.

Internationalization

The degree of internationalization at the Faculty is high, with strong connections around the world. However, there is no explicit Faculty-wide internationalization strategy which would present the Faculty's ambitions and goals in its international scientific collaboration with key partners ('the key benchmark groups in educational science/psychology research for the Faculty). This also implies that there are no targets (quantitative and qualitative) for the Faculty's internationalization development, which makes it difficult to monitor development and progress adequately. This is all the more relevant from the perspective of the Faculty's goal (page 3 of SA report): "… to reach even higher national and international impact". Without specifying this goal (e.g., timewise) and developing a set of targets it will be impossible to determine whether this goal has been achieved.

Finnish Institute for Educational Research

The research profile and overall strategic goal of FIER is to produce academically high level and reliable research to support the development of education at all levels both in Finland and internationally.

FIER has three research focus areas, which are 1) Educational systems and society, 2) Education and the world of work, and 3) Learning, teaching, and learning environments.

The vision of FIER is that it aspires to be a leading research centre with a comprehensive and holistic research understanding of educational systems and the global challenges they are facing. In its operations, the research and practice elements support and feed each other, aimed at contributing to developing new knowledge about and understandings of education.

In general, FIER research activities seem to be organized, governed, and conducted in a compartmentalized way, where some activities form a kind of silo for

the junior staff involved, without any attractive career perspectives. From this perspective it can be argued that FIER is in a transition period, where its future position and strength will be determined by the way in which it manages to evaluate and where appropriate adapt its internal organization, governance/decision-making structures and practices, and its personnel policies. Its research profile can be argued to require a reconsideration with respect to the appropriate balance between theoretically ambitious and potentially innovative education research, and largely commissioned research that includes heavy data collection and analysis.

Furthermore, FIER staff do currently have no structured opportunities for involvement in teaching at the BA and Master's level, which may limit their career development.

FIER has a rather high volume of external research funding with around 16% being stable, from year to year (including four-year agreements with the Ministry of Education and Culture for national tasks). The largest single source of complementary funding is the Ministry of Education and Culture (between 30% and 35% annually) Even though the overall funding situation at FIER is rather stable, the continuation of funding appears a continual worry among part of the FIER staff.

Personnel composition. Firstly, a group of senior academic staff in tenured positions who are productive as project leaders and in the acquisition of project funding. The members of this group are the directors of the identified research areas at FIER, and in this they form, together with the leadership (director and 2 vice-directors), the decision-making group at FIER. Secondly, a group of senior academic staff who are at FIER for a relatively long term, are in a tenured position and are project leaders, but who do not participate in the decision-making processes of the leadership group (a source of frustration expressed in the interviews; and to some extent a lacking sense of belonging). Thirdly, early career researchers with a PhD who are involved in various types of research projects/activities, and fourthly, a group of junior researchers without PhD, many of whom are involved in national task/data gathering activities, without any clear career perspective, and without possibilities to pursue their PhDs. The latter group is interpreted to be frustrated in their stage of career, with currently no prospect of a tenured position (and doctoral degree).

Internationalization. FIER has a strong international collaboration network and a good level of international peer-reviewed publications. The level of international funding for research projects (as part of the total amount of complementary funding) is relatively low. Increasing the level of EU funding (both in Pillar I and II) should be a strategic target in the internationalization strategy of FIER.

4.6.3 Research leadership

Faculty of Education and Psychology

Research leadership/management is formally organised at the Faculty and Departmental level, but in practice this formal leadership is seen as mainly facilitating, while academic research leadership tasks are mainly performed by project leaders and supervisors. Therefore, the principal level of strategic research management does not seem to be positioned at the Faculty and Departmental level but rather with project leaders. For this type of research leadership to work effectively from the Faculty perspective, a strong joint research vision and strategy with overall targets for the Faculty as a whole should be created.

Follow up and evaluations of research environment and research outcomes are conducted and include individual development plans. However, these are mainly driven by quantitative indicators (number of publications; amount of external funding), and hardly incorporate academic culture, wellbeing, and societal impact/engagement.

Overall, research leadership functions satisfactorily at the Faculty, but what is lacking is a proactive strategic vision/plan for positioning the Faculty and its research at the global forefront in its educational science and psychology research profile areas. There has not been an acknowledgement in the Faculty until now that its strong research performance also incorporates responsibilities in the form of taking a more proactive, central position in the further world-wide development of the knowledge foundations in the research profile areas of the Faculty.

Strengths

- Committed formal Faculty leadership (at Faculty and departmental level)
- Inspiring project (team, centre) leaders
- The sector of education has a high status in Finland; and the Faculty is the prime academic unit in Finland in research in educational sciences and related areas of psychology (visible in volume of external research funding and publications)
- Committed to developing the next generation of senior researchers at the Faculty.

Weaknesses

- Rather opaque research organization forms a challenge for effective research leadership.
- No strategic, proactive orientation towards positioning Faculty at the global forefront of research in the Faculty's key research profile areas.

– Lack of explicit, Faculty-wide strategies in areas such as internationalization, publication, societal impact/engagement; career development.
– Faculty research leadership is characterized as working without effective strategic tools, such as incentives.

Threats

– Possible impact of more negative attitude of political leadership in Finland towards fundamental research (with likely limited impact on educational sciences)
– Possibility that the Faculty's international benchmarks (or 'academic competitors') are more active and successful in strategic development of research leadership, capacity and quality in the Faculty's key research profile areas than the Faculty. Danger that Faculty 'misses the next boat'.
– Lack of international visibility (and attractiveness) of Jyväskylä as an academic location.

Recommendations

1. Evaluation and rethinking of research leadership and organization.
2. Upgrading of Faculty research strength (Learning, Interaction, and Wellbeing) more clearly and explicitly to JYU profile area.
3. Developing research strategy for positioning the Faculty more clearly and actively at the global forefront of research in its key research profile areas (doing justice to the educational science/psychology research profile of the Faculty).

Finnish Institute for Educational Research

Research leadership in the hands of the director, who started her position 1 February 2023. The director is closely cooperating in FIER management and decision-making with the Management Group, which consists of two vice-directors, the directors of the research areas and representatives from staff. This unofficial body is embedded in the three research areas of FIER, but it is not clear how these research areas function in practice, and how they relate to research teams (some of which are spread over all three research areas) and individual projects, and whether the three research areas cover all projects satisfactorily. While the SA report states that the Management Group is assisting the Director of the Institute, the report does not provide information on the nature of this task, and the extent to which the Management Group is involved in the actual decision-making processes of the Institute's leadership. Furthermore, it is not clear how the principles of co-determination and democracy are taken care of in the operations of the

Management Group, including how the Management Group reports back to the other staff members of the Institute, for example, the members of the various research teams. Finally, it is also not clear how the three research lines (basic, contract, and national tasks) are represented in the Management Group.

Follow up activities are conducted at FIER, but could become better structured and individualized It is, for example, not clear whether FIER staff have individual development plans.

Overall, research leadership functions satisfactorily at FIER, but at the same time, the recent appointment of a new director offers an opportunity for evaluating the current research organization (see Figure 16) and governance, and FIER personnel policies, and using the results of the evaluations for introducing necessary changes in the research leadership in the unit. This could also include the evaluation of the Management Group and an effort to introduce a more transparent and inclusive research leadership practice at FIER.

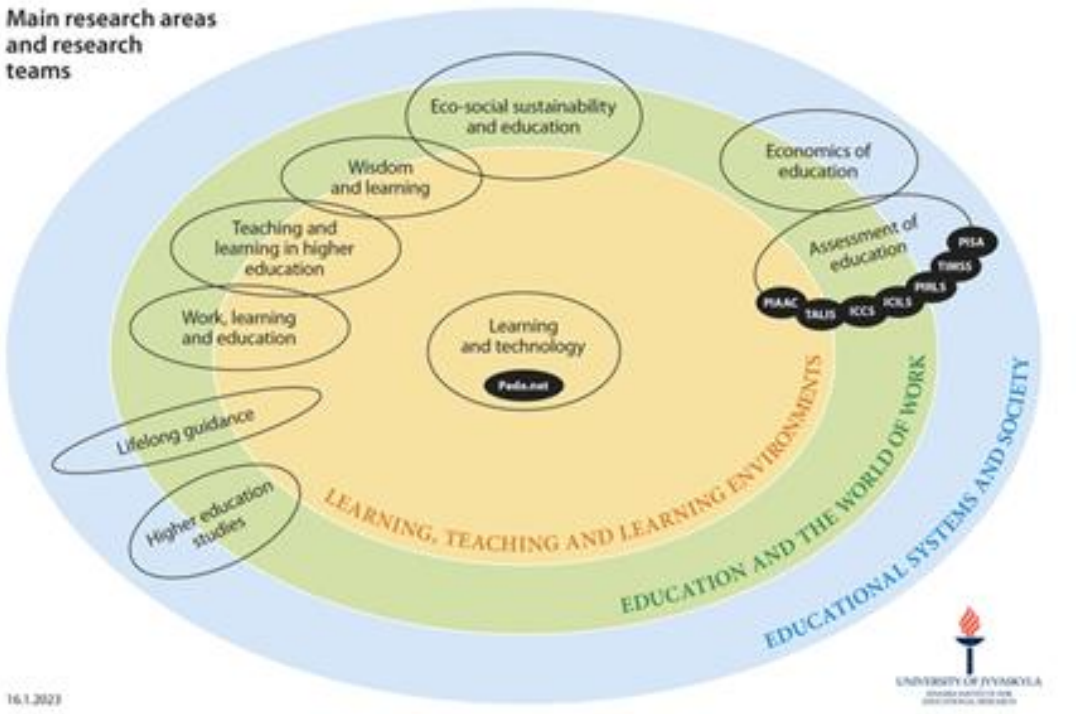

Figure 16. Research organization at FIER.

Strengths

– FIER has a new director who is very experienced in the field of education research and strongly commitment to FIER. She can be assumed to be in a

position to initiate and introduce necessary changes in organization, governance and personnel policies at FIER.
- Many highly experienced research leaders at project level at FIER.
- Good research connections with the Faculty of Education and Psychology and a number of JYU Faculties.
- Research leadership and individual researchers at FIER (at Institute and project level) well-connected in Finland and internationally.

Weaknesses

- Research leadership rather opaquely organized
  - Not clear whether the current research management structure, which is embedded in three fixed research areas, functions adequately and flexibly enough.
  - Relatively weak connections between the three lines of research at FIER (basic, contract, national tasks).

Threats

- Being a self-standing research institute in a university is in itself a vulnerable position, which is potentially exacerbated by the low degree of stable funding of the Institute.
- FIER leadership is currently not able to offer attractive working conditions for all its academic staff and therefore is at risk of losing both junior and senior staff.

Recommendations

1. To evaluate and rethink research leadership, including the research organization and governance, and the personnel policies. This includes the role, composition and tasks of the Management Group, which could become more transparent.
2. Allowing research leadership to reduce compartmentalization of research activities (esp. through new organizational and personnel policy approaches)
3. Forming a strategic alliance with like-minded research institutes/centres internationally with the goal of enhancing and institutionalizing international collaboration.

4.6.4 Academic culture

Faculty of Education and Psychology

The academic culture in the Faculty is generally positive and the research staff is committed to the academic community in their respective disciplines and the

educational practice in Finland and beyond. At the same time, commitment among staff to their Department and Faculty could become stronger.

There were no structural concerns or serious complaints, or worries mentioned about the Faculty's academic culture that surfaced during visits and interviews. This reflects the SA report which states on page 5 that the Faculty's research groups contribute to the positive academic culture at the Faculty by "promoting a sense of belonging, organize events, and training as well as interact internationally."

The Faculty aims especially at offering a supportive academic culture for doctoral researchers. This is not easy in the specific Finnish circumstances for doctoral education, but the measures the Faculty has taken seem to have resulted in an academic culture that is more supportive for at least the active doctoral researchers than at most other Faculties at JYU. These measures include faculty-level meetings of the doctoral school, conference participation support, and promotion of active participation of doctoral researchers in national networks. Nonetheless, also at FEP there are unfortunate differences between doctoral researchers because of differences in their funding sources. This affects their sense of belonging (and therefore their academic culture).

Diversity and sustainability are important components of the Faculty's vision. However, it is not clear what this means in practice. For instance, the proportion of international academic staff is quite small.

There is little information on how the Faculty has responded to the COVID-19 pandemic. While the Faculty conducts regular surveys of the wellbeing of its staff (also during the pandemic). However, it is not sufficiently clear how the Faculty wants to deal with the mean wellbeing impacts of the pandemic, what the Faculty has learned from its experiences during the pandemic, and how it wants to incorporate the positive experiences gained, e.g. in the use of digital technologies. In the SA report (page 5) it is, for example, indicated that "The pandemic time has reduced spontaneous and intellectual interaction due to increase in remote work and hybrid meetings and events." This issue is addressed in general terms in the Development Plan (page 2).

Strengths

- Faculty overall characterized by a positive atmosphere and strong commitment of staff (and students) to education (as academic field and education practice).
- Various measures and activities in place to support positive academic culture.
- Research groups in the Faculty contribute in a number of ways to the positive academic culture at the faculty.

Weaknesses

- Early career researchers (esp. doctoral students) do not feel as supported by the Faculty in their career development as one might expect. For example, their career prospects are not clear.
- Some senior lecturers can feel stuck in their career developments, and university teachers have heavy teaching loads.
- Even though the new building of the Faculty has a positive impact on the academic culture for those staff who work there, the location in two separate buildings reduces interactions between the Faculty's staff.
- Faculty lacks clear strategy for realizing its commitment to diversity and sustainability.

Threats

- Possible danger of emerging feeling of complacency in Faculty
- Faculty is housed in various buildings on campus. While main building has very positive impact on academic culture, possible danger of development of 'loosely coupled' communities in Faculty.
- A growing feeling of a 'lack of time' among staff (because of increasing pressure on staff to be productive in research) is a possible threat to wellbeing of staff and academic renewal.

Recommendations

1. Developing an overall comprehensive 'road map' for enhancing the academic culture at the Faculty. This road map should be aimed at integrating the development and implementation of relevant personnel policy measures, diversity goals, and sustainability objectives with policies to strengthen the formal and informal interactions between staff (senior and junior) necessary for maintaining a lively and productive academic research productivity and realizing academic renewal in a fitting way. The Development Plan presents a good starting point for this, but the measures proposed in the DP could be more integrated and elaborated.

Finnish Institute for Educational Research

It is indicated in the SA report that the academic culture at FIER is dependent on the culture of each team. There is apparently a large variation in academic culture among teams, which would affect especially junior researchers involved in national task/education assessment projects. Furthermore, it is unclear how strong overall 'sense of belonging' and commitment to FIER is among staff.

The overall impression the subpanel got during visits and interviews is that strengthening a shared and lively academic culture should be a major area of interest to the new director and wider Institute leadership and staff. This relates, amongst other things, to the current research organization, which does not seem to function optimally (see Figure 16).

The SA report presents a number of questions about the impact of the current state of affairs of career planning at the Institute on the academic culture. This issue is addressed in the Development Plan where it is indicated that a working group, representing different career stages and staff groups is set up to suggest actions that help staff development. While this is a positive step, it should not be seen as a separate issue, and be linked to a wider evaluation of the Institute's research organization and governance, and its personnel policies.

Strengths

- The team structure provides a home basis and community feeling, and allows for flexibility in the organization of research, especially when it comes to senior researchers.
- Monthly meetings for all staff members ('Tuesday coffees') contribute to creating commitment to FIER as a whole.
- International orientation is a common component of the academic culture at FIER.

Weaknesses

- Many early career researchers (esp. researchers involved in national task projects) have limited career prospects at FIER, amongst other things, because of the challenges in combining their research task with doctoral education.
- Difficult for early career researchers with PhD at FIER to develop a consistent and coherent academic area of interest/specialization, because of the dependence of FIER on externally funded projects.
- FIER lacks clear strategy for addressing diversity and sustainability in its operations.

Threats

- Danger of negative impact of internal compartmentalization on the academic culture at FIER, amongst other things, because of the internal research organization
- SA report presents a number of questions about career planning as part of the academic culture. Not clear whether the answers to the questions in the current situation present a positive picture about career planning (and

therefore also academic culture). The working group set up to make recommendations with respect to career planning should bear in mind that an adequate career planning practice has a strong positive impact on academic culture.

Recommendations

1. It is important that the FIER leadership initiates a thorough, comprehensive evaluation of its current organization and functioning. The results of such an evaluation will allow for a comprehensive reform of the organization, governance, and personal policies/internal career planning at FIER, which can be expected to have a positive impact on the academic culture.

4.6.5 Recruitment

Faculty of Education and Psychology

The Faculty is apparently an attractive employer for both early and senior career researchers. At the same time, the vision among the leadership with respect to renewal of staff and raising a new generation of senior researchers is relatively abstract and not clearly operationalized. Academic renewal is currently mainly initiated and driven by project leaders and supervisors of junior staff.

The tenure track system blocks career advancement opportunities for part of the senior staff at the Faculty by blocking access to this system for them.

Some of the early career researchers that were interviewed claimed that there is scarce information about the faculty's recruitment practices, when it comes, e.g., to the requirements for postdoctoral positions, or access to tenure track positions.

A further issue is that hardly any international top-level scholars apply to senior jobs at the Faculty.

Strengths

- The Faculty is able to recruit young research talent from among its own early career researchers and offer them a long-term career perspective.
- Senior researchers (project leaders and supervisors) play a crucial role in the academic renewal and in the recruitment of academic staff.

Weaknesses

- Currently rather difficult to attract international top scholars to Jyväskylä. No clear strategy to address this challenge.

Threats

- Creation of new positions is largely dependent on external funding, which has the danger of stagnation in times of reductions in external funding

volume. In addition, it is not clear in how far external funding can be used for creating new senior positions.

- Reductions or gaps in external funding cause an excess of non-permanent positions.
- The tenure track system in its current form is a threat to the effectiveness of the Faculty's career planning and recruitment policies and practices.

Recommendations

1. The Faculty could develop a more coherent and comprehensive recruitment policy, linked amongst other things, to the recommended strategy for positioning the Faculty at the forefront of global scientific developments in its core research profile areas. This could also allow for the development of ideas and measures for recruiting international top scholars.
2. Evaluate the current working of the tenure track system at the Faculty and introduce the changes necessary to make it more in line with an effective career planning and recruitment policy.
3. Develop and introduce measures to keep a viable balance between permanent and temporary contracts.

Finnish Institute for Educational Research

FIER staff is not involved structurally as teachers in study programmes (BA and master's level) at JYU, and in this sense FIER is an atypical university unit. This makes it a challenge to recruit talented academics who aspire to a traditional academic position.

The recruitment of new research staff at FIER is mainly from within JYU, while FIER has not yet had the possibility of opening tenure track positions. As a consequence, recruitment conditions are to a large extent determined by project conditions.

Data gathering/managing activities, especially in Assessment of Education research team, are conducted by junior researchers. Because of the siloed nature of these assessment projects and the tasks for junior researchers, these projects not an effective basis for recruiting talented researchers.

Strengths

- Recruitment processes at FIER are determined by JYU regulations and procedures, which provide transparency and the possibility of recruiting international scholars.
- FIER offers relatively stable career opportunities for its staff with a doctoral degree.

Weaknesses

- Despite international advertising, it is rather difficult to attract international scholars to FIER/Jyväskylä.
- No direct contact with students (Bachelor and Master's) is a disadvantage for the recruitment options of FIER.
- Large dependency on external funding implies that recruitment requirements are (to a large extent) determined by projects and lead to many non-permanent contracts.
- Lack of tenure track positions implies that it will be difficult for FIER to attract ambitious and talented researchers 'mid-career' researchers.

Threats

- FIER runs the danger of being able to recruit mainly early career scholars for its projects that do not have the ambition of aspiring a traditional academic career.
- The lack of access to the tenure track system makes it difficult for FIER to offer a career path towards regular senior academic positions in its recruitment.

Recommendations

1. FIER could develop a more flexible and adaptive recruitment strategy (as part of a new overall personnel policy approach) that would offer applicants various attractive career options instead of a position in a project, a team, and a research area, that have the danger of working as siloes.

4.6.6 Career and mobility

Faculty of Education and Psychology

Career development at the Faculty is supported by yearly development discussions between the research staff and the assigned immediate superior. Mentoring groups have been established for tenure track positions and for postdoctoral researchers while follow-up groups discuss career options with doctoral researchers. However, apparently not all young career researchers are meeting their mentoring groups or follow-up groups regularly.

Information on funding possibilities and career planning are claimed to be available by the Research and Innovation Services of JYU. However, easily accessible basic information on career planning is argued to be lacking at the Faculty. There is support for international mobility (incoming and outgoing) at the Faculty

and Departments, but also here information about these support options might not be as easily accessible as one might expect.

International collaboration is strong and relates to career development, but it is not clear how strong the relationship is in practice, also because of the lack of a Faculty internationalization strategy (aimed at positioning the Faculty at the global forefront of research in the faculty's profile areas).

Support for postdoctoral researchers is available, but not in a general, equally accessible and distributed way. Getting the aimed necessary support depends to some extent on the postdoc him/herself, and his/her supervisor/project leader. This is acknowledged in the SA report: "Systematic career counselling for researchers has been mostly missing". This also goes for the support for doctoral researchers, which seems to be confirmed in the interviews (quote from interview: "you only are told about opportunities when you ask, which is often too late").

Tenure track system blocks career advancement opportunities for part of the senior staff.

The number of incoming and outgoing mobilities of academic staff was in 2022 not yet at the pre-pandemic level (2018/19), with incoming mobility in 2022 at an overall low level (6 stays at Faculty compared to 23 in 2018), and outgoing international mobility being 40 (compared to 68 in 2018). The most common length of outgoing mobility is between 5 days and 1 month.

Strengths

- There is a system in operation for career support and planning.
- The Faculty has a lively international incoming and outgoing staff mobility (even though the actual number of mobilities is not yet at a pre-pandemic level).

Weaknesses

- It is not clear how much career development, guidance and mentoring, is in place for the rather large group of non-permanent staff.
- The career support for junior researchers is less solid than one might expect.
- Career planning will not much help senior researchers with no real advancement opportunities or university lecturers with a heavy teaching load.
- Altogether, the system for career planning seems to apply somewhat variably, depending on a person's placement and position.
- Postdoctoral positions are few and mostly depend on Academy of Finland project funding.

Threats

- International mobility among early career researchers may suffer from inadequate access to information.
- Some talented researchers may get disillusioned with the opportunities offered by an academic career at the Faculty.
- The tenure track system blocks career advancement opportunities for part of the senior staff.

Recommendations

1. Improve the career guidance and mentoring for non-permanent staff.
2. Introduce a Faculty platform where all staff can report positive and negative experiences with career planning and guidance at the Faculty, recommendations and ideas. Make sure that all input is followed up.
3. Reconsider the tenure track system in light of career development for already employed researchers.
4. Develop (together with other faculties) ideas for a university wide sabbatical leave system.

Finnish Institute for Educational Research

The staff structure of FIER is different from the typical four-stage model used in the JYU faculties, which in practice means that the career opportunities for FIER researchers after career level 3 are rather limited at FIER. To address this situation, efforts are made to collaborate with faculties at JYU to enable so-called career rotations and new career opportunities unavailable at FIER.

FIER has no doctoral researchers, although the staff of FIER is involved in supervision of doctoral students in the Faculty of Education and Psychology and other JYU Faculties in collaboration with Faculty staff.

The proportion of post-doctoral researchers is small, but there are many experienced university research fellows / senior researchers working in FIER.

Due to a large number of externally funded projects, FIER relies more than the JYU Faculties on project researchers in its research activities.

