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Research Master Methodology and Statistics for the Behavioural, Biomedical, and Social Sciences

Utrecht University

Report of the limited programme assessment

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Contents

Executive summary

The outcome of the external assessment of the research master's programme Methodology and Statistics for the Behavioural, Biomedical, and Social Sciences (MSBBSS) of Utrecht University by an NVAO approved panel is positive. The two-year full-time programme aims to educate students as qualified methodologists and statisticians for the behavioural, biomedical, and social sciences. The programme focusses on major concepts, theories, statistical procedures and models related to methods and statistics in the areas mentioned. According to the panel, the programme fulfils a strong need for highly qualified applied statisticians, both inside and outside academia.

In the first year, students acquire a solid basis on the background of methodological and statistical theories and applications in the behavioural, biomedical, and social sciences. In the second year, students prepare and write their master thesis. In addition, students have some free space in which they can choose to follow elective courses or combine electives with a short internship. The panel is enthusiastic about the curriculum. It considers the curriculum to be an appropriate reflection of the aims of the programme, and the courses clearly build upon each other.

The panel thinks highly of the quality of the teaching staff, who are acknowledged scientists in their own subfield. The programme has a stable, healthy, and sustainable inflow of about 20 new qualified students per year. The panel appreciates the interactive and small-scale teaching methods used in the programme. This allows for in-depth discussions that meet the level and intensity of a research master's programme.

The panel worries a bit about the heavy study load and stress that students perceive. Especially in the first year, the teaching, learning and assessment activities are mainly concentrated in the first fifteen weeks of the semesters. The panel strongly recommends distributing the study load more evenly across the entire year.

The programme has a clear framework for assessment and makes use of an appropriate range of assessment methods. The panel is impressed by the thoughtful and extensive process to safeguard the quality of the master theses, including attention for recent initiatives to promote research integrity and open science and the valuable role of the programme coordinator. It only encourages the programme to make more transparent for students how the different assessors involved come to the final decision about the grade. The Board of Examiners (BoE) plays an active role in ensuring the quality of assessments. The panel is impressed by the high quality and academic level of the fifteen theses it examined. According to the panel, the students reach a high level of achievement and are very well prepared for research positions inside and outside academia.

The panel is, therefore, convinced of the quality of the research master's programme MSBBSS.

The chair and the secretary of the panel hereby declare that all panel members have studied this report and that they agree with the judgements laid down in the report. They confirm that the assessment has been conducted in accordance with the demands relating to independence.

Date: 19 May 2021

Rob Ruiter   Esther Poort

(chair)   (secretary)

1. Introduction

1.1 Administrative data

Name of the programme:	Methodology and Statistics for the Behavioural, Biomedical, and Social Sciences (research)
CROHO number:	60384
Level of the programme:	Master of science
Orientation of the programme:	Academic
Study load:	120 EC
Location:	Utrecht
Variant:	full-time
Expiration of accreditation:	1 November 2021

1.2 Introduction

This report focuses on the assessment of the research master's programme Methodology and Statistics for the Behavioural, Biomedical, and Social Sciences (MSBBSS) of Utrecht University. This assessment forms part of a cluster assessment of thirteen research master's programmes at seven universities. In total, fifteen panel members participated in this cluster assessment. Appendix A provides an overview of the thirteen participating research masters and the composition of the total panel.

The assessment is based on the standards and criteria described in the NVAO Assessment framework for the higher education accreditation system of the Netherlands 2018 (limited framework). Research master's programmes must meet a number of additional criteria as described by the NVAO (specification of additional criteria for research master's programmes, 2016).

1.3 Panel composition

For every online visit, a (sub)panel was composed, based on the expertise and availability of panel members. Each (sub)panel consisted of five members, including the chair and the student member. The panel that assessed the research master's programme MSBBSS consisted of the following members:

- Prof. dr. Rob Ruiter (chair), Professor of Health and Social Psychology, Faculty of Psychology and Neuroscience at Maastricht University;
- Prof. dr. Lidia Arends, Professor of Statistics and Research Methodology, Department of Psychology, Education & Child Studies at Erasmus University Rotterdam;
- Prof. dr. Detlev Leutner, Professor of Instructional Psychology, Faculty of Educational Sciences, University of Duisburg-Essen;
- Yvonne Schittenhelm BSc, (student member), Master Individual Differences and Assessment, Tilburg University;

- Prof. dr. Lieven Verschaffel, Professor of Educational Psychology, Faculty of Psychology and Educational Sciences, KU Leuven.

