



# Self-assessment report of research 2015–2020

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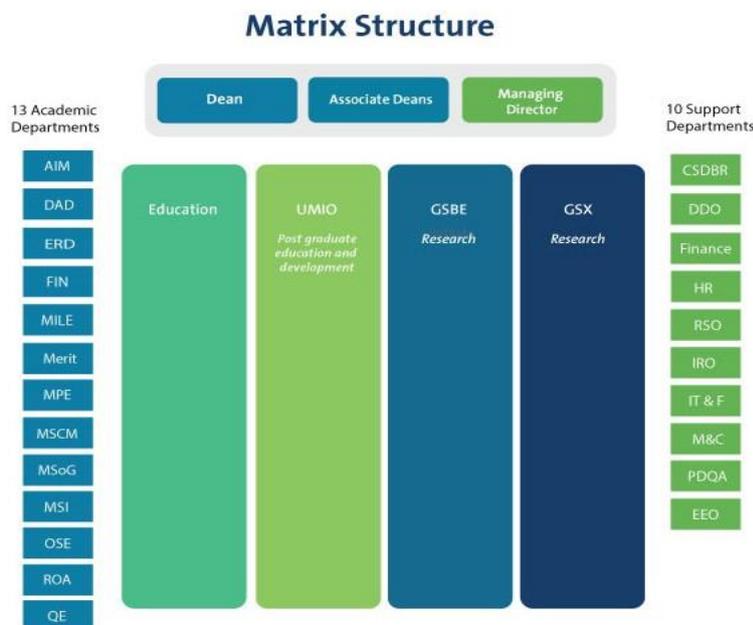
## 1. Introduction of the Research Unit

The Maastricht University School of Business and Economics (SBE) is organised according to a matrix structure (see picture 1 below). The matrix consists of academic and support departments represented by the rows in the matrix, whereas the columns in the matrix represent the institutes. The SBE Board consists of the dean and two associate deans, as well as two advisory members, the managing director and a student representative. One of the associate deans is responsible for Internationalisation and Collaboration, and the other for Research and Education.

The following thirteen academic departments are the disciplinary home bases for academic staff: Marketing and Supply Chain Management (MSCM), Organisation, Strategy and Entrepreneurship (OSE), Accounting and Information Management (AIM), Macro, International and Labour Economics (MILE), Microeconomics and Public Economics (MPE), Quantitative Economics (QE), Data Analytics and Digitalisation (DAD), Finance (FIN), Educational Research and Development (ERD), Research Centre for Education and the Labour Market (ROA), Maastricht Economic and Social Research Institute on Innovation and Technology (MERIT) and two new departments, the Maastricht Sustainability Institute (MSI) and the Maastricht Graduate School of Governance (MGSOG), which joined SBE in September 2019. For this SEP evaluation MGSOG will not be included as it follows its own assessment cycle. MGSOG is strongly connected to UNU-MERIT and hence participates in the United Nations University’s internal review cycle which has its own SEP evaluation.

School-wide strategic topics, including research, are discussed in monthly SBE board meetings with the Heads of Department, the Scientific Director of GSBE, the Chair of GSX (for more information on GSBE and GSX see below), the Education Institute (EdIn) and the centre for postgraduate education and development (UMIO). In annual spring and autumn meetings, the individual units discuss progress regarding the set objectives with the SBE Board.

The ten Administration Offices (AO) are the administrative backbone of SBE. The ten offices are: Centre for Student Development and Business Relations (CSDBR), Dean and Director’s Office (DDO), Education and Examination Office (EEO), Finance (FIN), Human Resources (HR), International Relations Office (IRO), IT & Facilities (IT&F), Marketing & Communication (M&C), Policy Development & Quality Assurance (PDQA) and Research Support Office (RSO). The AO supports SBE in all the central administrative processes surrounding education and research.



**Figure 1.** The organisational layout of SBE

### *The Graduate Schools*

The Graduate Schools, GSBE and GSX, are SBE’s central authorities on academic research and administer SBE’s PhD programmes. GSBE is the largest Graduate School within the faculty and evaluates research output of all departments and individual researchers except for MSI and MGSOG. GSBE also selects PhD candidates, monitors

their progress, and stimulates research through specific, targeted actions. In addition, it advises on administrative and budgetary decisions with respect to research funding. GSBE has its own annual budget, which is used to finance a PhD programme and to develop new research initiatives. GSBE regularly organises research lunches during which GSBE fellows and other faculty staff are informed by GSBE on new developments, can discuss issues regarding research policies and provide advice to the GSBE management when decisions must be taken. The GSBE management team consists of the scientific director, the directors of the research master's programmes, the PhD director and the managing director of the Research Support Office. Faculty members who provide evidence of the consistent quality and significance of their research and research output over a period of four years may become GSBE Fellows. In 2020 we had 131 GSBE Fellows (for criteria see page 5).

GSX was created in September 2019, when MSI and MGSoG joined SBE. It serves as a home for challenge-driven research on topics of strong societal interest that is often transdisciplinary in nature. Both MSI and MGSoG have a chair who is responsible for organising and managing the activities of the sub-unit. The chairs of the two GSX units together form the GSX management team of GSX.

#### *The Research Support Office (RSO)*

The RSO supports researchers from both graduate schools. It assists in finding funding opportunities, grant writing, project management, contracts and agreements, international research collaboration and research policy development and implementation. The RSO also supports individual research talent development and the PhD and Research Master programmes, and organises training and activities (e.g. grant writing), PhD supervision and research data management. The RSO consists of a senior funding officer (specialised in European grants), a junior funding officer (specialist in individual grants), the data steward (research data management and GDPR), a management data officer, a secretary, a research policy adviser, a project manager and four financial advisers.

#### *PhD Committee*

The PhD Committee is made up of one PhD candidate from each department and supports PhD candidates with any issues they may have concerning research projects, supervision or other practical matters. The Committee meets eight to ten times a year. It reports on the topics of these meetings to the GSBE management team and discusses any issues as needed. The Committee also organises social activities and colloquia for PhD candidates.

## **2. Mission and Strategic Aims of the past six years**

### *SBE*

SBE's **mission** is to combine a strong commitment to excellent research and research-based education with a focus on our impact on society. Our aim is to generate ideas that advance scientific knowledge and practice, and to educate and train undergraduates, graduates and professionals to function effectively and responsibly in careers in economics, international business, management, public policy, governance and sustainability. Through these objectives, SBE aims to add value to the society to which it belongs. In the 2015–2017 period, SBE organised an extensive bottom-up process to develop a strategic plan for the 2017–2022 period. Taskforces discussed and advised on topics related to education, research, postgraduate and executive education, students and HR. This resulted in a renewed strategy for 2017–2022. The broad **research strategy** was to invigorate SBE's research activities by investing in high quality interdisciplinary and multidisciplinary research, building on SBE's (and the University's) research strengths. In 2018/2019, the newly installed Board built on this strategic foundation and developed a more detailed long-term (or longer-term) vision. The UN Sustainable Development Goals (UN SDGs) were more explicitly integrated in the SBE's strategy, as well as in new research initiatives. In addition, SBE proudly integrated MSI and MGSoG, which enhance the focus of SBE on the UN SDGs and societal relevance with their available resources, knowledge and expertise. During 2019/2020 these developments were framed in an **updated vision for 2025**: *As part of UM, the European University of the Netherlands, SBE strives to contribute to a better world by addressing societal problems, by co-creating knowledge and by developing team players and leaders for the future. SBE aims to have a positive impact on the local, regional, national and global environment to which it belongs.*

In 2017 SBE also started working with the matrix structure depicted in section 1, allowing for better identification of responsibilities and accountability across the organisation. Perceived barriers in the governance structure have been reduced by establishing the following units: (1) Research (GSBE & GSX), (2) Education (EdIn), (3) Postgraduate Development (UMIO), and (4) Expertise Centres (the departments and institutes). Furthermore, objectives and targets are assigned in agreements with the units that form the basis for a periodical and continuous improvement and innovation cycle. To facilitate the administrative support needed by the units, the

support plan of the Administration Office is aligned with the annual plans of the units. Development of organisational structure is continuously monitored.

As human capital is the driving force in academia, one of the important SBE goals is to develop excellent talent and leadership, transforming our organisational culture to an empowering, engaging, entrepreneurial environment. In this respect, we aim to (1) implement new and differentiated career paths for the faculty to attract and to retain the human capital required to be successful, including the tenure track policy, (2) redefine performance, reward, and incentive criteria, and (3) continue addressing diversity issues through practical programmes of action. Furthermore, SBE is committed to the Recognition and Rewards project from the nationwide association of universities (VSNU) within the faculty. We refer to section 3.4 for more detail.

#### *GSBE*

In 2015 GSBE received the following recommendations from the SEP evaluation: (1) continue paying attention to improving research quality in terms of journals targeted; (2) better integrate basic research, applied/contract research and teaching; (3) simplify the organisational structure; (4) accelerate the implementation of the research integrity policy; (5) promotion (to full professor) should be merit based; (6) progress issues of diversity by ensuring policies are translated into practical programmes.

Based on the bottom-up strategy process mentioned previously and the recommendations obtained in the previous SEP cycle, GSBE's research mission has focused on enhancing multidisciplinary research addressing societal needs, while preserving a strong disciplinary base. GSBE's main goals are in terms of **quality of research**: (a) to maintain research output and quality and (b) to enhance the quality of the research MSc (RM) and PhD programmes; in terms of **societal relevance**: (c) to stimulate multidisciplinary research, (d) to enhance societal impact of research and (e) to increase internal and external visibility. In terms of guaranteeing **long term viability**: (f) to increase the volume of external research funding. Simultaneously, recommendations have been addressed based on the **SEP 2015** related to targeting higher ranked journals, integration of research and education, organisational structure, research integrity, promotion criteria and diversity issues. Organisational structure has been an SBE-wide point of attention.

In the remainder of our report, we elaborate on four SEP focal areas. For now, we observe that, concerning **Open Science**, Maastricht University aims to have all publications open access as soon as possible and wants to be FAIR by 2023. SBE embraced these ambitions as well. With respect to **Academic Culture**, the SEP evaluation in 2015 recommended to accelerate the implementation of a research integrity policy. SBE operates in line with the Code of Conduct for Research Integrity and has implemented a number of actions to move forward. Concerning **HR Policy**, in line with the SEP recommendation related to promotion criteria, we started working towards a new approach which also provides for new and differentiated career paths, such as an academic career more focused on education, leadership or societal impact. Additionally, with our renewed HR policy we addressed progressing issues of diversity in a systematic manner. Finally, regarding **PhD Policy and Training**, we note that the RM and PhD programme have been specific GSBE aims.

### 3. Strategy

#### 3.1 Research

Concerning the six main goals related to research, SBE has taken the actions described in this chapter.

#### Quality of Research

##### Research output and quality

One aim was to maintain research output and quality. To assess research output and the quality of academic departments and individual researchers, GSBE classifies journals based on the GSBE journal list (typical economics and business journals) and non-listed journals (other disciplines). The GSBE list is based on the Web of Science® categories Business, Business/Finance, Economics, Management, and Operations Research & Management Science. Journals are classified as A+, A, B+, B, C+, or C based upon a 5-10-15-20-20-30 percent partition principle applied separately for Business, Business/Finance, Economics, Management and Operations Research & Management Science. Within each field of research, the A+, A, B+, B, C+, or C label is based upon the Article Influence Score. Also, non-listed journals are classified upon request of researchers. Yearly overviews of the number and the classification of these publications are made per department. This enables the Board to monitor the number of publications and get an indication of the quality of the output and financially compensate the department accordingly. As such, this assessment incentivises research output and quality. In addition, the granting of the GSBE Fellowship was based on this classification. To become a Fellow a researcher should hold a PhD degree and accumulate at least 16 points (12 points for an A+ labelled publication; 10 for A; 8 for a B+; 6 for B; 4 for C+; 2 for C) with their publications over the past four years. Also, an executive position in the editorial process of a scientific journal results in points. It is important to note that SBE will rethink this incentive system in the next year to make it more in line with initiatives related to Recognition and Rewards, and the DORA declaration (signed in 2019 by the UM).