Internationalization seems to be an important component of the FIER career policy and practice. Since 2015 FIER has had the Cygnaeus Scholarship programme that supports mobility and research exchange (for outgoing and incoming mobility). This apparently has had a positive impact on the number of co-authored publications.

FIER is argued to be an attractive place for foreigner researchers to visit ("FIER is a wanted place to visit and there would be more visitors than we can host," SA report page 5). However, the number of incoming mobility was 0 in 2022, in the data

given to the Panel, (compared to 9 in 2018). Outgoing international mobility of FIER staff was 9 in 2022 (compared to 25 in 2018). There is, however, a strong tradition of mobility to Finland (329 in 2018 and 339 in 2019), nearly all short (1-4 days). Data on intra-Finnish mobility was not available for 2021 and 2022.

Strengths

- Leadership of FIER is committed to offering effective career development guidance and mentoring support for its staff.
- Mobility practices at FIER (both national and international) were fairly well established before the pandemic.

Weaknesses

- Large reliance on external funding forms an important challenge for having an effective career development guidance and mentoring system.
- Not clear how much career guidance and mentoring support is in place for non-permanent staff.
- Career planning will not help senior researchers with no realistic career advancement opportunities.

Threats

- Loss of talented staff on account of weak career prospects at FIER.
- Lack of teaching and thus contact with students may make FIER an unattractive or unknown place for students to consider after graduation and deprive the senior staff from the opportunity of acquiring requisite teaching experience to boost their careers.

Recommendations

1. Improve the career guidance and mentoring for non-permanent staff.
2. As indicated in the Development Plan, it is very important to create clear structures for research staff development within projects and in the process of becoming independent stage 3 level researchers. Make sure to map the factors that currently block adequate research staff development (both in general and in projects) in order to make sure that the strategic ambition to make FIER a more attractive unit for academic career advancement can be realized.
3. Also, for FIER it is important to make sure that is cat offer sabbatical leave to its staff.

4.6.7 Infrastructure

Faculty of Education and Psychology

The Faculty's infrastructure is of very high quality, up to date, and relevant in enabling high quality research, amongst other things, in the interplay between educational science and psychological research. It includes behavioural neuroscience laboratories and learning labs. The researchers of the Faculty also manage unique large-scale datasets, including e.g., the Jyväskylä Longitudinal Study of Dyslexia, the First Steps study & School Path, Teacher and Student Stress and Interaction (TESSI), and Self-efficacy and Learning Disability Interventions (SELDI).

Part of the infrastructure is shared with the rest of the university in general, or with one or more other JYU Faculties. A challenge is to 'link/connect' investments in and use of infrastructure (for learning research) throughout the university.

The SA report argues that data analyses could be further streamlined and supported by methods training and expert support. The time from data collection to publication is rather long in some cases.

Strengths

- High quality, state-of-the-art research infrastructure, shared with other faculties at JYU, a 'pull' factor at international level.
- Infrastructure is continuously developed, updated and earmarked in the Faculty's budget.

Weaknesses

- Not all opportunities of versatile use and sharing of the infrastructure (within JYU, nationally and internationally) have been exploited to the full.
- Data analyses could be further streamlined and supported.
- Access of grant researchers to desks, software and facilities could be improved.

Threats

- Public funding situation in Finland and at JYU could lead to a reduction in infrastructure funding/investments.

Recommendations

1. There is potential at JUY for enhanced sharing of the infrastructure for learning research for specific lines of enquiry. The variety of research questions could thereby be widened, with the potential of discovering new commonalities.
2. Include a more proactive approach to infrastructure management in the Development Plan that will allow to prepare for various contingencies. This

should be part of the development of a more proactive and ambitious internationalization strategy as indicated elsewhere in the report.

Finnish Institute for Educational Research

The infrastructure at FIER is mainly in form of expertise rather than equipment.

In some research areas (e.g., research on learning processes and technologies), FIER collaborates with the Faculty of Education and Psychology in developing the research infrastructure in terms of laboratories and equipment. However, the question can be raised why FIER does not use the Faculty's infrastructure more structurally and routinely e.g., for its learning research.

Strengths

- Several large databases compiled, maintained and developed, meaning rich data sources available for Institute's and collaborators' use.

Weaknesses

- Coherence between data and theoretical developments seems lacking, which may hold back renewal. Demand for the databases comes from the outside, which in some respects is a blessing, e.g., securing funding, but which does not necessarily motivate staff to develop innovations of their own.

Threats

- Working on data collection and analysis on its own is not attractive to junior researchers, whose career opportunities may get curtailed.
- The demand for some databases may drop, disappear altogether, or undergo changes of direction independently of the Institute and its interests.

Recommendations

1. Include an infrastructure strategy that addresses the above weaknesses and threats and possible contingencies in the overall new research strategy of FIER.

4.6.8 Funding

Faculty of Education and Psychology

The overall funding situation at the Faculty is rather stable, with external funding comprising 20–22% of the total annual budget (in 2020–2022). The largest single source of external funding (as measured in the annual use in euros) is the Academy of Finland (around 30% in 2022), followed by the Ministry of Education and Culture and other funders from the public sector (incl. other Ministries and municipalities)

(in total around 15% in 2022), and Finnish foundations & trusts. The amount of complementary funding from the EU is relatively low.

There is overall no feeling of a funding crisis, on the contrary, for some areas of research specialization the opportunities for external funding might be larger than the research capacity could handle.

The funding from the Academy of Finland is important, but not sufficient (consisting of relatively small grants; high % overhead).

As indicated, the level of EU funding is moderate (compared to AoF funding), and includes one ERC project. The faculty leadership has no clear strategy/practice when it comes to funding opportunities in pillar II of the EU Framework Programmes (currently HORIZON Europe): Global Challenges and Industrial Competitiveness.

Current challenge is that the basic funding level has remained at the same level during 2021 and 2022 while the personnel, facility and other costs keep raising. This puts pressure on the Faculty to increase the acquisition of external funding. In this, the focus is mainly on the AoF and the EU HORIZON Europe, Pillar I. It is unclear why the Faculty is not more active in the acquisition of other types of EU funding (incl. MSCA grants, pillar II projects, ERASMUS+ projects).

The funding situation of doctoral education is unclear (info received during visits/interviews is that there is funding for 6 doctoral students, while far more are accepted). From a funding perspective, the gap between supervisory and infrastructure capacity, and the funding situation on the one hand, and the number of accepted doctoral students is unexplainably large.

The financial room to manoeuvre (or strategic financial capacity) of the Faculty leadership is unclear. For any strategic management of the Faculty research activities the leadership needs adequate instruments, such as financial incentives or strategic investment funds.

Strengths

- Relatively high level of core funding that until 2022 increased annually.
- Stable level of complementary funding.
- The support for researchers applying for complementary funding provided by the university is generally seen as adequate and effective.

Weaknesses

- Complementary funding sources could be more balanced to reduce the relative dependence on Academy of Finland funding.
- Unclear how the Faculty strategy considers, encourages and supports applications for EU funding and a wider variety of complementary funding sources.

– Support strategy for junior researchers with funding gaps and funding uncertainty insufficient or missing at Faculty level.

Threats

– Unpredicted policy changes in the funding agencies most relied on, e.g., Academy of Finland could change conditions that might affect the chances of FEP staff for acquiring Academy of Finland project funding negatively.
– Growing competition under diminishing resources of funding providers.
– Overall level of core funding by Ministry of Education might decrease with potentially negative impacts on core funding level of Faculty.

Recommendations

1. A clear and determined core and complementary funding strategy at Faculty level is desirable for possibly refocusing and broadening the basis for funding, for dealing with contingencies, and for improving junior researchers' uncertain and variable funding situations. This should include a more effective and explicit strategy for increasing the overall level of EU research income.
2. In the development of a new internationalization strategy (indicated elsewhere in the report) attention should be paid to expanding collaboration with strategic partners in countries that would allow for a greater chance to apply for collaborative research funding (especially the Nordic countries and EU Member States).
3. Develop a proactive strategy for participation in those FORTHEM alliance joint projects and activities that would strengthen the Faculty's funding basis structurally.

Finnish Institute for Educational Research

FIER is characterized by a rather high dependence on external research funding. While there is some stability in the external funding, such as four-year agreements with respect to the funding of national tasks, the level of secure basic funding is relatively small. Furthermore, the dependency on external funding is growing.

Most of the external funding (as measured in annual use of euros) is coming from the Ministry of Education and Culture and other funders from the public sector (incl. other Ministries and municipalities) (around 55% in 2022). Around 20% of the external funding comes from the Academy of Finland (in 2022).

According to the data that were provided to the Panel (Source: SAP Finance, Converis Research Information System (22.2.2023)), the level of international

external funding (as measured in annual use in Euros) fluctuates strongly from year to year.

The FIER SA report states (on page 5) that the main funding challenges concern the need to diversify the funding basis of the Institute (e.g., increasing international funding, and participation in multidisciplinary consortia), and supporting FIER researchers in applying for external funding.

The funding structure also makes strategic personnel planning challenging as the share of secure basic funding is relatively small.

Strengths

- Even though FIER is largely dependent on external funding, it is very professional and effective in acquiring various types of external funding. As a consequence, the overall funding situation seems generally strong and stable.

Weaknesses

- Overall, the FIER budget relies heavily on funding from Finnish public sector sources.

Threats

- Any central funding agent may change their policies and drop lines of funding hitherto stable for FIER.
- Even though the overall funding situation at FIER is rather stable, the continuation of funding appears a continual worry among part of the FIER staff.

Recommendations

1. Develop a new strategic approach to the funding overall (as part of the new FIER research strategy), with the aim of diversifying the funding basis of the Institute. In this strategy, one issue could be to expand collaboration with strategic partners in countries that would allow a greater chance to apply for collaborative research funding (especially the Nordic countries and EU Member States).
2. Broadening/diversifying the funding basis could not only lead to a more secure future for the Institute but also give researchers more leeway in developing the lines of research worth pursuing within the scope of the Institute.

4.6.9 Research collaboration

Faculty of Education and Psychology

The internal research collaboration among the three Departments is overall very good, for example, in the Centre of Excellence.

Inter-faculty collaboration within JYU is strong, but there is room for further developing the multidisciplinary research activities with JYU. In this it would make sense to proactively work on the development of a university profile area in the area of Learning (and wellbeing). The SA report indicates that the opportunities to network within JYU could be enhanced, esp. for early career researchers.

Collaboration in Finland is very strong. Bibliometric analyses show that most institutional affiliations for all three departments are with Finnish universities, research institutes and other organizations.

The international collaboration is strong and diverse, but as indicated already, there is no strategy for positioning the Faculty in forefront of global research in the Faculty's core areas of academic strength.

The US is the main country for collaboration (in the form of co-authorship) for the Department of Education and the Department of Psychology, while Norway is the main collaboration country for the Department of Teacher Education.

Overall, there is not yet a clear strategic understanding and use of opportunities offered by FORTHEM and other strategic university partnerships.

International collaboration aimed at applying for EU funding (in Horizon Europe Pillar II, or Erasmus+) apparently not part of current collaboration strategy of Faculty.

Strengths

- Both Faculty-internal and national research collaborations unquestionably strong points.
- International collaboration well-established and apparently stable.

Weaknesses

- Institutionalized international collaboration with strategic partners underdeveloped.
- The Faculty does not have a strategy for participating in and profiting from strategic university partnerships, such as FORTHEM.

Threats

- Current collaborations running their course without regenerating their objectives, research directions, or composition.

– Complacency in current collaborative relations may lead to missed opportunities in the face of rapid changes in the education/psychology research domains, and ignoring the global situation.

Recommendations

1. International collaboration should be more ambitious with regard to the Faculty's strong research output and its already high international reputation. A more strategic approach to international collaboration should be part of a new internationalization strategy of the faculty (as indicated elsewhere in the report). Section 1 of the Development Plan provides a good start for the new internationalization strategy, but it should be lifted to a more comprehensive and ambitious level.
2. A more distinctly global orientation in the field would be an asset.

Finnish Institute for Educational Research

As indicated elsewhere, the current research organization at FIER (see Figure 16) both stimulates and hinders internal collaboration. This is also acknowledged in the SA report and the Development Plan. The work on the new research strategy of FIER is expected to also include the development of ideas for a different way of organizing research at the Institute. Of importance in this is to develop an integrated research strategy, and not treat the various components as self-standing issues.

Research collaboration within JYU is seen as "a natural and essential part of work at FIER" (SA report page 6). This includes joint research activities, funding applications and supervision of doctoral students. The most active collaboration is with the Faculty of Education and Psychology and the Open University of JYU. In addition, FIER collaborates especially with the JYU Faculties of Humanities and Social Sciences, and of Information Technology.

International collaboration takes place mainly around international evaluation projects (such as PISA, TIMMS and PIAAC). Collaboration in Finland is very strong. Bibliometric analyses show that most institutional affiliations for FIER are with Finnish universities (esp. Tampere University and University of Helsinki).

The US is the main country for collaboration (in the form of co-authorship) for the FIER, followed by Australia, Norway and Sweden.

No reference in SA report to strategic opportunities offered by strategic university partnerships, such as FORTHEM. Also interviews showed that FIER is currently not incorporating university partnerships into its collaboration strategy.

FIER is argued (in SA report) to be part of very stable collaborative networks in Europe (with funding from Horizon and Erasmus+). At the same time, the funding

overview shows that the level of external income from the EU is fluctuating from year to year and is overall relatively low.

Strengths

- Structural collaboration within JYU and nationally strong and stable.
- International collaboration of long duration and stable.

Weaknesses

- Collaboration focused on relatively few partners and topic areas both nationally and internationally.
- Relatively one-sided international collaboration. Collaboration aimed at acquiring EU Pillar II funding could e.g., be strengthened.

Threats

- The relatively narrow basis of funding for especially international collaboration may backfire.
- The limited involvement in established European-wide consortia in education sciences might limit the options of enhancing EU funding income.

Recommendations

1. Further develop and institutionalize international network collaborations amongst other things with the aim to acquire more EU funding.
2. Broaden the basis of collaboration strategically so as to ensure regeneration of foci, ideas, and collaborative partners – without spreading the Institute's resources too thinly.

4.6.10 Publication

Faculty of Education and Psychology

Overall publication output strong (both academically -in English, and professionally- in Finnish). Scopus/SciVal analyses show that among all scientific publications by JYU in the area of social sciences, publications in the subject area of education have the largest share (7.6%) among all subject areas.

Number of peer-reviewed scientific articles published by Faculty staff has increased from around 340 (in 2018 & 2019) to 512 (in 2022). All Departments have contributed to this increase: with the Department of Education showing the strongest increase (almost a doubling of the number of peer-reviewed publications since 2018), and the Department of Psychology having produced the largest number of peer reviewed publications among the three Departments (181 = 39% of total in 2022).

No clear Faculty publication strategy, but that is not seen as a problem by those Faculty staff that were interviewed by the subpanel.

International co-authorship profile in publications at Faculty (with 43% having a co-author from outside Finland).

Strong commitment to and effectiveness in using open science principles.

Strengths

- Publication output strong in both quantitative and qualitative terms, with a good balance between international and national publications.
- Overall, a strong international publishing output, with the number of peer-reviewed publications is on the rise in all three Departments.
- Good level of co-authorship (national and international) in the publications.
- Very high level of open access publications

Weaknesses

- The lack of a Faculty publication strategy might result in a lack of direction in the further development of the Faculty's publication output.

Threats

- There are no immediate threats in sight, but new generations of researchers need special attention in order to keep renewing the research domains and keeping them at the forefront of the relevant research fields.

Recommendations

1. The Faculty leadership should consider developing a Faculty Publication Strategy, amongst other things, to provide support to junior researchers, to help attract recruits from outside, and to present a general direction for the further development of the publication output of the Faculty (e.g., aspired balance national – international publications; preferred balance quantity – quality in international publication output).

Finnish Institute for Educational Research

Overall, the publication output of FIER is satisfying, with a good balance between academic (English), and professionally oriented (Finnish) publications. Scopus/SciVal analyses show that among all scientific publications by JYU in the area of social sciences, publications in the subject area of education have the largest share (7.6%) among all subject areas.

Number of peer-reviewed scientific articles published by FIER staff has been increasing from 2018 (70 peer-reviewed publications) to 2022 (96 peer-reviewed publications; note: this figure is lower than the number of peer-reviewed articles published by each of the three Departments of the Faculty). At the same time, the

overall number of publications has been relatively stable over the last three years (2020–2022).

International co-authorship profile in publications at FIER (with 35% having a co-author from outside Finland), but not as strong as in the Faculty (where it is 43%). Also, the share of publications with a co-author from outside JYU is higher at the Faculty (69%), than at FIER (55%). The latter figure implies that 45% of the publications at FIER in the period under review were either single-author FIER publications or publications co-authored with other JYU staff.

The situation concerning open access publishing in FIER is very good, with the share of peer-reviewed OA publications at FIER increased during the assessment period, from 65% in 2018 to 98 % in 2022.

Strengths

- The publication output is stable, as is the level of collaborative publication.
- Overall, a good international publishing output, with the number of peer-reviewed publications increasing.
- Good level of co-authorship (national and international) in the publications.
- Very high level of open access publications.

Weaknesses

- The growth in the overall publication output seems to have slightly stagnated since 2020.
- Collaborative publishing with partners from outside JYU is not as high as it could be.

Threats

- The junior researchers at the Centre have little opportunity to pursue their PhDs, thus keeping the scope of the publications narrower than it need be and reducing the opportunity of renewal.

Recommendations

1. Also, the publication strategy should be renewed and integrated into the overall new research strategy. This could lead to an adaptation of the aspired balance national – international publications, and the preferred balance quantity – quality in international publication output.
2. Allow more time for junior researchers to pursue their own research to add to the volume and broaden the scope of publications.

4.6.11 Doctoral training

Faculty of Education and Psychology

The situation with respect to doctoral education at JYU is in general a major area of concern as a result of

- The lack of structured funding support for doctoral students
- The relatively large number of 'ghost students'
- The long average time it takes for doctoral students to graduate
- The lack of effective doctoral education structures at the University, Faculty and Departmental levels
- The lack of structured opportunities for doctoral students to get involved in teaching Bachelor's and Master's students
- The weak career perspectives and general lack of structured career support for doctoral students

All these areas of concern also affect doctoral education at the Faculty, e.g., when it comes to

- The large difference between funding for doctoral education (for 6 students) and number of doctoral students accepted each year
- Lack of structured financial support for doctoral students
- Lack of easily accessible, transparent, and focused information on career support for doctoral students
- The large gap between total number of doctoral students registered and number of doctoral graduates per year

The doctoral education statistics of the Faculty give the impression of a highly ineffective Faculty in the area of doctoral education.

Another issue is the education part of doctoral education at the Faculty. There is no doctoral education set of courses/offered course overview for doctoral students available at the Faculty. This is (partly) explained by the fact that next to some mandatory courses, doctoral students are free to choose the courses they want to follow, and can take these courses at other Faculties at JYU (or outside JYU). This reflects the mainly symbolic functioning of the Faculty's doctoral school, and the lack of presence and structure of the doctoral programmes at the Departmental level. As indicated in the interviews, (active) doctoral students at the faculty are positioned within projects or teams where they work with their supervisor(s), other academic staff, and (in most cases) with other doctoral students.

At the same time, the Faculty's Departments provide support for (active) doctoral students for conference attendance (and for some students for a stay at a

foreign university); there is (at least on paper) a good follow up and monitoring structure for (active) doctoral students, and the doctoral students the panel met are in general very positive about the collaboration with their supervisor(s).

The Faculty has established a new doctoral education programme, which opens up new possibilities both when it comes to the organization of doctoral education at the faculty, the support for doctoral researchers, and the broadening recruitment foundation of the Faculty when it comes to the areas of specialization of its early career researchers.

Strengths

- The situation with respect to the support for active doctoral researchers at the Faculty seems better than in most other JYU Faculties (e.g., when it comes to getting support for conference attendance and opportunities for staying at foreign universities).

Weaknesses

- The intake of doctoral students is disproportionate to how many are active, supported financially, and to the number completing.
- The coursework required from and recommended to doctoral students is unclear; beyond 'mandatory', is it desirable that they complete much else, or is this an additional burden on their time?
- Doctoral researchers receive scant opportunities to teach.

Threats

- Doctoral researchers may get discouraged from pursuing their studies on account of the lack of structure and either give them up or keep taking excessively long to complete.
- Because of the lack of an up-to-date internationalization strategy, the Faculty might become less attractive as a place for doctoral education for highly talented international doctoral researchers.

Recommendations

1. Develop a strategy for supporting doctoral researchers according to their needs, and consider their diversity as a group: while some are active and undoubtedly wish to pursue an academic career, this may not be the case with those already in stable positions (e.g., as teachers). The former need opportunities to complete their degrees within four years, gain teaching experience, attend conferences, and get a good view of academia, including postdoctoral possibilities. The latter will take longer to graduate, need to acquire different types of competences than the active doctoral researchers, and should be considered part-time students.

2. For all doctoral researchers, provide a clear understanding which courses they need and a possibility of attending those without burdening them with extra coursework at the expense of their thesis writing.
3. Provide doctoral researchers with the opportunity to gain teaching (and administrative) experience necessary for an academic career.

4.6.12 Societal impact of research

Faculty of Education and Psychology

The Faculty follows the university's societal impact strategy and does not have its own Faculty societal impact strategy. In this, the Faculty (like the University) emphasizes societal ***impact*** and has far less attention for societal ***engagement***.

The Faculty's research is highly societally relevant and is having a societal impact in the sector of education. In this, it is relevant that Finland is globally regarded as one of the leading countries in educational policies and practices, and in educational research. In this national context, the Faculty (together with FIER) is the prime academic unit in the area of educational sciences. This position has major benefits when it comes to the nature and impact of the Faculty's interactions, relations and partnerships with various societal organizations and with companies.

The Faculty (and its Departments) has a large and active set of collaboration networks with many key public Finnish organizations in the area of education, as well as with private sector companies.

The public outreach activities of the Faculty are multiple, and range from press releases and newsletters to social media presence, webinars, and podcasts, to active participation in various types of advocacy events. Interaction with society is also (according to the SA report) part of the development discussion with each staff member.

Other modes of interaction with societal stakeholders include policy recommendations and professional training programmes aimed at improving educational practices in Finland.

Even though the societal impact activities of the Faculty are mainly non-commercial, there are example of various types of innovation activities, aimed at non-profit applications of research findings.

Of relevance here is also the Faculty's commitment to strengthening the research-teaching linkage in the Faculty's degree programmes. One development is e.g., the growing number of Bachelor and Master's theses projects that are

conducted as part of research projects in the Departments instead of self-standing student designed projects.

Strengths

- The Faculty has a high societal impact nationally and regionally, and in a number of respects internationally.
- Many activities are undertaken at the Faculty aimed at having societal impact as well as social engagement.
- A good volume of publications in Finnish is produced that is aimed at policy makers, stakeholders and the public at large.
- A number of national tasks have been assigned to the Faculty by the Ministry of Education, while also projects funded by other public sector agencies and organizations, and by foundations and trusts can be assumed to have a direct societal impact.
    - Also, the non-academic collaborations can be assumed to have a high societal impact. in society.

Weaknesses

- The Faculty does not have a clear policy for social engagement; the issue appeared somewhat confusing to junior researchers.
- The strict divide between publishing in Finnish for societal impact and in English for academic impact may not be as appropriate as generally thought; there are also peer-reviewed open access journals in Finnish, which broaden the scope of publication.

Threats

- A slight, if not a very likely, possibility that the Faculty's societal impact will diminish as a consequence of changes in the political landscape in Finland.
- The status and interpretation of social engagement may remain unclear and undirected at the faculty.