The panel was supported by drs. Esther Poort, who acted as secretary.

All panel members and the secretary have signed a declaration of independence and confidentiality. In this declaration they affirm not to have had any business or personal ties with the programme in question for at least five years prior to the review.

The NVAO approved the composition of panel on 26 November 2020.

1.4 Working method

Preparation

On 14 January 2021, the panel of the entire cluster held a general online kick off meeting. In this meeting, the panel received an introduction to the assessment framework and discussed the working methods in preparation to and during the online visits.

The programme drew up a self-evaluation describing the programme's strengths and weaknesses. This self-evaluation included a chapter in which the students reflected on the programme. The panel members prepared the assessment by analysing the self-evaluation report and the appendices provided by the institution. The panel also evaluated a selection of fifteen theses and the accompanying assessment forms from the programme. The theses selection was made by the panel's secretary based on a provided list of at least fifty theses from the most recent years. In the selection, consideration was given to a variation in assessments (grades), topics and programme variants.

The panel members individually formulated their preliminary findings and a number of questions they wanted to raise during the online visit. The secretary made an overview of these preliminary findings and questions and sent it to the panel members as a starting point for the preparation of the panel during the online visit.

To further ensure that the different panels used the same working method and approach for all thirteen programmes in the cluster, the two chairs and the two secretaries had two additional meetings: one prior to the first visit and one halfway through all the visits.

Online visit

The online visit took place on 9 March 2021 (see Appendix B for the schedule). During the preparatory meeting, the panel discussed the preliminary findings and decided which questions to raise in their meetings with the programme representatives. During the visit, the panel spoke with representatives of the management, students, lecturers, alumni, and the board of examiners. Everyone involved in the programme had the opportunity to inform the panel in confidence about matters they consider important to the assessment. No one made use of this opportunity. The panel used the last part of the online visit to evaluate the interviews and have a second meeting with the programme's management to receive answers to any remaining questions. At the end of the visit, the chair presented the panel's preliminary findings and their first impressions of the programme.

Report

The secretary drew up a draft report based on the panel's findings. This draft report was submitted to the members of the panel and adjusted on the basis of their review and feedback. After adoption, the draft report was sent to the institution for verification of factual inaccuracies. The secretary discussed the programme's comments with the chair, after which the secretary drew up the final report and circulated it to the panel for a final round of comments.

The report follows the four standards such as set of in the NVAO's Assessment Framework 2018 (limited framework): 1) the intended learning outcomes, 2) the teaching-learning environment, 3) assessment, and 4) achieved learning outcomes. Regarding each of the standards, the assessment panel gave a substantiated judgement on a three-point scale: meets, does not meet, or partially meets the standard. The panel subsequently gave a substantiated final conclusion regarding the quality of the programme, also on a three-point scale: positive, conditionally positive, or negative.

Development dialogue

Although clearly separated from the process of the programme assessment, assessment panel members and programme representatives met to conduct the development dialogue, with the objective to discuss future developments of the programme in light of the outcomes of the assessment report.

2. Review

2.1 Intended learning outcomes

> *The intended learning outcomes tie in with the level and orientation of the programme; they are geared to the expectations of the professional field, the discipline, and international requirements.*

Findings, analysis, and considerations

MSBBSS is one of seven research master's programmes offered at the Faculty of Social and Behavioural Sciences (FSBS) of Utrecht University (UU), which are organised within the Graduate School of Social and Behavioural Sciences (GSSBS). The Graduate School is chaired by the vice-dean, who is advised by the Board of Studies (BoS), comprised of the programme coordinators of the seven research masters.

The research master MSBBSS trains students into becoming qualified methodologists and statisticians for the behavioural, biomedical, and social sciences. The programme focusses on major concepts, theories, statistical procedures and models related to methods and statistics in the areas mentioned. At the end of the MSBBSS programme, students are able to develop new statistical techniques/methods, execute methodological and statistical research and write a scientific report. The programme prepares for a PhD training, while also enabling students to pursue their future career in a research setting outside the university.

