ODION
onderzoek & accreditatie

Faculty of Behavioural, Management and Social Sciences
University of Twente
Research evaluation report 2015-2020

10 February 2022

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1. PREFACE

This report presents the research evaluation of the *Faculty of Behavioural, Management, and Social Sciences* (BMS) of the *University of Twente*. We focus on the period 2015-2020 and follow the new Strategy Evaluation Protocol (SEP 2021-2027).

For us as a research evaluation committee, this was an intriguing experience. It was fascinating to see how BMS is evolving from transformation to consolidation, and is making important contributions to changing the way in which research is being conducted, so that societal interaction and trans-disciplinary learning become an intrinsic dimension of academic methodologies, while science and technology become more inclusive, sensitive and open to society. At the same time, we believe, as critical friends, that this could be taken one step further, and therefore we have tried to present our findings and recommendations as precisely as possible. Last but not least, the hospitality of BMS has made our work a pleasant experience.

Prof. Dr. Hub Zwart
(Chair of the research evaluation committee)

2. INTRODUCTION

Research Evaluation Committee

The Faculty of Behavioural, Management, and Social Sciences (BMS) is responsible for the quality of the research at their institution. As part of the quality assurance cycle, research units are evaluated every six years. The Executive Board of the University of Twente commissions the research assessment and determined that the Faculty of BMS (hereafter called 'the Faculty') was to be evaluated in 2021.

In accordance with the guidelines of the Strategy Evaluation Protocol (SEP) for 2021-2027, the research performance during the period 2015-2020 is evaluated by an international research evaluation Committee (hereafter called 'the Committee'). The Executive Board appointed the following Committee members:

- Prof. dr. Hub Zwart (Chair), Dean *Erasmus School of Philosophy*, the Netherlands;
- Prof. dr. Pim Assendelft, professor of Prevention in Healthcare at Radboud University Medical Center Nijmegen, the Netherlands;
- Dr. Max Birk, assistant professor at the Department of Industrial Design at Eindhoven University of Technology, the Netherlands;
- Prof. dr. Sanna Järvelä, professor of Learning Sciences and Educational Technology at University of Oulu, Finland;
- Prof. dr. Marieke Liem, professor of Security and Interventions at Leiden University, the Netherlands;
- Prof. dr. Ian McCarthy, professor of Technology and Operations Management at the Beedie School of Business, Simon Fraser University, Canada;
- Denise Petzold MSc, PhD candidate at the Philosophy Department of the Faculty of Arts and Social Sciences at Maastricht University, the Netherlands.

The members have an excellent international scientific standing, affinity with the interaction between science, technology, social sciences and the humanities, and knowledge of the Dutch context of research evaluation. As a team, they provide a broad representation of the different disciplines in BMS, and are a diverse group in terms of background, seniority, gender, and nationality. The members Hub Zwart and Pim Assendelft have participated in the mid-term review of the Faculty in 2018. The secretary of the evaluation Committee, Elian Bogers MSc. of Odion Onderzoek B.V., was responsible for the process coordination and drafting of the Committee's report.

To ensure a transparent and independent assessment process, the secretary and the members of the evaluation Committee reflected on their personal interests that could influence their ability to conduct an independent and impartial assessment. The secretary and evaluation Committee members signed a statement of impartiality and confidentiality for this purpose.

Procedures

The Committee was asked to assess the quality of research conducted by the Faculty as well as to offer recommendations to improve the quality of research and the strategy of the Faculty. The Committee is requested to carry out the assessment according to the guidelines specified in the SEP protocol for 2021-2027. The evaluation includes a backward-looking and a forward-looking component. To establish Terms of Reference, the Committee is asked to evaluate the performance of the unit on the three main assessment criteria, i.e. research quality, societal relevance and viability of the unit. The Committee is also asked to incorporate four specific aspects, i.e. Open Science, PhD policy and training, academic culture, and Human Resource policy. In addition to the criteria in the SEP protocol, the Rector Magnificus requested to pay attention to the following additional questions, and offer assessment and recommendations:

1. How do you assess the development and realization of the BMS strategy, especially concerning the five focal themes and its objectives?
2. How do you assess the way BMS implements its research strategy and how BMS facilitates research activities of staff?
3. How do you assess the interaction between BMS and other institutes and faculties of the UT? Does collaboration with other faculties add to a successful implementation of the BMS strategy?

In a collaborative effort, the Faculty prepared a self-assessment report. The vice-dean of research sent the report to the Committee on October 4, 2021. At a later stage, extensive background information was supplied to the Committee via a private website. Prior to the site visit, the Committee members studied the self-assessment report and independently formulated first impressions. First impressions were shared with the secretary and chair one week before the site visit and were exchanged in a private preparatory discussion on the first evening of the site visit. The secretary informed the Committee extensively on the criteria of the new SEP protocol and the Terms of Reference of the Faculty. In the preparatory discussion, the Committee formulated the items to be clarified and questions to be asked during the site visit. The site visit took place from October 31 until November 3, 2021, at three different locations on the UT campus. The program of the site visit is described in Appendix 1.

The Committee discussed their assessments and preliminary findings daily during breaks, dedicated discussions and writing sessions. The chair shared the Committee's preliminary conclusions immediately after the site visit. These were based on the findings of the site visit and built on the assessment of the program documents. The secretary, in close collaboration with the chair, wrote the draft of the final report. The draft report was verified and added to by the Committee members before being presented to the Faculty concerning factual inaccuracies. The Faculty's comments were reviewed by the secretary and incorporated in the final report in close consultation with the chair and Committee members. The final version of the report was made available to the board.

3. MISSION, STRATEGY, AND ORGANIZATION

The Faculty of Behavioural, Management, and Social Sciences (BMS) is the outcome of a merger of the Faculty of Behavioural Sciences and the Faculty of Management and Administration of the University of Twente (UT) in 2014. An important aim of this merger was to form a unique blend of social science researchers from fields that include management, education, healthcare, philosophy, and information systems. The merger would create critical mass to strengthen the quality of the social sciences research, and to allow a joint relation to UT's technological faculties. The Faculty has a board with five members: the dean, vice-deans for research, education, and operations, as well as a student assessor. The Faculty Board is responsible for the management and governance of the Faculty.