To stimulate high-quality research that depends on appropriate funding, the research support office (RSO) supports researchers in selecting interesting grant opportunities, setting up the budget overviews, and writing and submitting the proposals. This will stimulate SBE researchers to obtain prestigious research grants. See also the section about external funding below.

To follow up on the SEP 2015 recommendation to target higher ranked journals, SBE celebrates top publications with the aim to inspire and to educate the SBE community. We invite the main authors to present their work during the GSBE research lunch and publish short articles in SBE's newsletter, and we do the same for winners of prestigious winning grant proposals. In addition, in 2019 and 2020 SBE has awarded SBE Research Prizes to its top researchers.

##### Research Master's (RM) and PhD programmes

The primary objective of the two-year **RM programme** is to prepare graduate students for a career in academia at leading research institutes and universities. SBE offers an RM in Economic and Financial Research (EFR) and an RM in Business Research (BR). While EdIn is responsible for the operation (recruitment, scheduling, examination), GSBE provides the programme director who oversees the strategic development of the RM programmes. Major revisions of the programmes were postponed awaiting the more general developments to renew the PhD programme. Currently a taskforce is working on this. Nevertheless, several smaller measures have already been taken to improve the RM programmes.

1. Following the recommendation of the SEP evaluation in 2015, we better integrated research and education. To that end, we now offer 20 paid RM research assistantships (0.2 FTE for six to nine months). Early exposure to high-quality academic research helps students to decide whether to follow an academic career path. Indeed, many of these research assistantships develop into a master's thesis and/or a PhD project.
2. We extended the Thesis Internship Programme to the RM programme. Students can combine their thesis with an internship at a company, a research institution, or a public institution.
3. The curricula were streamlined (partially according to recommendations of accreditation bodies). In the BR programme we require students to have all disciplinary courses within one ordinary business master's programme. This provides students with a wide range of courses and ensures sufficient depth in the chosen field. BR students must take those courses but participate in extra research-oriented assignments related to these courses. In the EFR programme we lifted the distinction of the elective courses according to research programmes, since these divisions were outdated.

Altogether, the streamlined curricula help make the programmes more coherent and improve the interplay between research and education.

The **PhD programme** has a duration of four years and consists of methodological, statistical and academic courses from the Research Master, as well as a skills course on how to write a research proposal. Next to that, the first year has mandatory workshops on research ethics and research data management, as well as training sessions on presentation and poster skills. Furthermore, PhD-candidates and their supervisors jointly write a Training and Supervision Plan (TSP). The second year has workshops on open science and on impact, and PhD candidates may attend some elective courses that relate to their PhD project. To prepare PhD candidates for the academic and non-academic job markets, the 3<sup>rd</sup> and 4<sup>th</sup> years of the PhD-programme offer academic and non-academic job market trainings. Each year PhD-candidates present their work to each other and their supervisors. Furthermore, during these four years, PhD-candidates receive regular supervision from a team consisting of at least two trained supervisors. Depending on the field, PhD-candidates are expected to write three to four academic papers that are of sufficient quality to get published in respectable journals. PhD-candidates are expected to teach for up to 20% of their time and are offered a short teacher training before their first teaching experience.

GSBE uses PhD Track to monitor the progress of the PhD candidates and to receive feedback about the PhD programme and the guidance they receive (built-in questionnaires). At the start of their projects, the PhD candidates are invited to a meeting with the PhD coach to discuss how to address personal issues such as time management and supervision issues. Support can also be provided by the counsellor and the personnel career centre (training).

## Societal Relevance

### Multidisciplinarity

Societal challenges often require a multidisciplinary research approach. To stimulate multidisciplinary research SBE initiated five larger and two smaller multidisciplinary research themes in September 2017, based on bottom-up engagement. Themes received seed money for three years to grow into financially self-sustainable multidisciplinary research themes. For each theme GSBE financed a PhD project supervised by a team of researchers from different disciplines. Although the themes were quite successful in starting up cross-disciplinary projects, not all goals set in the beginning, such as acquiring additional external funding, were met. In addition, the relationship between research and major societal challenges could have been stronger at that point in time, and the research profile was not always clear. For those reasons, and using an evaluation carried out by GSBE, the SBE Board deemed it necessary to intensify a transdisciplinary research focus. This led to a reassessment by the SBE Board when formulating its 2025 vision, including the formation of transdisciplinary spearheads (see below).

In 2020, SBE organised the internal conference 'Moving forward together' to welcome the Maastricht Sustainability Institute and Maastricht Graduate School of Governance and to stimulate multidisciplinarity by inviting presenters from different disciplines and randomly assigning them to the different sessions. This setup was highly appreciated and therefore in 2021 the online internal conference 'Mixing up Again' was organised.

### Societal Impact

In the summer of 2020, a call for spearheads was launched to further stimulate the co-creation of knowledge with external stakeholders, considering the societal challenges the world is currently facing, as evidenced by the UN SDGs. The spearheads are coherent cross-disciplinary research programmes including researchers from various departments and societal stakeholders. This new initiative will contribute to SBE's vision to become a more challenge-driven research school, while strengthening the problem-based nature of its identity, where it engages and co-creates with society, and nourishing the link between research and education.

Another illustration of SBE's emphasis on co-creation and societal impact is the integration of MSI into SBE in September 2019. MSI is a high-level knowledge partner for externally funded projects focused on sustainable development. Their approach is transdisciplinary, co-creative and participatory, enabling them to produce research that is both academically sound and relevant to practice and society. Impact is created by involving academic and non-academic stakeholders in the research process. MSI may be following the same path as ROA did earlier. ROA, too, is mainly funded by contract research and grants from government organisations, businesses and scientific funding bodies. ROA has been further integrated into the SBE in recent years and is now considered a department with the same rights and obligations as the other departments.

Furthermore, in early 2019, the Brightlands Institute for Supply Chain Innovation (BISCI) was established by the UM, SBE and the Province of Limburg to develop smart and sustainable solutions for supply chain management. BISCI closely collaborates with public, private and community partners.

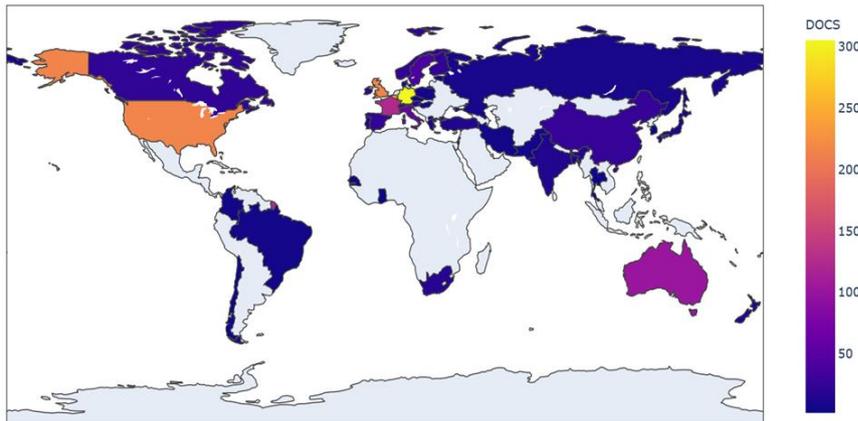
The research at the Brightlands Institute for Smart Society (BISS) is required to propel the potential of the smart society. BISS aims to create societal impact by connecting academic researchers and companies around specific topics/themes in projects. BISS for example carried out projects together with companies such as Evi van Lanschot (investment bank), Q-Park BV and the Limburg Police Unit's Innovation Lab (iLab). Also, SBE actively participates in networks with societal partners, such as the Network for Social Innovation (NSI) and the Academy of Business in Society (ABIS). Societal impact is a recurring topic during the SBE research lunches. To stimulate and celebrate research that has a meaningful impact to society, SBE awarded the Christmas Prize for societal impact, in 2018 and 2019. The winning projects were 'Breaking down menstrual barriers in Bangladesh' by L. Sol, E. Nillesen and P. Smeets (2018), the 'Education Agenda Limburg' (see Case 2; 2019 Jury Prize) and 'Sustainable Animal Assisted Interventions in MUMC+', by Pim Martens (MSI; 2019 People's Choice Award). Furthermore, SBE researchers participate in discussions within UM about enhancing the creation of societal impact.

In 2020, SBE renewed the **GSBF Fellowship criteria** to better align them with the strategic priorities, societal impact and visibility of SBE research. Next to scientific publications and apart from new activities related to scientific impact and research engagement, activities with respect to societal impact and external funding will also be rewarded as of 2021: (1) proposals for policy implementation taken up by governmental bodies and new products or services for society, (2) external funding for new (multidisciplinary) research teams working in collaboration/co-creation with societal partners, (3) coordinator or work package leader of EU Horizon or similar programmes, and (4) awarded grants and commissioned research.

### Visibility

To increase the internal and external visibility of SBE research, several actions have been taken:

- The SBE's Marketing and Communication office (MarCom) has recruited dedicated support (0.4 FTE plus 0.2 FTE student assistant) to increase the visibility of SBE's research. Example of activities:
  - **YouTube series** 'Talking Business and Economics' started in 2020.
  - **SBE podcast** will start up again after a Corona-related break.
  - **YouTube series** 'The Impact of Giving' is a new series in collaboration with Prof. Paul Smeets. A total of 12 episodes is planned.
  - **Website articles** about research: around 10-15 research related website articles a year are written either by the MarCom editorial team or by the researchers themselves as blogs. Examples include: [Melissa Siegel: Creating impact, one YouTube video at a time](#) (article) and [The sense and non-sense of early supplier involvement](#) (blog).
  - All the content mentioned above (video series, podcast, articles) is shared via SBE's **social media** channels, including LinkedIn, Twitter, Facebook and Instagram.
  - **Press:** MarCom regularly works together with the UM's press office to prepare press releases out of researchers' publications. This has led to many media appearances.
  - **Workshops:** MarCom organises one or two workshops a year to help researchers with the external communication of their research.
- Some prestigious research projects, such as Technequality, are designated as flagship projects and thus gain more visibility. MarCom helped with for example setting up a web page, creating promotional videos, a layout for letters and a template for press releases.
- Paul Smeets, professor of Philanthropy and Sustainable Finance, founded the online platform FUNdii in 2021 and was awarded a grant from the 'Science communication by scientists: Appreciated!' pilot fund in 2021, for his science communication in previous years.
- Researchers are stimulated (through a financial compensation) for being coordinator of a proposal, a work package leader or a partner in a large prestigious European consortium grant.
- Figure 2 below gives an impression of academic visibility through publications together with international partners.



**Figure 2.** Number of SBE publications with co-authors from other countries (2015-2020)

## Long Term Viability

### External Funding

In recent years, the research support office added a senior funding officer and project manager (2 FTE) to offer more pro-active support to scientific staff who wish to apply for external research funding. The support was professionalised by setting up support procedures and improving workflow. Other actions taken to increase external funding were the establishment of the ‘Research Talent Committee’ to support mid-career researchers, the establishment of research themes (evolved into Spearheads), the amended criteria for the GSBE fellowship (see above), the financial compensation of research time devoted to writing grant proposals for the EU, and the celebration of successes such as ERC grants laureates.

