Athens Journal of Technology & Engineering 2022, 9: 1-15
https://doi.org/10.30958/ajte.X-Y-Z

Management Strategies for Engineering Faculties under Consideration of Current Developments in the Higher Education Sector

By Ulrike Quapp[*] & Klaus Holschemacher[±]

Faculty management organizes the effective operation of a faculty and is responsible for all occurring problems. As the work will be done mainly behind the scenes, faculty management's influence on performance and development of a faculty often is underestimated. The challenge for faculty managers lies in balancing the conflict between governing and supporting faculty members while being in an uncomfortable sandwich position – between the central university administration and the faculty members. The big ambition of administration should be to appear "invisible" for university staff, to work efficiently and to avoid a waste of faculty resources. Nevertheless, administration has a strong positon in a higher education institution. Its decisions about resources and facilities are able to influence teaching and research to advantage or disadvantage of a faculty. The paper explains typical tasks of faculty management and shows in which way it influences engineering teaching and research by using examples from the daily working practice. Additionally, author gives advices how to improve faculty administration at engineering faculties. Efficient faculty management can contribute to teaching and research immensely, and, as a result, decide about success or failure of faculty performance.

Keywords: *faculty management, administration, engineering education and research*

Introduction

Elementary for the success of a higher education institution is good management. But, concepts of good management and how to achieve it differ. These differences might arise from variations in culture and traditions, historic experiences or from levels of development, to name just a few reasons (Fedrowitz et al. 2011).

Since the invention of New Public Management (NPM) at German Universities around 20 years ago, management methods and instruments are used to optimize and to measure universities' academic and financial outcome. Behind the idea of NPM stands a comprehensive reform concept for the modernization of public administration in order to manage it in a similar way like enterprises (Knopp 2012).

[*]Manager, Faculty of Civil Engineering, Leipzig University of Applied Sciences (HTWK), Germany.
[±]Professor & Chair, Structural Concrete Institute, Faculty of Civil Engineering, Leipzig University of Applied Sciences (HTWK), Germany.

The objective is to increase efficiency and effectiveness in public service (see also Bleiklie 2018). The success of NPM methods may be controlled by target agreements between the granting public authority and the financed universities. Targets often include the quantity of enrolled students, external funding received, number of outgoing or incoming foreign students, gender equality, dropout rates and cooperation with enterprises. If universities do not sign the target agreements, they risk to receive much less money from the state and to lose staff (Quapp and Holschemacher 2019). As a consequence, the central university management concludes target agreements with faculties. These agreements, normally, form the basis for universities' internal resource allocation. The better the faculties perform the more resources they will receive from the university administration.

This adjustment in public administration management over the last years is the reason why qualified management is of high importance for faculties. The paper gives an overview about basic methods in faculty management under consideration of relevant literature. Furthermore, the authors focus on faculty management at engineering faculties followed by recommendations for improving management quality. The paper will close with conclusions.

Literature Review

There is a huge amount of literature how to manage an enterprise or how to lead teams in economy and the open market. However, managing structural units or leading a team at higher education institutions is a completely different issue. Some literature exists about how to manage universities or faculties (see for example, Hagerer 2020, McGaffery 2019, Scholz and Stein 2014) and NPM (e.g., Bleiklie 2018, Broucker and De Wit 2015, Wan et al. 2021), but only less information about the specific management of the several faculties (see as an example, Mahajan et al. 2021). As the authors experienced, there is nearly no literature which deals with managing an engineering faculty or department.

Basics of Faculty Management

Managing structural units or leading a team at higher education institutions significantly differs from managing a company or an enterprise. Reason for that is, for example, the different funding situation. In Germany, and many other parts of the world, the state or the public hand mainly funds higher education institutions. Thus, university staff normally must not be feared of an insolvency of their employer. Nevertheless, there may be exceptions for private financed higher education institutions.

In Germany, university staff works in public service with special legal provisions, e.g., regarding labor law. Normally, professors receive a permanent engagement inclusive their professor title for life. For academic and administrative staff, public higher education institutions offer high employment security, especially

in cases of economic downturn or crisis situations (such as for example in the current COVID-19 pandemic). However, due to the absence of a hire and fire policy, sometimes motivating university staff may be a challenging issue.

Faculty management, not exclusively in Germany, normally consists of dean, vice-deans, deans for study affairs and faculty manager. In Germany, there is the special situation that most of the faculty managers are non-academic staff working in civil service who has open-ended employment contracts with a fixed salary. There are no strategic options, such as performance based funding or other possibilities (e.g., bonus-malus-systems), to reward or penalize their work.