Mission

Given that the mission of the University of Twente is to be the "ultimate people-first university of technology", the research mission of the Faculty is to create a positive societal impact in a technology-driven society via social science teaching and research. The Faculty aims to do so through three foundations: cross-disciplinary collaboration connecting social sciences and technology, combining a global and regional orientation, and entrepreneurship and innovation. In the conversations, it became evident that through research themes, cross-disciplinary collaboration within the Faculty and the broader UT is fostered. Research themes also aim to facilitate structural partnerships with other UT faculties, research institutions, and relevant societal partners. The Committee spoke to enthusiastic regional stakeholders, but on the basis of the interviews it was difficult to assess to what extent the Faculty aims to strengthen its collaborative ambitions internationally. Although the Committee agrees that the cross-border EUREGION and the Twente 'rurban' area provide opportunities, the Committee recommends to broaden the Faculty's perspective beyond the region and to become more ambitious in terms of international collaboration and benchmarking.

Strategy

Research themes

Five shared cross-disciplinary research themes, i.e., 1) Emerging Technologies & Society, 2) Smart Industry, 3) Resilience, 4) Health, and 5) Learning, were designed to connect the various disciplines represented within the Faculty to promote cross-disciplinary collaboration. These themes seek to facilitate structural partnerships within the UT, with other research institutes, and with relevant societal partners. The research themes serve as platforms, in which researchers can follow discussions but can also be actively involved in specific topics. Research themes facilitate research to connect on specialized topics. Where the primary goal of the departments is staff management, the drive for innovation lies in the research themes.

Interdisciplinary

The Faculty shows to be excellent in creating an interdisciplinary and connected workplace. BMS researchers are encouraged and feel invited to participate in interdisciplinary research themes and to connect with other researchers. As the research themes are aligned with the research strategy and mission of the UT, it allows close collaboration with researchers from other UT Faculties on specific research topics. The collaborative and interdisciplinary background of alumni is clearly valued by regional, national, and international stakeholders and institutions. Even though the Committee recognizes and values interdisciplinarity in the Faculty's design approach and collaborations, it also encourages the Faculty to (continue) to appreciate monodisciplinary expertise. Historically the Faculty consisted of monodisciplinary structures or research sections; a small group of experts working closely together on specific research topics. To facilitate strong interdisciplinary collaborative networks, the Committee believes and encourages the Faculty to continuously invest in and appreciate monodisciplinary expertise. The Committee expects that a single focus on interdisciplinarity creates a risk of solely training generalists.

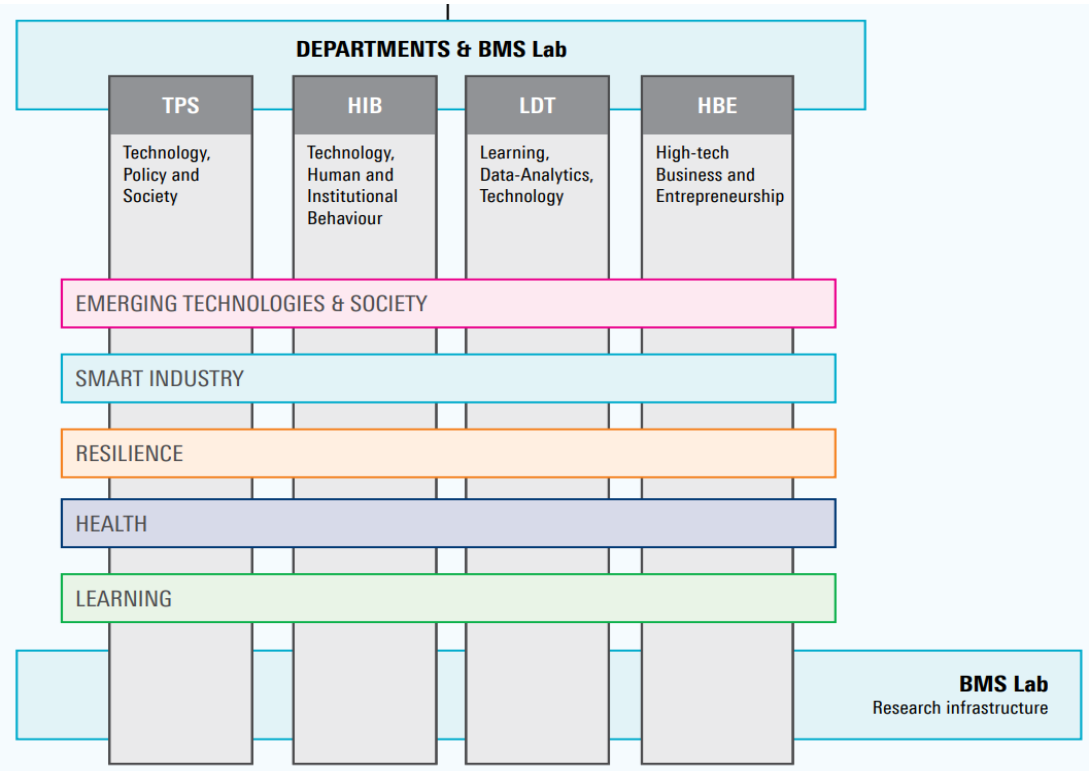
Organization

In the period under review, the Faculty underwent and completed a repositioning process aimed at strengthening its research focus and societal impact. The organizational structure of the Faculty is since 2017 based on vertical cross-disciplinary departmental structures and horizontal thematic structures. Next to research positions within one of the departments, researchers connect to one or more of the five themes. The Committee recognizes major repositioning processes and positive changes in terms of institutional structures, organization, and management. While recognizing positive outcomes, the Committee also encountered confusion among staff, still, with regard to the internal governance. The Committee supports the changes that have been made and observes great energy and confidence about the changes in the Faculty, but also noticed room for improvement in the implementation and consolidation of organizational changes.

Departments

The four cross-disciplinary departments (Technology, Policy and Society (TPS); Technology, Human and Institutional Behaviour (HIB); Learning, Data analytics and Technology (LDT) and, High-tech Business and Entrepreneurship (HBE)) are organized around their relationship with technology and are responsible for an adequate group of academic and non-academic staff. Recruitment, hiring, and talent support of staff members, are mainly the responsibility of the departments. Over the past years, new department names have been constructed. The Committee noticed that department names and acronyms are confusing and not very informative from an outsider's perspective. It is a challenging task – and even for many Faculty members impossible – to correctly commemorate the four department names. The department names seem to be constructed from an inward-looking perspective, "everybody needed to feel included". The Committee recommends – from an external perspective – to rename departments with recognizable and

appealing names that have strong connections to the core expertise and scientific traditions represented in the departments. A simple solution would be leaving "technology" out of the names, since that connection provides the common ground already, and technology is becoming more "everyday". The Committee believes that technology is part of BMS's DNA and does not need to be formalized into every single department's name. Departments consist of smaller teaching and research units with a stronger disciplinary profile.