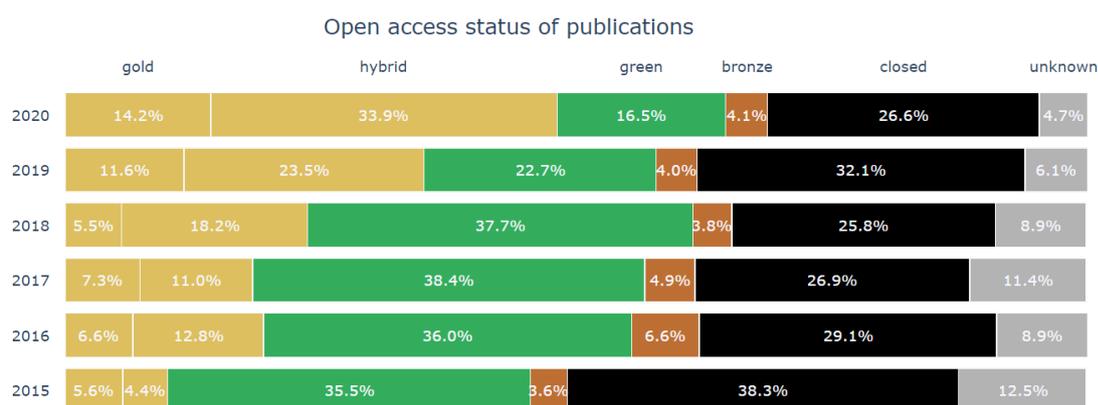
## 3.2 Open Science

For Open Science, Academic Culture, and Human Resource policy (sections 3.2 - 3.4), we will describe both the actions we have taken and the results, which often overlap.

### *RDM and GDPR*

Since March 2020, a data steward (0.8 FTE) supports SBE with the implementation of SBE’s 2020 FAIR action plan and compliance to GDPR guidelines. The data steward assists with the development of new systems and procedures that can (1) effectively support PhDs and NL/EU funded research projects in making their data and digital resources Findable and Accessible (FA), and that can (2) help support some pilot projects and data driven projects in making data and digital resources FAIR (FA & Interoperable and Reusable). The data steward also started developing systems and procedures to help provide researchers with GDPR support. The first FAIR action plan deliverable was achieved by September 2020. As part of this plan, an onboarding and offboarding procedure for PhD candidates has been implemented. The data steward arranges individual meetings to make sure PhD candidates know how to manage their data (onboarding) and to ensure that when they have finished their project and leave SBE, their data is stored properly at a safe UM environment (offboarding). More senior researchers have been informed about RDM, GDPR and the available support in personal meetings and during research lunches. A structure of departmental data stewards is being set up to assist the data steward.

To further stimulate open access publications GSBE implemented the policy ‘Financial Compensation OAP’ to compensate part of the Article Processing Charge (APC) charged to authors. GSBE compensates 50% of the publication fees for senior and 80% of the publication fees for junior (i.e., non-tenured) GSBE researchers. The figure below shows that the number of open access publications in peer reviewed journals has increased from 49.1% in 2015 to 68.7% in 2020. The Open Access Analysis carried out by the Center for Science and Technology Studies (CWTS) at Leiden University (see appended report) shows that SBE does well on the number of open access publications compared to other Dutch universities.



**Figure 3.** The numbers include E-Pubs publications. Legend: Gold: Free under an open license on the publisher site, published in a fully-OA journal; Hybrid: Free under an open license on the publisher site, published in a toll-access journal; Green: Toll-access on the publisher page, but there is a free copy in an OA repository. Most green access publication do not have an open license; Bronze: Free to read on the publisher page, but without an open license for re-use; Closed: Everything else.

### 3.3 Academic Culture

#### *Openness, (social) safety and inclusiveness*

Recently, a diversity and inclusivity (D&I) office was formed under UM. D&I convenes periodically with students and staff to discuss what can be improved at the university with regards to diversity and inclusion. Diversity and inclusion are important topics at SBE. For example, SBE puts out open calls for all vacancies, open to both internal and external candidates, and roles within the SBE. The vacancy texts are also checked by UM's Diversity and Inclusion office to make sure that the language used is inclusive. The topic of diversity and inclusion is also put on the agenda of the monthly meetings with SBE's Board, institute directors and the department chairs on a regular basis to increase and maintain awareness.

#### *Research Ethics and Integrity*

UM has a *Research Ethics and Integrity Platform*, that stimulates discussion within UM on research ethics and integrity, fosters exchange of best practices between faculties, and organises events on relevant topics. Another UM body is the *UM Committee for Scientific Integrity (CSI)*, which advises the Executive Board on complaints filed regarding scientific integrity. In addition, UM has the *Ethical Review Committee Inner-city Faculties (ERCIC)*, which encourages researchers to submit their study protocols involving human participants or personally identifiable data for ethical review. This procedure is followed by a significant part of the behavioural studies carried out in SBE's BeeLab. BeeLab and other research facilities contribute to an inspiring academic environment.

Confidential advisers for PhD candidates (at least one per faculty), the confidential adviser for employees and the counsellors on scientific integrity can be approached for advice by staff members who suspect that standards for integrity are not being respected.

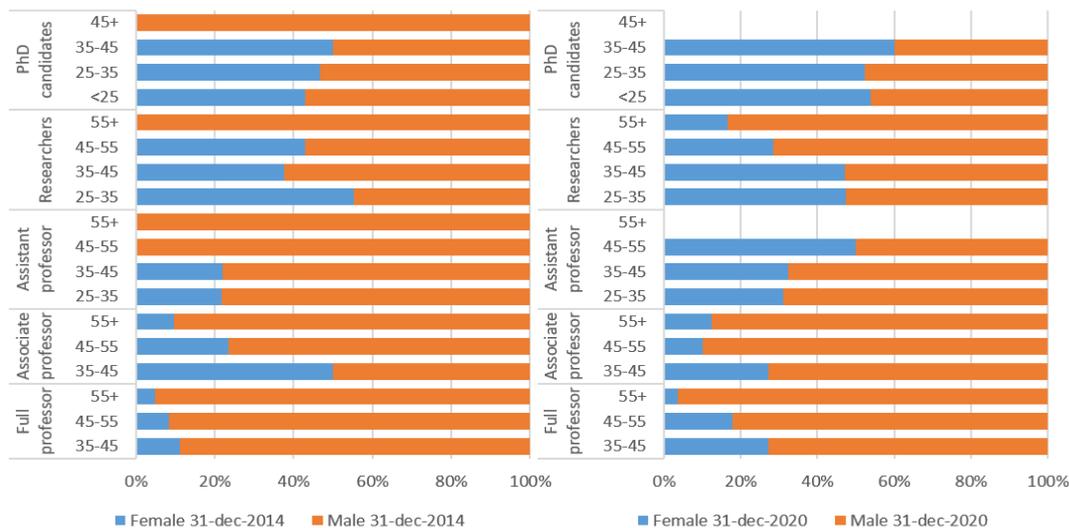
In the last years the following actions were taken:

- Compulsory 4-hour workshops on Ethics & Integrity and Research Data Management (year 1), and Open Science and Impact & Communication (year 2), are part of the PhD programme.
- All PhD candidates are informed about the SBE/UM Confidential Advisers for Employees in the introduction meeting organised for first-year PhD candidates and the PhD guide contains the list of confidential advisers and their contact details.
- Since 2019, GSBE organises an annual training for GSBE supervisors to improve their coaching skills.
- UM has developed an assessment form for PhD defences to improve clarity on the requirements and allow for a fair assessment system.
- Research integrity has been put on the agenda of important meetings, such as the monthly meetings of the SBE Board with institute directors and heads of department.

### 3.4 HR policy

#### Diversity

SBE's age structure shows a good balance between senior faculty and junior faculty. In terms of the composition of nationalities, of all academic staff employed by SBE on 30 September 2020, in total 59.1% have a non-Dutch background, representing 40 different nationalities. Furthermore, SBE has worked hard in the last five years to improve the gender imbalance at the faculty. This topic is a regular agenda point during monthly management meetings, and the target has been set that each department must appoint one female (associate) professor. Additionally, salary data is regularly analysed and discussed to ensure transparency and to close the salary gap. SBE has founded the Elinor Ostrom Fund to stop the pipeline from leaking and is continuously reviewing the performance criteria that are decisive for GSBE Fellowship, contract renewal and career development. The Dean of the SBE plays an active role in gender diversity discussions and regularly sits on panels for the Universities' Female Empowerment (FEM) committee and is an SBE ambassador for the National Network of Female Professors in the Netherlands. The figure below shows the changes in percentage of men and women in different positions (an empty row indicates that no staff member falls into this category).



**Figure 4.** Percentage of male and female staff in the different academic positions on 31-12-2014 and 31-12-2020.

#### Talent Management

One recent development is the Association of Universities in the Netherlands' (VSNU) Recognition and Rewards project led by UM's Rector Magnificus Prof. Rianne Letschert. The VSNU feels that academia needs a broader perspective and a different culture, where quality is more important than quantity. A culture in which other skills than the number of publications and large grants receive recognition and reward. This development resulted in the position paper 'Room for everyone's talent'. UM is now discussing how to best recognise and reward staff and how to best allow for different career paths that better fit the changing role of science in society and the corresponding demands for scientists. However, examples of notable policy developments that have been made UM-wide are:

- The UM Career Development Regulations for Academic Staff (Dec 2019) are based on maximising the development opportunities for all academic employees, with sustainable employability as the guiding principle. This is part of the UM HR vision. The UM Staff Career Centre (SCC) supports and guides researchers in developing general competencies.
- The UM Tenure Track (TT) Regulations for the position of assistant professor (Dec 2019) outline the implementation of a career policy for academic staff, with a focus on assistant professors. SBE has installed an SBE-wide TT advisory committee in 2017, and has recently further developed the SBE-specific TT criteria by among other things adding the criteria of business and societal impact to the criteria related to teaching, research, fund raising and good citizenship.
- UM Policy regarding full professors (Sept. 2020). The regulation provides a uniform framework for nominating and appointing professors. It also defines the position and appointment procedure for university professors and includes measures to increase the number of female professors. SBE is monitoring the gender balance as one of its dashboard indicators and stimulates departments to improve it.

SBE has made a commitment to implement Recognition and Rewards within the faculty, and in doing so has started implementing the REEAD approach, in which it redefines and realigns traditional academic roles across **R**esearch, **E**ducation, **E**xternal funding, **A**cademic citizenship and leadership, and **D**issemination and impact (REEAD) for all academic job profiles. This process started in 2018 and is expected to end in 2022. SBE has organised many internal meetings with its staff to discuss and implement the REEAD criteria.

Other SBE projects related to personnel development are:

- Various talented SBE colleagues have been appointed as professors with special remit status to advance their academic career. Some of them have already been appointed full professors by now, because of their merits to the school in terms of research and other performance areas like leadership for example.
- Leadership development: quarterly hands-on leadership workshops (Mar 2021) and the further professionalisation of leadership programmes.
- The implementation of the remuneration policy for senior management (expected start May 2021)
- The implementation of the equal pay policy for male and female full and associate professors (Mar 2021)
- Pilot project for professionalising the recruitment of (academic) personnel (Nov 2020)

## 4. Evidence

### 4.1 Goals and performance indicators

Table 1 shows the indicators chosen for research quality and relevance for society. It shows these indicators in relation to GSBE's strategic goals.

Table 1. Strategic goals and corresponding performance indicators	
STRATEGIC GOALS	PERFORMANCE INDICATORS
<b>Quality of Research</b>	
Output and quality	<ul style="list-style-type: none"> <li>• Quantity and quality of refereed articles (number of A, B and C journals)</li> <li>• Members of editorial boards</li> <li>• Awards for papers and theses</li> <li>• Citations</li> </ul>
Research master's and PhD programmes	<ul style="list-style-type: none"> <li>• Number of PhD theses</li> <li>• Number of joint / double PhD projects</li> <li>• See table 4 'PhD Candidates' in Annex I</li> </ul>
<b>Societal Relevance</b>	
Multidisciplinary	<ul style="list-style-type: none"> <li>• Publications in multidisciplinary, or non- economic/ business journals</li> <li>• Case study 1 in Annex II</li> </ul>
Societal impact	<p><i>Research products for societal target groups</i></p> <ul style="list-style-type: none"> <li>• Reports</li> <li>• Tools</li> </ul> <p><i>Use of research products by societal groups</i></p> <ul style="list-style-type: none"> <li>• Contract research</li> <li>• Projects in cooperation with societal groups</li> <li>• Regional development initiatives (e.g., campuses in the province of Limburg)</li> </ul> <p><i>Mark of recognition from societal groups</i></p> <ul style="list-style-type: none"> <li>• Awards and prizes from societal groups</li> <li>• Extraordinary/sponsored professorships</li> </ul> <p>Case study 2 and 3 in Annex II</p>
Visibility	<ul style="list-style-type: none"> <li>• Media exposure</li> <li>• Conferences and research events</li> </ul>
<b>Long-Term Viability</b>	
External research funding	<ul style="list-style-type: none"> <li>• Research grants from national and international research foundations</li> <li>• Contract research</li> <li>• See table 3 'Funding' in Annex I</li> </ul>

## 4.2 Research

### Quality of Research

#### *Research output and quality*

The Article Influence Score (AIS 2016) provides the basis for GSBE classification of journals, which is grounded on journal impact factors. We decided to use this classification because it has been used at SBE for many years, including the period which is reviewed now, allowing for a consistent assessment over many years. We are currently discussing how we can change this classification system into a system that is more in line with the DORA declaration, including an article-based instead of a journal-based evaluation of individual research output. Table 2 shows SBE maintained a high **quantity and quality of refereed articles research**. See also Annex III for five academic and five non-academic key publications.