The programme combines the research expertise of three different departments: Department of Methodology and Statistics (UU), Department of Biostatistics, University Medical Centre Utrecht (UU), and Department of Research Methodology, Measurement and Data Analysis (University of Twente; UT). Furthermore, the programme collaborates strongly with Statistics Netherlands (CBS) and Central Institute for Test Development (Cito). The panel appreciates the strong involvement of the two departments of Utrecht University, which allows for a unique synthesis of methodology and statistics in the social sciences with biostatistics. The panel also values the collaboration with the UT, CBS and Cito. UT is known for their strong expertise on psychometrics. Because of the connections with CBS and Cito, the programme is well aware of the methodology and statistics that are used and relevant outside of academia. These connections also provide students with a broad range of internship opportunities and thesis topics.

The programme distinguishes theoretical, analytical, judgment, communication, and learning skills. These five skills correspond to the formulated intended learning outcomes (MSBBSS uses the term academic skills) in line with the Dublin descriptors. The panel studied the academic skills and established that these are of the right level, and clearly are in line with the research orientation of the programme. The academic skills reflect the strong theoretical foundation of methodology and statistics in combination with applied skills that are relevant in the behavioural, biomedical, and social sciences in particular when it comes to consultancy tasks and providing advice. The panel endorses that there is a strong need for highly qualified applied statisticians both inside and outside academia.

The panel established that the programme is well aware of new developments in the field. It applauds the way the programme is dealing with the emerging field of data science by focussing on the theoretical foundations underlying working with big data rather than 'going with the flow' and teaching students the tricks of working with large and diverse datasets.

Conclusion

The panel concludes that MSBBSS is an ambitious research master's programme with a unique combination of theoretical foundation of methodology and statistics and application in the behavioural, biomedical, and social sciences. The academic skills have been adequately concretised with regard to content, level and orientation. The programme therefore meets standard 1.

2.2 Teaching-learning environment

The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the intended learning outcomes.

Findings, analysis and considerations

Curriculum

MSBBSS is a two-year programme of 120 EC that consists of two semesters per year. Within each semester, there is a period of fifteen weeks of intensive teaching, learning and assessment.

In the first year, students follow four parallel courses (each of 7.5 ECTS) during a semester. These eight courses provide a solid basis on the background of methodological/statistical theories and applications in the behavioural, biomedical, and social sciences. During these courses, students learn to understand, compare, and criticise the different approaches in relation to each other and also learn how to develop new statistical techniques and methods. With regard to this development of new techniques and methods, the lecturers explained that students learn, for example, how to write their own codes or algorithm in R and compare these codes with the 'golden standard'.

The first semester of the second year comprises a research seminar (7.5 EC) focusing on academic skills such as writing, presentation, and peer review and feedback. Students also follow a 15 EC course 'Preparation of the thesis' that prepares them for the research project carried out in the master thesis. This course focusses on mastering the state of the art in methodology and statistics and the research skills for the research topic chosen. Additionally, the students are trained in methodological and statistical consultation and obtain experience by participating in a consultation shop, which is highly valued by the panel. Writing the master thesis (22.5 EC) is the major component of the second semester of the second year. The topic of the master thesis is integrated in the ongoing research of one of the research groups associated to the programme. Based on an up-to-date knowledge of methodology and statistics, the students have to explore the subject of their thesis and show that they can develop new methodology and statistics, evaluate methodology and statistics, and apply methodology and statistics in a context that is relevant for behavioural, biomedical, and social scientists. The thesis is typically about 6,000 words long (a standard set by most of the scientific journals in this field). The thesis can have the format of an empirical journal article, but alternative additional formats are encouraged too, that fit with the mainstream publication methods in the field of methodology and statistics, for example publishing codes and supporting materials through GitHub. Students decide on their topic at the end of the first year. During the online visit, the students and alumni indicated that they were satisfied with the thesis topics allocated to them.

In addition, the second year comprises of 15 EC 'Electives and Research experience' which are spread across both semesters. Students can choose to only follow elective courses, or to combine electives with a short internship. They can choose to follow the predefined track 'Official Statistics' that has an

official European Master in Official Statistics Label (EMOS) which is highly appreciated by the panel. Students can also use this 15 EC free space to design their own individual path. The panel learned that students are encouraged to follow electives from other research master's programmes, but that they can also ask for approval to follow electives from regular master's programmes, which are checked for fit with the envisioned research master's level.