Governance

The Committee recognizes that a period of energetic transformations has resulted in a new organizational structure (combining departments with interdisciplinary themes), focusing on how social sciences and humanities can contribute to responsible and responsive development and societal embedding of technological innovation. The Faculty gradually becomes more organized, although the upcoming years will tell whether and how the new organizational structure will work out in practice. The Committee experienced vitality and energy among staff about the outcomes of the reorganization. The new organizational structures foster intense collaboration. Even though most staff have internalized the new organizational structure (i.e. matrix organization including departments and themes) and approach, researchers expressed they still feel most comfortable and connected to their 'teaching and research sections', that's where most researchers feel they belong.

People and communities

Diversity

During the site visit, the Committee got acquainted with a diverse Faculty in terms of nationality, age, and gender. The Faculty describes their population to be especially diverse in terms of nationality as 37% of the staff members come from abroad: 28% from the European economic region and 8.5% outside the European economic region. Efforts for a better gender balance, supported by the Hypatia program and the UT incentive fund for female mid-career staff, resulted in diversity in terms of gender through increasing numbers of female assistant professors (49% female in 2020) and full professors (39% female in 2020). Despite the focus on diversity in gender, age, and nationality and the fact that the Committee had interesting discussions with staff and management on this issue, there is no explicit policy to increase other types of diversity. The Committee recommends broadening the policies and goals on inclusion, other than gender.

Human Resources Policy

The Faculty renewed the Career Committee and new templates and narratives have been developed based on qualitative indicators ("fitting in the department", impact-based work, teaching, and supervision). Given the fact that the relationship between research, technology and society is changing and more emphasis is given to impact, the Committee recommends that more transparency is provided concerning the way researchers and staff members will be assessed. During the interviews, it became clear that expectations and promotion criteria are unclear to early- and mid-career researchers. As promotion is not dependent on vacant positions, the Committee foresees a potential threat of social dependency, which opens the door for favoritism and potentially promotes inequality. The Committee wonders if, and to what extent, PhD candidates and mid-career researchers are properly informed about their career prospects and if they hold realistic expectations of finding a job at the UT. Therefore, it recommends increasing clarity and transparency in criteria, selection procedures, and career perspectives. It is also recommended to provide more early- and mid-career scientists with mentoring and career-building opportunities, including "How to build a unique profile and identity", what are the various career opportunities from a more local to international perspective, and what activities (e.g. traveling, networking, co-authoring, teaching) could support a unique profile. To prevent favoritism, mentors should not have direct working relationships with their mentees.

PhD policy and training

From 2015-2020, 280 PhD candidates completed their thesis at the Faculty. Interviews with a sample of PhD candidates revealed that they are in general satisfied with their program and feel well prepared to conduct research in an interdisciplinary and interactive environment. PhD candidates expressed sufficient opportunities and allocated time for external activities (e.g. presenting at workshops and conferences and research visits). Some PhD candidates felt it was their individual responsibility to build

their network, they wondered if the Faculty could potentially support them through, for example, outreach programs.

The number of external or externally financed PhDs is considered high with around 55%. The Committee was pleased to learn about the interesting projects external PhDs undertake and the Committee understands they are highly valued by the Faculty in terms of outreach. However, the levels of termination among external PhDs are a reason for concern. The Committee recommends to invest in integrating external PhDs in the communities. Strengthening the relationship between internal and external PhDs could be a helpful first step. Strengthening this relationship could also create valuable connections with industry for internal PhD candidates. Research themes already serve as a platform for early- and mid-career researchers to connect and collaborate in interdisciplinary teams. Better integration of external PhD candidates in research themes and departments could also promote integration in the Faculty. Departments perceive PhD candidates as fully established members of the departments and try to involve them in future decision-making and support them in their personal development (e.g. conferences, going abroad, research visits, teaching qualifications).

Twente Graduate School

The Twente Graduate School (TGS) is responsible for the PhD process and training and educating PhD candidates at the University of Twente. The Committee is pleased to learn that the TGS reached out to PhD candidates early in the COVID crisis, and invested in a support system. This resulted in, among other things, extended contracts for PhD candidates. As the TGS facilitates courses university-wide, courses are not specialized for specific disciplines. In terms of interdisciplinary PhD projects, the Faculty has an exceptional standing in the UT. Therefore, it might be particularly important for the PhD candidates of the Faculty to receive training how to handle interdisciplinarity, not only scholarly, but also in terms of outreach and science communication. The number of external or externally financed PhD candidates is also higher compared to other UT faculties. At the moment, the way courses are organized at the TGS (i.e. lack of flexibility) results in difficulties integrating courses with their work. Given the innovative nature of many of the projects, specific support might be needed to handle challenges that come with such projects. Because of the vast amount of BMS PhD candidates (of which many are external), the wish of BMS PhD candidates for more tailored programs, and the nature of the Faculty, the Committee advises to have their own BMS Graduate School.

Given the importance of relevance and impact to the BMS mission, the Committee recommends (until the Faculty might realize their own Graduate School) that the TGS collaborates closely with the Faculty to track and report on the placement and career success of PhD graduates. The Faculty has no central database in which they keep track of labour market outcomes after graduation. Some information is available at departmental or section level, through informal contact between promotors and PhD candidates. The Faculty estimates one-third to stay in academia, one-third in governmental/public sector, and one-third to work in the private sector after graduation. The Committee recommends

exploring opportunities to gather insights in career prospects of PhD alumni and to connect these insights with the societal impact they hope to make. Tracking PhD careers creates valuable information for PhD candidates but it is also an important part of the impact on society. The Committee also believes that, if societal impact is the number one priority of the Faculty, knowledge translation, science communication, and career diversification opportunities should be part of PhD training for both internal and external PhDs.

