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HUOM! TÄMÄ ON RINNAKKAISTALLENNE

Rinnakkaistallennettu versio *voi* erota alkuperäisestä julkaistusta sivunumeroiltaan ja ilmeeltään.

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## Introduction

The article reports on methodological approaches, experiences and main results as well as conclusions referring to impact evaluation of quality assurance (QA) from the perspective of Jyväskylä University of Applied Sciences (JAMK), Finland, particularly students, teaching staff as well as quality administration staff (also cf. Bejan et al. 2015). JAMK together with the Finnish Education Evaluation Centre (FINEEC) was a partner of a European project on impact analysis of QA in higher education institutions (HEIs) (IMPALA 2016). This project aimed at closing the gap of somehow rudimentary impact analyses of QA in HEIs by developing and applying a flexible methodology to assess the impact of different QA procedures. To apply the methodology, at three project partner HEIs a partner QA agency carried out an external QA procedure (Bejan et al. 2018; Leiber, Prades, and Álvarez 2018; this article), while at one partner HEI an internal QA procedure was undertaken (Leiber, Moutafidou, and Welker 2018). Simultaneously, the QA agencies together with the partner HEIs implemented impact analyses. Their methodological core consisted of a before-after comparison, which relied on a longitudinal panel study with several surveys as a baseline, a midline and an endline (Leiber 2018). The generic survey questionnaire items, which were shared in the four case studies, were asking for developments of course types used in the study programme, QA instruments used in the programme, observability of QA effects and quality improvements by stakeholders, their attitude towards QA, their assessment of expenditure/benefit ratio of QA and suggestions for QA improvement.

The present article reflects mainly on the empirical results of impact evaluation of EUR-ACE programme accreditation at JAMK which was carried out in the context of the above-mentioned project, while an overview of the methodological core issues of that project (e.g. scheme of before-after comparison approach to impact evaluation; key guidance issues

for impact evaluation; description of available data types; contextualization of the attribution problem) is given in the introductory article of this special issue (Leiber 2018). The present article is organised as follows: Firstly, the QA framework in Finnish higher education is roughly described. Secondly, the sample, time schedule and characteristics of the applied before-after comparison approach are given, which was carried out at JAMK by FINEEC. Thirdly, results of the impact evaluation are presented and discussed. The article closes with conclusions and an outlook.

### **The quality assurance framework in Finnish higher education**

The quality of higher education is managed at JAMK using the following main approaches: first, participating in external evaluations including audits of quality management systems and international programme accreditations, such as European Accredited Engineer (EUR-ACE), both conducted by FINEEC. Second, internal cross-evaluations of degree programmes and, third, implementing student feedback systems.

### ***The Finnish quality assurance system***

According to the Polytechnics Act (932/2014) of Finnish legislation, HEIs are obliged to regularly perform external evaluations of their quality management systems. In Finland, the national QA is based on comprehensive audits of QA systems. The audits focus on the procedures that the HEIs use to maintain, develop and enhance the quality of their education processes and other activities. These audits are typically executed by FINEEC, an independent expert body assisting HEIs and the Finnish Ministry of Education and Culture in matters relating to evaluation of education. FINEEC is a full member of the European Association for Quality Assurance in Higher Education (ENQA) and it has been accepted to the European Quality Assurance Register for Higher Education (EQAR). All Finnish HEIs have passed the Finnish quality audit already once; the second round of audits was done by

the end of 2017.

FINEEC has conducted a quality audit at JAMK and was awarded a quality label that is valid for six years starting from 27 March 2013. Accordingly, the quality system of JAMK fulfils the national criteria set for the quality management of HEIs and the system corresponds to the European QA principles and recommendations for HEIs (Hazelkorn et al. 2013).

### ***International programme accreditations***

In Finland, the primary responsibility for QA in higher education lies with each HEI itself. The Finnish audits of QA systems have been used to ensure that the HEIs take the responsibility that belongs to them and that they have appropriate procedures for assuring the quality of each degree programme. Thus far, programme accreditations have not been a major part of the Finnish QA toolbox. FINEEC has started only recently reviews of engineering programmes, which are conducted on a voluntary basis. FINEEC is authorised to award the EUR-ACE (European Accredited Engineer) label for engineering programmes which pass the FINEEC engineering programme review. Thus, two of JAMK's engineering programmes have been awarded the EUR-ACE label (Logistics Engineering and Mechanical Engineering).