The panel studied the course descriptions and noted that the programme has translated the five academic skills into course objectives in a diligent and consistent way. The panel values the research-oriented nature of the programme, and considers the curriculum to be an appropriate reflection of the five academic skills of the programme and the courses clearly build upon each other. The panel appreciates the efforts the programme has made to enhance the coherence of the programme. Compared to the previous accreditation, there is a better balance between course work and training in additional topics (partly elective) besides working on the thesis.

The panel was pleased with the attention paid to research integrity and ethics in the programme. For example, students are obliged to submit their research protocol for approval to the Ethics Review Board of the FSBS. In addition, the programme further devotes attention to Open Science, such as the principles of FAIR (Findable, Accessible, Interoperable, and Reusable) data. In many courses, these topics are actively discussed, and skills for reproducible coding are being thought and put to practice for the thesis.

Students indicate in the student chapter that they are very satisfied with the programme, including the opportunity to specialise and gain experience in a specific statistics-related field in the 15 EC free space. However, students also mention that apart from the EMOS electives it is hard to find fitting electives that are at the same level as the MSBBSS master. The panel advises finding ways to offer students more relevant electives that are tailored at research master's level. In this respect the panel welcomes the introduction of a second predefined track on educational testing and psychometrics in collaboration with Cito in 2021. In addition, the panel suggests requiring additional assignments for research master's students in courses shared with regular master's students.

In the student chapter, students mention that they would prefer to include some classes that are more focused on skills needed for data science jobs (e.g., Python assignments). The panel appreciates that the programme accommodated a series of data science courses, so that students can acquire some specific skills. However, the panel agrees with the choice of the programme to focus on the theoretical foundations rather than teaching on specific coding skills. This choice was also supported by the alumni who indicated that understanding the rationale of all languages makes it easy to learn the different languages used in practice.

The students whom the panel met during the visit mentioned that they would like to see more training of their writing skills. The panel encourages the programme look for a way to incorporate this training more into the programme.

In accordance with the Executive Board of UU, the FSBS considers it important that, especially at a research master's level, students have skills to function in a globalised labour market. Given that English is the current lingua franca of scientific research, the renowned research is carried out in an international context and the research master's programme is open to international students and involve international staff members, the research master's programme is taught in English. The panel supports this choice.

Admission

The MSBBSS programme aims at enrolling at a maximum of twenty new students per academic year. Candidates are selected based on academic achievements, requirements regarding methods and statistics, English language proficiency, and motivation. The panel observed that the admission criteria are formulated clearly and adequately reflect the research-oriented nature and high demands of the programme. The programme has a stable, healthy, and sustainable inflow of about twenty new students per year. This allows for maintaining the high selection criteria.

Study load and study guidance

The panel established that students experience a heavy study load. Students stated that they felt overwhelmed especially during the first semester of the programme. The panel has the impression that is related to the high concentration of teaching, learning and assessment in a relative short period of time. The panel strongly recommends distributing the study load more evenly across the entire year. It is of the opinion that the programme has ample room to extend the programme over more weeks during the year.

The programme has an extensive system in place for study guidance. Students have access to several kinds of advice, support and guidance by a tutor and a mentor. The tutor is a staff member who has formal and informal meetings with students and maintains an open-door policy. The tutor – who is not responsible for any teaching module in the programme to preserve a safe environment for the student – monitors the study progress of students throughout the entire two years, and advises students on programme-related issues. During the master thesis, students are assigned to a mentor (next to their supervisor). This mentor coaches a group of approximately five students during their master thesis. The panel learned during the visit that the mentor plays an important role in guiding the students in the development of their soft skills. In 2019-2020, the mentoring ('buddy') programme was introduced, in which second year students are (voluntarily) paired with one or two first-year students to offer informal contact, companionship and advice. Students told the panel that they appreciate this system a lot.