Academic Culture

The Committee appreciates the transparent and honest character of the critical self-evaluation and the open discussions during the site visit. This indicates an engaged and reflective quality culture with a significant drive for improvements. One recognizes the good effort in establishing a multidisciplinary research culture that fosters openness, collaboration, social engagement, and societal impact. Because of this openness and eagerness to share and involve colleagues, there seems to be a limited sense of competition between early- and mid-career scientists, particularly a limited sense of competition vis a vis the outside (non-UT) world.

The Faculty has guidelines, initiatives and courses that show that (research) integrity is considered seriously. MindLab, a theatre performance about life in academia, is one of the initiatives feeding into the UT's focus on academic, social and corporate integrity, joined in UT's House of integrity. MindLab was initiated by the Faculty to foster a healthy academic climate through reflections and conversations. It is perceived by PhD candidates as a helpful exercise to speak up when issues are pushed under the radar. This can enhance creating an open culture to discuss difficult experiences. The committee has positively noted that the UT's House of integrity, an integral integrity and policy framework established in 2020, includes more aspects and initiatives (e.g. scientific integrity education for all PhD candidates, mandatory ethical assessments for all BMS research, a data management policy, registration of staff's ancillary activities, and training programmes).

4. RESEARCH QUALITY

Recognition and funding

The academic profile of the Faculty focuses on the relationship between social sciences and technology. The reputation of the Faculty has led to recognition via government assignments (e.g. national evaluation of the CoronaMelder app) and the award of several prestigious grants such as the NWO-gravitation grant (in 2019) and three European Commission Horizon 2020 grants. Within the awarded grants, BMS researchers take leadership roles, e.g., the leading role of BMS researchers in de €18M grant for study of the ethics of disruptive technologies. When looking at the total set of BMS publications, a modest but steady increase in the overall Field-Weighted Citation Impact (FWCI) was identified since 2015.

The Faculty is financed through three sources of funding: 1) the main source of funding (about 75%) is direct funding for teaching and research from the Ministry of Education, including PhD tutorship grants; 2) the second source of funding are research grants from national funding agencies; 3) the third source of funding is contract research with (inter)national societal partners. From external funding, the largest part concerns contract research (about 20%), including ERC grants. The total funding for both research and teaching remained rather stable in the period under review. Management explained that the Faculty does not necessarily want to grow in staff and research funding, as they explain in the interviews: "sometimes it's better to be smaller, but to be very good at what you do." The Faculty aims at being selective to ensure that projects fit the Faculty's unique profile. Grant application structures and support are mainly focused on small-scale regional funds, while the Faculty is fairly successful in acquiring VENI, VIDI and even a VICI grant. Also, the Faculty is involved in a prestigious NWO gravitation project (Ethics of disruptive technologies). Yet, the Committee encourages raising their ambition and applying for collaborative interdisciplinary European grants (e.g. Horizon Europe). The unique BMS approach to interdisciplinary and impact-driven research offers opportunities for collaborative and impact-driven grants on the international level. It recommends adding senior-level staff with grant acquisition experience to the Research Support unit to support these ambitions. Even though it was clear that support services are available to BMS researchers, the Committee wondered which funding opportunities were targeted or prioritized. Researchers are also not obliged to inform the support office about grant writing activities. The Committee advises to match the research support services to the research strategy goals.

Teaching responsibilities

The vast majority of the scientific staff combines research, education, and to a lesser extent managerial responsibilities. Due to the way financial data is organized within the Faculty, it is at this point in time impossible to present exact data concerning the research component. The Faculty has determined the minimum amount of research time at 20%. The research time of scientific staff is established at an average of 45% of the total time. As a rule, acquisition of substantial grants results in a reduction of teaching obligations, while examples were mentioned of situations where teaching obligations had been reduced pro-actively, to allow staff members to prepare ambitious grant applications.

Per department, the Committee received an overview of the time spent on teaching, research, management, and organization. The Committee was surprised to see substantial differences in teaching loads between the departments. When discussing these differences with departments, there seemed to be discrepancies on how to measure the various activities. The Committee recommends moving towards more transparency and an unambiguous system in every department to measure teaching load and time spent on different activities (e.g. How is teaching in external master programmes and the supervision of PhD candidates registered?). An integrated capacity model is currently being developed, with the application completed for the BMS educational programmes (based on a transparent and established set

of standards) but not yet for all other activities. To do so, constructing indicators that are comparable between departments is essential.

During the site visit, management described the Faculty as “a teaching-faculty”. The Faculty aims to divide these activities according to individual competences and performances. Though, the Committee regards the teaching load for some of the researchers as being substantial. In the conversations, some researchers express they teach and conduct research activities in “the remaining time, if there is any”, and they experience the teaching load as “heavy”. Faculty management needs to take into account that attracting new teaching staff only will decrease teaching load in the long term, as “it takes time to teach new staff how to teach”. The Committee worries that teaching seems to get priority over doing research. The Committee recommends emphasising research in terms of allocated time. It also encourages the Faculty to distribute the teaching load better and more balanced over the staff. Lowering the teaching load to write a research proposal is a successful opportunity for assistant professors and junior scholars to increase their research activities.

Integrating research & education

The Faculty makes a good effort in integrating research themes in educational programs, especially the Master’s programs. This would not only align the Master’s program with the research topics of the departments but would also focus on “skills to connect with society”. More explicit research profiles in the departments would make it easier to connect to educational content. The Committee appreciates and encourages the effort, and recommends the Faculty to use the unique profile of BMS as a starting point for both teaching and research, allowing to use teaching activities as an explorative laboratory and involving students in research.

Quality metrics per department

The Committee recognizes the value of both academic and applied contributions. However, the Committee found that the Faculty’s narrative argument made it difficult to credibly assess the research quality of the work. In line with the assessment criteria of the SEP protocol, traditional measures of academic impact were not included. The evidence of scientific achievements and evidence on applied impact focused more on explaining how the research was applied, as opposed to detailing the type and level of impact. The Committee recognizes that this change in assessment criteria (i.e., the shift from traditional metrics to a narrative-based approach) is not unique to the Faculty, but believes that BMS is well-positioned to substantiate narratives with a selection of quantitative indicators relevant for the narratives involved. For instance, on the basis of the narratives alone the international academic impact and excellence of the Faculty is difficult to determine. The Committee is sensitive to the risk of indicator fetishism and perverse incentives, but at the same time, narratives which only provide anecdotal evidence lack context and benchmarking. Therefore, the Committees advice would be to use the expertise of the Faculty to opt for a balanced approach, providing some relevant data to assess whether the efforts of the Faculty live up to expectations. For instance, data concerning the impact of

collaborations, both within the Faculty and with society. Without a careful selection of metrics and benchmarks in combination with narratives, it is difficult to assess the national and international prominence of the Faculty.