	2015	2016	2017	2018	2019	2020
<b>A+</b>	10	11	11	21	12	11
<b>A</b>	41	42	40	30	34	40
<b>B+</b>	49	58	42	47	54	70
<b>B</b>	49	42	42	37	43	39
<b>C+</b>	22	20	23	26	45	40
<b>C</b>	22	22	13	19	32	22
<b>TOTAL</b>	<b>193</b>	<b>195</b>	<b>171</b>	<b>180</b>	<b>220</b>	<b>222</b>

SBE researchers fulfilled a total of 86 editor roles in **editorial boards** of journals (editors for special issues and guest editorships are not included), including the International Journal of Research in Marketing (B. Foubert), Accounting Review (P. Mohnen), Journal of the Academy of Marketing Science (M. Wetzels), Journal of International Business Studies (R. Belderbos), Strategic Management Journal (R. Belderbos), Journal of Financial Econometrics (P. Schotman), Research Policy (R. Kemp), and Current Opinion in Environmental Sustainability (P. Martens).

In total, SBE has received 39 **academic awards** for papers and theses in the period 2015–2020, such as the Emerald/EFMD Outstanding Doctoral Research Award 2020 by T. Hilken (2020), the Robert Johnston Award Journal of Service Management by G. Odekerken - Schröder, M. Caic and D. Mahr (2019) and the Emerald Citation of Excellence Award by M. Wetzels (2016). Examples of **other awards** received are an honourable mention obtained by A. Riedl and P. Smeets connected to the Moskowitz Prize for Sustainable and Responsible Investing (2017); S. Smeekes has been appointed to the prestigious Young Academy of the Royal Netherlands Academy of Arts and Sciences (KNAW), a platform of outstanding young scientists from various disciplines who work together in the fields of research and science policy (2018); J.J. Herings was elected Economic Theory Fellow by the Society for the Advancement of Economic Theory (SAET) in 2019. He is the second Dutch academic to receive this fellowship. Among the Economic Theory Fellows selected since 2011, 22 are Nobel Prize winners.

The Center for Science and Technology Studies (CWTS) at Leiden University carried out a **citation** analysis (see appended report). We focus on the following measures for scientific impact: (1) the average normalised number of citations (MNCS) of the SBE publications (self-citations not included), (2) the average normalised citation score of the journals (MNJS) in which SBE has published and (3) the proportion of SBEs publications that belong to the top 10% most frequently cited, the PP(TOP 10%). For the period 2014–2019, SBE has **MNCS of 1.09** (9% higher than the global average in the same fields and publication years), a **MNJS of 1.12** (12% higher than the global average in the same field and publication year) and a **PP(TOP10%) of 0.11** (11% of publications are among the top 10% of most frequently cited papers worldwide).

### Research MSc (RM) and PhD programmes

As described in section 3.1, several initiatives were implemented to improve the **RM programme**. Despite many efforts, the student numbers in the period from 2015/16 to 2019/20 for both Research Master's programmes were small but relatively stable (between 21 and 33 per academic year) with on average 12 BR and 14 EFR students (1<sup>st</sup> and 2<sup>nd</sup> year students together). Of the RM students who graduated between 2015 and 2020 (66 in total), 50% started as a PhD candidate at UM, 5% started as a PhD candidate elsewhere (with Imperial College London, Cornell University, and Yale University as highlights), 35% found a job at a company (e.g., ING Deutschland, EY,

Aegon), one started as a research assistant at UM, one started a second master’s programme at the College of Europe, and for 15% we do not have data.

Regarding the PhD programme, in the period 2015-2020 the **numbers of PhD theses** successfully defended at SBE are as follows (theses by internal and external PhD candidates): 41 in 2015, 45 in 2016, 35 in 2017, 37 in 2018, 56 in 2019 and 25 in 2020. The drop in 2020 is probably caused by the COVID-19 pandemic. Next to the PhD projects supervised by SBE researchers, six interfaculty PhD projects (two started in 2019; two in 2020) and seven double PhD projects (two started in 2016; two in 2019; three in 2020) started in the period 2015–2020. The interfaculty projects were collaborations with the Faculty of Health, Medicine and Life Sciences, the Faculty of Law, the Faculty of Science and Engineering and the Faculty of Psychology and Neuroscience at the UM. The joint PhD projects were initiatives with universities in Belgium (Antwerp, Brussels and Leuven). The **number of interfaculty and double PhD projects** is clearly increasing.

In terms of **placement**, of the PhD candidates who received their PhD in 2015–2020, 55% found a job in academia (incl. MIT, the University of Oxford, Imperial College London and the National University of Singapore), 37% found a job outside academia (at a company such as the World Bank Group, McKinsey & Company, Novartis, The Heinz-Kraft Company or non-profit organisations such as UNICEF and United Nations), and for 8% we do not have the data.

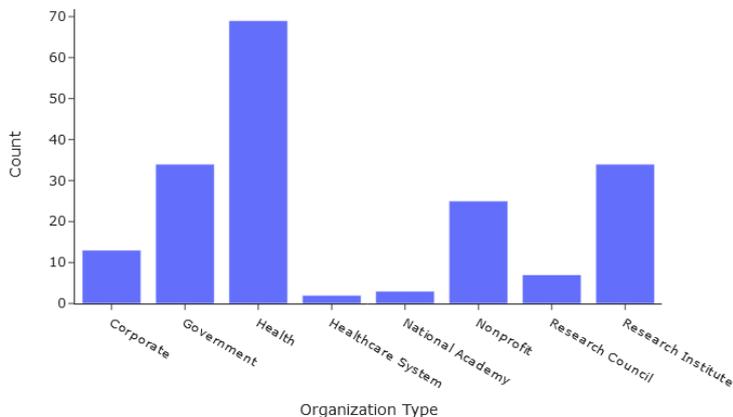
## Societal Relevance

### Multidisciplinarity

Table 3 shows the total number of publications in business/economics journals and journals in other disciplines. More than one third of the articles at SBE (38%) is published in journals associated with other disciplines.

	BUSINESS/ECONOMICS	OTHER DISCIPLINES	TOTAL
<b>A+</b>	56	20	76
<b>A</b>	147	80	227
<b>B+</b>	197	123	320
<b>B</b>	181	71	252
<b>C+</b>	79	97	176
<b>C</b>	76	54	130
<b>TOTAL</b>	<b>736</b>	<b>445</b>	<b>1181</b>

Figure 5 shows publications with non-academic partners. All in all, the data show that SBE has performed well in terms of working in multidisciplinary contexts by collaborating with stakeholders and applying SBE expertise in business and society. In Annex II, case 1 is an example of a large multidisciplinary project.



**Figure 5.** SBE non-academic collaborators divided according to organisation types. The y-axis shows the number of organizations.

## Societal Impact

*Research products for societal target groups*

In the period 2015–2020 SBE published in total 113 **reports**.

**Table 4. Number of reports**

	2015	2016	2017	2018	2019	2020
<b>Number of reports</b>	<b>18</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>19</b>	<b>28</b>

Examples are:

- J. Luyten et al. (2020). *VoxEU column: Public preferences for prioritising a COVID-19 vaccine*. The Centre for Economic Policy Research (CEPR).
- B. Annicchiarico (2020). *Moving the Frontier of Macroeconomic Modeling of Research and Innovation Policy*. Publications Office of the European Union.
- M. Levels (2019). *Scenarios for the impact of intelligent automation on work*. ROA External Reports
- J. Stoffers et al. (2017). *Sociale Innovatie Monitor Limburg 2016*. Lectoraat Employability, Zuyd Hogeschool, ROA, UM, LWV, Limburgse Werkgeversvereniging. ROA External Reports

In the period 2015–2020, SBE produced numerous **guidelines** and **tools** for society. Examples are:

- ACE-Retrofitting: Accelerating Condominium Energy Retrofitting

Van Zeijl et al. (2020) made a step-by step tool for owners and renters in a condominium for energy retrofitting of condominiums. See <https://www.nweurope.eu/projects/project-search/accelerating-condominium-energy-retrofitting-ace-retrofitting/#tab-4>

- Urban Living Labs towards Sustainability Challenges - MSI

A lab-kit providing detailed guidelines and tools to help practitioners set up urban living labs to co-create knowledge and solutions towards sustainability challenges. The lab-kit has been applied, ordered and used by many municipalities in the Netherlands, Belgium and beyond, including Amsterdam, Rotterdam, Antwerp and Graz.

*Use of research products by societal groups*

SBE carried out a total of 35 **contract research** projects (research commissioned and paid for by non-academic partners) in the period 2015-2020 (see also case study 2 and 3, Appendix II). Many of these projects were carried out at MSI in collaboration with societal stakeholders and with a focus on co-creating sustainable solutions to sustainability challenges in urban areas. Other departments also carried out research projects for and together with non-academic partners. The Finance department cooperated with financial institutions (e.g., banks and pension funds) and ROA received funding from national and international authorities (e.g. Ministries, the European Commission and OECD) and other organisations such as training funds, educational institutes and regional governments.

In the period 2015–2020, SBE was involved in 19 network **projects in cooperation with national and international partners**. For example, the department of Marketing and Supply Chain Management collaborates with logistics companies to find innovative solutions for the logistics sector such as robotics, smart packaging, and smart supply chain technologies. The Finance department works together with a variety of financial partners in the quest for healthier and more energy-efficient building, more sustainable investment preferences and energy-efficient investment products.

SBE (ROA) researchers provide consultancy in a growing collaboration initiated by IBM DACH (Germany, Austria, Switzerland) and the German United Services Union (ver.di) on the impact of technological change. The project has significantly expanded with new partners from the private sector and the German Ministry of Labour and Social Affairs with its Policy Lab Digital, Work & Society (Denkfabrik Digitale Arbeitsgesellschaft).

MSI's projects follow a transdisciplinary approach. MSI collaborates with stakeholders within academia and beyond to co-create knowledge and solutions concerning sustainability challenges. This co-creation takes place in so-called (Urban) Living labs, boundary work or in a participatory setting. Partners include SMEs in the logistics sector, municipalities in several cities across Europe, energy companies, housing corporations and national health services. These collaborations have resulted in the co-creation and prototyping of innovative ideas, toolkits for practitioners (e.g., to assess impacts of sustainable innovations on the food-water energy nexus and to design and facilitate urban living labs), policy guidelines and concepts for making private and social homes sustainable.

To establish and systematically manage corporate connections is an indispensable and integral element of the strategic ambition of SBE. It is also important for SBE to contribute to **regional economic and social development**, reflected for example in the activities of the Service Science Factory (SSF) of UMIO and in the development of Centre for Entrepreneurship and Innovation (CEI), as well as in numerous research projects in collaboration with the business world and abundant governmental and non-governmental organisations. Moreover, UMIO, BISS and BISCI, institutes that are part of the Brightlands initiative, cooperate extensively with both public and private regional organisations in the field of research and education.