Recommendations

1. Organizing an internal review and discussion about the issues of societal impact and social engagement might help the Faculty outline its policy about them and help set clear objectives that can help assess the progress or otherwise in the Faculty's intended outreach effects.
2. Enhanced collaboration with the private sector might be considered.

Finnish Institute for Educational Research

FIER does not have an explicated societal impact strategy. It is therefore positive that a societal impact strategy will be incorporated in the new FIER strategy (as indicated in the Institute's Development Plan).

FIER has an active public outreach/knowledge utilization policy, which is based on communication strategies and cultivating partnerships. This strategy aims at the uptake of research findings in education policy and practice in the following ways

- Scientific open publishing
- Publishing for a professional audience with the aim to contribute to improving educational practices
- Media engagement
- Cooperation with stakeholders outside academia

Knowledge transfer with a commercial purpose is not a core interest of FIER, even though some contributions to non-profit innovations have been made.

The SA exercise at FIER revealed a tension between societal and academic publishing (and aimed at impact). There is agreement within the FIER leadership that a thorough internal process is needed for developing a new FIER research and publication strategy aimed at developing a more effective balance between the academic and societal impact intentions and ambitions of FIER.

Strengths

- The Institute has a strong track record in publishing for the benefit of professionals to improve practices.
- The Institute has developed a clear and straightforward outreach policy has been devised.
- A societal impact strategy is in the making.

Weaknesses

- FIER does at present have no policy on societal impact or social engagement in place.
- A divided publication policy according to language may be not thoroughly thought out; there are e.g., also peer-reviewed open access journals in Finnish, which broaden the scope of publication.

Threats

- The Institute may fall into oblivion by others than its funders if it does not take care seriously and strategically of its societal impact and social engagement, given that a large part of its importance lies in its influence in its societal environment.

Recommendations

1. Outlining a clear and straightforward Institute policy on societal impact and social engagement can help set clear objectives that may facilitate assessing progress in the intended outreach effects.

4.6.13 Development plan

Faculty of Education and Psychology

The Development Plan is very well structured, and is building on the previous development plan (from 2021) in focusing on three areas of improvement:

1. International scope and attractiveness
2. Academic culture and research community
3. Early career researchers' funding

For each of these issues the plan contains a clear description of the challenge/problem, specific goals to be achieved, improvement actions and a time schedule.

The three areas cover many of the issues raised in this report and overall, the Faculty can be argued to have identified a fitting and appropriate way forward.

The main concern from the side of the subpanel to the development plan is that it seems to lack the ambition that one might expect from a highly productive and internationally active academic unit. As indicated at several places in the report, it can be highly recommended to the faculty to develop an ambitious internationalization strategy that would be aimed at maintaining and strengthening the position of the Faculty as a globally leading research unit in its areas of research strength. We hope therefore that it will be possible for the Faculty to 'lift' the Development Plan to a higher level, and ground it strongly in the strategic ambitions of being and wanting to remain a world-leading research unit in a number of areas in the interplay between educational sciences and psychology.

In addition to this overall recommendation, the subpanel wants to share the following overview of identified strengths and weaknesses, threats and recommendations to the Development Plan of the Faculty:

Strengths

- The junior/early career researchers' position is on the agenda.
- A joint funding plan sounds like a good idea to help sustain longer contracts for junior researchers.
- The further planning of the Faculty's development is clearly scheduled.

Weaknesses

- The plan is still rather generic and vague, for example, about the international strategy (see above).

Threats

- It is not clear whether the needs of all groups in the Faculty are addressed.
- The anticipation of future developments and possible contingencies in the field are not clearly addressed. It might be appropriate for the faculty to develop a contingency plan, given the growing uncertainties especially in its Finnish and European contexts.

Recommendations

1. Pay attention to international impact and your potential at that level.
2. Attend to doctoral students' position and needs.

Finnish Institute for Educational Research

The Development Plan is very well structured, and is grounded strongly in the ambition to renew the Institute's research strategy, together with the publications and communications strategy.

In addition to the focus on the renewal of the research strategy, the development plan covers:

1. Organisation of research and team structure
2. Developing staff structure and career development

For the renewal of the research strategy and the other two issues, the plan presents a clear description of the challenge/problem, specific goals to be achieved, improvement actions and a time schedule.

The three areas cover many of the issues raised in this report and overall, the Institute can be argued to have identified a fitting and appropriate way forward.

The main concern from the side of the subpanel to the development plan is that it does not explicitly address the importance of an integrated strategic approach. One might read the plan as aiming at developing a set of parallel strategies and policies and a number of core areas. While it is very positive that the Institute acknowledges the importance of a major rethinking of its research strategy organization and personnel policies, if this rethinking is not done in an integrated way the resulting strategies and policies run the risk of having a counterproductive effect.

4.7 Faculty of Mathematics and Science

4.7.1 Introductory remarks

The Faculty consists of four Departments (Biological and Environmental Science, Physics, Chemistry, Mathematics and Statistics). With the exception of Math-Stat they are physically close, a decisive factor for encouraging collaboration and the participation in common activities. It also comprises Research centres: Accelerator Laboratory, Nanoscience Centre (hosting 30 research groups, combining biology-chemistry-physics), Konnevesi Research Station (ecology, evolutionary biology), JYU.Wisdom (green transition, well-being) established in 2019, and Center of Expertise for Circular Economy established in 2022. In addition, it is involved, at the national level, in 3 centres of excellence with a life span of 7 years, being also the host of one of them.

The Faculty has a good proportion of international and female staff (taking also into account that gender balance in STEM subjects is critical worldwide) and the personnel increased in the last 5 years almost by one fifth. On the other hand, the number of Master and PhD degrees declined, not dramatically, but probably as a consequence of the COVID-19 pandemic.

Almost one half of the Faculty funding is based on external sources and its research-oriented profile is clear in terms of the Faculty share of JYU: below the threshold in master and bachelor degrees, at the threshold for PhD degrees, well above in publications and funding. The main challenges seem to be at the undergraduate education level, in particular, given the concerns about the birth rate in Finland and the expected changes in the funding model by MEC. Nevertheless, there is full awareness of these threats, and the need is felt to define a more specific University profile and study programmes in some areas, in order to be more attractive.

The panel is satisfied with the collaboration and the engagement of students and Faculty during the visit, having listened to the many Faculty assets and unique strengths, but also to a frank description of the critical issues and threats.

4.7.2 General assessment

The leadership teams of the Faculty and of the Departments are very committed to the goals of maintaining high levels in research, funding and infrastructure. At the level of the organization minor critical aspects appear at the level of the interactions between Faculty and University board and Departments with Faculty. The areas of

funding, publications, appear sound and with positive trends. More critical aspects, in part linked to the Finnish legislation, and having points in common with other Faculties of JYU, appear at the level of doctoral training and at the level of recruitment/career/mobilities.

The Faculty shows excellence in many scientific areas as well as in publishing and outreach. A number of unique infrastructures, research areas and interdisciplinary clusters make this faculty special, highly visible and well-known at international level. Researchers are able to win research proposals at national, EU and international level.

The excellent infrastructure is critical for the high-quality research so it is important to provide strategic university support and a good level of base funding in order to maintain and operate the equipment (maintenance costs and technicians) and this should be provided independently of the number of BSc or MSc students.

The Finnish demography shows a decrease in young people, which impacts on the already lower numbers of STEM subject areas students. The Faculty should thus continue to make efforts in outreach activities, updated and current curricula and modern study programmes and possibly also attract more international students. Communication should thus take place in Finnish and English in order to guarantee integration.

These brief comments are more elaborated in the next sections, which include the specific panel's suggestions.

4.7.3 Research leadership

There is a clear structure in the Faculty: Division into Departments centered on specific subjects, corresponding also to the typical structure of many Science Faculties globally. The processes of decision making appear clear, with specific roles assigned to the Vice-Deans, parallel to the roles in the governing board of the Faculty. Many topics are discussed bottom-up, e.g., teaching strategy or investment strategies. The Dean has some power, but not complete insight into University finances and funding models. Heads of Departments have a lot of power in organizing, strategy, etc., but no funding to allocate. They have to request specific funding from the Dean who in turn has to negotiate with the Rectorate.

Furthermore, from the discussions, it appears that somehow a gap is felt between the Faculty and the University levels and a strong sense of autonomy of Departments emerges, being perceived in some respect as (micro) Faculties, but with their budget determined from the Faculty. During the interviews the panel

heard “micro-management from above is not needed”, a sentence which makes sense, provided this autonomy is balanced by more strategic decisions at the central level to support high quality research and critical infrastructure maintenance and renewal.

The follow-up procedures for individual researchers seem to be appropriate, detailed and fair. But, still from the discussions, there seems to be an issue when it comes to promotions and salary increases as there is no clear strategy and process, respectively there are no clear regulations about requirements, criteria, timelines, etc., which might lead to situations where the best negotiators win over those who expect simply being treated fairly (and typically this means men earn more than women). This can be perceived as an unfair and opaque system of performance assessment, promotion and rewards.

The panel supports the planned redefinition of the research strategy, also with a potential reorganization of the teaching. These aspects should be closely monitored, remaining agile and flexible as circumstances and external conditions change. In connection with all levels of student’s recruitment, the panel suggests researching the age distribution in Finland. This may provide insights on the size and the timeframe of the international openings (perhaps easier to recruit international students in comparison with other Faculties of JYU).

4.7.4 Academic culture

The Faculty has a clear and positive academic culture, embodied in collaboration at international level, as well as a good visibility. The reaction to the COVID-19 pandemic has been good, increasing the follow-up and remote activities and investing in 2021–2022 in an inbound visitor programme to compensate the limited outward mobility during the worst months of the pandemic.

The academic culture is basically non-hierarchical, with a large degree of academic freedom, with a general positive perception. From the discussions, it is generally perceived that there is an increased sense of community in the last few years, even though for some categories, such as doctoral students, there are still margins for improvement. In addition, the preparation of the preliminary assessment report and of the development plan, based also on the results of a questionnaire, has been an important moment of engagement for a larger community, even though the questionnaire did not have a high rate of responses. Still on the positive side, diversity is well present and respected, no case of harassment has been mentioned

and praise has been expressed for the HR staff helping international staff and visiting researchers to get settled.

Yet, during the discussions, complaints have been made about not all communications and important messages being bilingual. Finnish language courses are offered, but during normal office working hours, so many cannot attend. Even those who are around for a while did not learn Finnish yet, as one can get around with English quite well, while not being capable to get involved in administrative tasks at the University.

Finally, concerns have been expressed about the amount of bureaucracy in the last few years, having as a consequence the difficulty to get more people involved. As for outreach activities in Section 4.7.12, the panel suggests the introduction of tools, not necessarily monetary ones, for rewarding the personnel engaged in these activities.

During the discussions the panel was told that recently administrative staff have been withdrawn from the Faculty to operate centrally and, since then, it is more difficult to find the right people to talk to, and when one does find the right person, they are usually overworked and/or do not have time to help immediately. The centralized administration services model needs to be reviewed or perhaps allow some departmental based administration for key critical tasks.

The panel also suggests reinforcing the mentoring system for early-stage researchers and minority members of the academic community, also in view of increasing their percentage in future recruitments (based more than commonly believed on word of mouth), and to check the interest within the foreign community for Finnish language courses outside the most common working hours.

4.7.5 Recruitment

Generally speaking, the Faculty has an efficient recruitment process, adhering to JYU's document on Equality and Diversity and to the European Code of Conduct for the Recruitment of Researchers. The panel appreciates that all recruitments are made through international open calls, that efficiency is usually sought through an open range of levels, thus not necessarily following the traditional scheme of retirement/replacement, and that the recruitment panels at tenure-track and professor positions are chaired by the Dean, a decisive factor towards cross-disciplinarity.

The variety of positions can be described by two almost independent coordinates, permanent/nonpermanent and teaching/research, thus leading to a

multiplicity not so easy to handle and to understand, even for the panel. In connection with this, during the discussions, the panel heard complaints about the insufficient number of university teachers and lecturers while, at least in some areas, too many tenure track professor positions have been awarded at the same time. This has led to a "stalemate" situation for the next several years during which no more new staff can be hired as all TTPs are now in the "pipeline". It is impossible or very difficult for teaching staff to be promoted to professor, even if some of them conduct high quality research.

Even though one should always keep some flexibility for unpredictable events (for instance the hiring of ERC grantees, an arena of great competition within EU), the panel suggests instituting longer-term succession planning, particularly for tenure track professorial positions.

4.7.6 Career and mobility

From the panel meetings, concern emerged about the precarity of working contracts. While the precarity of contracts could and should be seen as structural in the early stages of the academic career, more efforts in the direction of mentoring and well-being, along the lines already mentioned in the development plan, would undoubtedly help to alleviate this critical aspect.

In connection with promotions, a general sense of concern emerges, due to the introduction of tenure-track positions, mostly aimed at young scholars, that seem to leave to university professors/lecturers or even to senior researchers, a very few possibilities to apply for career development. In addition, the panel has been told that the criteria for promotions are department dependent.

Even though academic parochialism should be kept under control, the panel suggests seeking, for the next years, for a balanced career development considering also a few selected calls reserved for lecturers (but still open to those having an equivalent position in other universities).

In addition, the panel suggests restoring, at least in part, the sabbatical system for the teaching staff, since the sabbatical is often helpful in cross-fertilization as well as amplification of scientific contacts.

4.7.7 Infrastructure

The Faculty clearly has iconic and world-leading infrastructures, the most important attraction for researchers in experimental science. In particular, the numbers of the Nanoscience Center, hosting research activities in Health, Sustainable society,

Second quantum revolution, are impressive: 137 researchers, 3 ERC grants, 2 start-up and a funding of 14M Euro/year.

From the discussions in panel meetings, it seems relatively easy to attract funding for new infrastructures, for instance hosting new ERC projects, but more difficult to find funding for maintenance and technical staff. E.g., the calls for maintenance have extremely low success rates. A suggestion here could be to revise the way finances are distributed in the university with support for critical infrastructure from centrally held overheads and core funding (e.g., a base funding for maintenance and technicians, which should be independent from the number of students, because this is concerning research and is independent of BSc numbers).

Opportunities for further international collaboration and contribution to funding of maintenance and technical personnel should be explored. The funding for maintenance of roadmap infrastructure seems indeed to be very competitive and, from the discussions, there are not many opportunities to be successful. Therefore, strategic decisions to maintain this infrastructure should be made. The panel suggests, also in line with the ongoing process of definition of EU (besides national) infrastructures, to open a call at international level for the accelerator, so that other countries may want to join this top-level facility. Other countries could also help to co-finance maintenance and technical staff.

Nevertheless, the panel suggests revising, in part, the criteria for the allocation of external funding. In particular, the overheads of funded research projects should be in part given to the Faculty/University level in order to increase the capability, at those levels, to pursue strategic goals. This policy is also necessary in view of the fact that (almost) no tuition fee is part of the University income. The possibility to introduce remunerative master courses should also be explored.

4.7.8 Funding

The Faculty displays a very good performance when we look at external funding, increased by a factor ¼ in the more recent years, up to the 2022 level of 44% and from many sources (Academy, EU, ERC, national roadmap infrastructure…), as a clear consequence of its international visibility and quality of research. A promising pilot program aimed at the enhancement of large network collaborations has recently been introduced. Furthermore, the level of distribution of the quota of strategic funding, based on MEC funding criteria and on a 3-years cycle, seems adequate, in view of the necessity to take predictability into account.

Nevertheless, the panel suggests revising, in part, the criteria for the allocation of external funding. In particular, the overheads of funded research projects should be in part given to the Faculty/University level in order to increase the capability, at those levels, to pursue strategic goals. This policy is also necessary in view of the fact that (almost) no tuition fee is part of the University income. The possibility to introduce remunerative master courses should also be explored.

4.7.9 Research collaboration

The FORTHEM European Alliance (at the University level) and its spin-off FIT-FORTHEM open new perspectives of collaboration within Europe that should be exploited as much as possible, also because in the next few years, many EU calls will be reserved for the European Alliances. It can be a positive experience of international collaboration and benchmarking not only for students, researchers and professors, but even for the other JYU staff.

There seems to be excellent support from the Research Support Office for supporting researchers to gain funding at national and international level. Nevertheless, the Research Support Office could be strengthened as it receives many requests.

More chances should be explored to create excellence research clusters across disciplines, even transdisciplinary between Faculties, to increase visibility and attract students. For example, maths-sports, math–physics, chem-biology, IT-chem, math-IT (this, also, given the new hiring in the Mathematics Department in AI) could be attractive collaborations leading to third party funding. Such collaborations could also make the teaching more attractive and focused on current trends and developments, leading to an increase of students at BSc and MSc level.

It can be recommended that the researchers consider with whom they want to compare in order to benchmark themselves. This could help to set their own goals. They could also choose entire departments to do benchmarking.

4.7.10 Publication

The Faculty produces an excellent number of high-quality publications, that receive very good to excellent citations. The Faculty is steady in its output, but with positive trends: the growth in the number of publications by the Mathematics and Statistics Department, the growth in the percentage of open plus green publications, now at the optimal level of 90%, with a trend of dominance in this subgroup of the open

ones. The Faculty has also a good impact on policy making, comparable to the Faculty of Sports and Health.

Not surprisingly for a scientific Faculty, the dominant language of publications in English, except for the research having an impact on the local professional community and the large majority of publications appears on peer-reviewed journals.

Globally, the Faculty displays a large and dense network of collaborations, not only with European countries, UK and Switzerland, but also with China and India.

By looking at the number of collaborations, the Mathematics and Statistics Department seems to be slightly behind, even though the relative size affects these numbers. Given the strong research potential of the Department, the panel suggests the creation of more collaborations.

The percentage of open access publications is presumably optimal. As mentioned in the self-assessment document, the trend is to put the open access costs more and more on the university, a real challenge for the university's budget. Since, at least in some sectors of Science, the number of open access journals which do not apply fees is increasing (for instance managed by academic institutions, rather than publishing companies), the possibility to drive some publications in this direction should be explored.

4.7.11 Doctoral training

From the discussions, the panel felt that professors look after their doctoral students and postdoc researchers very well, are inspiring to them and some doctoral students feel extremely motivated and are very enthusiastic. Doctoral students and postdocs have two supervisors, one main or lead, and a second one, not so close to the PhD subject. They can address this second person in case of difficulty with the main supervisor and they are happy with this system.

On the other hand, it seems that, generally speaking, doctoral students do not feel to belong to the same community, not even those of the same Faculty. Some of them interact essentially with their supervisor, but seem not as well connected to the other doctoral students than others. Still from the discussions, it seems also that there are quite different categories of doctoral students: this depends on the source of funding (if any) and from the time elapsed from their entrance in the PhD course, that can be arbitrarily long. These aspects, together with a lack of representation in the governing bodies, affect their feeling and sense of belonging to the same community.

Notwithstanding the Finnish law, which ensures the right to defend the PhD thesis with no time limitation, there should be a difference in terms of rights, duties and representation between “senior” doctoral students and the most active ones, possibly using as criterion the time elapsed from their entrance in the course. A time frame of 4 years is by now an international standard, even though more specific cases could be considered and regulated.

Recommendations

1. A representation of doctoral students should be granted, both at the Department and the Faculty levels.
2. A collective welcome message (in Finnish and English) might help to circulate the information and to increase the sense of belonging to the same community.
3. In connection with the long time elapsed from the entrance in the program to the thesis, which affects badly also the future career perspectives, a dedicated fund for new doctoral students, thought also as an incentive not to delay the time of the thesis defence, should be considered.
4. The support given to doctoral students for scientific writing, methodology and ethics in research is already perceived as good and needs to / should be consolidated.
5. At the full University level, basic software licences should be provided to all doctoral students.
6. A fixed, yearly, minimal amount of support for travel should be granted to all doctoral students, independently of their sub-category, at least to those who are actively present at JYU and engaged in research.

4.7.12 Societal impact of research

The Faculty has slightly decreasing BSc and MSc student numbers. In order to reverse this trend, the Faculty is very much involved in outreach activities, particularly in the experimental sciences, but also in Mathematics, and they receive specific funding from MEC for this.

The impact case studies illustrated in the self-evaluation highlight very successful (and helpful, during the pandemic) start-up companies as well as very good connections to industry. Several Faculty professors are also involved in national panels and are consulted in connection with policy documents.

From the discussions, the doctoral students and postdocs involved in these activities, fundamental also in view of the future recruitments, seem to be very

motivated. With the goal of increasing collaborations/funding from the industry, the actions outlined in the self-evaluation and development plan seem appropriate and feasible to the panel, in particular the pilot project, partially funded from the Faculty, activated at the end of 2022.

The panel suggests providing tools, not necessarily monetary ones, for rewarding the personnel engaged in outreach activities. Since part of the JYU funding from the MEC is related to technological transfer and outreach, one should try to design a good part of these activities according to the MEC evaluation criteria.

4.7.13 Development plan

From the discussions in panel meetings and from the reading of the actions described in the unit's development plan, the panel got the clear impression that the leadership of the Faculty and of the Departments is fully aware of the necessary actions, which have a significant overlap with those proposed in the specific sections of the report and have also been designed on the basis of a questionnaire distributed to the research staff. The actions are relevant, appropriate and feasible, have a time schedule compatible with the University-level cycle and cover these topics: training of young leaders, development of academic culture and improvement of induction process (for both researchers and staff).

The panel appreciates that some of these actions are already planned in collaboration with other Faculties. In connection with doctoral training, in light of the comments made in Section 4.7.11, more coordination and funding at the University level is necessary. More generally, the actions scheduled in the unit's development plan could gain more momentum, when seen in combination with some actions proposed in the report.

4.8 Faculty of Sport and Health Sciences

4.8.1 Introductory remarks

The Faculty of Sport and Health Sciences at the University of Jyväskylä (JYU) is unique in many respects as it is the only higher education unit in the area of sport, exercise and health sciences in Finland. The Faculty has a long tradition of work in this area having started as a Physical Education unit 60 years ago in 1963 with the establishment of the Faculty of Sport and Health Sciences following, in 1968. It has an excellent international reputation as it was one of the units that contributed to the development of this field as an academic discipline in Europe and worldwide with some significant and eminent scientific contributions from pioneering researchers based in Jyväskylä. These scientists are considered as some of the forerunners of Sport and Health Sciences worldwide, and include, for example, the pioneers that formed the European College of Sport Sciences, one of the most influential scientific associations in this academic discipline.

Following restructuring, the Faculty is organised into three 'study programmes' (as described in the Self-assessment report or 'Discipline Groups' as described on the website) Biology of Physical Activity, Sports Pedagogy & Social Sciences of Sports and Health Sciences. There are also three research centres in the faculty: Neuromuscular Research Centre, Research Centre for Health Promotion and the Gerontology Research Centre (a unique collaborative effort in aging research jointly run by the University of Jyväskylä (JYU) and the University of Tampere). As well as several groups based in Jyväskylä, Biology of Physical Activity includes the Sports Technology Unit based in Vuokatti, 350 km to the North-East of Jyväskylä, where around 15 staff members are permanently based, and where the main focus is on winter sports. There was also another major structural development during this evaluation period with the formation of four 'thematic groups' each led by a professor/associate professor: Physical activity and wellbeing in changing society; Competence and wellbeing in teaching and coaching; Ageing and functional capacity; Physical activity, health and performance.

The Faculty is a large academic unit with ~253 staff in total (175 'Researchers & Teachers', 25 support staff and a number of Grant Researchers), 1,223 UG students (student/staff ratio: ~7) and 145 doctoral researchers. The total income is ~ € 18.3 M with the annual core budget allocated by the university set at ~ € 12.3 M and supplementary funding amounting to ~€ 6 M (33% of total income) which is an impressive achievement for this subject area and the size of the Faculty.