Official authorities, e.g., ministries for higher education, are charged with administrative, functional and/or legal control over universities, depending on the countries' legislation. That means less flexibility for higher education institutions in strategic development and strict requirements resulting from higher education legislation. Furthermore, in Germany, the salary and the number of state financed staff is restricted and universities are unable to adapt their human resources to their current needs.

Due to the above-mentioned specialties of universities compared to companies and enterprises, rules, principles and experiences from the economy and the open market can only be adapted to management of higher education institutions to a very limited extent. Of course, some of the common management principles can be used to run a faculty successfully. Office management tools, such as documentation, deadline management, and absence management for staff are appropriate instruments for facilitating the functioning of a dean's office.

However, the authors experienced a significant difference between organizing engineering faculties and other higher education institution units (e.g., faculties of law) due to partially different targets, performance indicators and culture of the academic disciplines. The specifics of the various subjects may have a significant effect on the management of the respective faculties. Understanding the culture of an academic discipline enables the responsible persons in the faculty's administration to lead the staff, to come to decisions and to find solutions, which will be accepted by all or at least the majority of the academics who work at the structural unit. That is why this paper only focuses on management of engineering faculties.

Faculty Management at Engineering Faculties

Faculty management organizes and supports teaching as well as research. Additionally, it is responsible for self-administration (including strategy, preparation and conduct of meetings of the faculty's councils and boards), finances, human resources, quality management, internationalization and many things more. The following part of the paper will focus only on the most important responsibilities of faculty management.

Organization of Teaching

Teaching is one of the basic tasks of all universities. Depending on the special type of higher education institution and the country in which it is located, professors and lecturers have more or less hours of teaching load. Faculty administration is obliged to organize teaching and examinations at the faculty and to support the scientists as much as possible in the education of students.

The organization of teaching by faculty management starts with accompanying the process of creating study programs. According to German Law, professors are responsible for the courses of degree programs, especially they may define content and method of their courses, such as topic, form (lectures, seminars, practical and non-practical exercises), structure and duration (Fehling 2021). All professors in a degree course have the same fundamental rights of free teaching. However, in the case that all professors would enforce their rights, efficient course planning would not be possible. Thus, to enable conception of study plans, there must be a balance in practicing lecturers' fundamental rights. Faculty management has to provide assistance to put the subject specific decisions in an administrative and legal frame. Because of that, the faculty's Academic Commission is responsible for proposals for new degree programs or changes to existing curricula. The Academic Commission usually includes both professors and students and discusses the subjects in the curriculum, their duration, the amount of working hours and many other details (Quapp and Holschemacher 2019). However, the final decision about a curriculum takes the Faculty Council, which represents all faculty member groups such as professors, scientific and administrative staff members as well as students.

Furthermore, the organization of teaching includes providing teaching facilities such as lecture rooms and technical equipment, to prepare course planning and to create timetables for students and staff. At the end of the study year, faculty administration may support the professors and lecturers in the documentation processes of their lectures.

Human Resources

The true treasure of a higher education institution is its human resources. The faculty's success in teaching and research is significantly dependent on high qualified and motivated staff. Thus, for example, with many specialized research and teaching assistants, professors are able to apply for a higher number of research projects, to gain third party funds for the faculty and to deliver teaching of high quality.

Nevertheless, currently, hiring qualified staff for engineering faculties in Germany is a huge problem. Most of the German Universities are state universities and the salary is lower than in industry. Furthermore, sometimes only temporary employment for third party funded research and/or teaching assistants can be offered. That is why working at higher education institutions is not quite attractive for excellent educated engineers. Additionally, the lack of qualified engineers makes the situation more demanding for universities.

Faculty administration is responsible for organizing all human resources processes at the faculty, starting with developing and posting a position, to organizing the application process and the job interviews. This should always be done in compliance with the legal requirements as well as university's gender and diversity strategy.

Furthermore, the dean's office manages the provision of an appropriate working environment including office space, necessary technical equipment and all useful information. It is responsible for all occurring questions and problems, should give feedback, and motivate the faculty staff. This can be realized by regular staff meetings and interviews.