Three SBE research institutes lead the acquisition of externally funded research projects:

- The Maastricht Economic and Social Research Institute on Innovation and Technology (MERIT) which is linked to the United Nations University (UNU) is a leading institute in research on a range of social, political, and economic factors that drive economic development with a global perspective.
- ROA is a leading institute in the field of skills, education and training and the demand and supply in the labour market.
- MSI is a high-level knowledge partner for projects that focus on sustainable development.

#### *Marks of recognition from societal groups*

GSBE members received various **awards and prizes for societal groups** in the period 2015–2020, such as the IAST Multidisciplinary Prize 2016 (P. Smeets), Joachim R. Frick Memorial Prize 2018 (S. Kühn, M. Palacios, J. Carlos), 1st prize for the best policy report 2019 (M. Buisman, R. van der Velden), EFMA Capital Markets Best Paper Award 2019 (D. Bams, R. Otten, E. Ramezanifar) and the RERI Award for Conflicts of Interest in Commercial Real Estate Brokerage 2020 (P. Eichholtz). Other marks of recognition are membership of the writing team for both the 2020 ZonMw call Climate change and Health and the 2020 NWO-NWA call on climate change and health (M. Huynen).

**Extraordinary/sponsored professorship** funded by societal partners are presented in Table 5.

**Table 5. SBE full professors partly or fully financed by societal partners.**

SPONSORED PROF.	FULL PROFESSOR OF	SPONSOR
J. van den Brakel	Quantitative Economics	Statistics Netherlands
D. Broeders	Pension finance	DNB (central bank of the Netherlands)
J. Francis	Audit Quality Research	Foundation for Auditing Research
F. Harmsen	Management of Global Work	EY
F. Rozemeijer	Purchasing and Supply Management	NEVi (Dutch Organisation for Purchasing Management)
O. Sleijpen	European Economic Policy	DNB (central bank of the Netherlands)
P. Smeets	Philanthropy and Sustainable Finance	Strouven Foundation
H. Hummels	Ethics, Organisations and Society	SNS Bank
P. Sampers	Financial Accounting	DSM
R. Vergoossen	International Financial Accounting	EY

#### *Visibility*

We used information available in Altmetric to report on the **media exposure** of SBE research. One of the most visible SBE researchers is Prof. Paul Smeets with his research into happiness. His publication 'Buying time promotes happiness' published in the Proceedings of the National Academy of Sciences (PNAS) in 2017, was mentioned in 241 news stories from 162 outlets (mainstream media). His study was mentioned in the BBC news, TIME magazine, Forbes, the Washington Post, for example, as well as on Dutch radio stations Q Music and Slam FM. Prof. Smeets was invited to speak at ABN AMRO Bank, Deutsche Bank (Frankfurt), Rabobank, Robeco, the OECD (Paris), the Dutch Ministry for Foreign Affairs, the Authority Financial Markets and the Central Planning Bureau. Other SBE publications that received high citation scores include:

- Circular Economy Policies in China and Europe. W. McDowall, Y. Geng, B. Huang, E. Barteková, R. Bleischwitz, S. Türkeli, R. Kemp, T. Doménech, *Journal of Industrial Ecology*, 2017 (154 citations)
- Unravelling the Personalization Paradox: The Effect of Information Collection and Trust-Building Strategies on Online Advertisement Effectiveness. E. Aguirrea, D. Mahr, D. Grewal, K. de Ruyter, M. Wetzels, *Journal of Retailing*, 2015 (153 citations)

In addition, 98 SBE publications are mentioned in policy reports and 21 publications are mentioned in Wikipedia.

The Dutch Prime Minister joined one of SBE's student tutorial groups ('Online working visit' Prime Minister Rutte at Maastricht University - news - Maastricht University).

In the period 2015–2020, SBE departments organised a total of 40 **conferences, symposia and workshops**. Examples include:

- the yearly Behavioural and Experimental Economics Symposium (M-BEES) and the Maastricht Behavioural Economic Policy Symposium (M-BEPS) conference
  - the yearly conference of the European Association of Labour Economists ([www.eale.nl](http://www.eale.nl)). Since its foundation in 1989 the secretariat is located at the Research Centre for Education and the Labour Market (ROA) of SBE
  - the 39th European Accounting Association (EEA) Annual Congress 2016
  - the fifth world congress of the Game Theory Society (GAMES 2016)
  - the 44th Annual Conference of the European Associations for Research in Industrial Economics (EARIE 2017)
  - the International Symposium on Audit Research 2018
- ESOB stands for European Seminar on Bayesian Econometrics.

## Long Term Viability

### External Funding

Between 2015 and 2020, SBE submitted 580 proposals to obtain **research grants from national and international research foundations**, of which 56% were Dutch proposals, 35% EU proposals and 9% other proposals. The overall success rate of these proposals was around 30%, of which almost two-thirds was granted by Dutch foundations and a quarter was related to EU funding.

<b>NATIONAL<sup>1</sup></b>		<b>EU</b>	
FAR	9	COST	1
Netspar	12	EIT / KIC	3
NWO NRO	12	Erasmus	4
NWA	2	MSCA networks	3
NWO individual (2 Veni; 5 Vidi)	20	MSCA individual fellowships	10
NWO networks	10	ERC StG	2
NWO Open Competition	3	Horizon2020 Societal Challenges	7
OP Zuid	3	JPI Urban Europe	3
Think Forward Initiative	2	Interreg	3
Miscellaneous	17	Miscellaneous	3
<b>Other</b>			
Miscellaneous	9		

Some of the highlights of successful funding proposals include a European Horizon 2020 research flagship project ‘TECHNEQUALITY’, which investigates the relation between recent technological innovations and social inequalities, asking questions such as what are the labour market consequences of such innovations and how can governments best respond? Another example is the European doctoral training network ‘BioBased ValueCircle’ on the development of innovative bio-based products, which addresses among others optimising change management processes in the context of the circular economy. Several Dutch research projects conducted by SBE were funded in the area of pensions and pension funds: how to elicit preferences and beliefs for sustainable investments, how to develop tailor-made policies and smart pension savings products for a heterogeneous group of pension savers, etc. In addition, a Dutch research project was awarded funding to study the consequences that the COVID-19 school lockdowns have had on the educational performance and well-being of young (vulnerable) students.

As described in the section *Use of research products by societal groups*, SBE carried out a total of 35 contract research projects (research commissioned and paid for by non-academic partners) in the period 2015–2020. Table 3 in Annex I presents the funding of the SBE staff in percentages of direct or government funding, funding by research grants and funding by contract research.

<sup>1</sup> Including pre proposals

## 5. Accomplishments during the past six years – research quality and societal relevance

### 5.1 General reflection on strategic goals

Reflecting on the accomplishments with regard to the strategic goals as mentioned in Table 1, the overall picture that we conclude is as follows. First, there is not a clear upward or downward trend in research output and quality over the past years. Although the research output measured in terms of refereed articles, books, book chapters and PhD theses shows some fluctuations, it generally seems to be at the same level between 2015 and 2020, as is the amount of faculty research staff (see Table 2 in this report, and Table 2 of the Appendix). The only exception may be last year (2020), which shows a significant increase in refereed articles but a drop in the number of PhD theses that have been successfully defended, as well as a significant increase in the number of full and assistant professors. The drop in PhDs graduated in 2020 may be related to the COVID-19 pandemic, due to which the public defences of some PhDs have been postponed. Also, research quality measured in numbers of A+ to C publications (in journals classified by GSBE), seems to be at a higher level in 2019 and 2020. Nevertheless, there is no clear trend in the share of top journals (A+) or the above average ranked journals (e.g., A+, A and B+) at the expense of the lower ranked journals. Furthermore, SBE researchers have been granted some prestigious academic awards and prizes, but again no clear upward or downward trends can be found. In summary, we conclude that **research output and quality (measured by journal rankings) has remained stable which is in accordance with our first strategic goal.**

One way of looking back at the attention paid to the different strategic goals, including research output and quality, is by evaluating the internal communication via the weekly SBE news sent via email to all faculty and the discussions during for example the regular GSBE research lunches and SBE town hall meetings. The internal communication has, among other things, been focusing on sharing the successes of publications in A+ journals by mentioning the authors and their published work in the SBE newsletter. We have also invited several authors of these publications to present their work during the research lunches and discuss their strategy on how to publish in top journals as well as the implications of their findings for society.

However, the attention paid to the topics related to strategic goals other than research output and quality seems to have risen even more. A lot of effort has been directed towards **raising awareness among our faculty staff of the relevance of working in multidisciplinary teams, of being visible for society, of increasing societal impact by the co-creation of knowledge and solutions with stakeholders, and of increasing the volume of external funding** for which multidisciplinary, visibility and societal impact seem to be critical success factors. Numerous internal meetings have been organised and guest speakers from outside SBE and our university have been invited to not only raise awareness but also create a sense of urgency to achieve the strategic goals. The SBE internal conferences organised during the last two years randomly assigned the research faculty of different disciplines to sessions to stimulate multidisciplinary thinking. Also sharing success stories of awarded grants and research proposals during research lunches may inform researchers on how they too can achieve success. Furthermore, we discussed the opportunities for research funding, the several aspects of research data management policies and ethics and integrity, the aspects of publishing in open access journals as well as the importance of diversity and the sound supervision of PhD students, including a well-structured training programme for PhDs. Together with our Rector Magnificus Rianne Letschert the SBE faculty discussed the publication of the report 'Room for everyone's talent: towards a new balance in the recognition and rewards for academics'. The renewal of the GSBE Fellowship criteria further underlines the importance of the activities related to the strategic goals other than research output and quality.

This indicates many efforts have been undertaken by SBE. However, the evidence presented concerning the strategic goals other than research output and quality alone does not necessarily reveal true progress. Most indicators seem to be rather stable. Regarding multidisciplinary, we have shown that about one third of our refereed publications stems from other disciplines than business and economics. Although this significantly increased in 2020, the number of policy reports to measure societal impact has been relatively stable between 2015 and 2019. Furthermore, the total percentage of funding from external sources has remained rather stable over time (see Table 3 in the Appendix); there only is a slight shift in the share of funding from research grants to contract research. An example of a successful policy to attract external funding is the requirement of external funding for a third of the PhD budget. In this way we have doubled the number of PhD positions for this part of the budget. We have presented many examples of our visibility in the media and in the research world and of the remarks of recognition from society, such as other research projects with companies and (semi-)public organisations, practical tools, endowed chairs for SBE professors, and the establishment of new campuses and

institutes. By revealing these, we have shown **convincing figures and narratives for our efforts to meet the other strategic goals.**

Perhaps more important than the evidence revealed by indicators presented, is **the development of research themes and spearheads at SBE.** In September 2017, seven research themes were selected bottom-up, and these were launched in 2018 to stimulate cross-disciplinary collaboration for greater societal impact. One of the most successful results was the start-up of many cross-disciplinary PhD projects with supervisors from different departments within SBE. The research themes were evaluated, and it was concluded that although cross-disciplinary research and SBE's visibility on the themes increased, stronger connections with external stakeholders in the field were needed to really make high impact. Therefore, a call for spearheads was launched in the summer of 2020 to further stimulate the co-creation of knowledge with external stakeholders, considering the societal challenges the world is currently facing, as evidenced by the UN SDGs. In January 2021, three new spearheads were launched. Some of the former seven research themes have been incorporated in these new spearheads, while others were either cancelled or continued on a voluntary and independent basis. The three spearheads are entitled 1) Maastricht Observatory on Resilient, Responsible, Sustainable Enterprise and Economy (MORSE); 2) UM Behavioural Insights Centre (UM-BIC); 3) Fair and Smart Data (FSD). Another promising initiative on digital transformations (DxU) received seed money to start up new activities.