Benchmarking

Given the distinctive and valuable mission of the Faculty, Appendix M in the self-evaluation report that compares the Faculty with the Georgia Institute of Technology, Oulu University, Tampere University and others, is a very useful starting point for assessing quality. The Committee encourages the Faculty to more actively benchmark itself in relation to such faculties, and to provide more information and a rationale to justify the relative scoring. The SEP protocol advises universities to substantiate narratives with case studies and indicators concerning the results achieved during the past 6 years (e.g. grant applications which reflect the profile and ambition of the Faculty, contribution to Open Science). While boosting indicators should not become a goal itself, carefully selected indicators can make narratives convincing, assessable and concrete.

Towards new quality metrics

At the Faculty, research quality and societal relevance are closely related. This is an important aspect of the BMS profile. Rather than focussing on basic research, the connection with societal impact is part of the research methodology, and rather than focussing on applied research, these connections are made in an innovative manner, so that societal interaction has an impact on research (e.g. citizen ethics, etc.). this requires innovative indicators to assess the added value of this interaction. The research assessment landscape in the Netherlands is shifting from quantitative indicators towards a qualitative approach focusing on quality, team efforts, education, impact, and leadership. At the Faculty, there is also a movement towards a qualitative narrative of measuring quality. In the Faculty's aims and strategy, this is framed as good research solves real-life problems and creates 'tangible' outcomes for society – a 'design and making' tradition. There is a common urge to move away from traditional metrics and publications, in order to, what one of the researchers interviewed called "make the change happen".

Though, the Faculty did not create a framework or metrics yet on how to measure impact and therefore measures the quality of their research. The management team, departments, and research themes are aware that indicators need to be developed to measure which research projects create impact or make society "better". In Mental Health care projects, for example, when guidelines for therapists are developed, indicators are more straightforward: Is the guideline implemented? How is it used? What are the experiences with the guidelines? Another measure could be the number of projects involving (citizen) stakeholders, agenda-setting, participation in public debates or media attention. As of now, there is no system at the Faculty to collect this type of information or to collect information on big break-throughs.

Note of the committee on the impact of the SEP protocol

The Committee emphasizes that in the globalizing world of scientific research and higher education, a context-sensitive use of indicators as well as efforts to publish in leading journals are still crucial. Although the national trend in the Netherlands is now to ignore metrics completely, the committee notices that quality and impact are difficult to assess on the basis of narratives alone. A context-sensitive combination of narrative and qualitative elements is advisable to make narratives convincing. As the current anti-metrics trend may be temporary, ignoring all recognised quantitative measures has the potential threat of weakening the position both of individuals researchers and the Faculty as a whole in the global landscape and could negatively affect early- and mid-career academic labour market prospects. Therefore, the Committee recommends that the Faculty uses new (more advanced and context-sensitive) quality measures, it adds some quantitative evidence to substantiate their narratives.

5. SOCIETAL RELEVANCE

Research with impact

The exceptional feature of the Faculty's research quality is its focus on societal relevance in terms of impact and public engagement. The Committee came across many different initiatives and projects of significant impact in a social, cultural and educational context. For example, the Faculty is one of the drivers behind Challenge-Based Learning (CBL). The Faculty plays a role in the development, supporting the implementation and monitoring the effectiveness of the pedagogical approach. The Faculty, in collaboration with UT-wide initiatives like DesignLab, facilitates Citizen Science in many different research topics. Co-creation with the public and external stakeholders is in the DNA of the Faculty. The focus on societal impact clearly motivates and attracts talented researchers and results in meaningful research projects. Novel approaches, such as citizen ethics, are relevant for addressing multiple challenges in technological innovation also for other knowledge institutes across the globe.

PhD alumni

More and more PhD candidates at the Faculty work in interdisciplinary teams on interdisciplinary-oriented research projects incorporating technical elements. An increasing number of theses includes a relationship with technology, from 35% in 2015 towards 65% in 2019. Overall, over 80% of the PhD theses have been conducted in cooperation with societal partners. The Committee believes that through the societally-driven projects and PhD training, the Faculty has a strong societal impact. Not only because of the research done during their PhD-projects, but also because of the positions PhDs hold after defending their theses.

Open Science

Societal relevance is related to the access that society has to the knowledge produced by the Faculty. There are three dimensions of Open Science: 1) availability of research output, 2) reuse of data, and 3)

involvement of societal stakeholders. There is significant attention and great outcomes to the first aspect (availability of research output) in open access publications. In the period under review, there is an increase of Open Access publications, from about 28% in 2015 to 67% in 2020. Initiatives and effort are also noticed in the other two dimensions of Open Science. Open Science was actively brought to researchers' attention, the Faculty installed two information specialists and a data steward as part of BMS research support and many BMS researchers have joined the Open Science Community Twente. Societal stakeholders are actively involved. Citizen Science plays an important role in many projects, often aided by the DesignLab infrastructure. The Committee appreciated the actions taken but recommends further outlining Open Access, for example by organizing courses for PhD candidates on how to reach the general public and through open data. BMS researchers could also benefit from the 4TU Centre for Ethics & Technology offering training and data infrastructures. The Committee observed a lack of structural attention for preregistration of studies and storing data in public repositories. Open Science could be improved by preregistration of studies and storing data in public repositories such as the Open Science Framework (OSF).

BMS Lab

In the period under review, the Faculty realized an increase in research support facilities, including the BMS Lab. There is a steady increase of projects conducted with the BMS Lab, particularly with the larger, cross-disciplinary projects and projects with external stakeholders (companies, policy makers, schools, etc.). During the site visit, the Committee visited the lab facilities, and to see a demonstration of some of the equipment. BMS Lab also included the ExperiVan, a mobile lab that enables field research with participants from the street and difficult to access participant groups. The Committee is pleased that both students and staff are encouraged to use the Lab facilities. The Lab makes it possible to develop prototypes without external funding and is, therefore, a catalyst for innovative research. The Committee applauds the role of the BMS Lab, as an experimental facility demonstrating how the unique interaction between social sciences and technology comes to life, e.g. bringing together cutting–edge technologies with innovative design and experiential research, combining an element of playfulness with solid data analysis.