4.8.2 General assessment

The research profile of the Faculty is very strong and although this is the only unit in this subject area in Finland, its international reputation is excellent, especially in the two research areas of biology of physical activity/elite sport and gerontology. This is also reflected in the prestigious grants held (e.g., ERC) and increased support from national schemes including Academy of Finland funding. The Faculty has a distinctive research profile with strong traditional disciplines but also an emphasis on multidisciplinary research supported by the three research centers and JYU has identified Physical Activity, Health and Wellbeing as one of its core fields. Participation in three strategic research profiling areas ensures access to collaborations and funding opportunities in areas of research priorities aligned with the faculty's research strengths and in particular the mechanisms, behaviours and assessment tools for physical activity, health, ageing and well-being. The Faculty has excellent research facilities and infrastructure although the main laboratory building is old and requires continuous repairs so there is an urgent need to relocate the laboratories or refurbish the existing building through major infrastructure investment by the university.

The Faculty of Sport and Health Sciences Strategy 2019–2025 was published in 2020 as an infographic with cartoons under the banner "Active Individual-thriving society" with a Vision "We are an international renowned science community that promotes physical activity and wellbeing" and three very general 'main tasks' on research, teaching and influencing society through global networking. As part of that vision the faculty identified several emerging fields within the profiling areas that have the potential to become 'top tier areas' within the next 5–10 years through the work of young researchers who have initiated novel studies and have the potential to make these research areas thrive in the future. The emerging fields have a strong focus on physical activity, health promotion and wellbeing through collaborations with hospitals and clinical environments aiming to develop therapeutic strategies for disease prevention through prognostic research, personalised medicine approaches, digital applications in health and rehabilitation including artificial intelligence.

The research strategy infographic is overall quite basic and generic, and both the vision and the emerging fields are primarily focused on physical activity promotion, health and wellbeing with many traditional areas of strength in the faculty in sport and exercise sciences but also the work of research centres or units (e.g., neuromuscular, gerontology, sports technology) not represented or included explicitly in the research strategy and vision.

The personnel composition includes 175 'Researchers & Teachers', 25 support staff and a number of Grant Researchers. Approximately 25% of the academic staff are in permanent positions. This percentage is quite low in view of the fact that in the main the courses to be taught are known in advance and do not change frequently. Several full professors have retired recently at around the same time, and they have been replaced by entry positions in the tenure track system. Although this is a strength given the high number of young talents recruited, at the same time there is a challenge because there is also an increased expectation and workload on the (few) remaining full professors. Although the tenure-track system appears to be working well and staff are generally satisfied, it is likely to increase costs for permanent personnel in the future with promotions and more importantly, as the bulk of those promoted will likely stay until retired, this will block career paths for younger faculty for several years. This may not be necessarily good for productivity, creativity, innovation, etc. which are often driven by junior faculty members.

During the five-year period, administrative services have been centralized at JYU which means that administrative support personnel with daily contacts, experience and understanding of local needs have moved out of the faculty. These skills of administrative support are valuable not least in connection with competitive applications for external funding. The university should consider the recommendation to allow some key administrative services to be moved back to the faculties to improve productivity and strengthen the support to the Faculty leadership and staff.

The organizational structure of the faculty is quite complex and confusing as the former three departments have been replaced by three study groups (old departments) plus three research centers, four thematic groups and six profiling areas. Although staff seemed to be satisfied with the new structure and with the four thematic groups acting as the main natural physical environments for staff coming together, it also has some weaknesses as it is confusing (especially to outside collaborators) and it may be difficult for staff members to operate in different groups, research centers and areas with such large overlapping interests.

The Faculty has a very good level of internationalization with three international Master's programmes, visiting professors and a large network of international academic collaborators and a scientific advisory board. There is also a new (successful) Master's programme, in collaboration, with the Business School, on responsible management and the business of sports, building on research from both faculties and that of international collaborators. The visiting scholar scheme that was introduced during the last five-year period has been a great success and is also a

valuable recruitment tool, so it is important to continue. There are also opportunities for faculty members to have research visits and periods of study leave abroad that increase collaborations and bidirectional international mobility.

As the only academic unit in the country offering this combination of fields, it is one of very few academic career destinations in Sport, Exercise and Health Sciences and if a graduate in the area does not get tenure in JYU, they may have to look for opportunities abroad.

4.8.3 Research leadership

The leadership and management of the unit is clearly organised and effective. The Faculty Management Team consists of the Dean, two Vice Deans (Research and Innovation, and Education), the Head of Administration, and the four heads of the above thematic groups. The R&I Vice Dean leads the Research Committee and the faculty Doctoral School, and the Vice Dean for Education leads the Educational Committee with the Head of Administration in charge of daily matters concerning HR and finance. The Faculty Board (staff from all academic levels and disciplines) led by the Dean takes final decisions on strategic issues including staff planning, operational and financial planning, curricula, and high-level recruitment.

The Dean and the Vice Dean Research and Innovation lead the research in the faculty. The faculty research leaders are also members of university-level committees ensuring that the faculty works in collaboration with the university leadership. The faculty research activities are supported by the Research and Innovation Services who provide a very useful service and are valued for their contribution to the research successes and achievements. However, the RIS support for large EU grants is not at the same level. There are also various effective mechanisms for providing support to academic staff to develop their research and also to enhance the faculty research infrastructure.

This open and constructive model of research leadership developed in the faculty with well-defined roles and structures, university cooperation and support by the Research and Innovation Services appears to be very effective for enabling high quality research.

The faculty system for research performance monitoring and evaluation ('follow-up practices') is based on an action plan with concrete objectives that are monitored regularly at faculty level, although these objectives and any key performance indicators are not included in any specific documentation and are not reflected in the research strategy infographic. At an individual level there appears to

be an effective research performance monitoring and development process with each member of staff assigned a manager with review meetings at least once a year to discuss their performance and to agree upon goals for the upcoming year. However, the link of individual staff research goals to research strategy and plans of the research centres, thematic groups or study programmes is not clear. Furthermore, the complex faculty structure does not allow for a clear understanding of how potential membership of multiple groups (research centres, thematic groups, study programmes) is considered in assigning a manager to each member of staff. It is also unclear how the managers communicate or liaise with the leaders of the various groups (research centres, thematic groups, study programmes) before discussing research plans and goals with individual staff to ensure that their plans align with the research strategies and plans of the group(s) they belong to or are associated with.

Strengths

- Faculty leadership and management clearly organised and effective enabling high quality research.
- Increase of infrastructure budget in recent years to facilitate renewal of research equipment.

Weaknesses

- Faculty research objectives and any key performance indicators are not included in any specific documentation and are not reflected in the research strategy infographic.
- No clear link between staff research goals and research strategy and plans of the research centres, thematic groups or study programmes.

Threats

- RIS support for large EU grants is not at the same level and some investment is needed centrally to recruit research support staff with expertise in large complex grants to assist academic staff that are targeting major funding bodies such as ERC.
- Complex faculty structure and organisational management with large overlap between study groups, research centres and thematic groups.

Recommendations

1. The panel recommendations for improving research leadership include the simplification of the faculty's organisational diagram and a better link between individual staff research goals and the overall research strategy, the plans of the research centres, thematic groups and study programmes as part of the faculty's system for research performance monitoring and evaluation ('follow-up practices').

2. The RIS support for large EU grants is not at the same level as other funding sources, so some investment is needed centrally to recruit research support staff with expertise in large complex grants to assist academic staff that are targeting major funding bodies such as ERC.

4.8.4 Academic culture

There is a very positive academic culture in the faculty with strong disciplinary teams striving for excellence in their work and producing high quality research. This is facilitated by the three research centres and the multidisciplinary work of the four thematic groups. The various disciplines are at different stages of research development level, but they all engage in activities that promote collaborations and a thriving research culture. It was clearly evident from the discussions in meetings with staff at different stages of their research careers that they are all have a strong sense of belonging and are very committed to producing high quality research that is addressing current societal problems and major issues in their disciplinary areas.

Strengths

- Culture of innovation and excellence that leads to high quality research.
- Strong disciplinary teams with a strong sense of belonging.

Weaknesses

- In some areas there is a tendency towards small research groups, creating 'silos' that may be quite narrow in focus.
- The faculty cannot fund international conference trips for all doctoral researchers due to the size of the doctoral cohort.

Threats

- Statistical/methodological expertise of doctoral researchers was identified as an area requiring improvement as it threatens doctoral research quality.
- Late planning of post-PhD careers threatens future research potential so early career guidance and support are essential.

Recommendations

1. There is a strong and positive academic culture in the faculty grounded on the long tradition of the unit for high-quality research. The main recommendations of the panel relate to the improvements suggested following the 2022 evaluation of the Doctoral School. These include improving the statistical/methodological expertise of doctoral researchers, supervisor training and early planning their post-PhD careers.

4.8.5 Recruitment

The Faculty has an efficient recruitment process aiming to ensure that recruitment contributes to high quality research. The process involves approval of the Dean's proposal by the Rector and the formation of a recruitment panel with faculty and independent experts that oversee the public international application procedure and utilise external evaluation by independent national and/or international experts.

The recruitment process includes standard procedures and necessary stages to ensure equal opportunities in the selection of candidates based on their merits, expert evaluation statements, interviews, potential test lectures and other relevant considerations. The final decision is taken by the Rector on the basis of the Faculty Council's proposal. This process enabled the recruitment of very talented and motivated staff in the tenure-track system although in some cases posts were filled through an invitation procedure without a public call when an exceptionally distinguished scholar was invited to apply for a post.

Recruitment of new academic staff is generally informed by the needs of the emerging and profiling areas and a very positive development in 2022 was the recruitment of three visiting professors, all of whom are among the most highly cited in their respective fields. This is an excellent recruitment scheme to enhance academic culture, research quality and internationalisation and must continue in the future with funding provided by the faculty and university strategic investment funding.

There is also an efficient recruitment process for doctoral students (~5–6 per year recently), post docs and researchers working in externally funded projects that is typically led by the project leader(s) and includes interviews of shortlisted candidates unless a specific candidate has already been identified.

Strengths

- Great improvement of the faculty's recruitment process by appointing an HR partner, who coordinates the process.
- The university has improved the clarity and transparency of the tenure track system by publishing the procedure and evaluation criteria online. Through the tenure track system, the Faculty have recruited very talented and motivated staff.

Threats

- Target number of doctoral graduates per year has not been reached in recent years.

Recommendations

1. The number of international doctoral researchers is quite low given the international links and networks of the faculty, so some steps are needed to increase the number and quality of international applicants.

4.8.6 Career and mobility

There is very good support for researchers at all career stages to sustain their active career paths as evidenced by the responses of staff during the panel meetings but also the progression of four lecturers/senior lecturers who have successfully transitioned to tenure track positions, and one senior lecturer is currently on research leave after acquiring a Research Fellow grant from the Academy of Finland and four current associate professors are expected to be evaluated for full professorships in 2023. The tenure track system is considered to be an effective mechanism for career progression but there are also several staff that have been recruited internationally to different organisations around the world (Europe, Middle East, USA). Although losing talented researchers is a risk, at the same time, it reflects the high-quality research, and that faculty are highly regarded internationally, and it also provides an opportunity to recruit talented new and career young researchers. The Faculty has a special post-doc support group that meets regularly, and the post-doctoral researchers interviewed confirmed that there is good support from the faculty and RIS and they are also encouraged to apply for their own funding. In general, though, post-doctoral researchers are employed in funded projects led by academic staff so there are joint efforts to obtain further funding.

Mobility visits reduced significantly compared to pre-pandemic levels and although there are some support mechanisms for post-doctoral research mobility visits, interest from staff has diminished as new communication technologies for online meetings developed during the pandemic enable effective research collaborations. Although the funding available for mobility does not allow long research visits for all staff, there has been flexible use of various internal and external funding sources (e.g., Erasmus, Academy of Finland, other project grants) to cover short term mobility with the faculty typically covering travel and accommodation and these have been very successful for facilitating international collaborations. There is also a very active inbound mobility programme with the faculty hosting 13 visitors over the past two years through the University's Visiting Fellow Scheme as well as several self-funded visitors.

Strengths

- Very good support for researchers at all stages to develop their careers.
- Mobility has been used successfully for facilitating international collaborations.

Weaknesses

- Funding for mobility linked to research diminished especially for researchers in funded projects.
- Importance of mobility for research quality and career development not always appreciated by doctoral students.

Threats

- Interest in research mobility among post docs has reduced compared to earlier years.
- Mobility visits reduced significantly compared to pre-pandemic levels.

Recommendations

1. Although research mobility was affected significantly by the pandemic and the new communication technologies have enabled remote collaborations, it is still a very important element of research training and careers. The panel agrees with the suggestions for improvement including the encouragement of young researchers to participate in conferences and include mobility in their research plans. This can be facilitated by senior researchers who can use their personal international contacts to help younger researchers.
2. The Visiting Fellow Scheme has been very successful and useful for inward mobility and fostering international collaborations so its support must continue through an annual allocation in the University budget.

4.8.7 Infrastructure

The faculty has excellent research infrastructure that enables high quality research with modern equipment and state of the art instrumentation in well-equipped laboratories. The faculty has systematically increased the infrastructure budget since 2018 enabling new research lines to develop supported also by the installation of state-of-the-art equipment, e.g., shear wave ultrasound for tissue property imaging. The faculty is also currently exploring possibilities and options to purchase some major capital equipment (>€500k) that cannot realistically be bought from the allocated faculty funding.

The faculty's systems, personnel and processes for the maintenance and development of the infrastructure are highly appropriate and include four full-time

technicians that design and build on-site innovative devices in accordance with researchers' needs. The bioanalytics laboratory includes five full-time laboratory technicians, who provide services for researchers and research projects. Two full-time coordinators assist with organising and scheduling of research projects, and infrastructure is overseen by a research director. With these excellent facilities, researchers in the faculty are able to conduct innovative research experiments involving data from the molecular, cellular, tissue and organism levels, as well as from the functional level. The laboratory facilities are also used for teaching, e.g., practical demonstrations and student training.

Strengths

- Excellent research infrastructure that enables high quality research with modern equipment and state of the art instrumentation.
- Excellent technical support and dedicated research director.

Weaknesses

- The main laboratory building is old and requires continuous repairs making it uneconomical.
- The current solutions at JYU for online forms used in survey studies and facilities for research data management do not completely fulfil modern-day requirements for data protection and large data volumes.

Threats

- The quality of the buildings continues to disrupt health and well-being of staff because of poor internal air quality in some areas.
- Allocation of laboratory resources to projects is still challenging, due to limited space and a large number of ongoing projects.

Recommendations

The faculty has been waiting for many years to finalise plans for a new laboratory building and the understanding of the panel is that the university is not going to rent laboratory space on the 3rd floor of the "Osaamiskeskus" that is planned to be located in the Hippos area. This decision leaves basically two options, which are:

1. Renovate the current laboratories building.
2. Move the faculty laboratories to the natural sciences (old Chemistry building).

Although both options have advantages and a move to the natural sciences area on campus would create synergy in terms of research infrastructure, especially in molecular and cell biology and statistics, the renovation of the current laboratories building offers greater advantages for sport sciences research with all the other sport facilities in the Hippos area. In the panel's view, after discussing the issue with

faculty staff and senior management, the first option seems to offer the greatest advantages for the continuation of high quality fundamental and applied research. The university therefore should take the necessary steps to resolve this ongoing laboratory building issue given that faculty has been waiting for many years to finalise plans for a new laboratory building.

There are some other infrastructure recommendations for an electronic system at university/RIS level to support research such as grant proposal submission. The panel also supports the other suggestions for improvement regarding a solution for surveys that can be used offline or within a secure internal network, which is not the case with the current system; such a solution should be developed at the university level. Regarding the faculty strategy, it is important to develop a procurement strategy that enables the faculty to compete internationally with well-funded universities. Current national funding instruments for infrastructure consider only very broad national open research sources, making them unsuitable for the faculty's research purposes; the university level investment plan should include funds to enable procurements for ambitious laboratory research.

4.8.8 Funding

There has been a steady increase of ~9% per year in core funding with the faculty receiving ~ € 12.3 M in 2022. As the core funding is based on various research output and teaching metrics, this represents a healthy increase in performance and outputs. The faculty does not have a devolved budget, from which it can distribute funding to the research groups directly however, the core funding does support research in different ways. These include providing the facilities and research infrastructure, which is a significant proportion of the annual costs, open access publication costs, support for successful research groups through extra human resources to help with teaching and administrative duties and funding some positions for doctoral researchers.

The total supplementary income of ~€ 6 M is approximately half (~49.1 %) of the annual core budget of ~ € 12.3 M allocated by the university and there were some very encouraging trends of increased funding from the Academy of Finland and EU structural funds with the annual proportion of funding by Finnish sources ~30%, compared to 1.8%–5.4% from international sources. There is no specific research funding strategy in the faculty, and it is up to individual researchers to apply for external research funding. However, there were several measures implemented to facilitate external funding that include greater focus on research activities,

increased annual investment in infrastructure to ensure that laboratory facilities are internationally competitive. There was also targeted recruitment of several Associate Professors in strategic areas to help their groups increase funding, and this is very important because the majority of staff do not actually submit any proposals, so most grant applications are submitted by a core group of 40–50 academic staff. Despite this concentration of grants in a selective group of staff, the overall income is impressive for this subject area and the availability of funding for Sport, Exercise and Health Sciences research in general.

Strengths

- Increased core funding over recent years and external research income of ~€ 6 M that is approximately half of the annual core budget.
- Significant increase of project funding from the Academy of Finland.

Weaknesses

- Industry and Business Finland funding declined in recent years.

Threats

- Some funding sources are very volatile because of the small number of successful applications so it is important to maximize application volume.

Recommendations

1. The vast majority of grant applications are submitted by a core group of 40–50 people, so there is scope to improve the number of applicants.
2. The proportion of the total budget made up of competitive funding should be increased consistently. Open and upcoming calls could be better identified and JYU's Research and Innovation Services could be better exploited to maximise success. JYU should revive the opportunity for sabbaticals for its professors, during which new international funding applications could be prepared. Given the gradual reduction of funding from industry and Business Finland over the years, there should be a focus to improve cooperation with companies and industry to increase external funding from collaboration with industry, as done successfully by various research groups and the Sports Technology Unit in recent years.

4.8.9 Research collaboration

The faculty has a long tradition of collaborations with well-established research links and networks with some of the best institutions in the world and this is reflected in the large volume of joint publications with national and international collaborators. International collaborations are particularly important given that this is the only

Finnish institution in this subject area and include active collaborations with other Nordic countries (Nordic Health Promotion Research Network, MoveECE), other European universities and research institutes and networks (FORTHEM) in several countries and throughout the world (USA, Australia and Asia). It is important to note, for example, that in the Shanghai Ranking Global Ranking of Sport Science Schools and Departments, the Faculty of Sport and Health Sciences at the University of Jyväskylä has one of the highest scores for international collaborations amongst the top Sport Science departments in the world (www.shanghairanking.com/rankings/grsssd/2022). Faculty members are also making significant contributions to the subject area through positions of responsibility in several international academic networks and associations.

The national collaborations are underpinned by strategic partnerships with other universities (National Defence University and University of Tampere) through very effective schemes such as joint professorial appointments and joint research centres (Gerontology Research Centre) and there are also collaborations with other universities/centres through joint research projects, mobility visits, co-supervision of students and joint courses (e.g. University of Eastern Finland, Folkhälsan Research Centre, University of Turku). The faculty is also contributing to other university initiatives linked to government and health organisations and most notably biobanks to examine genotypes in Finland.

There are also extensive research collaborations in multidisciplinary networks within the university in health-related topics (rehabilitation, brain research, ageing and physical activity for health) as well as participation in three of JYU's current profiling areas (PACTS2, BC-WELL and JYU.Well) and one recently completed (AAC), with staff also contributing to SOSUS. There are also collaborations through specific research projects with a number of other departments in the different JYU faculties.

Strengths

- Excellent collaborations with the vast majority (91%) of publications with co-authors from outside of JYU, and 63% with international co-authors (120 different countries; Source: JYU Open Science Centre).
- Strategic partners among Finnish universities: National Defence University and University of Tampere (joint Gerontology Research Centre).

Weaknesses

- Number of international research collaborations initiated by senior researchers low.

Threats

- Potential future selection of profiling areas by the university that do not strongly include research areas in the faculty.

Recommendations

Many of the research collaborations in the faculty are based on national and international networks, and these should be supported and continued. The panel also supports the suggestions for improvement described by the faculty. These include the creation of systems for benchmarking with international universities or units that conduct research in similar areas. Furthermore, senior researchers should be encouraged and supported to apply more often for international research funding in collaboration with partners outside of JYU. They should also strive for different expert positions in international research funding institutions. The faculty should also exploit multidisciplinary collaboration opportunities within JYU, especially in the profiling areas.

4.8.10 Publication

The faculty has a very strong publication profile with high quality research outputs across the different disciplinary areas but in particular in sport sciences, health related research and gerontology. Faculty staff have published some seminal and highly influential papers over the years that defined research directions in the different disciplines, and this is reflected in the publication quality and bibliometric analyses with ~60% of the publications in category A international peer-reviewed scientific journals. However, staff also publish in Finnish professional outlets in order to inform sport and health professionals and policymakers. This is particularly important and essential to influence applied practice in these areas, especially given the unique role of the faculty in Finland as the only academic unit in sport, exercise and health sciences.

The faculty does not have an explicit publication strategy linked to the overall faculty research strategy or the appraisal/promotion system and the main reason given is the different practices in the various disciplines of the faculty. However, the faculty and university generally recommend and encourage certain publication policies, e.g., to choose open access outlets wherever possible. These appear to be working because the vast majority of outputs (91%) are published in open access journals, despite some conflicts between ethical restrictions and open data.

Although there is no specific publication strategy, the faculty is monitoring publication activity regularly aiming to further improve the proportion of papers published in English peer-reviewed open access journals.

Strengths

- 60% of publications are in international peer-reviewed scientific journals (category A) with a 42% increase in the number of category A articles (N=348) between 2018–2022
- 91% of publications open access with strong impact through citations in academic journals and policy documents internationally by Intergovernmental Organizations, governments, IGOs, think tanks and other organisations.

Weaknesses

- Faculty size is small in relation to other international departments in this area which is likely to mean fewer publications
- Publication activity variable between different groups/areas

Threats

- Large proportion of publications linked to doctoral dissertations that may lead to many smaller scale papers rather than fewer but major substantial papers given the requirement of 3 publications from PhD theses.
- No specific publication strategy linked to overall research strategy and staff appraisal/performance monitoring system.

Recommendations

Although the publication profile of the faculty is very strong, the threats and weaknesses should be addressed as these will have the potential to increase high quality publication activity across the different subject groups in the faculty. This requires a strategic approach, however, to ensure that different groups formulate action plans for a range of different publications to highlight and disseminate their work, including review papers, large scale, and substantial original research papers, edited works etc. The panel also agrees with the self-assessment recommendations that the large proportion of publications that are related to doctoral dissertations not only limits the number of articles that supervisors write independently but also leads to smaller scale papers rather than fewer but major more substantial papers that likely to be more impactful and influential, given the requirement of 3 publications from PhD theses. Social media can be utilised to disseminate publications more widely and although this is normally initiated by the authors, the faculty Communications Specialist and university/RIS or media/communication services should lead these activities through news items, social and traditional media

campaigns (e.g., local TV and newspapers or wider international outlets such as The Conversation).