## 5.2 PhD policy and Training, Open Science, Academic Culture and HR policy

GSBE has put a lot of effort into improving **PhD Policy and Training** by setting up a mandatory PhD programme with workshops that include topics such as research ethics and research data management. Since 2019 the PhD projects should have a duration of at least four years while the teaching load has been reduced. Multidisciplinarity and internationalisation is further stimulated by giving priority to the (co-)funding of interfaculty PhD projects and joint and double PhD programmes. The share of **Open Science** publications has increased between 2015 to 2020 from almost half to more than two thirds of the total number of refereed publications. A new scheme has been introduced to financially compensate authors for part of the Article Processing Charge (APC). Other efforts regarding open science policies are the SBE's 2020 FAIR action plan and the appointment of a data steward to support this plan. Also, a structure of local data stewards is being set up to assist the data steward. In terms of **Academic Culture**, a lot has been invested in research data management (RDM) and in creating awareness of the importance of ethics and integrity in research. A platform (*Research Ethics and Integrity Platform*) and two committees (*UM Committee for Scientific Integrity (CSI)*, *Ethical Review Committee Inner-city Faculties (ERCIC)*) have been launched. Information was shared and discussions were held during GSBE research lunches, workshops and training sessions were included in the PhD programmes of GSBE and GSX. Confidential advisers and counsellors on Scientific Integrity are available to advise faculty on issues of malpractice. Modernising **HR Policy** belongs to one of the three transformational initiatives at SBE. In line with the national Recognition and Rewards discussion, SBE has launched the REEAD project to define and balance Research, Education, External funding, Academic citizenship and leadership, and Dissemination and impact (REEAD) across all academic job profiles. There have also been many initiatives that aim to improve diversity and inclusion, for example by discussing and introducing performance and reward criteria for differentiated career paths and promotion. Another example is the consequent use of open calls for vacancies and the use of inclusive language in vacancy texts. At all academic job levels gender diversity has increased over time (see Section 4).

## 6. Strategy for the next six years

### 6.1 SWOT Analysis and the Strategy for the next six years

#### *Internal Strengths*

SBE distinguishes itself through its **broad research portfolio** (please also see Appendix IV for an overview in a SWOT table). This portfolio ranges from curiosity-driven research to applied endeavours, from topics in economic theory to sustainability sciences, from data sciences to qualitative approaches, from disciplinary to **multidisciplinary** studies, from desktop research to co-creation with external stakeholders. The SBE community is characterised by being **international**, collegial and **collaborative**, making it an attractive place to work. At SBE, many **PhD candidates** conduct research covering the broad SBE research portfolio. They represent a **vibrant and diverse** constituency of our **community**. Research produced by SBE is **impactful** in areas like education economics, labour markets and sustainability. In addition, SBE commits to **outreach to business and society** by well-established institutional units such as ROA and MSI. Strong involvement in regional development was established by participating in Brightlands through BISC and BISS. The Center of Entrepreneurship and Innovation is the linking pin between SBE and start-ups and medium-sized companies.

#### *Internal Weaknesses*

SBE's areas of improvement relate to obtaining broader access to **external funding**. Some groups have obtained grants and financial research support from external parties, but not all the SBE departments are equally successful. In general, there are untapped opportunities for success. This is partly because the **visibility** of our research could use some improvement, and a wider **international orientation** for our staff may advance the identification of funding and collaborative efforts. The education of researchers takes place in the setting of the RM and PhD programmes. So far, SBE has been able to attract qualified PhD candidates, but the RM would benefit from a larger inflow of students in order to become a major pipeline for the PhD programme. **The PhD programme** is flexible but also rather informal. Making it more structured, by providing a clear course programme and setting clear expectations in terms of deliverables over time, will improve possibilities to track progress and will clarify the steps to be taken for a successful defence of the PhD thesis. Recently, SBE has started a programme to professionalise **research data management** practices. Though this initiative is working well, awareness at SBE is still not at the desired level. Furthermore, our **HR policies** are not very modern yet. Recent developments in broadening appreciation of academic accomplishments must be incorporated. Accounting for diversity in career tracks and career stages are work in progress, as are developments in valuing team efforts. Staff moving towards employing new research approaches experience hurdles when proposing **non-standard initiatives**. Administrative staff often is not available or not prepared to handle requests of this nature.

#### *External Opportunities*

SBE is well positioned to become successful in **EU funding schemes**. As mission driven research will be stimulated in these programmes, SBE has good chances because of its research portfolio, including the three recently started spearheads, which exemplifies **societal impact and transdisciplinary approaches**. In addition, the public arena increasingly expects academia to play a role in **contributing to societal transformation**. SBE started the Data Analytics and Digitalisation department in 2019. This new unit and the already existing group in the Quantitative Economics department are well equipped to employ modern digital tools to analyse data and advance data sciences. An SBE-wide initiative (DxU) was recently started to unite a community of researchers interested in **understanding the consequences of digitalisation** and those colleagues interested in the advancement of **new research methods** based on recent data analytics.

#### *External Threats*

One of the challenges concerns the **long-term impact of COVID-19**. Due to the pandemic, workloads have been high and research time was reduced in order to migrate education to an online setting. Certain types of research got delayed disproportionately (experimental and field research). In particular, the careers of female and junior academics may be hampered. Structural concerns pertain to **the attractiveness of universities in general as employers**. This is reinforced, as **research is not well-funded**, for at least two reasons. First, NWO only funds researchers up to salary scale 11.0, senior staff is not funded at all, and PhD research is increasingly only funded for up to three years. Second, student numbers are increasing while government funding has not increased accordingly. In addition, the acquisition of research funding takes place in a very **competitive environment** resulting in a low return on investment.

*Strategy for the next six years*

To work towards our **updated vision for 2025** (see section 2) SBE has recently started three transformational initiatives, which address our opportunities and challenges. The first transformational initiative was launched in 2020: the so-called SBE-SDDG challenge, leading to the three aforementioned spearheads. The challenge concerned the broad concepts of **Sustainable Development**, **Digitalisation** and **Globalisation**. The call invited the SBE community to propose spearheads through which SBE can make a difference in these areas. This new initiative also will contribute to our vision of SBE becoming a more challenge-driven research school and strengthening the problem-based nature of our identity, where we engage and co-create with society. SBE wants to stimulate new, transdisciplinary research into themes that address societal challenges. In addition, this type of research requires new combinations of researchers as well as co-creation with non-academic stakeholders, often with other faculties/disciplines as well. In short, the intention is to address challenges in sustainable development, digitalisation and globalisation where SBE can develop new research strongholds and contribute with knowledge, a wider span of research methods and innovative ways of thinking to the academic community, companies, policymakers and society at large.

The Board has approved three spearheads which are a set of activities/projects that form a coherent cross-disciplinary research programme in which researchers from many departments are represented. The spearheads support purposeful interaction among the participants (getting to know each other, trust building among members, giving each other feedback, working on shared projects). The spearheads are supported by clear and appropriate commitments of SBE departments and by units at Brightlands Campuses. The spearheads are expected to generate funding beyond the seed money from the Board from the start, and to some extent this already has been achieved. Spearheads are expected to engage in and have an impact on the academic community, public debate, policy and external organisations. They are visible and relevant to the needs of research, education, business development, policy-making and/or the wider society. Spearheads are expected to produce distinct, high-quality, academic and non-traditional output and provide a link between research and education.

Digitalisation is high on the agenda of SBE. In 2019, the Data Analytics and Digitalisation department was established from scratch mainly by hiring externally. Still growing, it currently staffs 17 colleagues in areas like data analytics and computer sciences. In addition, the Board funds the SBE Digital Transformations Unit (DxU). DxU aims to position SBE as a global thought leader on digital transformations of societies and research. It fosters cooperation, coordination and collaboration between scholars working on the consequences of digitalisation, as well as new possibilities for research within SBE and at different UM-faculties by actively stimulating joint research projects.

## 6.2 PhD policy and Training, Open Science, Academic Culture and HR policy

With respect to **PhD Policy and Training** we observe that the PhD programme is rather informal. The director of our PhD programme is redesigning the PhD track to make it more structured. This improved structure should allow for even stronger community building amongst the candidates. Another aim is to better track supervision, development and progress of the PhD candidates, making expectations in terms of deliverables during the PhD track more transparent. This will contribute to the 4-year success rate. The modification is made in conjunction with redesigning the RM programme in such a way that scale advantages can be obtained in the provision of Research MSc courses and PhD research courses. Concerning **Open Science**, research data management is receiving increasing attention at SBE, and awareness is improving. The data steward is receiving full support in taking the next steps in ensuring data and digital resources ultimately become FAIR. Currently our score on open access publications is 68.7%. To further stimulate open access publications, policies are in place to cover some of the cost involved for GSBE researchers. We will monitor developments closely and act if necessary. **Academic Culture** is one of our core backbones. We consider competences and awareness regarding research ethics integrity and open science to be crucial for our reputation. So far, our policies were geared towards raising awareness amongst our PhD candidates. It is likely that in this way knowledge will also spill over to their supervisors and the broader SBE community. To enhance awareness, we are considering adopting training programmes for staff. We will also create more awareness for these topics through school and departmental seminars and workshops. So far checking research initiatives by the ethical review committee (ERCIC) is done on a voluntary basis. We pay a lot of attention and effort to developing **HR Policy**. A transformational initiative at SBE that would be relevant to mention concerns organisational development. It relates to, for example, modernising HR to address the leaking pipeline, work/life balance, a broader recognition and reward of academic performance areas, including academic citizenship, dissemination and impact. This initiative features prominently on the SBE Board's agenda.

## 7. Summary

Based on a bottom-up strategy process and the recommendations obtained in the previous SEP cycle GSBE's research mission has focused on enhancing multidisciplinary research addressing societal needs, while preserving a strong disciplinary base. GSBE's main goals were in terms of **quality of research**: (a) to maintain research output and quality and (b) to enhance the quality of the research MSc (RM) and PhD programmes; in terms of **societal relevance**: (c) to stimulate multidisciplinary research carried out at SBE, (d) to enhance societal impact of SBE's research and (e) to increase internal and external visibility of the SBE's research in terms of marketing & communication; in terms of guaranteeing the **long-term viability** of SBE's research: (f) to increase the volume of external research funding.

Simultaneously, recommendations have been addressed based on the **SEP 2015** related to the targeting of higher ranked journals, integration of various types of research and education, organisational structure, research integrity, promotion criteria and diversity issues. Furthermore, the organisational structure has been an SBE-wide point of attention.

As to research, there has not been a clear upward or downward trend in research output and quality over the past years. We conclude that **research output and quality (measured by journal rankings) has remained stable which is in accordance with our first strategic goal**. Perhaps more important than the evidence revealed by indicators, is **the development of research themes and spearheads at SBE**. In September 2017, seven research themes were selected bottom-up, and these were launched in 2018 to stimulate cross-disciplinary collaboration for greater societal impact. One of the most successful results was the start-up of many cross-disciplinary PhD projects with supervisors from different departments within SBE. The research themes were evaluated, and it was concluded that although cross-disciplinary research and SBE's visibility on the themes increased, stronger connections with external stakeholders in the field were needed to really make an impact. Therefore, a call for spearheads was launched in the summer of 2020 to further stimulate the co-creation of knowledge with external stakeholders, considering the societal challenges the world is currently facing as evidenced by the UN SDGs. In short, the intention is to address challenges in sustainable development, digitalisation and globalisation where SBE can develop new research strongholds and contribute with knowledge, and where SBE has a wider span of research methods and innovative ways of thinking to offer to the academic community, companies, policymakers and society at large.

Furthermore, a lot of effort has been directed towards **raising awareness among our faculty staff of the relevance of working in multidisciplinary teams, of being visible for society, of increasing societal impact by co-creation of knowledge and solutions with stakeholders, and of increasing the volume of external funding** for which multidisciplinary, visibility and societal impact seem to be critical success factors. We have shown convincing **figures and narratives for our efforts to meet the other strategic goals**. An example of a successful policy is the requirement of external funding for a third of the PhD budget. This meant we were able to double the number of PhD positions for this part of the budget.