Successful human resources management at higher education institutions in Germany is challenging because the ways to motivate or to discipline are limited. Furthermore, many different staff groups are working at a university, such as professors, lecturers, scientific and administrative staff who are paid by the state or by external funding. All of them have different educational backgrounds, needs, intentions and problems. To form them to a team is the main challenge of faculty management.

Budget

Key tasks of faculty management are financing and budget of the faculty. Around 72 per cent of German universities (Statistisches Bundesamt 2020) are state institutions and therefore funded by the German Federal States. Once a year, higher education institutions receive their operating budget from the state and distribute a part of it by a fund allocation system over the faculties.

The administration of the faculty may distribute all or a part of its operating budget among the faculty members for their own use. Another system is to allocate the money based on applications of faculty members to the faculty management.

At Faculty of Civil Engineering at HTWK Leipzig, the operating budget is distributed to the professors or institutes by using a two-pillar-model. One part of the budget is distributed non-performance based, e.g., on the basis of the number of professors and state employees. The second part of the budget is distributed performance-based using performance indicators, such as individual teaching load, successful supervised degree theses, acquired third party funds, international activities, publications, conference organizations, memberships in scientific organizations, awards and much more. This system allows rewarding faculty members' activities in various fields of strategic importance.

Quality Management

Faculty management is responsible for quality assurance in teaching and research. Methods can be for example course evaluation, study program accreditation or process evaluation. There is no doubt that evaluation and accreditation of programs and courses done by students and external organizations are an outstanding opportunity for testing the competitiveness of universities,

detecting existing problems and providing a stimulus for revisions in programs and faculty strategy. Nevertheless, a clever faculty management knows that quality assurance measures should not be used without any critical reflection. In Germany, study program accreditation and course evaluation by students has been discussed controversially since years (Quapp 2020, Quapp and Holschemacher 2020) because these quality assurance measures affect the constitutionally guaranteed freedom of science to a considerable extent. That is why faculty management should adapt quality assurance methods to the individual needs of the faculty in order to achieve the best possible results. Additionally, faculty management must secure that quality assurance does not lead to such a high workload for the scientific and administrative staff that main tasks will be neglected.

Internationalization

Internationalization has become a central issue at universities in the last years, with the aim to participate intellectually and financially in the global academic resources. Due to the reduced numbers of local first-year students resulting from the decreasing population in European countries, German universities' survival depends on foreign students. Furthermore, European universities' internationalization efforts are driven by the desire to get larger share of the academic cake that the major countries of academic mobility, namely the United States and Great Britain, divide among themselves.

Internationalization often is a part of target agreements. However, this should not be the only reason for creating an international atmosphere at the faculty. Successful internationalization includes students' and staff mobility, welcoming international guest scientists and their inclusion in the faculty daily working process. Participation of faculty members in international conferences and committees as well as visits at partner universities should be part of the academic routine.

Support of Research

Universities in Germany must foster sciences, culture and education by teaching, research and degree programs (e.g., Federal State of Saxony 2021). Due to their research activities, higher education institutions contribute to development and improvement of the society. Especially in the fields of medicine and engineering, innovations as a result of research are especially tangible for the people.

Mainly in engineering faculties, third party funded research and development plays a major role. Faculty management is able to support scientist to increase research activities by reducing the administrative efforts, e.g., for hiring staff, purchasing research equipment and spending research overheads. Furthermore, it should provide appropriate research facilities such as technical equipment and labs. Nevertheless, administration should also coordinate the faculty's active research projects if there is a need to use the same facilities. This avoids conflicts among the

researchers. Furthermore, faculty management has the task to monitor the application of health and safety regulations in offices, labs and while all research activities.

Making research understandable and relevant for society – the so called Third Mission – is one of the current topics in German universities' daily life. The politics urges the sciences to leave their "academic ivory tower" and to increase lifelong learning offers as well as the knowledge and technology transfer to practice (Tauch 2012). To manage that task, faculty administration will be the ideal contact point between science and society.

Alumni contacts and fundraising have become more and more important in the competition for industry funded research projects or external financial support for student excursions or student competitions. And for the amount of third party funds from the industry, faculty management's activities and the quality of contacts to the industry are important as well.

University Self Administration

For the university leadership, faculty management is partner on the one side and counterweight on the other side. Faculty management has to execute the rectorate's top down decisions and is responsible for negotiating and signing target agreements with the rectorate. In close contact to the president of the university, the deans should do their best to influence the university strategy to the benefit of their faculty.