### ***Internal cross-evaluation of degree programmes***

In 2004, JAMK developed their own method for the quality improvement of degree programmes, the so-called 'cross-evaluation of the degree programmes' (Janatuinen 2009). The cross-evaluation procedure is based on the basic assessment model of higher education established in Europe with its main stages of evaluation being: self-evaluation, evaluation visit, evaluation report, feedback session, developing improvement measures and follow-up meeting. The evaluations are carried out by cross-evaluation teams that consist of

representatives of various schools, common support services and a student representative.

The cross-evaluation is based on the ideas of enhancement-led evaluation, collegial support and the sharing of good practices. The results of the evaluations are published. Meanwhile, all programmes at JAMK have been cross-evaluated once.

### ***Student feedback system***

In Finland, it is typical to prioritise student feedback in evaluation of the quality of teaching and learning processes. JAMK has also put into practise a comprehensive student feedback system in degree-awarding education. In Bachelor degrees, the following feedback approaches are utilised: course mid-term feedback; course feedback at the end of the courses; student feedback after one year of studies; feedback for the Ministry of Education and Culture at the end of the studies; follow-up survey one year after the graduation placement; feedback campaign organised by the student union at JAMK.

In particular, firstly in JAMK's School of Technology teachers are obliged to collect mid-term feedback in every course. They are, however, granted the freedom to select a collection method that suits the needs of development on the said course the best. The feedback is collected before the end of the course (mid-term) to be able to alter the delivery of the rest of the course if need be. Secondly, JAMK's common and standardised course feedback is collected at the end of the courses. The head of department selects the courses in which the feedback is collected and makes sure that the feedback is comprehensive enough to provide useful information for development of education without putting too much strain on students by extensive surveys, since too lengthy questionnaires too often can cause feedback fatigue (Porter, Whitcomb, and Weitzer 2004). Thirdly, in JAMK's feedback system there is no separate feedback method for collecting assessments from employers on the graduates' education. Instead, similar information is gathered from the graduates themselves. In JAMK

this information is collected one year after the graduation placement follow-up survey. JAMK's student union has also been active in the quality management of education; for example, it arranges biannual feedback weeks on the various campuses of JAMK.

### **Population, sample and time schedule of the case study**

The before-after comparison impact evaluation carried out in the above-mentioned project at JAMK was connected to the EUR-ACE accreditation process of JAMK's Bachelor Degree Programme in Mechanical Engineering. Accreditation was awarded in June 2015 and it is valid for six years.

Because of the tight schedule of the European impact evaluation project at JAMK as compared to the slow change processes at universities, just around half a year between baseline and midline as well as between midline and endline surveys (Table 1), this article will focus on the comparison between baseline and endline.

#### ***Table 1: about here***

The sample sizes as well as response rates of the impact evaluation baseline and endline surveys carried out at JAMK are illustrated in Table 2.

#### ***Table 2: about here***

The students chosen for the impact evaluation were 2<sup>nd</sup> and 3<sup>rd</sup> year students as it was assumed that the 1<sup>st</sup> year students are not yet able to evaluate changes in the degree programme. The 4<sup>th</sup> year students were not, on the other hand, available as most of them were doing their final thesis work in companies and other organisations outside of the university. Participation in the baseline survey was 'partly compulsory' for the students in the sense that the teacher asked the students in the classroom at the beginning of the lecture to fill in the online survey questionnaire. However, based on the experience with the baseline study, that a

lot of student participants did not answer any of the questionnaire questions or only single ones, it was decided that the endline survey and the midline survey were carried out as voluntary for the students meaning that those should and can answer who are willing and who are feeling capable to do it. Essentially, it was decided that the quality of answers was more important than quantity, because it is a well-known phenomenon that empty or uninformed or aleatory answers of respondents who are not well-informed or not well-engaged in the surveyed subject can strongly diminish the content relevance and (statistical) representativeness of responses.

The surveyed teacher group included all teachers of the programme who are working permanently for the JAMK School of Technology. The stakeholder group of quality administration included the university rector, the university vice-rector, the educational development manager of the university, the director of administration of the university, the quality manager of the university as well as directors of the school and programme.