6. VIABILITY

Unique profile

For many years, the Faculty had a unique profile focusing on the relationship between social sciences and technology. As of now, other universities and social sciences departments turn towards tech-orientation and an entrepreneurial mindset too. The Faculty rightly indicated this as a potential threat for the future. The competition is fierce as more broad universities are using technology as an answer to societal challenges. The Committee wonders what the Faculty's unique profile will be, compared to those

universities where interdisciplinarity is also becoming more common practice. “How does the Faculty plan to stay ahead?”

The Committee believes that the Faculty has the potential to become a leader in new methodological theories and practices regarding qualitative metrics on measuring societal impact and in conducting socially inclusive research (e.g. Citizen Sciences). It believes they can benefit from a stronger position of who they are, how they work, and what they are good at. It is recommended that the Faculty more carefully consider their academic profile, what unique perspectives, expertise, and excellence they possess, and how they better distinguish themselves. The Faculty should be careful not to move towards a profile of an applied sciences university. Rather, it should foster its profile of embedding societal interaction and mutual learning as embedded components of academic research. When setting ambitions and goals, an outward-looking perspective on the Faculty’s profile is vital. The Committee also recommends raising their ambition in terms of their international orientation and their collaboration with international top universities, and private and public companies outside the region. Strategic investments to organize themselves in bigger international and interuniversity collaboration structures provides opportunities to create mass, and tapping into niches (e.g. Citizen Sciences), increases opportunities to attract bigger grants.

Organizational consolidation

The Faculty has clearly gone through a major transitioning phase. The Committee recommends giving departments and research themes the time to get used to new structures and to strengthen the connectedness and profiles of the departments and themes. The Committee finds it vital that after a period of transformation, a period of consolidation takes place. The Faculty needs to foster and strengthen the accomplishments achieved and further develop their unique profile and approach. The Faculty needs to support departments and research themes with time and support (budgets) to do so.

The Committee identified a number of potential hindrances to complete internalization and implementation of the new structures. It is convinced that present leadership of departments and research themes are mature enough to receive more responsibilities. At the moment, there is one day a week available for chairing one of the research themes. Annually, an amount of €500k is reserved for themes jointly, to support teams of researchers with extra time for grant writing purposes. Another €300k annually is contributed to create ties between acquired grants and the wider research programs during their term and upon completion. Although funds have been increased over the last years, the Committee feels that these amounts are insufficient to strongly embed the research themes in the organization. As the Faculties’ research staff totals 321 FTE, it recommends to provide the themes with more autonomy, allocated funds, allocated time, and decisive power chairing the themes. This could also provide research themes with the opportunity to attract staff, specifically proficient in topics which reach across departments and disciplines.

Management team

The current dean will retire latest 1 April 2022. The Faculty is confident that the new directions set so far provide the new dean with a solid base and excellent starting point. Though with half of the management team leaving, part of its institutional memory will leave the Faculty. The focus of the new Dean should be on implementing and consolidating the concept and organizational structure that have been developed rather than radical innovation, in other words make the shift for drastic (top-down) innovation of the last years towards stabilization, offering more responsibilities to department heads and team leads and creating space for bottom-up involvement.

7. OVERALL CONCLUSIONS AND RECOMMENDATIONS

The Committee was impressed by the entrepreneurial, interactive and interdisciplinary workspace established and further concretized during the period of review. At the same time, it came across issues which have and will be concerning the Faculty looking forward. The Committee therefore invites the Faculty to consider the following recommendations:

Finding: During the past few years, many changes were implemented, more or less top-down, to foster internal collaboration.

Recommendation: During the upcoming years, the focus should shift from transforming to implementing, consolidating, clarifying and communicating the Faculty's strategy and supporting practices, processes and assessment. Such change needs time, and it is important to broaden the level of support and internalization. At first glance, the structure still raises some confusion both internally and externally, partially due to lack of clarity of department names and acronyms.

Finding: The Faculty is internationally leading in terms of developing and validating methodologies for making technological innovation more inclusive, participatory, transdisciplinary and responsible, combining expertise from multiple areas in science, technology, social sciences, and humanities.

Recommendation (also building on the mid-term review): This should be presented more explicitly as the Faculty's academic profile. What could be strengthened is that BMS is not about applied research, but about changing the way in which academic research and technological development are being conducted, making science more open to society. Besides collaboration with regional stakeholders, there could be more ambition and focus on international opportunities, steering away from an "applied sciences" profile towards an internationally leading academic position.

Finding: In terms of mission and profile, the Faculty puts significant emphasis on impact, interdisciplinarity and participatory research.

Recommendation: Acknowledge that there are internal challenges involved in this. How to assess the quality and impact of the Faculty's activities and achievements? To the extent that the Faculty moves

away from traditional indicators, a more explicit view on developing alternative indicators, specifically poised to assessing the aspired combination of quality and impact, should be considered. One important aspect here are careers of alumni in various domains. Keeping track of the vicissitudes of alumni and their expert contributions to society, while using their strategic positions and knowledge to foster participatory research, could contribute to demonstrating the quality and impact of the Faculty.
In addition, in terms of talent management: how are early-stage researchers (e.g. PhD researchers and post-docs) and mid-career staff members (e.g. assistant professors) being assessed? What are their prospects for tenure or promotion? Some tensions are noticed here in the sense that BMS leadership may underestimate the uncertainties experienced by early-stage researchers and junior staff members.

Finding: The Faculty sometimes presents itself primarily as a teaching Faculty.

Recommendation: The Committee invites the Faculty to be more ambitious in combining teaching with academic research as a priority, which includes fundamental (i.e. not necessarily applied) research. The teaching load is substantial, and the division of teaching loads across departments and units is not always transparent. Strengthen academic research, and combine it with teaching more explicitly.