On faculty level, faculty management is responsible for strategy development, which substantially must correspond to the university strategy. Furthermore, it has to prepare and lead all meetings of the councils and boards of the faculty and to execute their decisions. The dean has to criticize decisions of the Faculty Council as well as of other boards, which do not comply with the legal regulations.

Safety and Hazard Management

An efficient safety and hazard management is the basis for successful teaching and research. It avoids accidents, protects staff from injury, secures the functional capability of technical equipment, and therefore prevents cancellation of courses or delays in research projects.

Safety and hazard management benefits from fixed check-up deadlines, lists with (mobile) phones numbers of contact persons and clear instructions for the case of emergency. Faculty staff should be familiar with this information.

Particular attention must be paid to people with special needs. For pregnant students/faculty members or other high-risk groups, individual solutions have to be developed, especially in using toxic materials and dangerous (lab or experimental) works. In case of emergency, disabled people can be limited to protect and/or to help themselves, for example if they are not able to use elevators in case of fire. Thus, faculties shall develop individual emergency strategy for these special persons.

Safe Occupational Environment

Safe and ergonomic working places contribute to the health and working ability of faculty members. That is why periodical check-ups of offices, labs teaching rooms and other facilities are required. To guarantee a high quality evaluation of the occupational safety, it is recommendable to appoint a staff member as safety officer and to provide him/her regular further training.

Especially in labs or experimental halls, a detailed safety concept is required due to sensible technical equipment and toxic substances or harmful materials. Lab and hall safety first of all benefits from access restriction and access documentation. Each person working there, whether staff or students, must be instructed how to behave and how to ensure a safe working environment. Elaborating lab or experimental hall users' guidelines can be helpful. Toxic or harmful substances must be inventoried and stored under lock and key.

General Safety at Faculty

A general safety concept provides a feeling of security to staff and students. This includes, if not already forbidden by law of the respective country, the prohibition of weapons on the campus. In addition, access regulations for outside persons to the campus and its documentation may contribute to a feeling of security to all university members. Especially facilities where toxic materials, expensive technical equipment or other relevant resources are stored must be under lock and key. However, in doing so, faculty management shall balance the safety interests of the structural unit with the access needs of students, especially to PC-pools in the evening, at night and at the weekend. For realizing the students' access outside office hours, a flexible key card access system and a video monitoring system as theft protection may be installed.

Preparation for Unforeseen Occurrences

As currently experienced by the COVID-19 pandemic, unforeseen occurrences may affect universities and their structural units to a greater extent. Economic troubles, natural disasters, pandemics, civil unrest, war or terrorism are likely to influence the regular functioning of a faculty.

Due to the COVID-19 pandemic, universities all over the world were forced to reorganize teaching and research to protect staff and students from an infection. First problem was to change the high share of presence teaching in university rooms by online teaching without any personal contact. Faculties had not only to identify suitable online teaching tools, but also to purchase necessary hard and software. Furthermore, face-to-face interactions and oral examinations became impossible which had to be replaced by alternative examination forms without any personal contact.

In Germany, the type of teaching and examination must be fixed in the study and examination regulations for each study program. The faculty council had to adopt and the university's rectorate shall authorize the faculty's study and examination regulations. In the Corona crisis, faculties were not allowed to simply modify teaching and examination types what required a change of the respective

regulations. Elaborating new study and examinations regulations for each of the programs and ensuring the relevant decisions in the boards and councils was a time consuming work. A further challenge was to deliver complete and early information to students and staff. Universities and responsible state authorities currently discuss how to deal with the summer term regarding state financial promotion of students or the recognition of the semester as regular semester within the study time.

In addition, conducting research projects in times of the COVID-19 pandemic posed a huge challenge to universities' structural units. Although some research funding organization announced a prolongation of project duration and/or funding, faculty management had to develop ideas how to enable a continuation of the projects in compliance with all the new hygienic guidelines.

Regarding the health protection of human resources, many faculties organized home office for staff. Essential for effective working in home office is to provide the staff with the necessary hard and software to enable a work result similar to them gained in the offices on the campus.

Universities have learned from the COVID-19 pandemic that staying calm, keeping the overview and having fast and defined decision finding procedures may support an efficient and clever reaction on such a crisis. The future will show, if higher education institutions will use the pandemic as a chance to rethink teaching, research and working area. Unforeseen occurrences, also if they are unpleasant, force management to evaluate the status quo and, by this, create a new approach to faculty management.