The generic survey questionnaire items used by all four case study partner groups of the European impact evaluation project (see also Bejan et al. 2018; Leiber, Moutafidou, and Welker 2018; Leiber, Prades, and Álvarez 2018) were asking for developments in course types used in study programmes; QA instruments used in programmes; alignment of examinations and learning objectives; frequency of development discussions of study programmes; observability of QA effects and quality improvements; transparency of responsibilities; attitude towards internal QA; attitude towards external QA; perceived attitude of leadership towards QA; assessment of expenditure/benefit ratio of QA procedures; plans for major programme changes; suggestions for QA improvement (ICP 2016, 33ff.).

## **Results and discussion**

### ***Preliminary remarks***

First of all, it is worthwhile to mention that the attribution problem – ‘With what reliability can we attribute observed changes to possible causes?’ – can be plausibly approximated in the present impact evaluation case study, because so far only two EUR-ACE programme accreditations were carried out at JAMK, the first one in Mechanical Engineering which is the subject of impact evaluation of the present article. Therefore, the surveyed Mechanical Engineering students, but also the other stakeholder respondents, most probably have only, or at least predominantly, the EUR-ACE accreditation in mind when they are surveyed. This helps to approach the attribution problem, because it can be assumed that the students’ assessments of QA preferably refer to the EUR-ACE accreditation. A similar argument also applies to the other stakeholders: although they are very likely to have longer experience with other and earlier QA procedures applied at JAMK, nevertheless the EUR-ACE accreditation can be assumed to be rather prominent in their present views on QA because this accreditation was really a novelty at JAMK.

### ***Course types used in study programmes***

Several items of the survey collected information about the type of courses (frontal teaching, interactive courses, courses with practice-related elements, project-based, etc.). Since the impact evaluation project aimed at capturing changes, for some questions the respondents were asked whether they had observed changes recently, in which type of courses, who or what initiated the changes, and what had triggered them.

For 70% or more of the students and the teachers, lectures are the main way of education delivery in the Bachelor programme of Mechanical Engineering at the baseline as well as at the endline (Figure 1). Seminars, presentations and group works are used mostly or

partly according to 100% and 91% of the students and according to all teachers at the baseline and the endline, respectively. Project works are used mostly or partly according to 90% and 91% of the students and according to 92% and 100% of the teachers at the baseline and endline, respectively. In addition, online studies are utilised in the programme realisation mostly or partly according to 66% and 82% of the students and according to 77% and 87% of the teachers at the baseline and the endline, respectively.

Obviously, there are some differences between teachers' and students' views: teachers, as compared to the students, report a higher extent of seminars, presentations, group and project works as well as online studies. One possible explanation for this is that teachers and students have different understandings of the teaching (and learning) concepts. Also, it may be that students, for example, interpret a session to be lecturing, although the teacher thinks that the method is clearly some other. The teachers may also envision the delivery of teaching to be more varied than what the students experience.

***Figure 1: about here***

In the questionnaire there was another question concerning about who or what is initiating the teachers to change their teaching methods. From the responses it turns out that the pressure for a single teacher to offer different methods of delivery and also to develop her/his teaching methods seems to originate from various sources. According to the endline survey, 88% of the teachers say that the initiatives for changes are coming from students. In addition, 88% respond that the initiatives are coming also from other teachers, 88% that also from university top management, 63% that also from external QA, 63% that also from internal QA, 13% that also from changes in law and 50% that also from external stakeholders as from companies etc. In summary, according to the endline survey all triggers for change in teaching methodology play their role, with the exception of legislative changes. At least the latter is to

be expected because legislation in general can only have a very indirect influence on the teaching structures and processes. Two obvious reasons for this are the freedom of academic teaching and the concentration of teaching and learning skills in the educational institution (and not in politics).

### ***Attitude towards quality assurance***

The questionnaire was also asking for the students' and teachers' attitudes towards QA and their self-observed changes of attitudes. Overall, teachers and students reported positive or neutral attitudes towards QA which are rather stable from the baseline to the endline.

However, teachers show a remarkable increase in positive attitudes in the endline survey (Figure 2).

### ***Figure 2: about here***

This is corroborated by responses to the question, which asked for self-observed changes in attitude (Mueller, Gaus, and Rech 2014) towards QA (Figure 3). The reason for these generally positive and stable attitudes most likely is that JAMK and its Mechanical Engineering programme has many years of experience of developing activities through QA mechanisms. From the perspective of the programme and JAMK, this is a positive development, since it indicates that QA in learning and teaching is not perceived to be an additional chore, but largely accepted or at least not rejected by students as well as teachers. If, in accordance with the used proxy to the attribution problem, we assume that the change in attitudes can be attributed to the applied EUR-ACE accreditation, the data in Figure 3 suggest that teachers received this accreditation rather positive, and more positive than students (Figure 3).