We further observe that, concerning **Open Science**, Maastricht University is aiming to have all publications be open access as soon as possible and wants to be FAIR by 2023. SBE embraced these ambitions as well. With respect to **Academic Culture** the SEP evaluation in 2015 recommended accelerating implementing a research integrity policy. SBE operates in line with the Code of Conduct for Research Integrity and has implemented various actions to move forward. Concerning **Human Resource Policy**, in line with the SEP recommendation related to promotion criteria, we are working with a new approach providing also for new and differentiated career paths. Additionally, with our renewed HR policy, we addressed progressing issues of diversity in a systematic manner. Finally, regarding **PhD Policy and Training**, we note that the RM and PhD programme have been developed further.

## 8. Appendices

### APPENDIX I. Results

Table 1. Result indicators			
		Quality Domains	
		Research quality	Relevance to Society
Assessment Dimensions	<b>Demonstrable products</b>	1. <u>Research products for peers</u> <ul style="list-style-type: none"> <li>Quantity and quality of refereed articles (number of A, B and C journals)</li> <li>Publication in multidisciplinary journals or non-economic/ business</li> <li>Number of theses</li> <li>Awards for papers and theses</li> </ul>	4. <u>Research products for societal target groups</u> <ul style="list-style-type: none"> <li>Media exposure</li> <li>Reports</li> <li>Tools</li> </ul>
	<b>Demonstrable use of products</b>	2. <u>Use of research products by peers</u> <ul style="list-style-type: none"> <li>Citations (CWTS Analyses)</li> <li>Conferences and research events</li> <li>Citation scores of the most influential researchers</li> </ul>	5. <u>Use of research products by societal groups</u> <ul style="list-style-type: none"> <li>Contract research</li> <li>Projects in cooperation with societal groups</li> <li>Regional Development Initiatives (campuses/institutes)</li> </ul>
	<b>Demonstrable marks of recognition</b>	3. <u>Marks of recognition from peers</u> <ul style="list-style-type: none"> <li>Research grants from national and international research foundations</li> <li>Member of editorial boards</li> </ul>	6. <u>Marks of recognition by societal groups</u> <ul style="list-style-type: none"> <li>Awards and prizes from societal</li> <li>Extraordinary/sponsored professorships</li> <li>Case study 2 and 3 (Annex II)</li> </ul>

Table 2. Research staff												
Research unit	2015		2016		2017		2018		2019		2020	
	#	FTE										
<b>Scientific staff</b>												
Full professor	50	14.20	48	13.48	56	15.84	56	16.78	65	19.58	70	21.76
Associate professor	43	15.08	48	17.04	44	15.64	45	16.16	46	15.60	42	14.50
Assistant professor	50	18.92	52	19.72	54	20.80	52	20.08	67	25.76	74	27.96
Postdocs	24	20.70	20	18.30	18	10.10	16	13.30	20	17.45	19	16.45
PhD candidates	127		113		115		102		96		107	
Honorary professors and scientific staff <0.2 FTE	21	0.50	25	0.55	26	0.45	28	0.40	29	0.40	30	0.30
<b>Total research staff</b>	<b>315</b>	<b>69.40</b>	<b>306</b>	<b>69.09</b>	<b>313</b>	<b>62.83</b>	<b>299</b>	<b>66.72</b>	<b>323</b>	<b>78.79</b>	<b>342</b>	<b>80.97</b>

**Table 3. Funding**

	2015	2016	2017	2018	2019	2020
<b>Research unit</b>						
<i>Funding: FTE*/</i>						
Direct funding	135.37/52%	133.27/51.7%	136.75/52.1%	133.49/53.1%	137.13/52.8%	145.15/52.1%
Research grants	23.17/8.9%	25.04/9.7%	17.73/6.8%	17.32/6.9%	18.65/7.2%	18.37/6.6%
Contract research	101.77/39.1%	99.69/38.6%	108.09/41.2%	100.59/40%	104.18/40.1%	115.05/41.3%
<b>Total funding</b>	<b>260.31/100%</b>	<b>258/100%</b>	<b>262.57/100%</b>	<b>251.41/100%</b>	<b>259.96/100%</b>	<b>278.57/100%</b>
<i>Expenditure: €x1.000/</i>						
Personnel costs (x €1.000)	15,350/56.1%	15,375/68%	16,186/68.3%	17,377/72.7%	18,161/71.5%	20,104/74%
Other costs (x €1.000)	12,026/43.9%	7,231/32%	7,515/31.7%	6,535/27.3%	7,240/28.5%	7,072/26%
<b>Total expenditure</b>	<b>27,376/100%</b>	<b>22,606/100%</b>	<b>23,701/100%</b>	<b>23,912/100%</b>	<b>25,400/100%</b>	<b>27,176/100%</b>

\* This only concerns the research FTE. Based on 40% of the direct funding flow FTE and 100% of the indirect funding flow FTE.

**Table 4. PhD candidates\***

Starting year	Enrolment male / female		Success rates						
			Total M+F	Graduated in year 4 or earlier	Graduated in year 5 or earlier	Graduated in year 6 or earlier	Graduated in year 7 or earlier	Not yet finished	Discontinued
2011	18	14	32	8 / 25%	11 / 34.4%	4 / 12.5%	2 / 6.2%	3 / 9.4%	4 / 12.5%
2012	28	23	51	17 / 33.3%	9 / 17.6%	6 / 11.8%	4 / 7.8%	11 / 21.6%	4 / 7.8%
2013	22	22	44	13 / 29.5%	15 / 34%	7 / 15.9%	0	5 / 11.4%	4 / 9.0%
2014	26	17	43	15 / 34.9%	9 / 20.9%	1 / 2.3%	1 / 2.3%	12 / 27.9%	5 / 11.6%
2015	26	26	52	20 / 38.5%	0	1 / 1.9%		29 / 55.8%	2 / 3.8%
2016	15	12	27	3 / 11.1%	1 / 3.7%				
2017	26	22	48	3 / 6.2%					
2018	13	15	28						
2019	19	10	29						
2020	15	24	39						
<b>Total</b>	<b>208</b>	<b>185</b>	<b>393</b>	<b>79 / 20.1%</b>	<b>45 / 11.4%</b>	<b>19 / 4.8%</b>	<b>7 / 1.8%</b>	<b>224 / 57.0%</b>	<b>19 / 4.8%</b>

\* Numbers are for internal PhD candidates.

**Table 5: main categories of research output**

	2015	2016	2017	2018	2019	2020
<b>Research Institute</b>						
Refereed articles	237	245	218	220	261	311
Books (refereed)	1	1	1	1	0	1
Book chapters (refereed)	15	17	18	14	17	15
PhD thesis	42	30	28	31	37	20
<b>Total publications</b>	<b>295</b>	<b>293</b>	<b>265</b>	<b>266</b>	<b>315</b>	<b>347</b>

Source: UM Research Intelligence Dashboard (Pure). The increase in the number of publications is in line with the increase in staff (see table 2 above).

## APPENDIX II. Case Studies

### CASE 1: Multidisciplinary Research Project

#### LIMES

The LIMES project is a doctoral programme for 13 talented PhD candidates in the domain of the humanities and social sciences, centred on the theme of 'The Hardening and Softening of Borders: Europe in a Globalising World'. The project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement. The keystone of LIMES – the Latin word for border – is mobility of persons, information and commodities. Nine non-academic and five academic partner organisations from other European countries cooperate in providing external supervision as well as six-month secondments to the candidates. For more information, see: <https://limes.maastrichtuniversity.nl/>

Supervisors and PhDs from SBE, the Faculty of Arts and Social Sciences (FASoS/lead partner), the University College Maastricht (UCM) and the Faculty of Law (FL) have been working closely together in writing the proposal, in managing the LIMES project, in recruiting the candidates (only from outside the Netherlands; SBE has led the work package on recruitment and selection) and in setting up joint programmes, including trainee programmes on interdisciplinarity, internationality, project management and ethics, and intersectorality. SBE is literally and figuratively exploring and crossing borders.

The content of the training programme is built around four employability elements: academic knowledge, professional experience, general competencies or skills and personality. It is spread over three components: 1) a general, more content and discipline-driven doctoral training programme focusing on research skills and including attention for interdisciplinarity and mixed-methods, 2) the employability training programme, and 3) the secondment at the partner organisation. The latter two elements focus on transferable skills.

The employability training programme offers the candidates training/workshops on transferable skills and employability. This training programme is clustered in six joint summer and winter schools of five working days spread over the programme's duration. They focus on a broad range of skills, such as time and project management, data management, ethics and research integrity, intercultural cooperation and communication, diversity, impact course, presentation skills and blogging, grant writing, training for job interviews, etc.

An important element of the LIMES training develops from cooperation with partner organisations. Secondments, mentoring, and presentations (but also informal meetings) with companies and organisations active on the research themes give the candidates insights on issues and solutions in different settings. The specific focus of the research projects guides the cooperation with the partner organisations. Depending on the project, the training covers specialised courses coordinated by the partner organisations, such as training in use of equipment and software, database research, hands-on experience, project management, etc. At the end of their secondment, the PhD candidates are asked to write a three-page report in which they reflect on the non-research skills that they have acquired or improved during this period.

Four out of 13 positions are held by PhD candidates at SBE. The projects at SBE are as follows:

- Study and Work Experiences across the Border: their Impact on Cross-border Career; partner organisation for this project is the Bundesinstitut für Berufsbildung (BIBB, Federal Institute for Vocational Education and Training), Germany
- Foreign Students and Graduates in European Border Regions; partner organisation is the Institut für Arbeitsmarkt- und Berufsforschung (IAB, Institute for Employment Research), Germany
- All Together or All Alone? How Demographic and Digital Trends affect Socialisation and Isolation at Work; partner organisation is Department of Politics and Public Administration, University of Konstanz, Germany
- The Impact of Borders on the Effectiveness of Active Ownership by European Asset Owners; partner organisation is International Centre for Pension Management (ICPM), Canada

## **CASE 2: Research Project with High Societal Impact**

### **THE NETHERLANDS COHORT STUDY ON EDUCATION (NCO)**

In many countries, the quality of (large-scale quantitative) educational research is threatened by data challenges. SBE-ROA researchers lead an innovative data research project from the Netherlands in which many of the challenges that come forward in previous literature are addressed: The Netherlands Cohort Study on Education. In Dutch referred to as ‘Nationaal Cohortonderzoek Onderwijs’ (NCO). NCO systematically combines existing register data from the Netherlands and integrates them with relevant other data sources. NCO uses longitudinal data on track placement of cohorts of pupils in primary and secondary education, which is combined with school admin data on pupils’ performance and data from major national and international surveys. The basis of NCO is formed by register data from Statistics Netherlands, which overcomes some of the problems that large-scale educational research has faced recently, such as low response rates, low data quality, and a lack of statistical power. By hosting these data sets at Statistics Netherlands, an entrusted third party, the data can be linked to all other data, are available to all researchers, while at the same time their security and confidentiality are still safeguarded.

The NCO data set is valuable for both researchers and schools. The major added value of the NCO data set for researchers is longitudinal individual pupil data from school administrative systems which can be added to other data sets such as (international) surveys or other register data. This allows us to overcome a major challenge of survey data, which does not contain interesting information such as longitudinal performance data. In addition, by linking survey data from large national and international survey data collections (e.g. PIRLS, TIMMS, PISA), new promising possibilities for data analysis arise. Unfortunately, the NCO data currently does not (yet) contain information on for example social-emotional skills or on pupils that require specific (health and psychosocial) support.

To create a win-win situation where schools also profit, NCO provides annual reports to all primary and secondary schools in the Netherlands. These reports provide information on their students’ performance and educational careers, both during school as well as in further education. A major asset of these reports is that they provide information on how comparable schools (in terms of student population) perform (the so-called reference value), which is an important reference point for schools. Schools use the reports to improve their educational practices, to base their policy decisions on and to check whether they have reached their goals. This is specifically important since the intuition and assumptions of school leaders and teachers about the consequences of educational policies and practices do not always appear to be correct. Schools also wish to use data, for instance on tests or student backgrounds, to improve their education. By providing annual reports to all schools, we hope to establish a mutual commitment so that schools will participate in research in the future, which should boost response rates.