8. APPENDICES

Appendix 1: Programme site visit

Sunday 31 October 2021

Time	Location	Activity
17.30	Upark Hotel lobby	Welcome of Committee by the vice dean of research
18.30 - 21.00	Upark Hotel restaurant a la carte	Committee preliminary discussion and private Working diner

Monday 1 November 2021

Time	Location	Activity
08.45	Upark Hotel lobby	Meeting at the Hotel lobby to walk to the boardroom with Lorette Bosch (5 min walk)
9.00 – 9.15	Upark Hotel boardroom	Preparations Committee private
9.15 – 10.00	Upark Hotel boardroom	Committee interview with management team
10.00 – 10.45	Upark Hotel boardroom	Committee interview with research theme chairs
10.45 – 11.15	UparkHotel boardroom	BREAK Committee private
11.15 – 12.00	UparkHotel boardroom	Committee interview with HIB department
12.00 – 13.00	Upark Hotel restaurant	LUNCH Committee private
13.00 – 13.45	UparkHotel boardroom	Committee interview with PhD's
13.45 – 14.00	Walk from Uparkt to Cubicus	Committee walks to BMS lab Cubicus (10 min walk) with Lorette Bosch
14.00 – 14.45	Cubicus BMS lab	BMS Lab Tour Committee with BMS lab team
14.45 – 15.15	Walk from Cubicus to Upark	Break and Committee walks with Lorette Bosch from Cubicus to Upark (10 min walk)
15.15 – 16.00	UparkHotel boardroom	Committee interview with HBE department
16.00 – 16.30	UparkHotel boardroom	Committee interview with graduate school

16.30 – 17.30	UparkHotel boardroom	Committee private discussing and writing preliminary judgments
17.30 – 18.30	Upark Hotel	Committee private Refreshing at hotel
18.30 – 21.00	Upark Hotel	Committee private working diner

Tuesday 2 November 2021

Time	Location	Activity
08.45	Upark Hotel lobby	Meeting at the Hotel lobby
9.00 – 9.15	Horst Toren 1300	Preparations Committee private
9.15 – 10.00	Horst Toren 1300	Committee interview with TPS department
10.00 – 10.30	Horst Toren 1300	Committee interview with talents
10.30 – 11.00	Horst Toren 1300	BREAK Committee private
11.00 – 11.45	Horst Toren 1300	Committee interview with LDT department
11.45 – 12.15	Horst Toren 1300	Committee interview with research support
12.15 – 13.15	Horst Toren 1300	LUNCH Committee private
13.15 – 14.15	Horst Toren 1300	Committee interview with WTMC
14.15 – 15.15	Horst Toren 1300	Committee interview with Partners from practice
15.15 – 15.45	Horst Toren 1300	BREAK Committee private
15.45 – 16.15	Horst Toren 1300	Chair Faculty council
16.15 – 16.45	Horst Toren 1300	Committee interview with Future of BMS
16.45 – 17.30	Horst Toren 1300	Committee private discussing and writing preliminary judgments
17.30 – 18.30	Upark Hotel	Committee private Refreshing at hotel
18.30 – 21.00	Restaurant Upark Hotel	Committee private working diner

Wednesday 3 November 2021

Time	Location	Activity
9.15	Upark Hotel lobby	Committee meets at the lobby of Upark Hotel
9.30 – 10.00	The Business Room Cubicus	Committee private Finalising conclusions
10.00 – 10.30	The Business Room Cubicus	Committee concluding meeting with Faculty board
10.30 – 12.00	The Business Room Cubicus	Committee private Finalising conclusions
12.00 – 12.30	The Gallery (Grand Café)	LUNCH Committee
12.30 – 13.00	The Gallery (Grand Café)	Oral presentation by Committee with everyone involved
13.00 – 13.30	The Gallery (Grand Café)	Short reaction Rector

Appendix 2: Documents

BMS self-evalution report

Digitally accessible documents

- Shaping 2030 – Mission, vision and strategy – University of Twente
- BMS Research Strategy, Vision and MBS under STEαM & Picking up STEαM
- BMS midterm evaluation documentation
- Annual reports – University of Twente
- BMS Departments and Institutes
- BMS Research Themes
- BMS Ethics Committee – domain HSS
- BMS Lab
- BMS Research Support
- BMS Datalab
- BDSI – Behavioural Data Science Incubator
- BMS PhD portal
- BMS Signature PhD Projects
- BMS COVID-19 fund projects
- BMS Talent Development (TD) program
- BMS criteria & self-assessment for moving towards Associate Professorship
- TEFCE – Community Engagement At The University of Twente Report on Piloting The Tefce Toolbox
- Designlab – University of Twente

Documents accessible during the site visit

- Presentations by BMS departments
- WTMC Research School presentation
- Various examples of research theme related collaborative grants
- Number of PhD's specified per category per research section
- FTE's per research section (incl. vacancies)
- FTE's specified by function per department (incl. vacancies)
- Time spent on Teaching, Research, Management & Organisation

Appendix 3: Curriculum Vitae of the Committee members

Prof. dr. Hub Zwart (chair) is Dean of the Erasmus School of Philosophy at the Erasmus University Rotterdam. Hub Zwart studied philosophy (cum laude) and psychology (cum laude) at Radboud University Nijmegen, worked as research associate at the Centre for Bioethics in Maastricht (1988-1992) and defended his thesis in 1993 (cum laude). He was appointed as research director of the Centre for Ethics (Radboud University Nijmegen, 1992-2000) and in 2000 became full Professor / Chair of the Department of Philosophy at the *Faculty of Science*. In 2018, he became Dean of ESPhil. He published 15 books (3 in English), >100 academic papers (single or first author). He presented >150 international lectures, most of them invited, was visiting scholar at the Hastings Centre (NY) and visiting professor at St. John's (Canada), Nagasaki (Japan), Seoul (Korea) and Ghent (Belgium). 23 Ph.D. research projects supervised by him have resulted in a thesis. In 2004 he became director of the *Centre for Society and Genomics* (CSG) funded by the *Netherlands Genomics Initiative* (NGI) and established at his department. He is editor-in-chief of the *Library for Ethics and Applied Philosophy* (SPRINGR, LOET) and of the journal *Life Sciences, Society and Policy* (Springer). The focus of his research is on philosophical and ethical issues in the emerging life sciences with a focus on genomics and post-genomics fields such synthetic biology, nanomedicine and brain research, but he is also interested in research integrity and academic authorship. Special attention is given to the use of genres of the imagination (novels, plays, poetry) in research and education.