### ***Figure 3: about here***

### ***Observability of quality assurance effects***

Another question of the used surveys asked students and teachers: ‘Do the procedures of QA and quality development in learning and teaching (e.g. course evaluations, module evaluations, student surveys, etc.), which are carried out in your HEI, have effects which are observable for you?’ About half of the respondent students reported QA and quality development having effects observable for them (Figure 4). This is a positive finding as, however, obviously an average student in a HEI will not always be aware of improvements made according to her/his feedback to courses since she/he will not usually participate in the courses again. Therefore, it is important for the institution to report previous improvements at the beginning of the course to motivate the students to give feedback and help further develop the course.

### ***Figure 4: about here***

Also, teachers reported that effects of QA and quality development are observable for them (Figure 5). However, although the number of teachers who could observe QA effects distinctively increased from the baseline to the endline, still 20 % of the teachers could not observe such effects immediately after the accreditation process (endline). The reported increase is most probably due to a common and well-known effect of any external evaluation or review process which normally lead to raised awareness of the staff on issues of QA and quality (Westerheijden and Jeliaskova 2002). This is usually due to common efforts to draft a self-evaluation report to which most teachers are invited to participate. Also, many teachers are interviewed by the external panel on the on-site visit, which again, raises their awareness on the QA procedures as the staff is prepared for the interviews.

### ***Figure 5: about here***

### ***Use of internal quality assurance instruments***

According to the survey data, student feedback questionnaires and quality indicators are used consistently in the quality assessment of the programme. Student feedback questionnaires are used regularly according to 68% and 45% of the students and according to 100% and 87% of the teachers at the baseline and endline, respectively. Quality indicators are used regularly according to 46% and 93% of the teachers at the baseline and endline, respectively. In addition, according to teachers, questionnaires to teachers (baseline: 62%; endline: 80%) and stakeholders (31%; 60%), quality meetings (62%; 47%) as well as written reports (38%; 47%) are produced occasionally. According to the impact evaluation survey, students seem to be fully aware of only their feedback questionnaires while they do not report that they know other QA instruments (in the survey questions concerning these issues, most of the students chose the option 'no answer'). This can be understood as an invitation to involve (more) students in stronger ways in communication and implementation processes of QA, a call that would not only be relevant at JAMK.

### ***Frequency of development discussions of study programmes and transparency of quality assurance responsibilities***

According to survey data of the teachers, the frequency of development discussions of the study programme changed during the EUR-ACE accreditation process of the Mechanical Engineering programme. At the baseline survey, 23% of the teachers say that they met at least once every three months under the topic, while at the endline this quantity raised to 40%. In addition, at the endline 20% of the teachers see the meetings became more frequent during the last year. Initiatives of the change have mostly come from the management of JAMK as well as from external and internal QA. If it is assumed that during the application of the present before-after comparison approach no other QA process in addition to the EUR-

ACE programme accreditation had a substantial influence on the frequency of development discussions (which is quite plausible), then the reported changes can be ascribed to the EUR-ACE programme accreditation.

Furthermore, responsibilities (of individual persons and bodies) in the QA processes seem to be transparent in the JAMK teacher level as 86% and 87% of them think in this way at the baseline and endline, respectively.

### ***Perceived attitude of leadership towards external quality assurance***

According to the impact evaluation survey data, the perceived attitude of JAMK leadership towards external QA in learning and teaching as assessed by teachers is positive: 69% and 93% of teachers state that leadership ‘actively supports QA’ or is ‘affirmative against QA’ at the baseline and endline, respectively. In both cases, no teacher says that ‘HEI leadership is unfavourable against QA’. In addition, 77% and 73% of teachers do not report perceived changes in the leadership’s attitude against QA in the last year at the baseline and the endline, respectively. However, 27% of teachers report such changes at the endline, while the corresponding number at the baseline is negligible. This can be taken as an indication that JAMK leadership’s engagement in QA raises during the EUR-ACE accreditation, at least in the view of the teachers.