4.8.11 Doctoral training

The faculty has a clearly structured and well-functioning doctoral programme although there are similar problems as in other JYU faculties with large number of passive, part-time or off-site students. There is a structured programme of training on ethical and other issues via mandatory courses that are credit bearing although the thesis does not carry a specific credit level. Doctoral students are also encouraged to develop their own networks by attending conferences and interacting with visiting international staff. There is a good diversity among the doctoral cohort with 11% international and 63% female students. Supervision is effective and each doctoral student is assigned at least one supervisor (typically 2–3) and at least one independent follow-up group member. They are required to complete mandatory courses to support their knowledge and skill development, e.g., in communication, research methods and ethics."

Strengths

- Well-structured programme of doctoral training.
- High level of doctoral student satisfaction and sense of belonging.

Weaknesses

- Dissertations carried out independently outside research projects, some of them outside the faculty, may be in a disadvantaged position, as they may not receive the same level of support as those based physically on campus.
- The length of the PhD registration period until completion and graduation has increased to almost six years, which is partly due to an increase in the proportion of researchers who work part-time during their PhD.

Threats

- The faculty cannot fund international conference trips for all doctoral researchers so other sources need to be explored.
- No extensive collaborations across disciplinary areas.

Recommendations

1. Doctoral students should be encouraged to apply for funding from Finnish foundations, and the panel would also encourage the use of split funding models, whereby the faculty shares the salary costs with other funders.
2. The requirement of three published papers in the thesis should be reconsidered and different faculties may need to have different requirements

in terms of number of publications from each thesis. A drawback of this requirement is that it gives students finishing in 3 (4) years incentives to publish in “safe”, less visible, lower-than-necessary-quality outlets and divide their work into smaller and less impactful publications.

4.8.12 Societal impact of research

The faculty conducts high quality research that is highly relevant to major societal problems relating to physical activity, health and well-being, and ageing, but also to industrial and economic impacts such as sport technology. The three impact case studies are excellent examples that reflect these contributions in some of the most important areas for societal impact on Active Ageing, physical activity monitoring of children and adolescents and Sports Technology. There is also extensive evidence of societal impact generated by the work of academic staff through a wide range of activities including social and popular media activity, public engagement activities and popular science events, collaborations with local hospitals, High Performance Sport units and national organisations for elite sports, industry and commercial companies, government and scientific and professional associations.

The faculty formed a societal interaction working group, consisting of members from various disciplines who plan events and specific actions related to impact. The faculty also has a Communications Specialist who writes regular press releases and promotes the research in addition to social media presence and engagement by staff, students and centres in the faculty (Gerontology Research Centre, JYU-Vuokatti etc).

There are several examples of societal impact through non-academic collaborations such as membership of key organisations at national and international level, including policymaking through influencing government and educational policies, strategic partnerships with non-academic collaborators. These examples indicate that the faculty has utilized its full potential for societal impact by interacting and liaising with relevant stakeholders to disseminate and translate the research outputs and knowledge generated from the research for public benefit.

Strengths

- Excellent range and examples of societal impact and influencing a wide range of stakeholders
- Societal interaction working group and a Communications Specialist to facilitate public engagement

Weaknesses

- Limited commercialisation activity
- Challenges in the provision of central administrative services

Threats

- Some staff perceive that societal interaction is not as important as research or teaching.

Recommendations

1. The faculty has a very strong record of societal interactions from dissemination activities to collaborations with non-academic stakeholders and industry. Although commercialisation activity is limited there is scope to increase interaction with industrial partners through JYU's Research and Innovation Services. JYU-Vuokatti have been successful in developing new technologies and software and, their expertise could be used to drive the commercialisation agenda in other areas of the faculty.
2. A more important issue, however, is the staff perception outlined in the 'Challenges' section that societal interaction is something separate that detracts from research and teaching. This is an outdated view of societal interaction and public engagement, and impact activities should be central to the research work of the different groups not only to inform the public about the outcomes of their research but to actually inform their research directions and problems examined through interactions with the public, participants, patients and other stakeholders of their research that they should be engaging with regularly. This perception needs to change through training and development activities but also through a strategic approach to impact as part of a more comprehensive research strategy.

4.8.13 Development plan

The Research Development Plan of the Faculty of Sport and Health Sciences includes Goals and Improvement Actions in four different areas of improvement identified (Impact & Funding, Doctoral researchers, Infrastructure, Innovation). The development plan is relevant, but many actions are generic and quite vague without specific details, no time schedule and no follow-up actions and no sense of the overall timeline as the development plan title indicates start in 2023 but no duration is given. Given the generic nature of many actions it is difficult to determine their feasibility as there are no specific details and timeframes. However, the proposed actions are in general justifiable in most areas of improvement although in the

Innovation area it would have been useful to link the actions specifically to the relevant faculty units/centres. For example, there is no mention of the Sports Technology Unit in Vuokatti in the Innovation area and whether all these actions will be led by that unit and/or the other Faculty research centres.

The main challenge is the physical infrastructure and the faculty building and this will impact upon a number of the other areas, so the actions need to be coordinated closely with the university senior management. Most areas requiring development measures have been included in the development plan but there are no specific and detailed actions on the societal impact of research as most 'Impact & Innovation' actions are related to external partners for research collaboration and funding proposals.

4.9 Jyväskylä University School of Business and Economics

4.9.1 Introductory remarks

The disciplines within the unit have been taught at the University since 1967. The business school Jyväskylä University School of Business and Economics (JSBE) has had the status of an independent faculty since 1999. In 2018, JSBE received accreditation from AACSB (Association to Advance Collegiate Schools of Business) in 2018. JSBE is organized without separate departments. Instead, the disciplines, Accounting, Corporate communication, Corporate Environmental Management, Management and Leadership, Marketing, Strategy and Entrepreneurship and Economics are the administrative units. The research is organised in three Focus Areas:

1. Sustainable Business and Economy
2. Digital Business and Economy and
3. Policy-Relevant Economics and Competitiveness of Economy

The research activities are organized into eight groups.

1. Sustainable Business
2. Responsible Management, Leadership, Digitalization & Strategy
3. Organisational Ethics, Leadership and HRM
4. Strategy and Entrepreneurship
5. Digital Marketing and Communication
6. Accounting Change
7. Empirical Microeconomics
8. Jyväskylä International Macro & Finance

The business school and JYU has chosen to follow the AACSB standards to assure quality in research and education. This a mission driven accreditation with a strong focus on scholarly as well as societal impact. While the latter mainly focuses on the impact from faculty and faculty in collaboration with external - business community – partners, the former focuses on faculty and student impact. The accreditation and the quality assurance model within the AACSB form a good basis for systematic and mission driven development and follow-up of research, education and collaborative activities with a focus on scholarly as well as societal impact. A long-term plan to apply for EQUIS accreditation provides a good roadmap for increasing academic and managerial quality. The school has a significant impact on the success of JYU.

4.9.2 General assessment

The University's budget model is a key challenge, especially pertinent at the School of Business and Economics. The model lacks transparency and predictability for strategic decision making at faculty (or department) level and contributes to giving it a short-term, non-strategic nature. This could also be a challenge for the AACSB re-accreditation as this expects a long-term budget to support the school's strategic plan. During the five-year period since the most recent assessment, the Business School has had a predictable significant increase in the number of Bachelor and Master's level students but was allocated no additional resources, due to a "freeze" of the allocation of resources to the faculties. Despite this, the faculty members at the School have impressively also managed to increase their research output.

Centralization of administrative services is a severe problem that is likely to increases over time as new administrative employees expected to support faculty members lack experience from daily, face-to-face work at the faculty/department level or in other units. This will further decrease the quality of support services. Business schools have their customized administrative needs that differ from other faculties.

The tenure track system at JYU is not clear to all faculty members nor are its advantages communicated in a clear manner. We recommend that its pros and cons be reviewed and that its current form be reconsidered. Business school would benefit from a vision of ideal faculty structure and a plan to get there. A problem is that the system can be conservative as it reduces possibilities to recruit from outside the school. Tenure track positions for who already have permanent contracts is, presumably for good reasons, rare in countries like the U.S., that had a tenure track system for a long time. Moreover, at JYU, the tenure track system is not an "up-or-out" system. If the bulk of the large number of current tenure track positions result in promotions, this could have strong negative effects on career prospects for junior faculty who have not been given tenure track positions.

At the Business School, the tenure track system is paralleled by a large number of short, fixed-term contracts with varying degrees of teaching obligations. Many faculty members in non-permanent positions have a rather patchy and uncertain career, which affects their research efforts negatively. If it is not possible to have more permanent positions, we recommend extending the length of temporary contracts – reflecting also the long-term perspective being possible due to stable student admissions (most of the courses taught are given and thus highly predictable). Dearth of employees with permanent positions might mean that

faculty in short fixed-term contracts, including doctoral students, are expected to be involved in the development of the curriculum of courses – which risk commitment and may slow down the doctoral student in their progress for the degree. Faculty members in permanent positions do not have sabbatical leaves enabling them to spend more time concentrating on their research and on renewing their teaching. Research activities and output thereof are only to a limited extent aligned with the mission of the School ("Supporting Competitive, Digital, and Sustainable Transformation in Business and Economy"). Rather, it appears as merely lip service is being paid to it. This can be confusing to the external collaboration partners.

The School's funding of participation in international conferences and seminars is good. Incentives to apply for international (EU) funding need to be strengthened and time-consuming application work needs to be supported. Failure rates are high and therefore those who apply should be rewarded for trying. There could also be more rewards, especially non-monetary rewards, for very good teaching, excellent publications and other major achievements. It seems as if the only criterion for promotion is excellence in research. In business schools, excellence in teaching and outreach activities also matter.

Doctoral training. As in other faculties at JYU, there are (too) many part-time, off-site and possibly passive doctoral students registered in the system. This is likely using faculty members' resources in an inefficient manner and is a problem that needs to be addressed. The two doctoral programs could be streamlined with tighter admission criteria, lower numbers of students, and stricter rules for staying in the active category. A strength of the Business School is the availability of high-quality structured programs (FDPE, KATAJA, GSF) at the national level for doctoral students in economics, business disciplines and finance. Thus, a graduate school at university level is of limited value to these students. A more severe problem is the limited funding for doctoral students and post-docs, especially for longer uninterrupted periods.

Benchmarking. While there is regular benchmarking against other Finnish Business Schools no formal, systematic, international benchmarking occurs. And yet, benchmarking with other Schools of similar size that are part of a university can give valuable information on how to improve but also about what is working well. At the level of individual employees, quantitative benchmarks (such as journal rankings and citations), if sensibly used, are also valuable. A group of friendly international benchmarking schools can become a useful network for academic and managerial cooperation.

Data, especially registry data, are widely used in particular in economics research at the Business School. These should be recognized as crucial research infrastructure by university, similarly to laboratories for science faculties. They are expensive and it is rather difficult to obtain external funding for acquiring them and especially for covering costs for remote access, maintaining and updating them. Collaboration with other Faculties at the University could help, at least partially.

The portion of international faculty and doctoral students is relatively low. With internationalization of doctoral training and publications, professional norms and conduct at work differ increasingly less. (Cultural differences are likely more important in the private sphere.) A key barrier that was noted among the staff is the Finnish language, which is the sole language of administration and its communication with faculty members. As a consequence, non-Finnish speaking faculty can contribute less to work in committees and working groups. This not only means that they become less integrated into the local working environment but also that their inputs in the form of valuable knowledge and information may be lost. Language, however, is not the only issue involved in integrating international personnel and making them feel welcome, regardless of how long they will be staying; there are other academic cultural issues as well that need to be considered so that newcomers may feel welcomed and included.

Publications. Societal impact is good in particular on the discussion of policy and is mainly in the areas of economics of education, health and labour. This is not surprising and as they are also fields of strength in terms of publishing.

4.9.3 Research leadership

JSBE's strategic indicators are outlined in the Operational and Financial Agreement between the Rector and JSBE. JSBE Strategic Management Plan (SMP) defines strategic objectives for 2021–2024. The Dean and Vice Deans regularly report on the advancement of the JSBE to the Management Board. Implementation of the strategy is followed regularly through the realization of research and educational targets and related indicators given to JSBE in the Operational and Financial Agreement, quality indicators for the education of the JYU, and the additional strategic indicators selected by JSBE. Results of the research and educational targets are annually confirmed by the Faculty Council and reported to the Rector and stakeholders in the Annual Report. Faculty members and doctoral students are annually given feedback on their performance. The progress of those in the tenure track is monitored two times per year.

Strengths

- Continuity and stability to the work of the leadership, the Deanship of the school, with a strong focus on research evidenced by the positive trend in the number of and quality in scientific output.
- It follows from the AACSB accreditation and the quality assurance model that the unit conduct follow-up and evaluation of the research environment and research outcomes.
- Formal feedback on performance is given at the individual level (annual professional dialogue) and at the unit level.
- The Dean can strategically allocate funding to the strategic areas.

Weaknesses

- JSBE research groups can be created freely and are not coordinated. This facilitates bottom-up initiatives but at the same time the research leadership can be perceived as unclear.
- The unit's mission not clearly communicated across the personnel.
- A relatively large management group (The Faculty Management Board consists of the Deans (3), Heads of the Disciplines (7), Director of Advance Executive Education, Head of Administration, and Head of Student and Academic Affairs)
- Unclear expectations about criteria for advancing in the tenure track system and uncertainty about when new positions will be announced.
- Unclear contribution to the United Nations 17 Sustainable Development Goals (SDGs) by goal – only reported in aggregate (as claimed in the self-assessment report to be important).

Threats

- Too strong focus on national standards and the DORA declaration. Although it promotes fair and transparent evaluation practices in academic research, the in-house system for follow-up of research impact risk being too narrow (university and national level only).

Recommendations

1. Clearer communication about expectations on performance in the tenure track system and a long-term plan for announcement of new positions.
2. International focus in benchmarking, use for example of a mix of qualitative and quantitative data with reasonable focus on the international ranking of journals (use multiple lists to be inclusive and encourage multidisciplinary research collaboration).

3. Clarify the contribution – research impact – on sustainable development, for example, by measuring the share of research and policy publications per SDG. How large a share of all publications is related to at least one of the SDGs reported by SDG?

4.9.4 Academic culture

The school has an academic culture with formal and informal structure that fosters high quality research with international scholarly impact as well as societal impact. There are, however, some challenges. A concern is the high number of doctoral students without employment or only part time employment being excluded from the academic culture. Another concern is a relatively high share of faculty continuing to work remotely after the pandemic.

Strengths

- International accreditation for business schools, AACSB facilitates research excellence and high quality in education with the student in the centre, clear expectations on faculty to contribute with research and societal impact parallel to learning and teaching activities.
- Incoming international mobility, guest researchers.
- International faculty members and international doctoral students.
- Outgoing international mobility, faculty with international experience (research visits in, for example, Canada).
- Formal structure in form of seminars, workshops and meetings and, for example, the Summer Seminar of Finnish Economists.
- Grant researchers (on scholarship and not formally employed) are treated as faculty members and offered the necessary services for their work, such as workspace and university computer account.
- The study curriculum of the doctoral school includes obligatory courses on research ethics and responsible conduct of research.
- Gender balance among mid-level research and teaching personnel is good.

Weaknesses

- Large share of doctoral students works remotely from campus and have no contract or only a part time contract. It is unclear if those not employed by the unit are part of and contributing to the academic culture.
- Excellence in research, teaching, and service is not visibly recognized.

Threats

- Difficulties getting people back to campus after the pandemic – threat to the research culture.
- While there is diversity among doctoral students, there is less so among the senior staff.
- The challenge to maintain a non-hierarchical academic culture with academic freedom (a challenge for Research leadership, 3 above).

Recommendations

1. Make remote work a strategic issue and set up a plan for getting people back on campus, parallel to the ambition to develop the communication plan to ensure that faculty who work remotely feel connected and engaged with the school.
2. Involve the remote doctoral students more in the life of the school.
3. With the goal of internationalization, develop strategies for encouraging international staff and students, which would contribute to creating a welcoming and inclusive diverse academic culture.
4. Create a culture of recognizing and supporting excellence.

4.9.5 Recruitment

Although the recruitment processes are well-organized and structured, the current form of the tenure track system risks the unit's losing or not attracting the best talent. A further concern is that the system might be perceived to signal low value on teaching since senior lecturers are not included in the track. The school is thoughtful about their "own" faculty but risk losing qualified candidates to the different positions as they state that oversupply of qualified applicants can make the career advancement of their own faculty more difficult. Academic culture builds on mobility – at least to some extent. The quality system that JYU has committed to follow - the AACSB standards - and also is accredited according to, builds on the school's maintaining and strategically deploying sufficient faculty who collectively demonstrate significant academic and professional engagement that, in turn, supports high-quality outcomes consistent with the school's mission. The current model with tenure-track parallel with teaching positions might make it difficult to live up to these standards.

Strengths

- Structured model with clarity in the types of different positions
- High performing faculty members and doctoral students

Weaknesses

- Static composition of faculty – the tenure track system is closed for a long time ahead
- Recruitment strategy (lack of) that supports the mission
- The current model with the tenure track system in parallel with teaching positions risks unequal opportunities for research and signals low value assigned to teaching.
- Fixed termed contracts outside of the tenure track model for young promising and well performing scholars (fill-in for faculty members with senior lecturer and university teacher positions currently in the tenure track system – the teaching positions are cushions)
- No incentives for faculty with teaching positions to invest in research

Threats

- The current model for tenure track
- Uncertainties in the university funding model
- Exit from young and senior faculty members performing well that are outside of the tenure track system.
- Living up to the share of faculty meeting the criteria for faculty qualifications needed to maintain the AACSB accreditation.
- Not getting the best candidates for the full professor positions as the JYU's tenure track model is applied in the recruitment of professors.
- Lack of high-quality job applicants in certain areas.

Recommendations

1. Review the pros and cons of the tenure track model and decide what needs to be done.
2. Make a long-term plan on how to achieve an optimal structure of faculty positions.
3. Incorporate the position senior lecturer in the tenure track model.
4. Better communicate the possibilities or ways of progressing in the tenure track system.
5. Provide incentives for faculty with teaching positions to invest in research.

4.9.6 Career and mobility

The overall assessment for career and mobility to some extent overlaps with the overall assessment of recruitment. Similar concerns are found regarding the tenure track system. The internal career opportunities that this intends to create might

actually be counterproductive and increase the potential risk of losing talented faculty members. The unit offers support for international collaboration and international mobility is encouraged but this heavily depends on faculty attracting external funding. Young scholars outside the tenure track system and senior faculty in teaching positions report lack of support to sustain projects and the research output necessary to position them for potential tenure track positions.

Strengths

- Good international networks
- Investment (funding) in international mobility (conferences and longer visits) for doctoral students and faculty members
- AACSB accreditation process, a set of criteria is used as the basis of judgment for determining the qualifications of the faculty members. This information constitutes a tool to support and monitor career and mobility development plans.
- An International Coordinator supports and stimulates the mobility
- External project applications attention is paid to international mobility
- Starting grant (total of 60,000 EURO) to build international networks and research groups at the entry stage of the tenure track system (funded by the JYU Rector)
- Doctoral students have two supervisors and study plans (career planning and support)

Weaknesses

- Unclear expectations on junior faculty regarding the tenure track system and uncertainty among younger faculty about how the system works and when and if openings will come
- Unclear incentive structure
- Unequal opportunities for research (making the teaching and administrative work unequal as well)
- Mobility is dependent on external funding
- Language barriers in administrative work
- Low (none) share of post-doctoral positions, fixed term contracted university teachers and senior lecturers are presented as post-doctors

Threats

- National level funding of universities
- See also section 5.4

Recommendations

1. Create incentives for all positions to do research parallel to teaching.

2. Improve the communication related to tenure track system expectations.
3. Long-term plan for the announcement of new tenure track positions
4. See also section 4.9.5

4.9.7 Infrastructure

The school has the infrastructure that is needed to enable high quality research and renewal. The school facilities are well functioning, and the meeting room standard is high. The different disciplines are located at different floors in the house which is said to hinder cooperation across disciplines. There is a well-functioning infrastructure for meetings (rooms and technology). While the centralized administrative support offers scale opportunities (cost savings), it might have come to the cost of scholars doing significant administration (hidden costs) and is less adapted to the school context and needs. The main infrastructure is data in the form of register data from FIONA (Statistics Finland), Orbis database and self-collected data. The software is Stata (licenses), R (free), EViews, RATS, Atlas, TI, NVivo and Zotero. The school sees clear scale opportunities in centralised purchasing of data and software licences.

Strengths

- Access to national databases
- Facilities offer rooms and technology for onsite and remote meetings

Weaknesses

- Decentralized organization and purchasing process of data, software licenses
- Difficulties in synchronization of files with partners from other universities
- Lack of clarity in/knowledge about available resources to be invested in infrastructure

Threats

- Costly to invest in register data and lack of resources (cut downs)
- In-efficient and legally uncertain organization of purchasing of licenses and data storage opportunities
- Issues with the qualitative data analysis programs

Recommendations

1. Invest in university-level Zotero storage subscription, license for ChatGPT-4 and similar
2. University should treat data and storage space as one form of infrastructure, similarly to physical laboratories
3. Allow administrative support to be recruited at the faculty level

4. Data in the school level should be treated as important research infrastructure and shared with other disciplines outside the business school (facilitates collaboration across disciplines and save resources)

4.9.8 Funding

According to the self-assessment report, the total annual funding of JSBE has increased from 9.9 to 11.2 million euros in the period of 2018–2022. JSBE's funding consists mostly of government-based funding, including basic funding, which is based on JSBE's operational results and funding for strategic initiatives. Besides the government funding, JSBE funding includes the sales of Advance Executive Education (~15% of aggregate funding) and external research funding (10%–20% of aggregate funding). The one-year foresight of the budget makes a long-term perspective and strategic funding decisions difficult. The school is notified about budget decision made by the Rector in December, and this hinders strategic leadership. This offers too little foresight for the leadership of the business school. A potential incentive problem is the fact that the school is not allowed to balance the surplus at the school level (it is returned to the central level). Strategic investments to JYU intended for the business school seem to have stayed at the central level. At the same time, the school increased the number of seats at the business program – in accordance with the government's intention.

Strengths

- Access to national foundations (e.g., Yrjö Jahnsson foundation www.yjs.fi/en/) specific for economics
- High production of degrees (attractive and high quality undergraduate and master level programs)
- Faculty members and doctoral students are active in seeking funding from national sources
- Successful executive education generating extra revenues
- Frequently applying for funding from the Academy of Finland

Weaknesses

- Lack of transparency in the university level budget process and in the algorithm for how funding is allocated across faculties – core funding model is uncertain and hinders a long-term perspective
- Low on ERC and Marie Curie etc. international research funding applications

Threats

- Short run perspectives (due to the -unclear - budget model at the university model)
- Deflation of resources due to the economic situation in Finland (and worldwide) and additional funding from the government not being passed on to the school

Recommendations

1. Allow the school to retain potential surplus – at least up to a certain level.
2. Implement a long-term financial plan for both university and school level.
3. Strategically organize applications for Marie Curie Individual Fellowships, which are more accessible than ERC grants and which can be strategically planned research. This can be done through Master classes at JYU for potential candidates who wish to work with current staff. This will also increase international collaboration at the same time that it will generate revenue.
4. Improve the budget process, increase it transparency. Important that faculty understands their role in the revenue generation at the local level.
5. Increase cooperation with companies in research funding.