Didactic concept

The programme found a good balance between teacher-centred (e.g., lectures) and student-centred (e.g., individual and group work) forms of teaching and learning. The small-scale nature of the programme allows ample time for discussions among students and teachers, which facilitates teacher-student communication and contact. Students are required to actively reflect on the course literature prior to course meetings and contribute to group discussions during the meetings. In their interviews with the panel, students and alumni praised the balance of receiving information to understand new concepts and having space for exploring their own learning pathways. According to the students, all lecturers are willing to invest time, are easily accessible, and are flexible in adapting the deadlines when necessary. The panel acknowledges the interactive and small-scale teaching methods in the programme. This allows for in-depth discussions that meet the level and intensity of a research master's programme.

Before the COVID-19 crisis, MSBBSS lectures took either place at UU or at UT. Students attended lectures by a video connection in a room specially equipped or this purpose. Additionally, once every three weeks students based in Utrecht and twice every three weeks students based in Twente travelled to the other location. The panel learned that only one or two students are based in Twente

and that the programme is thinking about changing the dual location policy and host all education in Utrecht (except the track on psychometrics). The panel endorses this change because this will allow all students to engage optimally in the active learning community and it will decrease stress experienced due to the need to travel to the location.

Staff

During the online visit, the panel met a very competent and enthusiastic staff. Lecturers are very engaged with the students and programme. The ambitious and small-scale character of the programme adds to the commitment of the teaching staff to the programme and to the motivation to work with the MSBBSS students. Students and alumni stated that they appreciate the commitment and availability of the lecturers, which they consider one of the programme's greatest assets.

Thesis supervisors and course coordinators are always tenured senior faculty members at the associate and full professor level who participate in research groups affiliated to the programme. It is also possible for students to write their thesis at another (international) institute under supervision of an external supervisor. In that case, the student is also assigned an internal supervisor. All course coordinators teach about their own research field.

The panel noted that the programme is embedded in a solid and strong academic environment. It thinks highly of the teaching staff, who are acknowledged scientists in their own subfield. Both in the student chapter and during the interviews, students praise the high research quality of the teaching staff.

Most teachers and supervisors are members of the Interuniversity Graduate School of Psychometrics and Sociometrics (IOPS) that provides graduate training at the PhD level. IOPS was awarded the highly competitive Netherlands Organisation for Scientific Research (NWO) Graduate programme grant. This grant is awarded to research schools that provide an excellent educational and research environment for highly talented young researchers. Overall, the panel established that the programme is embedded in a very strong academic context.

The educational capabilities of the teaching staff are up to standard, as the substantial proportions of lecturers having University Teaching Qualification (UTQ), or Senior University Teaching Qualification (STQ).

COVID-19

Due to COVID-19 almost all education switched to online teaching and assessment in the past year. The panel asked students and teachers about their experience with online teaching. Especially first-year students were very positive about the smooth and efficient transition to online education. Students mentioned that there was still a lot of social interaction and discussion possible during online meetings. First-year students highly appreciated the buddy system. Moreover, they felt encouraged and supported to work together. Second-year students work more independently, and therefore experienced the negative effects of working from home more. The panel was informed that they feel a bit on their own, especially during the COVID-19 crisis. This needs attention from the staff now, but is probably also an aspect to take note of in general as second-year students are mainly involved with their personal research projects but still in need of the companionship felt in the first year.

Teachers worked hard to make adjustments to ensure that students could follow the courses online and that the learning objectives could be attained. They experienced a high workload but felt very supported by the ICT support offices (UU central level and the faculty) and the other UU units (e.g., Educate-IT, Educational Consultancy and Professional Development) that provided didactical support for online teaching.

The panel concluded that the programme adequately adapted to the COVID-19 situation and still allows students to achieve the five academic skills. The panel suggests the programme to inventory what measures might be kept after COVID-19.

Conclusion

In sum, the panel considers that the teaching and learning environment of the programme is strong, promoting, among others, small-scale, intensive, and student-activating learning. The programme therefore meets standard 2.

2.3 Student assessment

The programme has an adequate system of student assessment in place.

