sciendo Zagreb International Review of Economics & Business, Vol. 25, Special Conference Issue, pp. 1-15, 2022
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Faculty of Economics and Business, University of Zagreb and Sciendo. Printed in Croatia.
ISSN 1331-5609; UDC: 33+65
DOI: 10.2478/zireb-2022-0021
CONFERENCE PAPER

Defining Service Quality Attributes at Different Levels of Operation in Higher Education Institutions: How Could the Service Quality Perceptions of Students Contribute to a Better Understanding of Improvement Directions?

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Abstract: The service quality literature focusing on higher education has been expanding rapidly parallel with the increasing marketization of the sector which poses new challenges against institutional improvement efforts and the applied management toolkit. The primary objective of our paper is to demonstrate the results of a surveying carried out in the Hungarian higher education system. The participating students evaluated the importance of quality attributes that were previously defined at the programme and the institution levels of operation and also rated the performance they had experienced along the same attributes. Both the quantitative and the qualitative results demonstrate that the student perceptions about the institutional image primarily stem from their service quality perceptions gained at the programme level defining the total student experience. Therefore, the institutional actions aiming service quality improvements should incorporate the programme level experiences of students both for enhancing total student satisfaction and institutional reputation.

Keywords: higher education; service quality; institution; programme; student focus

JEL Classification: A20, I23, L84

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Introduction

The education sector has been expanding very rapidly all over the world. Higher education (HE) has arrived at the status of marketization and the phase of intense competition driven by economic forces resulting from the development of global education markets (Gupta, 2018; Pouratashi, 2021). In this new era, managing quality in higher education institutions (HEI) is a critical issue for success (Tarí and Dick, 2013; Harvey and Williams, 2010a, 2010b). HEIs are now under great public pressure to evaluate the quality of their services and to implement valid and relevant service quality measuring and evaluating mechanisms (Cheng, 2016). Consequently, the service quality literature on HE has been boosted by the diverse HE efforts, approaches and implementations (Prakash, 2018).

The quality of services in a modern HEI is managed at different interdependent levels (Hénard and Roseveare, 2012) and covers different institutional activities including the development and improvement of study programmes. At the upper level of operation, institutional quality assurance is designed and the support to the organizational quality assurance system is ensured. At the lower programme level, actions to measure and improve the design, content and delivery of the study programmes are developed and undertaken (Roskosa and Stukalina, 2018). The quality of services at the programme level should be the ground for service quality improvement actions at the institution level since the quality management procedures of the programme should comply with the quality policy of the HEI (Roskosa and Stukalina, 2018; Suomi, 2014; Brewer and Zhao, 2010; Ashmarina *et al*., 2015) by assessing and enhancing the design, content and delivery of the study programmes (Hénard and Roseveare, 2012).

Competitiveness and quality initiatives highly influence the students' choice of institutions which is a complex decision that is subject to multiple influences (Briggs and Wilson, 2007). Walsh and Culinan's (2015) literature review underlines that among the factors that influence student choice, the academic reputation (e.g. Briggs, 2006), course offerings (e.g. Shah *et al*., 2013; Verghese and Kamalanabhan 2015), teaching quality (e.g. Shah *et al*., 2013), job prospects (e.g. Maringe, 2006; Soutar and Turner, 2002) and facilities (e.g. Dao and Thorpe, 2015; Verghese and Kamalanabhan, 2015) play an important role. Obermeit (2012) found that besides academic reputation and the quality of the faculty and of the programme are also highly ranked factors in the institutional choice.

In accordance with the above, the purpose of this explorative study is to evaluate and compare the importance and the perceived performance of service quality attributes belonging to institution and programme level identified in our previous research. Data collection was carried out in the Hungarian higher education system primarily with the involvement of student councils. The results of the statistical analyses using various segmentation criteria were completed with netnography analysis based upon the narrative comments given by students in the survey.

The paper is organized as follows. The section titled as Materials and methods demonstrate the applied research methodology, which is followed by the analysis of the results. The paper ends up with drawing the main conclusions.