4.9.9 Research collaboration

The self-assessment report says that about 40% of JSBE publications in 2018–2022 are made in collaboration with international co-authors – also confirmed in the meetings. The data illustrates co-authorship of journal articles to be most common with researchers from United Kingdom (10%) followed by Germany (8%), Sweden (7%) and the US (5%). The University of Helsinki stands out among the universities in Finland with 9% followed by the University of Tampere (7%), the Labour Institute for Economic Research (7%), and the University of Turku (7%). Altogether, JSBE faculty members have co-published research articles with scholars originating from 47 different countries and representing 232 various institutions in 2018–2022. The school measures the impact from the different countries (where the co-authors are affiliated). Research collaboration occurs with social sciences and economic history (Faculty of Humanities and Social Sciences) and psychology (Faculty of Education and Psychology). Another example is the assignment from the Ministry of Education, which has granted JSBE national-level responsibility for research in the Economics of Education in cooperation with the Finnish Institute for Educational Research at JYU. The collaboration with other disciplines at JYU is, for example, illustrated by

the participation in JYU.Wisdom (Resource Wisdom) research network. There is little evidence of the multidisciplinary research resulting in high impact journals – something that normally is very difficult to achieve within the field of economics and business. The unit works to establish and maintain external and internal collaboration and networks.

Strengths

- Strong research within disciplines
- International collaboration and co-authorship
- International perspectives and mapping of co-authorship and collaboration
- Non-academic collaboration (give access to empirical research data for both faculty and various students preparing their theses)
- JSBE faculty hold significant local, national, and international expert positions (societal impact)

Weaknesses

- Lack of multidisciplinary research that translates to international peer review journal publications – the aim to be multidisciplinary may come at the cost of less impactful (lower ranked journals) research output and incentives to publish in less well recognized journals are weak, at least for faculty members, post-docs doctoral students aiming for a tenure – demonstration of discipline specific skills is still the international model when schools are looking for talent.

Threats

- Without more strategic research leadership in applying for international funding as a PI or a project member, the unit's research may become more national and local as opposed to gaining an international framework.
- Opportunities are lost on fruitful multidisciplinary cooperation inside JYU

Recommendations

1. Clearer benchmarking against peers internationally
2. Active research collaboration with IT faculty on business related issues

4.9.10 Publication

The unit publishes overall well and mainly in international peer review journals (in English) complemented with reports, books and book chapters (to some extent in Finnish and other languages (for example Swedish). Almost 60% of JSBE publications fall into the field of business, management and accounting followed by social sciences (32%) and economics, econometrics and finance (25%). According to

Dimensions' categorization, the top 5 fields of science in JSBE publications are Commerce, Management, Tourism and Services, Economics, Business Systems in Context, Marketing and Strategy, Management and Organisational Behaviour. The productivity of the JSBE faculty in publishing has increased substantially over the period from 2018 to 2022. The total amount of publications has increased from 203 (2018) to 262 (2022). Most of the publications are peer-reviewed articles (70%), and their share has increased during the last few years. The number of peer-reviewed scientific articles in JUFO categories 1–3 has increased from 107 articles (2018) to 168 articles (2022). At the same time, the number of faculty members has remained the same. Strategically, the school aims to publish in established, high-quality, peer-reviewed international journals in the three JSBE research focus areas – for the measurement period, 91% of the peer-reviewed publications are within the areas. JYU's open science principles are evidently something that the school follows – an ambition that can be potentially counterproductive in relation to the aim to publish in high-ranked international peer review journals.

Strengths

- Clear positive trend in publications (quantity and quality)
- High share of publication output is published in international well-established peer review journal and in English
- Publication strategies are discussed at planning days and work-place meetings

Weaknesses

- In house categorization of quality measurement
- Mixed signals from the DORA declaration and the quantification of international research impact
- Lack of clear publication policy and international benchmarking with relevant peer schools – the strategy can be more distinctive

Threats

- Open access - of course a wide dissemination, speedy publication and access are positive, but the latter might raise quality concerns related to predatory journals and open access is in general costly (at least at the established publishers).

Recommendations

1. Complement the JUFO model with internationally recognized rankings
2. Recognize excellence in research

4.9.11 Doctoral training

JSBE's doctoral training is organized through JSBE Doctoral School within two Doctoral programmes in economics and business studies. Doctoral seminars are primarily run by the disciplines. The Research Committee works as a steering group for the JSBE Doctoral School. The doctoral students seem to be responsible for finding their own funding and spend a significant amount of time writing bids to research funders and, in some cases, do this in parallel with teaching or working full or part time. The high number of doctoral students (150) is, in the context of number of doctoral degrees issued annually, confusing. The average time to complete a doctoral degree seems high (close to seven years). The doctoral programs have a clear structure with courses and credits for the thesis. The doctoral students are well aware of the expectations for their theses in terms of quantity (number of papers) and quality (published or publication standard). JSBE doctoral students must take a research ethics course as part of their studies, and the study curriculum also includes a mandatory course on responsible conduct of research and a course that offer knowledge and understanding of various career paths. Doctoral students have the opportunity to, and are encouraged to, for example, go on research or teaching visits and conference and seminars abroad. The doctoral students have access to shared office space and also to research infrastructure such as quantitative and qualitative analysis software (e.g., Stata, SPSS, NVivo/Altas.TI).

Strengths

- The national doctoral school, KATAJA, FDPE and GFS, doctoral courses in Helsinki
- University level doctoral program offering courses in, for example, research ethics
- Structured programs (business and economics) with clear expectations, good organisation of supervision support of doctoral students, annual follow-up with individual study plans, curriculum and courses are well organized at the national and faculty level, support to go to international conferences

Weaknesses

- Unclear funding structure
- Low completion ratio
- Average time to defence of thesis clearly above the target level of 4 years
- Too many doctoral students to take care of

- The intake is not regulated in the sense that doctoral students do not have to have funding to be admitted - there seems to be many different pathways for doctoral students, some more likely to lead to success than others
- The quality assurance among doctoral students outside of the university is uncertain
- Follow up measures (key performance indicators) are not useful for strategic decision-making since all kinds of doctoral students are merged into the same group

Threats

- Unequal opportunities for doctoral students depending on funding situation

Recommendations

1. Implement a follow-up structure of the doctoral school that better reflects the reality of doctoral students' participation in the programs, and facilitates strategic decision-making, for example, by presenting the numbers for the doctoral students on campus in one group and doctoral students outside JYU in another.
2. Tighten the doctoral program admission criteria and active status requirements

4.9.12 Societal impact of research

The school has a strong focus on research with the potential to contribute to global challenges and the UN sustainable development goals. The three focus areas mentioned earlier are clearly relevant, current and connected to sustainable development. Based on policy citation impact, JSBE has the highest impact across JYU on recent policy. According to the Overton database, JSBE research (160 articles) has been cited in 461 recent policy documents (the last 5 years). The most significant policy impact is found in Germany, Finland, International Governmental Organisations, and the EU. Based on the classifications and data in the Overton database, the policy impact is dominated by research publications in the field of economics. Other fields of study have also been impactful, as can be seen, for example, from media coverage.

Strengths

- Strong societal impact from publications and engagement of faculty as experts at the local, national and international levels
- An international accreditation that values and emphasizes societal impact
- Overton database

Weaknesses

- Research funding from companies rather low for a business school.

Threats

- Without strengthened international collaboration (cf. 4.9.9 above), the strong societal impact from publications and engagement of faculty as experts at the international level may decrease

Recommendations

1. Faculty members should continue to engage with society through their publications and their involvement as experts at the local, national and international levels.
2. Strengthen strategic cooperation and partnership with companies.

4.9.13 Development plan

JSBE Strategic Management Plan (SMP) for 2021–2024 outlines three key strategic objectives for the development of research:

- to strengthen the position of focus areas in the international research community and facilitate the international cooperation and mobility of researchers.
- to produce high-quality research and promote open science and sharing of research data.
- to educate skilled researchers for academic, business, and policy organizations.

To achieve these objectives, three key strategic actions were identified in the SMP:

1. Firstly, we promote, systematically evaluate, and develop the activities of JSBE's thematic research areas.
2. Secondly, efforts will be made to develop and ensure high-quality data infrastructure for empirical research.
3. Thirdly, there will be an emphasis on encouraging and supporting the international mobility of researchers.

The development plan was written in relative general terms but overall, the proposed actions seem to have the potential to lead to the targets. The panel has some concerns about the actions potential to lead to the EQUIS accreditation (listed in the self-evaluation report as a long-term objective). The panel strongly recommends preparing for EQUIS accreditation as the process itself and the requirements listed above under the different areas provide excellent guidance for development work.

4.10 Concluding comments

We would like to thank JYU for the opportunity to engage in this evaluation process which we have found both interesting and enjoyable. Special thanks are due to the Research Office team and also to all the people to whom we spoke and who responded openly to our questions. We very much hope that this report is constructive and useful.

5 SUMMARIES OF THE RESEARCH DEVELOPMENT PLANS

5.1 Faculty of Humanities and Social Sciences

The main strategic goals of the Faculty of Humanities and Social Sciences have been defined for the period 2023-2030:

- We will use our multidisciplinary potential in research, education and societal engagement.
- Our innovative research will be at the forefront of theoretical and methodological development in our fields.
- Our science-based education will renew working life and it responds to the future needs of society.
- We will improve our attractiveness both as an employer and as an educator.
- We will identify our strategic cooperation networks and cooperate with them.

The Faculty of Humanities and Social Sciences, the Faculty's Departments and the Faculty's Research Steering Group have reviewed the feedback from the research assessment. Based on the feedback, the discussions on the feedback and the Faculty's strategic orientations, the Research Steering Group has identified four key areas for development and shaped its Research Development Plan for 2023–2025.

The four main themes are:

1. Strengthening multidisciplinarity
2. Developing doctoral training
3. Improving academic culture
4. Improving societal interaction

1. Strengthening multidisciplinarity

The aim is to give concrete expression to the multidisciplinarity defined in the strategy and to seek practical solutions to achieve the strategic goal. This will include organising cross-departmental collaborative events and training sessions, for example with the Open Science Centre and Research and Innovation Services, as well as with existing international networks. The JYU.Well and JYU.Wisdom research communities and stakeholders will also be utilised.

2. Developing doctoral training

The aim is to build better support structures and services for doctoral researchers, following feedback on doctoral training in the self-evaluation of doctoral programmes in 2022 and the research evaluation in 2023. This will include a range of events, training and supportive follow-up for doctoral researchers and early-stage postdocs, as well as more targeted services through research into the diversity of doctoral researchers.

3. Improving academic culture

The aim is to strengthen the academic culture of working communities. Means to achieve this include better articulating, communicating and putting into practice views on diversity, equality and inclusion. Other means include transparency in decision-making, fairness in workload, open communication and the promotion of multidisciplinarity.

4. Improving societal interaction

The aim is to continue to invest in societal interaction. This will include events with identified stakeholders and the use of alumni to deepen contacts with the working life.

5.2 Faculty of Information Technology

The development actions concern five areas (see Figure 17). In terms of organizing, based on the panel recommendations the following actions have been taken:

1. We strengthen the integration of researchers into teaching, (our organizational reform is currently in process and as an outcome, researchers (as well as teachers) follow the Humboldti/an model).
2. International staff is beKer integrated in the faculty already at the beginning of their contract.
3. Research groups will have a start and end criteria (finished by end 2023). This reform also includes evaluation of each group in a friendly manner and actions are taken to boost co-operation between groups (early 2024).
5. The need for Internal and External advisory boards are to be discussed in the management board (early 2024).
6. Transparency of finances. All groups are encouraged to discuss and share their budget within their group/division (2024).
7. Project overheads are partially shared with the research group. The tool developed for this is now used, and we look for ways how to share this practice with other faculties.

Work wellbeing is constantly monitored. Events and gatherings are organized more often, and the faculty continues to support its wellbeing group contributing to well-being events.

Research strategy. We continue to strengthen our identified spearheads in research (e.g., profiling areas DEMO and cybersecurity were mentioned by the panel), support growing areas such as data science, spectrography and engineering,

Figure 17. Development actions.

and contribute to the newly launched Finnish Flagships with JYU participation (Education for the Future; Advanced Mathematics for Sensing, Imaging and Modelling; Quantum Flagship). The renovation of the research division allocation and respective research groups ensures beKer interconnectedness between the research fields and avoids developing in too many directions. High quality publications strategy will be further pursued in different disciplines.

Doctoral school. We ensure the positive development of the doctoral school. The division between active and passive doctoral students will be concluded by end of 2023 (in progress). The funding model (1+3 years) is continued. More coordinatedevents given by the doctoral school will be pursued. As suggested, a coordinator for doctoral school will be hired (beginning of 1.1.2024, 50%).

Co-operation. Actions are taken to increase co-operation in research both inside the faculty and outside, including research activities with other faculties, universities and industry.

5.3 Faculty of Education and Psychology

Panel comments and self-assessment

The panel report and self-assessment were in general aligned. The strengths of the Faculty were in the positive atmosphere and commitment of the personnel. Academic culture is supported by various activities and measures. The Faculty is also able to recruit early career researchers well and they feel to be part of research groups and have good collaboration with supervisors. However, to keep the overall positive academic culture at an excellent level, the panel recommended creating a road map for enhancing it. This is important as pandemic time remote working culture has changed the interaction between researchers. Academic culture should also include a plan how to foster a new generation of senior researchers.

The panel emphasized the importance to raise the ambition level of research activities at the Faculty. This would involve having a clear, proactive strategy on international scope of activities and widening the impact to include global reach. The need for an increase in international and ambition level is also seen important for the acquisition of EU pillar II funding and other international consortium level funding. Further, this is reflected also in the attractiveness of the Faculty for international applicants to open positions. Suggestions were thus made to have a more strategic and ambitious approach to international collaboration.

Career guidance, support and prospects of early career researchers were also raised in the panel report and self-assessment.

Development plan

Three main development areas were identified: International scope and attractiveness, Academic culture and research community, and Early career researchers at the Faculty.

For international scope and attractiveness, the goal is to increase international networking and visibility of the Faculty's researchers leading to increase in international competitive funding and in the attractiveness of the Faculty to international applicants to open positions and to visitors from abroad.

The development of academic culture and research community would include increasing the interaction between researchers on research contents. This would lead to deeper understanding of different phenomena, methodological advances and increased collaboration as well as further the sense of belonging in the research community of the Faculty at all career levels. To realize this a research strategy is created that guides the research activities towards scientific breakthroughs. Such a strategy is challenging to develop and will be created over a longer time period.

The goal for improvement actions for the early career researchers work include more systematic career support and guidance; training, guidance and information on funding opportunities; development of the curriculum for PhD studies for clarity and fostering future academic experts.

5.4 Finnish Institute for Educational Research

1. Renewal of research strategy

During 2023 we are in a process of updating the strategy to better respond to emerging research agendas, educational decision-making needs and the needs to communicate those for the decision makers and a wider societal and public audience. During the strategy process, we discuss and refine the main mission of FIER, vision for FIER 2030 and the strategic strength and development areas. In all this, our publication and communication strategies are incorporated, as well as strategies for societal impact work. In the ensuing strategy action plan, we will also set up the schedule and steps for the implementation of the strategy.

The process has been initiated in discussions in the Management Group and continued in regular staff discussions such in Tiistaikahvit and development days. A separate working group on publication and communications strategy has been set

up. The work will be brought together in a draft strategy by the end of 2023, and the new strategy will be operational from 2024 to 2027.

2. Organisation of research and team structure

FIER organisation has until now been based on teams. However, it has become apparent in recent years that the researchers work in different constellations and thematic networks nationally and internationally, making the teams opaque and difficult in to navigate, particularly for newcomers and early career researchers. The team structure works in some cases but not in others, and differences between teams create inequalities for staff.

Following the renewal of FIER research strategy, our organisation of research work will be accommodated for the needs for conducting relevant and high-quality research as well as fulfilling the demands of national tasks and societally relevant research. In addition, the practices of first line management are discussed, as people work flexibly in several groups / projects and not under one first line manager. A working group will be set up to provide suggestions that will be then discussed with staff and in the Management Group. As the reorganisation of teams needs to be based on the new strategy, this work will follow the strategy work, starting in early 2024 and concluding in 2024.

3. Developing staff structure and career development

Because of the nature of FIER tasks and the budget structure, staff works partly on temporary external projects related to national tasks, and partly on their other projects. This causes tensions in the staff structure, as for instance project researchers may not have time to conduct doctoral research. More senior researchers, in turn, need possibilities for starting their own projects and advance their careers horizontally. There is a need to create clear structures for research staff development both within projects and in the process of becoming independent stage 3 researchers. A working group, comprised of representatives from different career stages and staff groups is set up to suggest actions that help in staff development. Part of this work has already been initiated by previous and current directors at the University Extended Steering Group and in discussions with the HR. During the strategy work, views on role of staff in the strategy will be discussed to provide materials for staff development. Staff development plan will be finalised and ready for implementation in the first quarter of 2024.

5.5 Faculty of Mathematics and Science

The Faculty has identified the following three subject areas where efforts will be focused in the next couple of years:

1. Strengthen the Faculty's strategy and support for research, education and societal impact.

During the self-assessment, a need to update our strategy in research, education and societal impact became obvious. The need is driven by several changes in the society and from new expectations that the society places to academic research and education. At the same time, the funding model to support research in Finland and in the EU is changing, leading to increased opportunities for co-operation with the private sector. The strategy renewal work will take place parallel to JYU's university level strategy work. The new faculty level strategy will support University's strategy, make Faculty's strategic goals in research, education and societal impact clear and concrete, and elaborates the means to achieve the goals. Special attention will be paid to communicate the objectives and the plan of action internally and externally.

2. Training of young group leaders.

The Faculty has identified this need from the outcome of the staff goal discussions in 2022 where several young group leaders stated that they wish to get formal training on various soft skills needed to run a research group (such as recruiting, monitoring grants, digital tools, leadership skills, resolving conflicts). The Vice Dean of the Faculty took an initiative in the JYU Research Council in the fall of 2022 and as a result, centralized training program has been created in 2023 by JYU HR and financial services that will be offered annually to young group leaders (typically Academy research fellows, ERC StG awardees or associate professors starting in the first stage of the tenure track process). The Faculty will encourage its researchers to actively make use of this training program.

3. Development of academic culture and improvement of induction process.

This topic was selected based on a staff questionnaire in 2023. The aim is to strengthen the academic culture and enhance the sense of belonging to a diverse international community with strong peer support. Various parts of the academic life and the scientific path of researchers of all stages in their career are addressed, starting from the induction process of all incoming researchers, promoting participation to common functions such as scientific seminars (particularly the ones with interdisciplinary aspects), and including periodic training on responsible

conduct of research, on principles of ethical research and legislation, as well as on workplace safety.

5.6 Faculty of Sport and Health Sciences

Our development plan will focus on 4 broad themes, all of which are central to our development over the long-term: impact and funding, doctoral researchers, infrastructure, and innovation. Below is a brief summary of the main issues that we will focus on in the next evaluation period.

Impact and funding. As a relatively small unit, we are somewhat dependent on external funding. We aim to increase our participation in the most competitive funding instruments such as ERC (at all levels of application), Research Council of Finland, and other EU and international sources. This includes applications led by our own staff, as well as participation of our staff as collaborators or members of larger consortia. We will also encourage our staff to take on high level societal positions, such as Chair-level positions in major organisations, which may also increase our Faculty's visibility and attractiveness as collaborators.

Doctoral researchers. In previous years, the number of PhD graduates from our faculty has been slightly below the annual target. This has led us to increase the intake of new doctoral researchers where possible, but this is not without challenges. Across JYU, the proportion of people doing doctoral research part-time has increased substantially in the past decade, resulting in a larger cohort of doctoral researchers, but with the result that the time taken to obtain the PhD has generally increased. Funding all researchers is a huge challenge. Although we cannot increase our budget for the doctoral school easily, we aim to develop more flexible funding mechanisms, such as shared positions (or jointly funded positions) between JYU and a partner, e.g. business, hospital, grant foundation, or another university via double degrees. In response to needs identified during the doctoral school evaluation performed at JYU in 2022, we will also improve the statistical support provided to doctoral researchers, as well as develop regular meetings for supervisors to ensure that the level of supervision is relatively uniform across the faculty, and that all parties are kept well informed about relevant policies, upcoming events etc.

Infrastructure. The faculty has invested vast resources into developing plans for a new research building to house our main labs. Unfortunately, this process has been beset with difficulties and has been ongoing for several years, but we are currently in the process of deciding on the location of the building, and working with

architects to develop the concrete plans. A major goal within this evaluation period is to finalise all aspects of the plan, to facilitate a smooth transition to the new building without suffering major lags in research output. This is crucial because our faculty's research is often very lab intensive, requiring the use of specific rooms and equipment. An additional part of this plan is to submit ambitious infrastructure funding applications to JYU (and possibly externally) to help ensure that the new research building is fit for purpose, and that it will also support our aim of maintaining world class research infrastructure in the future.

Innovation. Traditionally, we have under-exploited connections with businesses, as well as innovation/spin-off mechanisms. In this period we will focus on improving the concrete level of interaction through several mechanisms. Firstly, in 2023 we will co-organise a business event where numerous companies from around Finland will interact with our students and staff, with a goal of organising this event annually from now on. Secondly, we will encourage the development of joint funding applications with industrial partners, as well as the possibility of joint student supervision, industry placements/internships etc.

5.7 Jyväskylä University School of Business and Economics

Our Strategic Management Plan (SMP) for 2021–2024, self-assessment report and the RA panel report lay the foundations for our research development plans. We have identified three key areas of improvement and planned corresponding actions for the near future (2023–2025). We recognize the need for enhancing our research environment, fostering internationalization and boosting the competencies of our researchers. These improvements are expected to strengthen the standing of JSBE's research focus areas within the international scientific community.

In terms of the *research environment*, JSBE operates in many research forums and groups. It is challenging to coordinate these activities, especially with increased remote work post-COVID-19. Consequently, we aim to enhance the coordination, communication and visibility of research activities within the JSBE research focus areas. Additionally, while we are aware of activities and performance of other Finnish business schools, we currently lack a formal, systematic, international benchmarking process. Benchmarking can give valuable information on how to improve our research activities and extend our collaboration networks

internationally. Thus, we will plan the steps for regular international benchmarking. Furthermore, we will develop ways to recognize excellence in research.

Although JSBE is a well-connected research collective, there's room for improvement in our *internationalization*. Our objective is to enhance JSBE's international standing by incorporating international research visits into funding applications and raising awareness of available funding opportunities. For example, we encourage seeking Marie Curie Individual Fellowships for potential candidates who wish to work with our faculty. We also develop practices that contribute to creating a welcoming and inclusive, diverse academic culture for international faculty at JSBE.

Regarding the *competencies of researchers*, there is a continuous need to strengthen their methodological skills, including the use of artificial intelligence and data management. Enhancing these competencies will improve our position in the international scientific community. To achieve this, we will organize workshops and information sessions and gather input from the faculty. We will encourage the inclusion of the data collection costs in project applications and raise awareness of available funding channels. We also develop practices for an internal peer review process at JSBE to support the high quality of research.

Based on the recommendations outlined in the RA panel report, we have also established *preliminary plans for the next SMP period* (2025–2028). First, the above three areas of improvement remain important in the next planning period. Second, we have a long-term objective of pursuing EQUIS accreditation, which can be supported by research development initiatives and regular benchmarking of JSBE against a group of international business schools. Third, we aim to enhance doctoral education by implementing an improved doctoral school follow-up structure, which will contribute to more informed strategic decision-making and support. Finally, we aim to strengthen our strategic cooperation and partnerships with companies and networks as well as other research organizations and JYU faculties. This includes increased promotion of collaboration in funding applications.

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Appendices

Appendix 1. Funding

Financial data include (2018–2022):

1. Core funding (€)
2. Supplementary funding in total (€, percentage of total funding (%)) (used funding)
    a. Finnish funding (€)
        i. Academy of Finland
        ii. Business Finland
        iii. Ministry of Education and Culture
        iv. Other public funding (other Ministries, municipalities, and other public sector)
        v. Finnish foundations & trusts
        vi. Finnish companies
    b. Foreign funding (€)
        i. EU Structural Funds
        ii. ERC and EU Framework
        iii. Other international funding (other EU funding, foreign foundations, international trusts, international companies, other international funding)
    c. Other supplementary funding (€)

Appendix 2. Bibliometric analyses

Bibliometric analysis provides an overview of the publication activity in 2018–2022 and the changes that occurred therein but is not the object of assessment.