Findings, analysis, and considerations

Assessment policy and methods

UU requires all study programmes to provide a detailed assessment plan. The assessment plan of MSBBSS provides a good overview of the assessments of the five academic skills (in terms of Dublin descriptors) across the programme. In addition, it contains a detailed description of the implementation of the learning outcomes, including an overview of which learning outcomes are tested by what assessment type and why certain tests are suited for testing certain skills. The panel established that the assessments adequately reflect the course learning goals. The programme uses a variety of different forms of testing, including in-class participation, open and closed book exams, group assignments, presentations, and practical and writing assignments (a mix of individual and group assignments). Overall, the panel applauds the strong alignment of the five academic skills, teaching methods, and assessment.

The self-evaluation report gives a detailed description of the quality assurance mechanism on the course and curriculum level of the assessments, which is also part of the assessment plan. The quality assurance policy is based on four pillars: viability, reliability, utility, and impact. The panel noted that this policy is thorough and well-considered. The programme has several measures in place to safeguard these four pillars, including the four eyes principle for important achievements, course manuals, assignment descriptions, assessment forms and test instructions. In particular, the panel was very positive about mandatory course manuals containing all information about the assessment for a given course.

Assessment of the master thesis

The panel is impressed by the extensive process to safeguard the quality of the master thesis. This starts with the proposal for the master thesis, which must be approved by the Board of Studies (BoS) and the Ethical Review Panel of the FSBS. Two members of the BoS evaluate each thesis proposal. This

guarantees the quality of research and uniformity of quality standards across all research master's programmes. The master thesis is graded by the supervisor and an independent second grader who is always a senior researcher from one of the other contributing departments. In the case of a large discrepancy between the grade of the supervisor and the second grader, the MSBBSS coordinator acts as a moderator to achieve agreement. The thesis is publicly defended in a meeting of a thesis examination panel. Students shortly present their thesis and respond to questions raised by two examiners, one being the second grader from the programme, the other a teacher from another research master's programme of the GSSBS. The final decision on the grade is made after the defence by the Thesis Examination Panel. This decision is based on the proposed grade by the supervisor, the two examiners, and the programme coordinator. The MSBBSS coordinator reads all master theses, thus allowing him to develop a benchmark against which to score the quality of the work presented and the cohort's performance in comparison to earlier cohorts under the coordinator's leadership. The panel is very positive about this thoughtful and extensive procedure. However, it advises to make more transparent for students how the different assessors involved come to the final decision about the grade, in particular when provisional grades of the two assessors differ by more than 0.5 points .

Board of Examiners

There is one Board of Examiners (BoE) for all seven research master's programmes of FSBS. Each research master's programme has one person in the BoE that is responsible for that individual programme.

The panel reviewed the activities of the BoE in monitoring the quality of examinations. Once a year, the vice-dean, each research master coordinator, the chair of the BoE and the MSBBSS member of the BoE, have a meeting in which they discuss the assessment plan and theses. Yearly, the BoE checks the level of theses by reading a sample with different grades, and evaluates the assessment of one specific course. In addition, the BoE yearly prepares the Education and Examination Regulations (EER) and communicates this in a meeting with the programme coordinators. The BoE reports to the vice-dean who may use this information in the annual quality assurance meetings with the programme coordinators. The panel concludes that the BoE has adequate procedures that safeguard the quality of testing but noted that resit procedures are not fully clear to both staff and students. This aspect could be described better in the Exam and Education Regulations and subsequently communicated to the programme's community.

Conclusion

The panel concludes that the programme has a sound and thorough system of assessment in place and the BoE takes its responsibilities seriously. The programme therefore meets standard 3.

2.4 Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

As described under Standard 2, students finish the programme with a master thesis. Being the final element of the programme and covering all learning outcomes, this reflects the level achieved by students. In order to assess whether the five academic skills are achieved, the panel has studied a

sample of fifteen recent theses as an internal indicator, and has examined the graduates' success in a research career as an external indicator.

The panel is impressed by the high quality and academic level of the fifteen theses it examined. The panel found interesting and original topics, and innovative ideas. The panel agrees with all grades and would have given the same marks, deviating maximally by 0.5 only, sometimes giving a slightly higher or slightly lower grade. For one thesis, the statistical level was a bit disappointing concerning this specialized statistical programme. All other theses used advanced measurement and analyses methods. Several theses were published in a high-quality journal, which underpins the high quality. Overall, the panel is convinced that graduates achieve the ambitious five academic skills of the programme.