Materials and methods

The development process of surveying that is aimed at the investigation of the service quality attributes perceived by the stakeholders influencing the operation of HEIs could be separated into three main phases. First, a comprehensive literature review of HE service quality measurement and evaluation was conducted during which the stakeholder(s) in focus, the level of institutional operation where the empirical investigation took place, the methodology applied and the service quality dimensions formulated were taken into consideration. The literature review has allowed us to conclude that a multidimensional, hierarchical service quality concept could serve to bring the diversified efforts related to HE service quality to a common base (Prakash, 2018; Gibbs, 2010).

The next step of the survey development process included the application of consecutive qualitative and quantitative research methods during which students were actively involved (for further details see Surman and Tóth, 2019; Surman and Tóth, 2021). Based upon the results, a pilot survey was developed to collect student ideas to explore how they perceived the primary quality attributes at the macro institution and at the lower operational level where the latter reflects more the programme level view of institutional operation. The questionnaire included two main parts. In the first qualitative part respondents were invited to formulate three quality attributes at both levels they deemed the most important. The following quantitative phase utilized the quality attributes explored in the literature review. Respondents were asked to rank the three most important attributes associated with the two aforementioned levels of institutional operation.

The pilot questionnaire was disseminated in two rounds in 2021 at a prestigious Hungarian university during which altogether 570 responses were collected. In the qualitative phase, more than 1000 phrases and ideas were given by students based upon which content analysis was carried out. In the quantitative part various segmentation attributes such as nationality, gender, programme field, programme level, work experience was used. Spearman rank-order correlation analyses were brought along to catch the differences between the ranking of the different segments of students. They all showed very strong positive correlations ($\alpha=0.05$, p-values<0.01) in every segmentation applied supporting that the rankings determined by the various participants with different backgrounds do not strongly depend on the features used as segmentation criteria.

Third, focus group interviews were conducted by involving lecturers with different professional experience from the given university. The quality attributes listed by

these lecturers highly overlapped with the ones given by the students in the previous qualitative phase. However, they added some ideas that were not mentioned previously, e.g., the value of the degree on institution level or the labour market relationships on programme level.

Based on the results of the questionnaire and the focus group discussions, the primary quality attributes both at institution and programme levels were determined (see Table 1).

Table 1: Primary quality attributes at the different operational levels

Institution level	Code	Programme level	Code
Career opportunities during the studies (offered by the institutions through career offices)	I1	Lecturer skills and abilities	P1
Career opportunities after the studies (owing to the studies at the given university)	I2	Institutional infrastructure and equipment (appearance of the classrooms, comfort level, equipment)	P2
Lecturers' scientific work and professional reputation (the role of the lecturer in the students' knowledge transformation)	I3	Career opportunities after the studies (labour market opportunities related to a given programme)	P3
Institutional infrastructure and equipment (environment, appearance of the buildings)	I4	Lecturers' scientific background and professional reputation (their commitment toward course improvement, knowledge transfer capabilities)	P4
Reliability (the institution provides the promised service)	I5	Curriculum (relevance of the main subjects, compliance of the course and ECTS structure, internship opportunities)	P5
Institutional commitment towards improvement (the up-to-datedness of the curricula, compliance with labour market expectations)	I6	Internationality (rate of courses held in foreign languages, student and lecturer mobility)	P6
Institutional reputation (competitive advantage, image)	I7	Programme reputation (programme popularity)	P7
Internationality (participation in international programs and projects, student and lecturer mobility)	I8		
Industrial relationships (internship opportunities, research projects, cooperation between institutions)	I9		
Application process (open days, written and oral admission (if relevant))	I10		

Source: own editing

Based on these phases, the questionnaire was refined including the primary quality attributes listed in Table 1 including 4 distinct sections. The first section listed the institution level related quality attributes and students were invited to assess both their importance and the perceived performance experienced at the institution one

attended on a 5-point Likert-scale. The second section included the quality attributes belonging to the programme level which were evaluated similarly. The third part included 2 narrative questions by addressing the most positive and the most negative HE experience of the respondent. This part ended up with giving an overall evaluation of HE experience on a 5-point scale. The fourth section included the demographic features of the respondents for segmentation purposes.

The National Student Council and the institutional student councils of 48 Hungarian HEIs were invited to participate and share the questionnaire with their students. The 380 responses resulted from 16 Hungarian universities and from 15 various programme fields. The respondents' demographic features are detailed in Table 2.