Bibliometric analysis seeks answers to the following questions:

1. What is the coverage of Dimensions and Scopus databases?
2. What is the profile and development of publication activities?
3. What is the volume of the publications?
    a. Annual number of publications by publication type
4. What is the share of open access publications?
5. What is the publication language (English, Finnish, other languages)?
6. The volume of co-publishing (as a proxy for collaboration)?
7. What is the field of research?
    a. Determined based on Dimensions database
8. What is the scientific impact?
9. What is the societal impact (in terms of citation counts in policy documents indexed in Overton)?
    a. Policy document citations
    b. Which institutions and in which countries unit's research is cited?

Appendix 3. Research personnel

Statistics on research personnel in years 2018–2022:

1. Number and Full Time Equivalent (FTE) of research personnel by research career stage I–IV
2. Number of grant researchers (based on the number of grant researcher's agreements)
3. Number and Full Time Equivalent (FTE) of teaching and research support staff
4. Gender distribution by research career stage (FTE)
5. International personnel by research career stage (FTE)
6. Share of permanent posts by research career stage (based on FTE)
7. Number of undergraduate students (pursuing Bachelor or Master's degree)
8. Undergraduate student/staff ratio

Appendix 4. Mobility

National and international research visits by the duration

1. Visits form the unit to abroad 2018–2022
    a. 1–4 days
    b. At least 5 days, but less than 1 month
    c. 1 month or longer
2. Visits from the unit to Finland 2018–2020 (No statistics available 2021 onwards)
    a. 1–4 days
    b. At least 5 days, but less than 1 month
    c. 1 month or longer
3. Visits to the unit from abroad 2018–2022
    a. 1–4 days
    b. At least 5 days, but less than 1 month
    c. 1 month or longer

Appendix 5. Doctoral training

Key figures of the doctoral training in 2018–2022

1. Number of doctoral students registered for attendance
    a. Share of women
    b. Share of international doctoral students
2. Annual number of completed doctoral degrees
    a. Share of women
    b. Share of international doctoral students
    c. Average completion time (years ± SE)
    d. Median of completion time
3. Enrolment number of new doctoral students
    a. Share of women
    b. Share of international doctoral students

Appendix 6. Self-assessment template

Guidelines

Please submit the completed self-assessment (in English, one on each unit of assessment, word-document) along with the development plan and extra voluntary background material no later than 24.3.2023 to the folder "Self-assessment" in Teams "Research assessment exercise 2023". New members to the Teams group will be added upon request.

The units of assessment are encouraged to involve researchers at different research career stages in the preparation of the self-assessment. If you enclose additional materials to the self-assessment report, please note that it should be in English.

The assessment period extends from 2018 through 2022. The assessment panel will use the self-assessment report as one information source when assessing the unit. Therefore, it is vital that you write an analytical self-assessment. Support your conclusions by referring to the results of the bibliometric analysis, other statistical data for the unit of assessment, and any other information source that you find relevant. Supporting arguments may also be qualitative in nature. In the panel report template, there are references to the items in the self-assessment report. Therefore, it is essential that you address issues under the correct topic, making it easy for the panel to find the relevant information. When writing the self-assessment, keep in mind that the expertise areas of the panel members, albeit multi-disciplinary, do not cover all disciplines of the University. The recommended length of the text in each topic is between half and one page.

The self-assessment template has topics that you are expected to assess from the perspective of your unit of assessment. In this document, you will find the guiding questions below each topic (please avoid copying them into the self-assessment report), which you may use in a way you find relevant. That is, you may put more emphasis on those topics, key factors, which your unit finds particularly important and meaningful in enhancing quality and renewal of research, societal impact of research, and doctoral training. Furthermore, you are free to include topics, which are not mentioned in the template (in "Other information"). Please note that the relevant topics should also be considered from a perspective of a doctoral training and doctoral researchers.

In terms of your choices, you are asked to consider the following questions and aspects:

- How are you currently working to make each key factor contribute to high quality and renewal?
- What strengths and weaknesses do you see in your current approach? Note: Based on the self-assessment, write a separate research development plan.
- Reflect relevant topics also from the viewpoint of doctoral training
- Specific questions under each topic
- Additional considerations not mentioned in the guidelines

After receiving the preliminary panel report, the unit of assessment has one week to correct any factual mistakes or misunderstandings in the panel report.

Please follow the principles of the San Francisco Declaration on Research Assessment (DORA), the recommendation for the responsible evaluation of a researcher in Finland, and the Agreement on reforming research assessment.

The questionnaire (topics 1.1–2.9) is adopted with modification from: Malmberg A., Kettis Å. & Maandi C. (Eds.) 2017. Quality and Renewal 2017 (Kvalitet och förnyelse 2017): Research Environment Evaluation at Uppsala University. Uppsala, Uppsala University, Sweden, 703 p. Available at: urn:nbn:se:uu:diva-332718.

1 Background

1.1 Organization structure

Describe briefly how the unit of assessment is organized in terms of departments, divisions, disciplines/sub disciplines, research centers, the Academy of Finland's Centres of Excellence, profiling areas, and staff structure.

1.2 Changes in the unit of assessment during the period of 2018–2022

What are the organizational changes and major changes in personnel within the unit in 2018–2022?

1.3 Research profile and strategy

Brief description of the unit's research profile and strategy.

1.4 Vision

Where the unit aspires to be in 5–10 years' time with regard to its research, i.e. your vision for the medium-term future.

2 Topics

2.1 Research leadership

2.1.1 Department level

Describe how research leadership is organized (the role of the board, dean, vice deans, department head, other constellations, individual research group leaders, etc.). If you do not have departments, answer these questions according your organization structure.

2.1.2 Faculty/disciplinary domain/university level

How do you perceive that the leadership at the faculty/disciplinary domain/university level works to support high quality research and renewal?

2.2 Current follow-up practices

How are you currently conducting follow up/evaluating the research environment and research outcomes?

Are individual researchers at different career stages given formal or informal feedback on their performance?

2.3 Academic culture

How are you currently working to nurture a culture that is conducive to high quality research and renewal, e.g., with regard to intellectual interaction, collegiality, equal opportunity, creativity, ambition, scientific conduct, and research integrity?

How do you ensure that the early-stage researchers (doctoral and postdoctoral researchers) in your unit are well familiarized with and follow the principles of the responsible conduct of research, ethical principles, and legislation relating to their research?

How do you promote the integration of doctoral researchers into international and local researcher communities (e.g., conference attendance, research visits abroad, in-house events, research collaboration, connection of doctoral training to research conducted at your unit)?

How do you promote the emergence of a sense of belonging (e.g., collegial events, joint seminars, peer-support, induction process)?

2.4 Recruitment

How your current recruitment process aims to ensure that recruitment contributes to high quality research, renewal and maintaining a critical mass at all stages of research career (e.g., recruiting and attracting the best people, opening new fields of research, recruiting outside JYU and from abroad, employed recruitment channels)?

How are equal opportunities of potential applicants ensured?

2.5 Career and mobility

How are you currently working to support researchers at all career stages to sustain their active career paths, to promote career development and to stimulate mobility?

What support do you offer for international collaboration which might boost career development?

Are there internal career opportunities or other incentives, which aim to decrease the potential risk of losing talented researchers?

How do you support researchers at the postdoctoral stage to sustain their projects during a funding gap until new external funding is obtained?

How do you ensure equal opportunities for all researchers?

How do you ensure that doctoral researchers have the adequate and equal access to supervision and time for research? How do you ensure doctoral researchers are equipped with knowledge and skills they need to pursue their chosen career paths?

2.6 Infrastructure (including administrative support and materials bank)

Describe your main infrastructures in 2018–2022.

How are you currently working to maintain and to develop the infrastructure to support high quality research and renewal?

How do you ensure that doctoral researchers have the adequate and equal access to laboratory and office space and research infrastructure?

2.7 Funding

Describe your funding situation in 2018–2022 and strategy for applying/obtaining external research funding.

Based on what criteria do you allocate the core funding (yliopiston perusrahoitus) within the faculty/department?

What measures have you taken or planned to take to maintain the sufficient level of external funding?

How do you ensure that doctoral researchers have the adequate and equal access to funding? How do you ensure that doctoral researchers have funding that is adequate for the duration of doctoral studies?

2.8 Research collaboration

2.8.1 Research collaboration and networks with other universities and research institutes

Describe your research collaboration abroad and in Finland in 2018–2022.

How are you currently working to establish and maintain external collaboration and networks with other universities and research institutes to support high quality research and renewal?

2.8.2 Research collaboration within the University of Jyväskylä

Describe your collaboration within the University of Jyväskylä in 2018–2022.

Are you striving for collaboration within the University to strengthen research quality and renewal? If not, why?

If you are involved in multi-disciplinary profiling areas, are you actively enhancing close research collaboration with other disciplines which are partnering in the same profiling area?

2.8.3 Non-academic collaboration

Describe your main collaboration outside the academia (e.g., companies, cities) in 2018–2022.

How are you currently working to establish and maintain such collaboration and networks?

2.9 Publication

2.9.1 Publication profile

Describe your publication profile and comment upon your research output based on bibliometric data with regard to productivity, scientific impact (citation counts as a proxy), open publishing, and publication channels (e.g., national and international publishing, research fields). Noticeable changes over time?

2.9.2 Publication strategy

Describe your publication strategy in 2018–2022. If you do not have a publication strategy, please explain why.

How do you encourage and facilitate the researchers to apply the open science principles and practices such as parallel publishing, making data, material, metadata and methods widely available for reuse?

How do you follow up on the development of your publication patterns?

2.10 Societal impact of research

2.10.1 Societal impact strategy

Describe your societal impact strategy.

2.10.2 Public outreach activities

Describe your public outreach activities in 2018–2022 and how you aim to realise wider dissemination of research results to the rest of society.

What are your current approaches to stimulate public outreach activities and knowledge utilisation?

What mode of interaction with stakeholders outside academia do you employ? They can be, for example, scientific publishing (including open access), publishing for general public, media, training, taking part in general discussion, and interactions with authorities and other stakeholders.

2.10.3 Technological transfer

If relevant, describe your activities in conveying research results to e.g., invention disclosures, intellectual property rights, and the creation of start-up companies.

What are your current approaches to stimulate innovation?

2.10.4 Challenges

Have you identified the challenges of engagement in socially-orientated research activities within your unit? Challenges may be related to e.g., attitude to societal impact, lack of resources (e.g., skills, time), lack of organizational support, or lack of rewards for societal engagement.

What actions you have taken to remove potential obstacles? Note: describe planned actions in your research development plan.

2.10.5 Impact case studies

Describe one case study per each department or if you do not have departments, up to three cases illustrating societal impact of research in 2018–2022. Because of a potential time-lag of societal impact, you may include research activities dating before the assessment period. In addition, societal impact may be attributed to more than one study. The selected cases can present local, national, or international potential or realised impact. You may select different kinds of cases, thus showing variance in societal impact. Include the following information: a) underpinning research for the case studies, b) references to the specific research, and c) a brief summary of the impact. You may consider the following questions:

- What was the societal challenge you addressed?
- Who were the end users or beneficiaries or who were influenced by the research?
- What were the vectors by which the interaction took place?
- What was the nature of impact?
- In case of potential impact, why do you expect research to have societal impact?

7 Other information

State below if there are matters of relevance to the research assessment that have not been covered above, i.e., topics at the unit of assessment that are important aspects of the preconditions and processes for high quality research that are central to your unit.

8 Organisation of work with completing the self-assessment

Describe briefly how you have organised the work with completing the self-assessment. Provide the names and the job titles of the persons involved and their role in the self-assessment.

Appendix 7. Participants in the self-assessment by unit

Faculty of Humanities and Social Sciences

Dean Jari Ojala
Vice Dean Tapio Litmanen
Development Manager Katariina Luoto

Research Steering Group:
Deputy Head of Department Jari Kaukua (Department of Social Sciences and Philosophy)
Deputy Head of Department Esa Lehtinen (Department of Language and Communication Studies)
Deputy Head of Department Tuuli Lähdesmäki (Department of Music, Art and Culture Studies)
Deputy Head of Department Sari Pöyhönen (Centre of Applied Language Studies)
Deputy Head of Department Sirpa Tenhunen (Department of History and Ethnology)

Researchers at all career stages contributed to the self-assessment.

Faculty of Information Technology

Vice Dean of research Tuure Tuunanen
Professor Heikki Karjaluoto
Professor Tommi Kärkkäinen
Professor Tommi Mikkonen
Professor Timo Tiihonen
Professor Timo Hämäläinen
Dr. Ville Isomöttönen
Professor Lauri Kettunen
Professor Tuomo Kujala
Professor Tommi Kärkkäinen
Associate Professor Ilkka Pölönen
Professor Vagan Terziyan
Dr. Sami Äyrämö

In addition, members from each research group and faculty staff, including university services, participated in the self-assessment.

The Faculty of Education and Psychology

Dean Anna-Maija Poikkeus
Vice Dean Jarmo Hämäläinen
Deputy Head Taru Feldt (Department of Psychology)
Deputy Head Marja-Kristiina Lerkkanen (Department of Teacher Education)
Deputy Head Niina Rutanen (Department of Education)

The self-assessment document was open for comments to the whole Faculty.

Finnish Institute for Educational Research (FIER)

Team of directors:
Director Jussi Välimaa
Director Taina Saarinen (as off 1 February 2023)
Vice Director Päivi Häkkinen
Vice Director Jaana Kettunen

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Professor Juhani Rautopuro
Professor Päivi Tynjälä
Senior Researcher Terhi Nokkala
Project Manager Tero Pelkonen
Project Manager Eija Puhakka
Assistant Satu Lassila

Approximately 40 people from different personnel groups (researchers, expert, and professional personnel) and career stages participated in the self-assessment.

Faculty of Mathematics and Science

Faculty Research Coordinator Sanna Rauhamäki

Faculty management board:
Dean Mikko Mönkkönen
Vice Dean Hannu Häkkinen
Vice Dean Maija Nissinen
Head of Faculty Development Katri Komulainen
Head of the Accelerator Laboratory Paul Greenlees
Head of the Nanoscience Center Lotta-Riina Sundberg
Heads of Department Leena Lindström (Department of Biological and Environmental Science)
Heads of Department Timo Sajavaara (Department of Physics)
Heads of Department Mika Pettersson (Department of Chemistry)
Heads of Department Tero Kilpeläinen (Department of Mathematics and Statistics)

Working group at the Department of Biological and Environmental Science:
Deputy Head Varpu Marjomäki
Professor Perttu Permi
Professor Marja Tiirola
Professor Phil Watts
Senior Researcher Antti Eloranta
Postdoctoral Researcher Mariana Villalba de la Peña
Doctoral Researcher Salla Ahonen
Doctoral Researcher Ilmur Jonsdottir
Doctoral Researcher Lauri Myllymaa

Working group at the Department of Physics:
Deputy Head Ilari Maasilta
Professor Anu Kankainen
Academy Researcher Ilkka Helenius
Postdoctoral Researcher Nisha Mammen
Doctoral Researcher Aki Ruhtinas

Working group at the Department of Chemistry:
Deputy Head Karoliina Honkala
University Lecturer Tatu Kumpulainen
Academy Researcher Aaron Mailman
Postdoctoral Researcher Efstratos Sitsanidis
Doctoral Researcher Jutta Koskinen

Working group at the Department of Mathematics and Statistics:
Deputy Head Tapio Rajala
Professor Juha Karvanen
Professor Mikko Salo
Associate Professor Katrin Fässler
Associate Professor Mikko Parviainen
Postdoctoral Researcher Santtu Tikka
Doctoral Researcher Janne Nurminen
Doctoral Researcher Tiia-Maria Pasanen

Faculty of Sport and Health Sciences

Research Committee:
Vice Dean Neil Cronin
Associate Professor Hannele Harjunen
Associate Professor Juha Hulmi
Associate Professor Sami Kokko
Associate Professor Eija Laakkonen
Associate Professor Harri Piitulainen
Associate Professor Arja Sääkslahti
Associate Professor Mikaela von Bonsdorff
Assistant Professor Keegan Knittle
Research Director Katja Kokko
Head of Laboratories Maarit Lehti
Professor Taina Rantanen
Senior Lecturer Hanna Vehmas

Other participants:
Dean Sarianna Sipilä
Vice Dean Taija Juutinen
Professor Janne Avela
Professor Vesa Linnamo
Associate Professor Timo Jaakkola
Associate Professor Sami Kokko
Associate Professor Elina Sillanpää
Postdoctoral Researcher Tiia Kekäläinen
Postdoctoral Researcher Kaisa Koivunen
Doctoral Researcher Jani Hartikainen
Doctoral Researcher Christina Kuorelahti
Doctoral Researcher Anna Lee
Doctoral Researcher Antti Löppönen
Doctoral Researcher Suvi Ravi
Associate Professor Arto Hautala
Associate Professor Riku Nikander
Associate Professor Merja Rantakokko

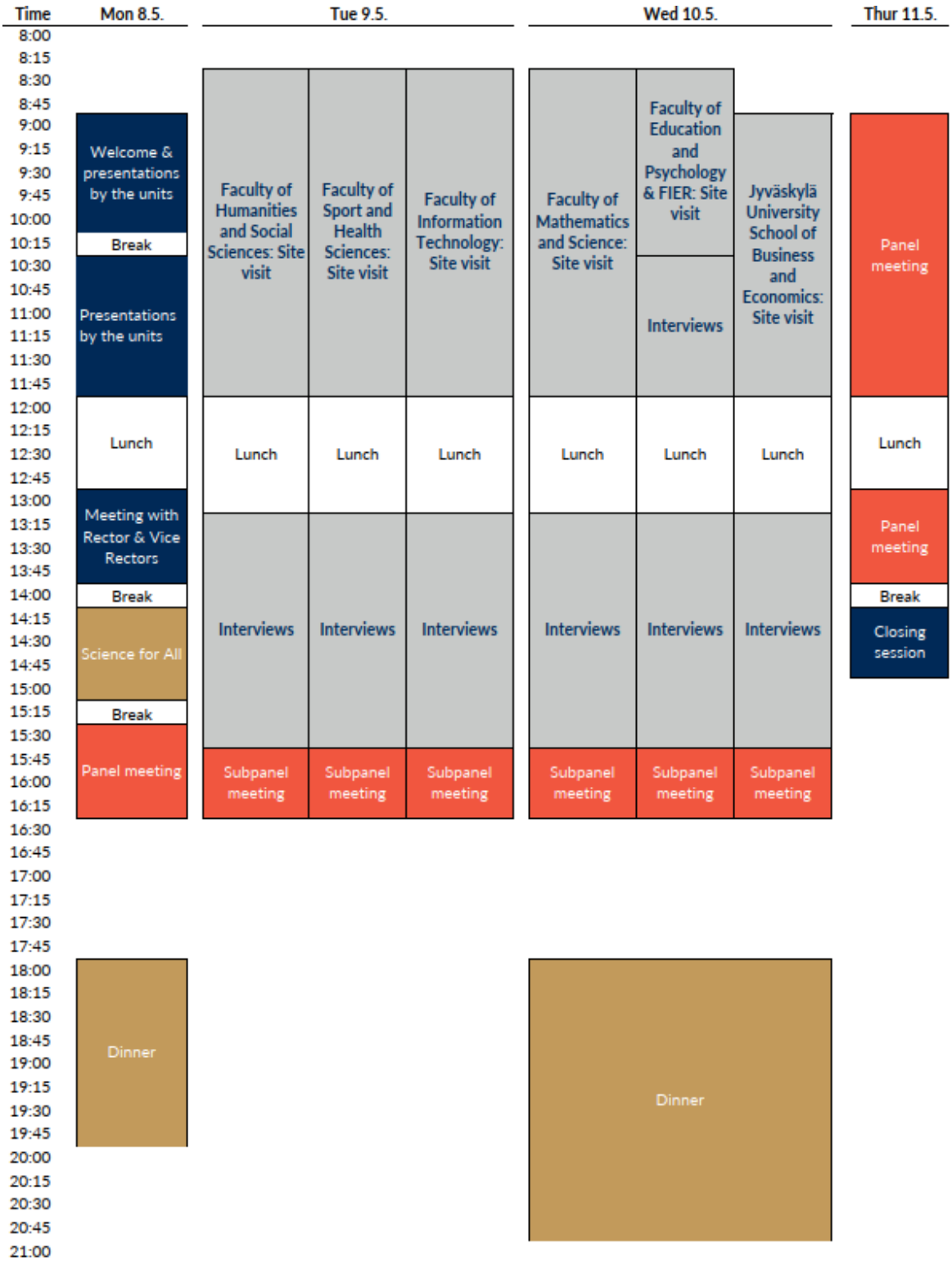
Academy Researcher Laura Karavirta
Senior Lecturer Ritva Mikkonen
Head of Administration Ritva Sakari
Head of Student Affairs Päivi Saari
Coordinator Tiina Ahonen
Controller Tellervo Ahlholm
Communications Specialist Laura-Maija Suur-Askola

Jyväskylä University School of Business and Economics

JSBE Research Committee members:
Associate Professor Mika Haapanen
Associate Professor Marjo Siltaoja
Senior Lecturer Toni Mättö
Assistant Professor Joel Mero
Doctoral Researcher Matias Lievonen
Senior Researcher Antti Sihvonen
Senior Lecturer Marileena Mäkelä
University Researcher Mika Skippari

Faculty Management Board:
Dean Hanna-Leena Pesonen
Vice Dean (research) Mika Haapanen
Vice Dean (education) Vilma Luoma-aho
Professor Juha-Antti Lamberg
Professor Jukka Pellinen
Professor Outi Uusitalo
Associate Professor Jutta Viinikainen
Associate Professor Monika von Bonsdorff
Director Ari Manninen
Head of Academic Affairs Janna Inkeroinen
Head of Faculty Administration Kirsi Murtosaari

Appendix 8. Programme outline for the site visit



Appendix 9. Participants in the interviews

Faculty of Humanities and Social Sciences

Early career researchers:
Postdoctoral Researcher Päivi Iikkanen (Department of Language and Communication Studies)
Doctoral Researcher Karoliina Inha (Centre for Applied Language Studies)
Doctoral Researcher Abdul Kadir Khan (Department of Social Sciences and Philosophy)
Doctoral Researcher Helena Kangasmäki (Department of History and Ethnology)
Doctoral Researcher Minna Koivula (Department of Language and Communication Studies)
Doctoral Researcher Gulnara Minkkinen (Department of Music, Art and Culture Studies)
Doctoral Researcher Quivine Ndomo (Department of Social Sciences and Philosophy)
Doctoral Researcher Katja Pyötsiä (Department of History and Ethnology)
Doctoral Researcher Waqar Ali Shah (Centre for Applied Language Studies)
Postdoctoral Researcher Elina Westinen (Department of Music, Art and Culture Studies)

Senior researchers:
Assistant Professor Martin Hartmann (Department of Music, Art and Culture Studies)
Professor Antero Holmila (Department of History and Ethnology)
Postdoctoral Researcher Mari Honko (Centre for Applied Language Studies)
University Researcher Veli-Matti Karhulahti (Department of Music, Art and Culture Studies)
University Researcher Eerika Koskinen-Koivisto (Department of History and Ethnology)
Senior Lecturer Maija Mänttäri-van der Kuip (Department of Social Sciences and Philosophy
Professor of Technology-enhanced Language Learning, UNESCO professor Ulla Richardson (Centre for Applied Language Studies)
Professor of Communication Anu Sivunen (Department of Language and Communication Studies)
Academy Research Fellow Mélodine Sommier (Department of Language and Communication Studies)
Professor of Social and Public Policy Sakari Taipale (Department of Social Sciences and Philosophy)
Academy Research Fellow Kaisa Vehkalahti (Department of History and Ethnology)