The programme recently conducted a survey among their alumni. Of the 34 alumni that replied, 15 indicated to have at least submitted the paper to a journal. None of the alumni the panel met, published their thesis in a journal. However, their work was published as policy document or shared on GitHub, which is another equally valuable way of having impact for statisticians. Moreover, the panel understands and appreciates that the relative low number of journal publications also has to do with the shift from many publications based on a single study towards fewer publications building on several studies.

The quality of the programme is clearly expressed by the achievements of the students, who are doing well according to the self-evaluation report. Of the 53 MSBBSS alumni who graduated up to 2019, 21 are currently working as a PhD candidate at different universities in the Netherlands and abroad. The alumni who pursued a career outside of academia found jobs at a wide variety of companies, or became junior lecturers in statistics. During the online visit, the panel talked to a diverse group of alumni, who are currently working as a researcher inside or outside academia. They indicated that they were well prepared by the programme for their current positions and that the step to the job market was made rather easily.

Conclusion

The panel concludes that the master theses reflect the high scientific standards of the research master's programme, and graduates are well prepared for research positions inside and outside academia. The programme therefore meets standard 4.

3. Strengths and recommendations

3.1 Strengths of the programme

The panel is impressed by the following features:

- Unique focus – The programme combines the theoretical foundations of methodology and statistics with their application in the behavioural, biomedical, and social sciences;
- Student-centred approach – The interactive and small-scale teaching methods allow for in-depth discussions that meet the level of a research master's programme;
- Strong academic environment – The high-quality and strongly engaged teaching staff ensure that the programme is embedded in a strong academic environment;
- External research partnerships –Due to the strong connections with CBS and Cito, the programme is well aware of the methodology and statistics that are used outside of academia. These connections also provide students with excellent internship opportunities;
- Assessment plan – The assessment plan demonstrates a strong alignment of the five academic skills, teaching methods and assessment;
- Master thesis – The programme has a thoughtful and extensive procedure to safeguard the quality of the master thesis. The theses reflect the high scientific standards of the research master's programme.

3.2 Recommendations

For further improvement of the programme, the panel makes the following recommendations:

- Electives – Find ways to offer students more electives that are tailored at research master's level, for example by requiring additional assignments for research master's students in courses shared with regular master's students;
- Heavy study load – – Pay more attention to the perceived study load of students, by spreading out the study load more evenly over the year;
- Final grade – Make more visible for students how the different assessors involved in the thesis come to the final decision about the grade;
- Dual location –Change the dual location policy and host all education in Utrecht (except the track on psychometrics).

4. Conclusion

The panel concludes that MSBBSS is an ambitious research master's programme with a unique combination of theoretical foundation and application in the relevant fields of the programme. The five academic skills meet the standards required for a research master's programme. The structure of the programme and the high-quality teaching staff provide a strong teaching learning environment, allowing students to obtain all five academic skills. The programme has an adequate assessment system, including an extensive process to safeguard the quality of the master theses. The theses studied by the panel, reflect the high scientific standards of the research master's programme, and graduates are well prepared for research positions inside and outside academia.

Standard	Judgement
Standard 1	Meets the standard
Standard 2	Meets the standard
Standard 3	Meets the standard
Standard 4	Meets the standard
Final conclusion	**Positive**

Appendix A – Panel composition and programmes of the cluster

Panel composition of the cluster:

- Prof. dr. Janke Cohen-Schotanus (chair) Professor emeritus of Research of Education in the Medical Sciences;
- Prof. dr. Rob Ruiter (chair), Professor of Health and Social Psychology, Faculty of Psychology and Neuroscience at Maastricht University;
- Prof. dr. Lidia Arends, Professor of Statistics and Research Methodology, Department of Psychology, Education & Child Studies at Erasmus University Rotterdam;
- Prof. dr. Caroline Braet, Professor of Developmental Psychopathology, Department of Developmental, Personality and Social Psychology at Ghent University;
- Prof. dr. Rachel Gibson, Professor of Politics, Department of Politics, University of Manchester;
- Prof. dr. Harm Hospers, Professor emeritus of Applied Health Psychology;
- Prof. dr. Detlev Leutner, Professor of Instructional Psychology, Faculty of Educational Sciences, University of Duisburg-Essen;
- Prof. dr. Maike Luhmann, Professor of Psychological Methods, Department of psychology, Ruhr University Bochum;
- Hanne Oberman MSc (student member). Methodology and Statistics for the Behavioural, Biomedical, and Social Sciences, Utrecht University (graduated in 2020);
- Prof dr. Arne Roets, Professor of Social Psychology, Faculty of psychology and educational sciences, Department of Developmental, Personality, and Social Psychology, Ghent University;
- Prof. dr. Guus Smeets, Professor of Education in Psychology, Erasmus School of Social and Behavioural Sciences at Erasmus University Rotterdam;
- Yvonne Schittenhelm BSc, (student member), Master Individual Differences and Assessment, Tilburg University;
- Marie Stadel MSc (student member), Behavioural and Social Sciences Research Master, University of Groningen (graduated in 2020);
- Prof. dr. Lieven Verschaffel, Professor of Educational Psychology, Faculty of Psychology and Educational Sciences, KU Leuven;
- Prof. dr. Karine Verschueren, Professor of School and Developmental Psychology, Faculty of Psychology and Educational Sciences, KU Leuven.

The cluster consist of thirteen programmes:

- M Individual Differences and Assessment (research), Tilburg University;
- M Behavioural Science (research), Radboud University;
- M Clinical and Developmental Psychopathology (research), Vrije Universiteit Amsterdam;
- M Social Psychology: Regulation of Social Behaviour (research), Vrije Universiteit Amsterdam;
- M Psychology (research), University of Amsterdam;
- M Communication Science (research), University of Amsterdam;
- M Educational Sciences: Learning in Interaction (research), Utrecht University;

- M Methodology and Statistics for the Behavioural, Biomedical and Social Sciences (research), Utrecht University;
- M Development and Socialisation in Childhood and Adolescence (research), Utrecht University;
- M Social & Health Psychology (research), Utrecht University;
- M Behavioural and Social Sciences (research), University of Groningen;
- M Psychology (research), Leiden University;
- M Developmental Psychopathology in Education and Child Studies (research), Leiden University.

Appendix B – Schedule of the visit

9 March 2021

Time	Session
08.30 – 10.00	Preparation panel
10.00 – 10.45	Management
10.45 – 11.00	Evaluation
11.00 – 11.45	Students
11.45 – 12.00	Evaluation
12.45 – 13.30	Lecturers
13.30 – 13.45	Evaluation
13.45 – 14.15	Alumni
14.15 – 14.30	Evaluation
14.30 – 15.00	Board of Examiners
15.00 – 15.30	evaluation and preparing questions for management
15.30 -16.00	Second meeting management
16.00 – 17.30	Evaluation
17.30 – 17.45	Presentation of first findings

Appendix C – Documents studied

- Self-evaluation report with appendices
  - o Recommendations previous accreditation and follow-up
  - o Previous external review of the educational programme
  - o Intended learning outcomes according to the Dublin descriptors
  - o Overview of the current curriculum
  - o Inflow, dropout and graduation MSBBSS 2015–2020
  - o Overview of allocated staff 2019–2020
  - o Education and Examination Regulations ReMa MSBBSS 2019–2020
  - o Impact of the COVID-19 pandemic on education
- 15 theses with assessment forms
- MSBBSS curriculum evaluation
- MSBBSS curriculum evaluation online

Appendix D – Abbreviations

BoE	Board of Examiners
BoS	Board of Studies
CBS	*Centraal Bureau voor de Statistiek*
Cito	*Centraal Instituut voor Toetsontwikkeling*
EC	European Credit
EER	Education and Examination Regulations
EMOS	European Master in Official Statistics Label
FAIR	Findable, Accessible, Interoperable and Reusable
FSBS	Faculty of Social and Behavioural Sciences
GSBS	Graduate School of Social and Behavioural Sciences
IOPS	Interuniversity Research School for Psychometrics and Sociometrics
MSBBSS	Methods and Statistics for the Behavioural, Biomedical and Social Sciences
NVAO	*Nederlands-Vlaamse Accreditatieorganisatie*
NWO	Netherlands Organisation for Scientific Research
STQ	Senior University Teaching Qualification
UT	University of Twente
UU	Utrecht University
UTQ	University Teaching Qualification