Of course, faculty management is not able to prepare for all potential situations but faculty leaders should use the experience from former occurrences and document the found decisions and used measures. Ideally, next generations in faculty management will use these information to learn from the situation and, if necessary, to improve the hazard management.

Improvement of Faculty Management

Faculty management is in an uncomfortable sandwich position between the central university administration and the faculty members. It must enforce faculty interests towards the university management and, on the other side, implement the university strategy on faculty level.

Essential to have is qualified administration staff, which does not take itself too seriously. Faculty management must be considered as a service unit with the aim to support the faculty members in performing at their best. Administration is not an end in itself.

If all administration processes are working efficiently, the scientific faculty staff is able to concentrate on their actual job and to deliver high quality outcomes, to improve teaching and to increase research activities. That is why administration must be as less as possible but as much as required.

Human Resources

For universities it is not easy to apply methods of NPM because they are not compatible with an education and science oriented institution. Attempts of managing universities in a way like enterprises cannot be successful due to the different preconditions in tasks, funding, image and especially intentions of the staff (Turner 2015). Normally, staff in enterprises has an interest to achieve optimal results by increasing production or shareholder value. This will secure existing jobs and generate new ones. For scientific staff at universities, success achieved by the home university is only of secondary importance. Primary, they are interested in their own scientific reputation among other researchers and the acceptance among students (Turner 2015). One reason may be that university staff does not participate directly and financially in the success or failure of their institution.

Using the few performance-oriented instruments, which are available at universities, faculty management must be careful with the consequences a competitive situation among faculty staff could have. It may encourage motivation but also often can create feelings like envy and jealousy.

Furthermore, modern management instruments are working only in conjunction with a modern human resources management. Some of the big problems for faculties in human resources management are low salaries for researchers, less flexibility and only average working conditions in comparison to other (foreign) performance oriented university systems or the industry.

Organizing and controlling the work performance at a faculty while, at the same time, giving the staff a feeling of respect and support, represents one of the biggest challenges for faculty management. It is important to prevent mobbing or unethical behavior, to support competition without causing jealousy and distrust and to illustrate a common goal to all faculty members. If faculty staff enjoys working at the institution, they will be more productive which increases the success of the faculty. That is why, providing a common goal to work for is one of the secrets for successfully running a university's structural unit.

Less Bureaucracy

The big ambition of administration should be to appear "invisible" for the scientific faculty or university staff. Moreover, faculty management must be very efficient and should avoid wasting faculty resources.

Additionally, it is expected that management will take serious all concerns of the faculty members and try to assist them as good as possible.

In the last years, staff surveys and other quality management measures increased rapidly. Of course, these feedback tools are necessary to be informed about problems or needs of faculty members but their use is time intensive for both administration and staff. It will be more efficient to use the old school techniques of informal direct feedback to the faculty management.

Support for Teaching and Research

The best way for supporting teaching by administration is to give lecturers time to prepare high quality courses, to offer consultations to students, to extend their knowledge and to go abroad to broad their horizon – that means, at the end, to prevent them from too much administrative work.

The same applies for the aim to increase research activities at the faculty. The better variety of possibilities in obtaining third party funds from industry for research and development seems to give an advantage to civil and structural engineering faculties in contrast to social sciences and humanities.

By the means of a performance based fund allocation model, faculty management may encourage researchers to increase efforts in application for research funds and to publish their research results. Young researchers could be motivated with a start-up funding for development of their own research ideas.

However, rigorous output orientation in teaching and research will have its price. Faculty management must protect its researchers from exaggerated expectations regarding the research outcomes of a faculty. Otherwise, that will have an effect on the research and paper quality. Furthermore, basic research that needs more time will be less attractive. Science is based on a slow, steady, methodical process, and should not be expected to provide fast and easy answers to society's problems. Scientists need time to think, to read and to fail (Slow Science Academy 2010).

Conclusion

The authors conclude that efficient faculty management can contribute to teaching and research immensely, for example by enabling high quality in teaching and by guaranteeing the efficient and successful conducting of research projects. Quality and motivation of administrative staff is of particular importance.

Exactly as an orchestra, a higher education institution's structural unit consists of many heterogeneous people. Faculty management must act like a conductor and should understand, respect and support the staff's diverse intentions, responsibilities, wishes and needs. That is why, communication is an essential tool in modern faculty management, but time consuming as well. All faculty members are high-qualified specialists and play their "instrument" in a very masterly way. Only the conductor can bring them into a perfect harmony and motivate them to show their best performance. Encouraging scientific staff by the administration is an excellent way to bring lecturers and scientist to maximum performance. However, in doing so, faculty managements' challenge lies in balancing the conflict between governing and supporting faculty members.