Department and faculty leadership:
Head of Department Heikki Hanka (Department of Music, Art and Culture Studies)
Head of Department Ari Huhta (Centre for Applied Language Studies)
Head of Department Marjo Kuronen (Department of Social Sciences and Philosophy)
Head of Department Mika Lähteenmäki (Department of Language and Communication Studies)
Head of Department Heli Valtonen (Department of History and Ethnology)
Deputy Head of Department Mia Halonen (Centre for Applied Language Studies)
Deputy Head of Department Jari Kaukua (Department of Social Sciences and Philosophy)
Deputy Head of Department Esa Lehtinen (Department of Language and Communication Studies)
Deputy Head of Department Tuuli Lähdesmäki (Department of Music, Art and Culture Studies)
Deputy Head of Department Sari Pöyhönen (Centre for Applied Language Studies)
Deputy Head of Department Sirpa Tenhunen (Department of History and Ethnology)
Dean Jari Ojala (Faculty of Humanities and Social Sciences)
Vice Dean Tapio Litmanen (Faculty of Humanities and Social Sciences)
Vice Dean Anne Pitkänen-Huhta (Faculty of Humanities and Social Sciences)

Development Manager Katariina Luoto (Faculty of Humanities and Social Sciences)

Faculty of Information Technology

Early career researchers:
Doctoral Researcher Karimov Ayaz
Postdoctoral Researcher Sarah Hönigsberg
Postdoctoral Researcher Babooshka Shavazipour
Doctoral Researcher Sanaz Soltani

Senior researchers:
Professor Teiko Heinosaari
Tenure Track Professor Jussi Jokinen
Tenure Track Professor Jenni Raitoharju
Tenure Track Professor Naomi Woods

Faculty leadership:
Dean Pasi Tyrväinen
Vice Dean Lauri Kettunen (Education)
Vice Dean Tuure Tuunanen (Research and Innovations)
Division Head Heikki Karjaluoto
Division Head Tommi Kärkkäinen
Division Head Tommi Mikkonen
Division Head Tuomo Rossi
Head of Administration Joni Kultanen

Faculty of Education and Psychology & Finnish Institute for Educational Research (FIER)

Early career researchers of FIER:
Postdoctoral Researcher Jonna Pulkkinen
Postdoctoral Researcher Timo Salminen
Project Researcher Anu Virtanen
Postdoctoral Researcher Takumi Yada
Senior researchers of FIER:
Senior Researcher Päivikki Jääskelä
Senior Researcher Kari Nissinen
Senior Researcher Matti Taajamo
Project Researcher (PhD) Maarit Virolainen

Early career researchers of the Faculty:
Doctoral Researcher Elina Auvinen (Department of Psychology)
Doctoral Researcher Saswati Chaudhuri (Department of Teacher Education)
Postdoctoral Researcher Heli Muhonen (Department of Teacher Education)
Senior Lecturer Marleena Mustola (Department of Education)
Postdoctoral Researcher Aku Nikander (Department of Psychology)
Doctoral Researcher Yaiza Lucas Revilla (Department of Education)

Senior researchers of the Faculty:
Professor Maarit Alasuutari (Department of Education)
University Lecturer Markus Hähkiöniemi (Department of Teacher Education)
Associate Professor Noona Kiuru (Department of Psychology)
Senior Researcher Riitta-Leena Metsäpelto (Department of Teacher Education)
Associate Professor Miriam Nokia (Department of Psychology)
Senior Lecturer Miia Sainio (Department of Education)
Professor Minna Torppa (Department of Teacher Education)

Faculty, Department and FIER leadership
Dean Anna-Maija Poikkeus (Faculty)
Vice Dean Jarmo Hämäläinen (Research and Innovations; Faculty)
Vice Dean Mirja Tarnanen (Education; Faculty)
Head of Department Leena Halttunen (Department of Education)
Deputy Head Niina Rutanen (Research and Innovations; Department of Education)
Head of Department Sirpa Eskelä-Haapanen (Department of Teacher Education)
Deputy Head Marja-Kristiina Lerkkanen (Research and Innovations; Department of Teacher Education)
Head of Department Juha Holma (Department of Psychology)
Deputy Head Taru Feldt (Research and Innovations; Department of Psychology)
Director, Research Professor Taina Saarinen (FIER)
Vice Director, Professor Päivi Häkkinen (FIER)
Vice Director, Research Professor Jaana Kettunen (FIER)

Faculty of Mathematics and Science

Early career researchers:
Postdoctoral Researcher Maria de la Pena (Department of Biological and Environmental Science)
Doctoral Researcher Ilmur Jonsdottir (Department of Biological and Environmental Science)
Doctoral Researcher Jutta Koskinen (Department of Chemistry)
Doctoral Researcher Tapio Kurkinen (Department of Mathematics and Statistics)
Postdoctoral Researcher Nisha Mammen (Department of Physics)
Doctoral Researcher Aki Ruhtinas (Department of Physics)
Postdoctoral Researcher Efstratios Sitsanidis (Department of Chemistry)
Postdoctoral Researcher Santtu Tikka (Department of Mathematics and Statistics

Senior researchers:
Academy Researcher Antti Eloranta (Department of Biological and Environmental Science)
Professor Gerrit Groenhof (Department of Chemistry)
Academy Researcher Kaisa Helttunen (Department of Chemistry)
Professor Pekka Koskela (Department of Mathematics and Statistics)
Professor Tuomas Lappi (Department of Physics)
Professor Ilari Maasilta (Department of Physics)
Professor Varpu Marjomäki (Department of Biological and Environmental Science)
Professor Matti Vihola (Department of Mathematics and Statistics)

Faculty leadership:
Dean Mikko Mönkkönen
Vice Dean Hannu Häkkinen (Research and Innovations)
Vice Dean Maija Nissinen (Education)
Head of Department Tero Kilpeläinen (Department of Mathematics and Statistic)
Deputy Head of Tanja Lahtinen (Education; Department of Chemistry)
Head of Department Leena Lindström (Department of Biological and Environmental Science)
Head of Department Timo Sajavaara (Department of Physics)
Scientific Director of the Nanoscience Center Lotta-Riina Sundberg
Director of the Accelerator Laboratory Paul Greenlees
Head of Faculty Development Katri Komulainen

Faculty of Sport and Health Sciences

Early career researchers:
Postdoctoral Researcher Tiia Kekäläinen
Doctoral Researcher Johanna Kotikangas
Doctoral Researcher Earric Lee
Doctoral Researcher Kialiina Tonttila

Senior researchers:
Academy Research Fellow Laura Karavirta
Associate Professor Sami Kokko
Lecturer Montse Ruiz

Faculty leadership:
Dean Sarianna Sipilä
Vice Dean Neil Cronin (Research and Innovations)
Vice Dean Taija Juutinen (Education)

Jyväskylä University School of Business and Economics

Early career researchers:
Doctoral Researcher Maqsood Bhutto
Doctoral Researcher Anniina Kinnunen
Postdoctoral Researcher Marke Kivijärvi
Postdoctoral Researcher Matias Lievonen
Postdoctoral Researcher Susanna Mansikkamäki
Doctoral Researcher Tomi Soininen
Doctoral Researcher Atalay Yavan

Senior researchers:
Senior Lecturer Stefan Baumeister
University Researcher Heikki Lehkonen
Associate Professor Joel Mero
Senior Lecturer Toni Mättö
Senior Lecturer Antti Sihvonen
Associate Professor Marjo Siltaoja
Senior Lecturer Heini Taiminen

Faculty leadership:
Dean Hanna-Leena Pesonen
Vice Dean, Mika Haapanen (Research and Innovations)
Vice Dean Vilma Luoma-aho (Education)
Head of Academic Affairs Janna Inkeroinen
Professor Juha-Antti Lamberg
Director Ari Manninen
Head of Faculty Administration Kirsi Murtosaari
Associate Professor Tiina Onkila
Professor Jukka Pellinen
Professor Outi Uusitalo
Associate Professor Jutta Viinikainen
Associate Professor Monika von Bonsdorff

Appendix 10. Panel report template

1 Introductory remarks

Free-form introductory remarks about the unit of assessment.

2 General assessment

You may comment on and summarize the panel's main observations and assessment regarding issues such as research profile, research strategy, vision, personnel composition, and the degree of internationalization. See items 1 Background, 2.3 Academic culture, 2.4 Recruitment, 2.5 Career and mobility, 2.8 Research collaboration, and 2.9 Publication in the self-assessment report, statistic on the research personnel, and the results of bibliometric analyses.

3 Research leadership

3.1 Overall assessment

Summarize in brief the panel's observation and assessment. You may consider the following questions. Does the leadership work to support high quality research and renewal? Is the unit currently conducting follow up or evaluating the research environment and research outcomes? Are individual researchers given formal or informal feedback on their performance? See items 2.1 Research leadership and 2.2. Current follow-up practices in the self-assessment report.

3.2 Strengths

3.3 Weaknesses

3.4 Threats

3.5 Recommendations

4 Academic culture

4.1 Overall assessment

Summarize in brief the panel's observation and assessment. Does the unit have and work for a culture that is conducive to high quality research and renewal, and which promotes the emergence of a sense of belonging? See item 2.3 Academic culture in the self-assessment report.

4.2 Strengths

4.3 Weaknesses

4.4 Threats

4.5 Recommendations

5 Recruitment

5.1 Overall assessment

Summarize in brief the panel's observation and assessment. Has the unit recruitment process, which likely ensures that recruitment contributes to high quality research, renewal and maintaining a critical mass at all stages of research career as well as ensures equal opportunities for all potential applicants? See item 2.4 Recruitment in the self-assessment report.

5.2 Strengths

5.3 Weaknesses

5.4 Threats

5.5 Recommendations

6 Career and mobility

6.1 Overall assessment

Summarize in brief the panel's observation and assessment. You may consider the following questions. Does the unit support sufficiently researchers at all career stages to sustain their active career paths, to promote career development and to stimulate mobility? Does the unit offer support for international collaboration which might boost career development? Are there internal career opportunities or other incentives, which aim to decrease the potential risk of losing talented researchers? Does the unit have measures aiming at supporting postdoctoral researchers to sustain their projects during a funding gap until new external funding is obtained? Does the unit ensure equal opportunities for all researchers? See item 2.5 Career and mobility in the self-assessment report, and mobility statistics.

6.2 Strengths

6.3 Weaknesses

6.4 Threats

6.5 Recommendations

7 Infrastructure (including administrative support and material banks)

7.1 Overall assessment

Summarize in brief the panel's observation and assessment. Does the infrastructure enable high quality research and renewal? Do the infrastructures meet the needs of research? Are the infrastructures sufficiently available? Are the unit's actions for maintenance and development of the infrastructure adequate and appropriate? See item 2.6 Infrastructure in the self-assessment report.

7.2 Strengths

7.3 Weaknesses

7.4 Threats

7.5 Recommendations

8 Funding

8.1 Overall assessment

Summarize in brief the panel's observation and assessment on funding situation and strategy for applying/obtaining external research funding. Are plans for maintaining the sufficient level of external funding realistic in general? See item 2.7 Funding in the self-assessment report, and statistic on funding.

8.2 Strengths

8.3 Weaknesses

8.4 Threats

8.5 Recommendations

9 Research collaboration

9.1 Overall assessment

Summarize in brief the panel's observation and assessment on research collaboration in terms of e.g., the degree, quality, and diversity of collaboration. Does the unit work to establish and maintain external and internal collaboration and networks? See item 2.8 Research collaboration in the self-assessment report, and the results of bibliometric analysis on the volume of co-publishing (as a proxy for collaboration).

9.2 Strengths

9.3 Weaknesses

9.4 Threats

9.5 Recommendations

10 Publication

10.1 Overall assessment

Summarize in brief the panel's observation and assessment on publication profile and strategy. How realistic is the publication strategy? Are measures and incentives sufficient for implementing the strategy, for example, in terms of encouraging and facilitating the researchers to apply the open science principles and practices such as parallel publishing and making data, material, metadata and methods widely available for reuse? Does the unit follow up on the development of publication patterns? Please note that the publication output is not a target of the assessment as such. See item 2.9 Publication in the self-assessment report, and the results of the bibliometric analysis.

10.2 Strengths

10.3 Weaknesses

10.4 Threats

10.5 Recommendations

11 Doctoral training

11.1 Overall assessment

Does the unit promote the integration of doctoral researchers into international and local researcher communities as well as the emergence of a sense of belonging? Does the unit ensure that the doctoral researchers are well familiarized with and follow the principles of the responsible conduct of research, ethical principles, and legislation relating to their research? Does the unit ensure that doctoral researchers have the adequate and equal access to resources (e.g., supervision, time for research, office space, research infrastructure, funding)? Does the unit aim to ensure that doctoral researchers have funding that is adequate for the duration of doctoral studies (the target time for the completing of a doctoral degree is 4 years)? Does the unit have measures aiming at supporting doctoral researchers career progression? Does the unit have measures aiming at ensuring that doctoral researchers acquire knowledge and skills they need in pursuing their chosen career paths? See items 2.3 Academy culture, 2.5 Career and mobility, 2.6 Infrastructure, and 2.7 Funding in the self-assessment report, statistic on the doctoral training, and outcome of the self-assessment of doctoral degree programmes 2022.

11.2 Strengths

11.3 Weaknesses

11.4 Threats

11.5 Recommendations

12 Societal impact of research

12.1 Overall assessment

Does the unit conduct research, which is societally relevant and likely to lead to societal impact? Does the unit do public outreach activities and other actions, and are they likely to lead to the desired outcome (including technological transfer)? Has the unit established collaboration with non-academic collaboration, which fosters generating of societal impact? Given the unit's research profile, has the unit utilized its full potential for societal impact in terms of activities and output? See item 2.10 Societal impact of research and item 2.8 Research collaboration in the self-assessment report, and bibliometric analysis (Overton) on societal impact.

12.2 Strengths

12.3 Weaknesses

12.4 Threats

12.5 Recommendations

13 Development plan

You may follow the same structure as above or write a free-form assessment. You may consider the following questions. Are the proposed actions feasible (with regard to the schedule, resources, objectives, etc.) and well-defined with clear objectives? Is the choice of proposed actions justifiable in the light of the background data? Are the proposed actions likely to lead to the target? Are there potential challenges for successful implementation of the development plan? Are there development measures, not touched upon in the development plan, the units should take to further improve the three components of the assessment (research environment, doctoral training, or societal impact of research)? See the unit's development plan.

Appendix 11. List of abbreviations

AACSB	Association to Advance Collegiate Schools of Business
ANZSRC	Australian and New Zealand Standard Research Classification
BC-WELL	The behaviour change, health, and well-being across the lifespan (profiling area at JYU in 2019–2023)
BIOENV	Department of Biological and Environmental Science
CALS	Centre for Applied Language Studies
Chem	Department of Chemistry
CoE	Centre of Excellence
DHE	Department of History and Ethnology
DORA	Declaration on Research Assessment
DSSP	Department of Social Sciences and Philosophy
EDU	Department of Education
EDUPSY	Faculty of Education and Psychology
ERC	European Research Council
FDPE	Finnish Doctoral Programme in Economics
FIER	Finnish Institute for Educational Research
FIN-CLARIAH	Common Language Resources and Technology Infrastructure
FIRI	Finnish Research Infrastructure
FIT-FORTHEM	Fostering Institutional Transformation of R&I Policies in European Universities
FORTHEM	Fostering Outreach within European Regions, Transnational Higher Education and Mobility
FTE	Full-time equivalents
GSF	Graduate School of Finance
HUMSOC	Faculty of Humanities and Social Sciences
IGO	Intergovernmental organization (see the glossary)
ITK	Faculty of Information Technology
JSBE	Jyväskylä University School of Business and Economics
JYU	University of Jyväskylä
JYU.Well	See the glossary
JYUGS	University of Jyväskylä Graduate School for Doctoral Studies
KATAJA	Finnish Doctoral Programme in Business Studies
KYC	Kokkola University Consortium Chydenius
LaCos	Department Language and Communication Studies

MACS	Department of Music, Art and Culture Studies
Maths	Department of Mathematics and Statistics
MEC	Ministry of Education and Culture
MLTK	Faculty of Mathematics and Science
NA	Not available
OA	Open access
OKL	Department of Teacher Education
OSC	Open Science Centre at the University of Jyväskylä
PACTS2	Physical activity and health during the human life-span (profiling area at JYU in 2021–2026)
Phys	Department of Physics
Profi	Profiling funding. See the glossary
PSY	Department of Psychology
RAE	Research assessment exercise
RIS	Research and Innovation Services at the University of Jyväskylä
SA	Self-assessment
SDGs	The United Nations 17 Sustainable Development Goals
SMP	Strategic Management Plan
Sports	Faculty of Sport and Health Sciences
STEM	Science, technology, engineering, and mathematics

Appendix 12. Glossary

Academy of Finland	According to the Academy of Finland, it is "an expert organization in science and research that funds high-quality scientific research, provides expertise in science and science policy and strengthens the position of science and research. The Academy is a government agency within the administrative branch of the Finnish Ministry of Education, Science and Culture." In June 2023, the Academy changed its English name to the Research Council of Finland.
Academy Professor	A 5-year funding granted by the Academy of Finland for "internationally leading-edge researchers and recognized experts in their field who are expected to have great scientific impact on the scientific community and on society at large". The funding is open for application every 2–3 years.
Academy Project	A 4-year funding granted by the Academy of Finland for research teams. The funding covers research team salaries and research costs.
Academy Research Fellow	A 5-year funding granted by the Academy of Finland for individual researchers who completed their doctorate at least 3 but not more than 9 years ago. The funding covers Academy Research Fellow's salary and research costs such as costs of setting up a research team, costs of international collaboration and mobility. Note: Academy Research Fellow reform took place in autumn 2022, changing the eligibility period to 2–9 (as of the autumn 2023 call, 2–7 years) and the length of the funding period to 4 years.
ANZSRC	The Australian and New Zealand Standard Research Classification (ANZSRC) is developed by the Australian Bureau of Statistics.
Business Finland	Business Finland offers funding for research, product development, and business development. It funds research projects of research organizations that carry out research in collaboration with Finnish companies.
Centre of Excellence	The Academy of Finland's Centre of Excellence Programme (CoE) grants 8-year funding for scientifically first-rate research communities, consisting of one or more research teams.
Collaboration	The extent to which a unit's publications have international, national, or institutional co-authorship, and single authorship.
Completion time of doctoral degree	The completion time is calculated from the date when a doctoral student accepts the studying place in university to the date of the doctoral degree certificate. The data includes both part-time and full-time doctoral students.
Converis	The research information system of the University of Jyväskylä, which contains information on researchers, projects, publications and metadata of research data.

Dimensions	Dimensions is a database, created in 2018. It includes information on publications, policy documents, research funding, datasets, patents, and clinical trials.
FIRI funding	The Academy of Finland's funding instrument for research organizations that supports the upgrading or construction of local infrastructures.
FIT FORTHEM	A 3-year-long cooperative project among FORTHEM universities (years 2020–2023), where research and innovation practices are being developed and cooperation with third party interest groups is being promoted further.
FORTHEM	Fostering Outreach within European Regions, Transnational Higher Education and Mobility is a European University Network that is designed to enhance the mobility of students and staff members, cooperation with university-external stakeholders as well as the civic activity of students. It is funded by the European Commission and has nine universities as members. JYU is one of the members.
Four-stage research career model	The four-stage research career model at the Finnish universities [26]. At the JYU, the stages include the following job titles. I = doctoral student (new title 1.3.2021: doctoral researcher), project researcher, research assistant. II = postdoctoral researcher, university teacher (since 2019), research coordinator. III = assistant professor (tenure track), associate professor (tenure track), lecturer, senior lecturer, senior university lecturer (a new title 1.1.2020), senior researcher, academy research fellow. IV = research director, professor, academy professor, visiting professor, professor of practice.
IGO	Intergovernmental organization such as the United Nations, the European Union, and the World Health Organization.
JUFO classification	JUFO is a Finnish classification system for publication channels [89]. It rates publication channels into the following levels: 1 = basic level, 2 = leading level, 3 = highest level, and 0 = publication channels, which do not yet meet the criteria for level 1.
JYU data warehouse	The data warehouse is a reporting service offered by the University of Jyväskylä to its units. It provides the units with information on their own activities and the University as a whole.
JYU.Well	Multifaceted wellbeing (JYU.Well) is an interdisciplinary community of wellbeing researchers at the University of Jyväskylä, established in 2021. The Academy of Finland has granted JYU profiling funding for JYU.Well for the years 2023–2028.
Jyväskylä University Foundation	The Foundation organises events, grants awards to members of the University community and supports financially JYU and its members.
JYX	JYX is digital repository of the University of Jyväskylä.

Nationally co-authored publications

In nationally co-authored publications, all authors are at least from two Finnish organizations.

Open access publications

Publications, which are available without any restrictions. Gold open access are identified as fully published articles available from the publisher without charge. That is publishing in open access journals. Green open access means that an article is published in a traditional subscription-based scientific journal and the parallel copy of the article is stored in a freely accessible online archive so called an open access repository. Hybrid (gold) open access refers to publishing in a traditional subscription journal, in which an article is made open access by paying an article publication charge.

Overton — Overton policy database provides information on publications cited by publicly accessible policy documents from government agencies, think thanks and intergovernmental organizations.

Postdoctoral Researcher funding

A 3-year funding granted by the Academy of Finland for individual researchers who completed their doctorate no more than 4 years ago. Postdoctoral Researcher funding was no longer open for application after year 2021.

Profiling funding (Profi)

The Academy of Finland's funding instrument to Finnish universities aimed at supporting and speeding up the strategic profiling of universities. The first call was in 2015.

Publication type — In Finland, the Ministry of Education and Culture classifies publications into nine main publication types [43]: A) Peer-reviewed scientific articles, B) Non-refereed scientific articles, C) Scientific books (monographs), D) Publications intended for professional communities, E) Publications intended for the general public, F) Public artistic and design activities, G) Theses, H) Patents and invention disclosures, and I) Audiovisual material, ICT software.

Research Council — The Research Council, appointed by the rector, is in charge of monitoring and supervising the implementation of the University's Strategy and the development of research environment and career path of researchers. It also serves as the Graduate School Steering Board. Vice Rector responsible for research and innovation activities chairs the Research Council, which consists of the vice deans for research and innovations and vice directors of independent institutes (FIER, KYC).

SAP — Financial and human resources information system

SciVal — SciVal is an online bibliometric tool, which can be used to analyses publication output at an individual, group, and institutional level worldwide. SciVal uses the Scopus database from 1996 onwards.

Scopus	Scopus is an abstract and citation database. It includes peer-reviewed scientific journals, conference papers, trade publications, book series, and patents (from 5 patent offices) that have been assigned an ISSN. The database is updated daily. Publications written in English constitute the majority in Scopus. The coverage of Scopus differs by a discipline.
Think tank	Encyclopedia Britannica defines think thanks as “think tank, institute, corporation, or group organized for interdisciplinary research with the objective of providing advice on a diverse range of policy issues and products through the use of specialized knowledge and the activation of networks”. Examples of Finnish think thanks are the Finnish Business and Policy Forum EVA, CMI – Martti Ahtisaari Peace Foundation, and the Research Institute of the Finnish Economy ETLA.
Vipunen Education Statistics Finland	Vipunen is the education administration's reporting portal in Finland. It contains statistics on e.g. Finnish universities.
Year of publication	The year in which the publication was published.

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Assessment panel 2023