Table 2: Demographic features of the respondents

Sex		Form of financing		Programme type		Programme level		Work experience		Age group	
Male	141	State-funded	278	Full-time	243	Bachelor	221	0 year	120	18-22	176
Female	239	Fee-paying	102	Part-time	136	Master	70	1 year	57	23-27	67
				Other	1	Undivided	43	2 years	31	28-36	52
						PhD	21	3 years	17	37-45	61
						Further education programmes	25	More	155	46-	24

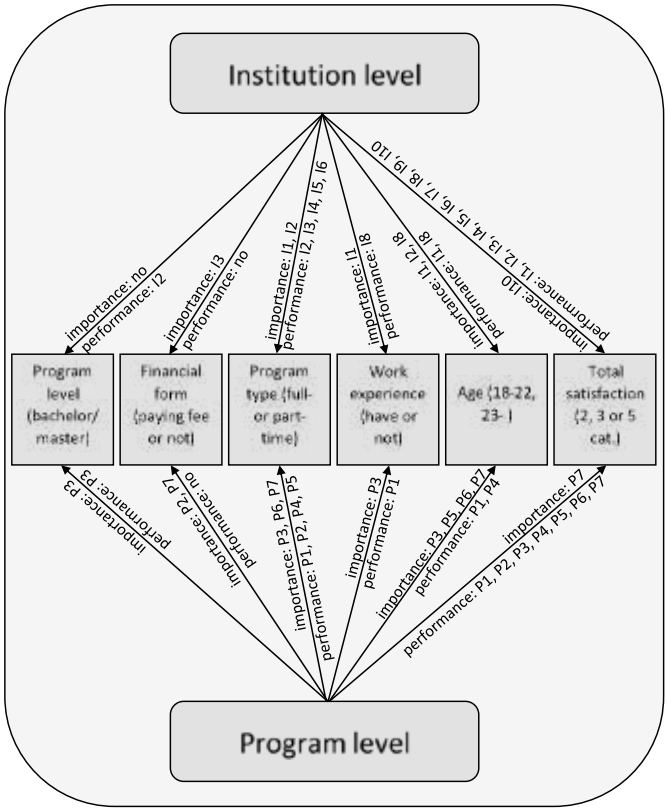
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Results

The normality of the data could not be proved (by running Kolmogorov-Smirnov and Shapiro-Wilk tests p-values were equal to 0.000 in the case of each attribute). The lack of normality is also demonstrated by the diagrams (Figure 2-5.) reflecting the distributions of importance and performance evaluations on both levels in the Appendix. The reliability of the questionnaire was measured by Cronbach alpha with a value of 0.882.

Figure 1 and the Table 3 in the Appendix demonstrate the results of the statistical analyses on both operational levels under investigation, highlighting the attributes in the case of which the results showed significant difference.

Figure 1: Results of the statistical analyses (supported by the Table in the Appendix on the statistical analyses)



Source: own editing

Analysis of the importance of quality attributes

Taking the programme level (bachelor or master) of the respondents into account as a segmentation criterion (Mann-Whitney U test, 0.05), significant difference was found related to the importance evaluations of P3, that is, the career opportunities after the studies were considered more important by bachelor students. This supports the original aim of the Bologna system to arm bachelor students with well-applicable practical knowledge and provide master students having more years of work experience with more theoretical knowledge. About 90% of the master student respondents already had work experience, and 60% of them had more than 3 years of experience.

Using the form of financing (paying tuition fee or state-financed) of the studies as a segmentation criterion, the Mann-Whitney U tests (0.05) proved that the impor-

tance values of I3 (lecturer scientific work and professional reputation), P2 (institutional infrastructure and equipment) and P7 (programme reputation) were significantly rated higher by students paying tuition fee. Therefore, they have significantly higher expectations in the case of these three attributes. However, it is interesting that the applied tests showed significant difference only in these cases.

The programme type (full-time or part-time) significantly affects (Mann Whitney U test, 0.05) the importance evaluations of I1 (career opportunities during the studies), I2 (career opportunities after the studies), P3 (career opportunities after the studies), P6 (internationality) and P7 (programme reputation). Except for P7, full-time students evaluated the importance of the above-mentioned attributes significantly higher. One possible reason for that could be that part-time students do work parallel with their master studies and not the foreign study opportunities are the main motivations behind their career expectations. However, the reputation of the programme they complete may provide them with further career opportunities.