References

Bleiklie I (2018) New public management or neoliberalism, higher education. In JC Shin, P Teixeira (eds.), *Encyclopedia of International Higher Education Systems and Institutions.* Dordrecht: Springer Science+Business Media.

Broucker B, De Wit K (2015) New public management in higher education. In J Huisman, H de Boer, DD Dill, M Souto-Otero (eds.), *The Palgrave International Handbook of Higher Education Policy and Governance*. London: Palgrave Macmillan.

Federal State of Saxony (2021) *Saxon University Autonomy Act*, §5. Retrieved from: https://bit.ly/3teqTEf. [Accessed 19 February 2022]

Fedrowitz J, Mayer P, Ziegele F (2011) *Promoting faculty management in Africa: innovation in cooperation between higher education institutions in Africa and Germany*. Available at: https://bit.ly/3BC9mJD.

Fehling M (2021) *Bonner Kommentar zum Grundgesetz, Article 5.3 (Wissenschaftsfreiheit).* (Bonn Commentary on the Basic Law, Article 5.3 (Academic Freedom)). Heidelberg: C. F. Müller Verlag.

Hagerer I (2020) Faculty management after higher education reforms - Exploring the organizational structure of faculties considering their contextual factors. In *Proceedings of the 6th International Conference on Higher Education Advances (HEAd'20)*. Valencia 2020. Polytechnic University of Valencia.

Knopp L (2012) Verbeamtung des Hochschulkanzlers auf Zeit verfassungsgemäß? (Temporary appointment of the university chancellor constitutionally?) In *10 Jahre Hochschulrecht im Wandel*, 227-243. Baden-Baden: Nomos.

Mahajan S, Gaitonde S, Lele U (2021) Employee engagement of faculties in management institutes in Pune during COVID-19 pandemic. *International Journal of Human Resource, Management and Research (IJHRMR)* 11(2): 53-60.

McGaffery P (2019) *The higher education manager's handbook.* 3rd Edition. London: Routledge, Taylor & Francis Group.

Quapp U (2020) Rechtswidrigkeit einer Lehrevaluationssatzung - Anmerkung zu VGH Baden-Württemberg 19.12.2019 –9 S 838/18–. (Unlawfulness of a teaching evaluation statute - Comment on VGH Baden-Württemberg 19.12.2019 –9 S 838/18–). *Wissenschaftsrecht* 2020(2): 152-164.

Quapp U, Holschemacher K (2019) Management of engineering faculties in Germany and its influence on teaching and research. In WT Erofeev (ed.), *Актуалные вопросы архитектуры и строительства (2), proceedings for the conference Восемнадцатой международной научно-технической конференции*. Saransk: Publishing House of the Mordovia State University.

Quapp U, Holschemacher K (2020) Quo Vadis civil engineering education - 20 years after Bologna Declaration. In Y Vacanas, et al. (eds.), *Proceedings of International Structural Engineering and Construction - Holistic Overview of Structural Design and Construction, 7(1).* Fargo: ISEC Press.

Scholz C, Stein V (Eds.) (2014) *The dean in the university of the future*. Munich: Rainer Hampp Verlag.

Slow Science Academy (2010) *The slow science manifesto.* Retrieved from: http://www.slow-science.org. [Accessed 19 February 2022]

Statistisches Bundesamt (2020) *Hochschulen.* (Colleges). Retrieved from: https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/BildungForschungKultur/Hochschulen/Hochschulen.html. [Accessed 19 February 2022]

Tauch C (2012) Hochschulen zwischen Diversifizierung und Standardisierung – Wie geht es weiter. (Universities between diversification and standardization – What's next) In WC Zimmerli, L Knopp (ed.), *Freiheit von Kunst und Wissenschaft, Forschung und Lehre – was heißt das nach Bologna?*, 47-55. Baden-Baden: Nomos.

Turner G (2015) *Ich AGs der Professoren gegen das Unternehmen Universität*. (I AGs of professors against the company university). Retrieved from: https://bit.ly/3v99E9J. [Accessed 19 February 2022]'

Wan CD, Lee MNN, Loke HY (2021) *The governance and management of universities in Asia*. London: Routledge, Taylor & Francis Group.