Prof. dr. Pim Assendelft is professor in prevention in healthcare. Previously he was professor in general practice and head of the department of Primary and Community Care of the Radboud University Medical Center. His research focuses on prevention (connection between public health and primary care), organization of care and outcomes research (trials in complex interventions, research synthesis). Previously, he was director of the Dutch Cochrane Centre, head of guideline development of the Dutch College of General Practitioners and he was a professor in Leiden. Within the Netherlands he was member of several grant Committees of Netherlands Organization for Health Research and Development (ZonMw). CommitteeIn his previous position in Leiden he was chair of the university research profile Health, Prevention and the Human life cycle and chair of the research profile Innovation in health strategy and quality of care of the Leiden University Medical Center. In Nijmegen he is chair of the interfacultary collaboration project on prevention research. He is member of the board of TOPFIT, a regional collaboration on health promotion.

Prof. dr. Sanna Järvelä is professor of learning and educational technology and head of the Learning and Educational Technology Research Unit (LET) at the University of Oulu, Finland. Järvelä and her research group is internationally well known from theoretical advancement of social aspects self-regulated learning (SSRL). Her interdisciplinary research work has strong contribution to the methodological development of process oriented research methods in the field of learning and collaboration and

recently applying of multimodal methods in self-regulated learning research. She is the co-chief editor of International Journal of Computer Supported Collaborative Learning (iCSCL) and invited member of the expert group of the OECD's PISA 2025 'Learning in the Digital World'. Järvelä has published more that 200 peer-reviewed journal articles and her google scholar h-index is 59.

Dr. Max Birk is assistant professor at the Department of Industrial Design at Eindhoven University of Technology. With an interdisciplinary background, Max draws from psychology, interaction design, data science, and game design, to investigate the effects of game-based design strategies on mental processes and design-induced behaviour change. His research contributes to games user research, digital health, and motivational interface design. He is interested in projects contributing to a healthy society, improving entertainment experiences (e.g., eSports), and developing tools and methods for researching interactive experiences. Max' research has been published more than 35 times in international top HCI venues, and he has contributed to research on player experience, individual differences in play, task adherence, crowdsourcing, and on the intersection between video games and mental health. In 2020, he has been awarded an NWO VENI titled "Game-based Digital Biomarkers for Acute and Chronic Stress". Max is member of the Eindhoven Young Academy of Engineers, and member of the steering Committee of CHI PLAY

Prof. dr. Marieke Liem is professor of Security and Interventions at Leiden University, where she and her team coordinate the European Homicide Monitor. A graduate of University of Cambridge in the U.K., Marieke Liem completed her PhD in Forensic Psychology from Utrecht University, the Netherlands. Before joining the Institute of Security and Global Affairs, she was a Marie Curie fellow at Harvard University. Her research interests involve interpersonal violence, with specific research projects on domestic homicide (including intimate partner homicide), homicide by the mentally ill, homicide followed by suicide, the effects of confinement on violent offenders, and international comparative research on lethal violence.

Prof. dr. Ian McCarthy is professor of Technology and Operations Management at Beedie School of Business, Simon Fraser University, Canada. Ian came to SFU from the University of Warwick, England where he was a Reader and Head of the Organizational Systems Strategy Unit. He worked for several years as a manufacturing engineer before earning his PhD in operations strategy from the University of Sheffield. Ian's research and teaching focus on operations management, change and innovation management, and social media. His research has been published in many top journals, including: Academy of Management Review, Industry and Corporate Change, California Management Review, Technovation, Journal of Product Innovation Management, Journal of Engineering and Technology Management, R&D Management, Business Horizons and OMEGA. My research has featured in other publication media, including The Economist Magazine, the Huffington Post, Business Insider and The Globe and Mail.

Denise Petzold MSc is PhD candidate at the Philosophy Department of the Faculty of Arts and Social Sciences at Maastricht University. Her PhD project is positioned in the 'Maastricht Centre for the Innovation of Classical Music' (MCICM) and supervised by Prof. dr. Peter Peters and Prof. dr. Karin Bijsterveld. In her research, she addresses the tension between innovating and conserving classical music. She particularly wants to understand how the symphonic canon and repertoire have been maintained in the last decades through different musical artefacts and technologies in practice, and how they might be subsequently "opened up". The study's theoretical background is inspired by Science and Technology Studies as well as contemporary art conservation theory (Museum Studies). Denise also teaches several courses at FASoS in the Bachelor Arts & Culture.

Appendix 4: Netherlands Graduate Research School of Science, Technology and Modern Culture (WTMC)

During the session devoted to The Netherlands Graduate School of Science, Technology and Modern Culture (WTMC), the Academic Director of WTMC mentioned that he expected our committee to assess WTMC as such. We felt insufficiently prepared to do so in a formal sense, on the basis of the terms of reference and the documentation provided, but since the connection between WTMC and BMS has a long history, we are willing to share our impressions.

WTMC is a collective effort of Dutch scholars studying aspects of the development of science, technology, and modern culture. Science and technology form the core of the work, but there are also strong inputs from philosophy, cultural studies, and innovation studies. WTMC coordinates and stimulates research in the field of science and technology studies, innovation studies, and cultural analysis of science and technology. It also provides advanced training for PhD candidates. The collaborative training for graduate students started in 1987 and was officially accredited as an interuniversity graduate research school by the Royal Netherlands Academy of Arts and Sciences (KNAW) in 1995. Since 2018, the Faculty is the hosting Faculty.

The cross-disciplinary focus of WTMC fits well with the ambition of the Faculty to form connections between social sciences and technology creating positive societal impact. Given WTMC's historical ties with several research groups and the national and international prominence and reputation of its training programs, the Committee believes that stronger collaboration of WTMC with the Faculty could be beneficial to both. Both WTMC and the Faculty seem to face similar challenges and opportunities in the realm of interdisciplinarity, societal engagement and the crucial role of Social Sciences and Humanities (SSH) fields in responsible and responsive technological innovation, so that there is considerable overlap in profile, history and identity, although this applies more to some BMS groups than to others.

The Committee recommends both WTMC and the Faculty explore ways of closer collaboration. Out of the 68 researchers (up till 2020), only 6 researchers are from the Faculty (UT-STePS). Also, the proportion of BMS students enrolled in the WTMC program is low. The PhD courses offered at WTMC potentially fit the needs and wishes of BMS PhD candidates very well. There also lie opportunities for external PhD candidates who experience difficulties following courses at the UT Graduate School.

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