Furthermore, QA administration also assessed the attitude of JAMK’s leadership towards QA. At the baseline the perceived attitude of JAMK leadership towards external QA and internal QA is positive for 100% and 86% of responding QA administration, respectively, while at the endline it is positive for 100% of respondents in both cases. At the baseline, the overwhelming majority of QA administration do report no changes of the perceived attitude of JAMK leadership towards external QA as well as towards internal QA. At the endline, 50% of QA administration report more perceived support of leadership

towards external QA recently; main reasons for this increase are initiatives of HEI management and external QA (e.g. programme accreditation), while other factors such as internal QA, legal requirements, or external stakeholders do not play a relevant role. At the endline, QA administration does not report recent changes of leadership's attitude towards internal QA.

To sum up, JAMK leadership's attitude towards QA is perceived very positive and very stable by teachers and QA staff; few reported changes are mainly attributed to initiatives of HEI management and external QA procedures.

### ***Expenditure and benefit of quality assurance procedures according to teachers***

The teachers were also asked for their assessment of the expenditure and benefit of QA procedures. The survey results show that the teachers assess an increase of the expenditure of QA from the baseline to the endline (Figure 6). This is very probably due to the fact that a planned QA procedure, which is carried out for the first time, may be accompanied by many positive expectations, while the amount of efforts and work required becomes clearer and visible only during and towards the end of the procedure. Fortunately, however, the teachers also assessed an increase of benefit from the baseline to the endline (Figure 7). This balances the increasing expenditure impression and, even more importantly, it can be causally related to the full first-time experience of the programme accreditation that was carried out. Obviously, at the end of the day this EUR-ACE accreditation was positively received by the teachers.

### ***Figure 6: about here***

The role of university's QA is seen by the teachers as very, even surprisingly, positive. It seems that JAMK has managed to find a very balanced expenditure/benefit ratio in its QA

procedures. Overall, based on questionnaire responses, the teachers seem to experience that they have strong support from the JAMK top management in QA and management work. It is quite interesting, that most teachers considered the expenditure of QA to be low before the external evaluation. After the evaluation, most considered the expenditure to be high. Fortunately, also the share of teachers who appreciated the benefit of QA grew significantly during the process.

***Figure 7: about here***

### ***Suggestions for quality assurance improvement***

Finally, an open item of the questionnaires was asking for suggestions for QA improvement. Here, students clearly expressed the following two issues. Firstly, they would want questionnaires early in the course, so they would also experience themselves the effects and improvements in the same course. In other words, students are a bit unsatisfied with the situation that follow-up improvements of QA measures only show up in the next semester or even later and benefits can only be experienced by their fellow colleagues. Secondly, the students would also like to see teachers taking the feedback more seriously. They have partly a feeling that the teachers are collecting a lot of data and feedback concerning their course content and realisation but this data is not utilised effectively enough in the course development processes.

### **Conclusions and outlook**

JAMK has recently targeted to certify all Bachelor Engineering programmes using international accreditations (EUR-ACE) in the future. These accreditations can be utilised in international marketing of the programmes as well as in international cooperation, for example, in the double-degree cooperation with international partner HEIs.

The results of the present impact evaluation study indicate that the quality management system of JAMK seems to be a fairly mature system. Particularly, the teaching staff's and student's attitude towards QA is rather positive and stable over the observation period. At the same time, it can be conjectured that teachers see an added value of the EUR-ACE programme accreditation because they show a remarkable increase of their positive attitudes towards QA from the baseline to the endline survey. In addition, the QA mechanisms appear to function quite well in the opinion of both students and staff. The survey results also suggest that JAMK has managed to find a balanced expenditure/benefit ratio in its quality management procedures.

However, the involvement of the students in the quality management process as well as to make the quality management work more relevant for them seem to be one challenge. The difference in knowledge and awareness of the development of the programme between average students and student representatives who take part in the development activities is significant. For this reason, they probably should not be considered equal as sources of information either. In addition, some individual teachers' involvement to the quality and education development processes seems to be a challenge in some cases. Furthermore, the open questions in the questionnaire, where the respondents were invited to share their ideas and attitudes towards the development of the programme and its QA procedures, yielded only a very limited amount of useful information. Finally, in the case of online questionnaires, the endline survey should probably be held at a later time than at the end of the evaluation as was done in this exercise due to requirements of the impact evaluation project funding. In particular, any lasting impact should be more visible after a period of one to three years after the accreditation.

Anyhow, the impact assessment exercise was an extremely useful experience for both JAMK and FINEEC. The evaluation impact assessment tools are only nascent (Kajaste,

Prades, and Scheuthle 2015) and the questionnaires of the project reported herein offer a fruitful launchpad for future efforts.

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No potential conflict of interest was reported by the authors.

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