In addition to providing annual reports to schools, NCO aims to coordinate national and international surveys taking place in primary and secondary education in order to relieve the time pressure schools experience for taking part in research. Given the current and future flow of national and international surveys, we estimate that primary schools need to participate in a research project once every eight years and secondary education schools once every three years. Once the coordination is in place, schools will experience less pressure and data collection will be dispersed more evenly over all schools in the Netherlands. Additionally, since all NCO data can be accessed by researchers, they will no longer need to answer questions that have been asked before if the results can be retrieved from the existing NCO data set. In the future, this will make conducting surveys in the future more efficient and make it less necessary to collect new data at schools.

For further information on NCO, please see: <https://www.nationaalcohortonderzoek.nl/>

### **CASE 3: Research Project with High Societal Impact**

#### **THE EDUCATION AGENDA LIMBURG (EAL)**

Within the MILE department, SBE leads one of the Kennis-As Projects Educatieve Agenda Limburg (prof. T. Schils P.I., involved researchers 2016-2020: L. Borghans, R. Haenbeukers, K. Coppens, M. Muskens, R. Diris). This is a cooperation with all primary, secondary and vocational schools in the region, as well as the higher education institutes and the province of Limburg. The project has been running since 2014 and it has shown impact on society by providing evidence underlying the educational innovations in schools. Some recent examples include:

- Supporting primary and secondary schools in monitoring their strategic goals by providing them with school-level feedback. Based on a yearly monitor, one year in primary education and the other year in secondary education, cohorts are followed over time and information is provided to schools on cognitive and social-emotional skill development in relation to background characteristics. For examples, see <https://www.educatieveagendalimburg.nl/onderwijsmonitor/rapportages>
- Providing evidence on social-emotional wellbeing and school performance in relation to the COVID-19 pandemic to help schools decide where extra support or interventions are necessary. A range of factsheets is published and actively spread among schools (<https://www.educatieveagendalimburg.nl/bijdragen>).
- Helped mentor specific groups of students this past autumn and is included in the BEST report of the Limburg after COVID taskforce.
- In cooperation with municipalities of Heerlen, Maastricht and Sittard-Geleen, research is performed on early warning signs for early school dropouts. Research showed that early warning signs are to be found in early years of secondary schools and schools now implement specific coaching for students to prevent early school dropout.
- Supporting secondary schools with evidence on whether the coaching of students helps them to develop social-emotional learning. There have been no publications yet, but a website to share the info and to help other schools has been launched: <https://www.beste-versie-van-jezelf.nl/>
- Supporting primary schools in developing creative and critical thinking among children. Project led by Kim van Broekhoven, supported by Lex Borghans and Barbara Belfi. A video including the results can be found here: <https://vimeo.com/386460132/2a9cd80oab>

#### *The link between NCO and EAL*

Both large projects focus on the collaboration with practice and the impact for practice: relevant information, scientifically analysed, returned to educational practice (in the form of school reports) to shape policy and improve quality. There is a lot of coordination between the projects. EAL is a Limburg project that focuses on social-emotional skills, whereas NCO is national project that focuses more on cognitive skills.

#### **CASE 4: Research Project with High Societal Impact**

##### **SERVICE ROBOTS: RISING OR FALLING STARS?**

This research on the impact and role of service robots in healthcare, hospitality and beyond is at the intersection of academia and practice, engaging strategic industry partners enabling synergies between research, teaching and societal impact.

Technological advancement is profoundly impacting the very nature of crucial services such as healthcare, education, hospitality, retail and banking. Societal developments such as the greying population are putting great stress on national healthcare systems because of a shortage of healthcare professionals. The global societal threat of perceived loneliness (amplified by the COVID-19 pandemic) calls for the mindful consideration of service robots in mitigating potential harmful consequences of these developments. Service robots can be defined as ‘system-based autonomous and adaptable interfaces that interact, communicate and deliver service to an organisation’s stakeholders. The success of service robots depends on the value created for the user but also on the value created or destroyed for the network in which that user is embedded. In carefully weighing the benefits and risks, each member of the network might support or impede an individual’s acceptance of the service robot. However, elderly people and their value networks of formal and informal caregivers have exhibited some reluctance to accept robotic services. This reluctance is a key challenge for service innovators.

This project mimics a living lab community in which researchers, students, and strategic industry partners collaborate to understand the role of service robots in addressing societal challenges. Prof. G. Odekerken-Schröder (chair in customer-centric service science) and Prof. D. Mahr (chair in digital innovation and marketing) are the leaders of the innovation. The research is truly interdisciplinary involving business, healthcare, design and robotics.

This research project addresses major societal issues such as loneliness, the greying population, and staff shortages in service industries such as healthcare, retail and hospitality. By collaborating with partners in *healthcare*, healthcare managers and policy advisers are provided with a typology of different roles service robots can take in care networks (consisting of elderly patients, formal caregivers such as doctors and informal caregivers such as family members). The collaboration with a strategic partner in *hospitality* resulted in evidence-based recommendations on how to build a robot-infused team in a restaurant, emphasising substitution and augmentation and the effect on repatronage intentions of guests.

The initiative received EU funding (ITN network), resulted in a double PhD programme with QUT, Brisbane Australia and is attracting more and more strategic industry partnerships. The research project is approximately five years old, resulted in numerous international refereed journal and book publications, PhD dissertations, conference presentations, keynote sessions, life-long learning workshops, a non-academic YouTube video and many more dissemination reports and presentations. The structure is organic and agile on purpose, enabling the innovation to address timely societal issues.

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2. Odekerken-Schröder, G., Mele, C., Russo Spena, T., Mahr, D., Ruggiero, A. (2020), “Mitigating Loneliness with Companion Robots in the COVID-19 Pandemic and Beyond: An Integrative Framework and Research Agenda”, *Journal of Service Management*, forthcoming. <https://doi.org/10.1108/JOSM-05-2020-0148>
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## APPENDIX III. Key Publications

### Five Key Publications Academic

1. Jonas Heese, Ranjani Krishnan, Frank Moers (2016), Selective Regulator Decoupling and Organizations' Strategic Responses, *Academy of Management Journal*, Vol. 59, pp. 2178-2204, <https://doi.org/10.5465/amj.2015.0446>
2. Raymond Montizaan, Andries de Grip, Frank Cörvers, Thomas Dohmen (2016), The Impact of Negatively Reciprocal Inclinations on Worker Behavior: Evidence from a Retrenchment of Pension Rights, *Management Science*, Vol. 62, pp. 668-681, <https://doi.org/10.1287/mnsc.2015.2157>
3. Daniela Osterrieder, Peter C. Schotman (2017), The Volatility of Long-Term Bond Returns: Persistent Interest Shocks and Time-Varying Risk Premiums, *Review of Economics and Statistics*, Vol. 99, pp. 884-895, doi: [https://doi.org/10.1162/REST\\_a\\_00624](https://doi.org/10.1162/REST_a_00624)
4. Arno Riedl, Paul Smeets (2017), Why Do Investors Hold Socially Responsible Mutual Funds?, *Journal of Finance*, Vol. 72, pp. 2505-2550, <https://doi.org/10.1111/jofi.12547>
5. Thomas Demuynck, P. Jean-Jacques Herings, Riccardo D. Saulle, Christian Seel (2019), The Myopic Stable Set for Social Environments, *Econometrica*, Vol. 87, pp. 111-138, <https://doi.org/10.3982/ECTA14954>

### Five Key Publications Non-Academic

1. Andries de Grip et al. (2016), Doorgesloten flexibilisering schaadt bedrijfsleven, MeJudice, 14 March, <https://www.mejudice.nl/m/a/ar/doorgesloten-flexibilisering-schaadt-bedrijfsleven>
2. Cristian Scholl et al. (2017), Guidelines for Urban Labs, Urb@Exp project 2014-2017, JPI Urban Europe, [URB@EXP-Guidelines.pdf \(jpi-urbaneurope.eu\)](https://jpi-urbaneurope.eu/project/urbexp/) and <https://jpi-urbaneurope.eu/project/urbexp/>
3. Harry Hummels (2018), Social Entrepreneurship: Garen spinnen bij mestverwerking. Me Judice, 3 October, <https://www.mejudice.nl/artikelen/detail/social-entrepreneurship-garen-spinnen-bij-mestverwerking>
4. Rob Bauer, Dirk Broeders et al. (2019), Jongeren slechter af bij aanpassing rekenrente, Financiële dagblad, <https://fd.nl/opinie/1320404/briefschrijvers-moeten-duidelijk-en-volledig-zijn-jongeren-slechter-af-bij-aanpassing-rekenrente-kgf1ca1BNBsO>
5. Frank Cörvers, Luc Soete (2020), Zet de grens met België op een kier, NRC Handelsblad, 16 April, <https://www.nrc.nl/nieuws/2020/04/16/zet-de-grens-met-belgie-op-een-kier-a3996958>, also published in De Limburger, 18 April

## APPENDIX IV. SWOT analysis

Internal Strengths	Internal Weaknesses	External Opportunities	External Threats
<ol style="list-style-type: none"> <li>Portfolio of curiosity and mission driven research</li> <li>Openness to transdisciplinary approaches</li> <li>International academic staff</li> <li>Diverse portfolio of research subjects</li> <li>Collaborative environment</li> <li>Large and diverse PhD population</li> <li>Societal impact in various areas</li> <li>Institutional outreach to business and society (BISS, BISCO, CEI, ROA, MSI)</li> </ol>	<ol style="list-style-type: none"> <li>International orientation not widespread</li> <li>Visibility of research</li> <li>Lack of critical mass Research MSc</li> <li>Traditional HR policies</li> <li>Lack of administrative support for non-standard initiatives</li> <li>PhD programme is informal</li> <li>Awareness importance Research Data Management</li> <li>Narrow external funding base</li> </ol>	<ol style="list-style-type: none"> <li>EU funding for mission-driven and impactful research</li> <li>Appreciation challenge-driven &amp; transdisciplinary research with impact</li> <li>Understanding consequences of digitalisation</li> <li>New approaches to studying data</li> <li>Increasing awareness need for societal transformation</li> </ol>	<ol style="list-style-type: none"> <li>Long-term impact COVID-19</li> <li>Poor image and attractiveness of universities as employers</li> <li>Structural underfunding of research with growing student population</li> <li>External funding programmes highly competitive</li> <li>Low return on investment</li> </ol>

## APPENDIX V. Recommendations SEP 2015 and actions taken.

Recommendation SEP	Actions
1. Targeting higher ranked journals	<ul style="list-style-type: none"> <li>SBE celebrates top publications and invites authors of top publications to tell their story and publish a short article in the SBE newsletter. This also makes researchers aware of referee processes, formal and informal strategies to get articles published in those prestigious outlets (page 5)</li> <li>Stimulating editorship at business and economics journals (page 5)</li> </ul>
2. Integration of research and education	<ul style="list-style-type: none"> <li>Development of educational initiatives has been a selection criterion for the spearheads (page 6, 20)</li> <li>Opening vacancies for research assistantships for research master students (page 5)</li> </ul>
3. Simplifying organisational structure	<ul style="list-style-type: none"> <li>Further development of the SBE matrix structure (page 4)</li> </ul>
4. Stimulating research integrity	<ul style="list-style-type: none"> <li>SBE operates in line with the Code of Conduct for Research Integrity (page 4)</li> <li>The PhD programme consists of, amongst others, mandatory workshops on research ethics and research data management (page 6)</li> <li>Appointment of SBE data steward and local data stewards (page 8)</li> <li>Discussions during various (lunch) meetings (pages 8, 17, 18)</li> </ul>
5. Modernising promotion criteria and diversity policies	<ul style="list-style-type: none"> <li>Advertising vacancies externally as much as possible. Vacancy texts are also checked for inclusive language by diversity and inclusion officers (page 9, 19)</li> <li>SBE has appointed various professors with special remit (page 11)</li> <li>We have updated tenure track processes (page 10, 11)</li> <li>Introducing the REEAD framework for promotion (page 11, 19)</li> <li>Gender balance is top priority to the dean (page 10)</li> <li>Departments are stimulated to improve the gender balance (page 10)</li> </ul>

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