The existence of work experience was also analysed (Mann Whitney U test, 0.05). The results showed that the respondents without any work experience evaluated the importance of I1 (career attributes during the studies) and P3 (career opportunities after the studies) significantly higher as expected showing their confidence in the institution and programme in this regard.

The age of the respondents was distributed to two main categories (18-22 age group covers mainly bachelor students, while the 23- age group includes mainly master students) (Mann Whitney U test, 0.05). The respondents between the age of 18-22 evaluated significantly higher the importance of the following attributes: I1 (career opportunities during the studies), I2 (career opportunities after the studies), I8 (internationality of the institution), P3 (career opportunities after the studies), P5 (curriculum), P6 (internationality of the programme). However, the importance of the P7 (programme reputation) attribute was evaluated significantly lower by them which coincides with the segmentation results of the programme level and the form of financing. As the younger students are not aware of the exact expectations of the labour market as having no work experience, they expect that both the institution and programme level quality attributes will serve them to become a valuable candidate at the time of graduation.

Using the total satisfaction evaluation (5-point Likert scale) as a segmentation criterion (5, 3 or 2 groups according to the given evaluation), the importance evaluation of only I10 (application process) and P7 (programme reputation) differed significantly between these groups (Kruskal Wallis and Mann Whitney U tests, 0.05). As the total evaluation gets higher, the importance ratings of these two attributes are evaluated higher.

Analyses of the performance perceptions of the quality attributes

Analysing the performance evaluations based on the programme level of the respondents, Mann Whitney U tests (0.05) showed significant differences in the case of I2 (career opportunities after the studies) and P3 (career opportunities after the studies). The bachelor students were more satisfied related to these attributes supporting the Bologna system's right to exist (Barakonyi, 2004; Surman, 2021)

No significant difference was revealed by the relevant statistical tests based on the form of financing which is interesting since it could have been supposed that those paying tuition fee consider themselves more as customers of the HE system and therefore, act like as 'real' customers when evaluating the quality of services provided to them.

Using the programme type of the respondents as segmentation criterion (Mann Whitney U test, 0.05), the performance ratings of I2 (career opportunities after the studies), I3 (lecturer scientific work and professional reputation), I4 (institutional infrastructure and equipment), I5 (reliability), I6 (the institution's commitment towards improvement), P1 (lecturer skills and abilities), P2 (institutional infrastructure and equipment), P4 (lecturers' scientific background and professional reputation) and P5 (curriculum) were significantly higher in the case of part-time students. This segmentation criterion also had a significant impact on the total satisfaction bringing the message that part-time students were significantly more satisfied than full-time students which could be explained by their more years of work experience and by their existing labour market experience which results in the fact that they consider these quality attributes as value adding factors.

Analysing the existence of work experience shows that the respondents who had none evaluated the performance of I8 (internationality) higher and of P1 (lecturer skills and abilities) lower. This could mean that these bachelor students tend to rely more strongly on the professional experience of the lecturer including labour market expectations. On the other hand, internationality is also an important attribute since these primarily full-time students consider the international environment as an opportunity for gaining competitive advantage in their future career.

Taking the age groups of the respondents into account, students between the age of 18 and 22 were significantly less satisfied with the following attributes: I1 (career opportunities during the studies), P1 (lecturers' skills and abilities) and P4 (lecturers' scientific background and professional reputation). The only exception is I8 (internationality) which was evaluated significantly higher by them. These results are a little bit surprising in the sense that these bachelor students have significantly less work and labour market experience. Therefore, it is questionable how these judgements could be utilized by institution or programme level management and what sort of improvement efforts could be launched.

As it was expected, according to the total satisfaction segmentation (5, 3 and categories), the null hypotheses were rejected in the case of all performance attributes (using Kruskal-Wallis and Mann-Whitney U tests, 0.05).

Comparing the cohesive importance and performance evaluations

Wilcoxon signed-rank tests (0.05) were run to compare the cohesive importance and performance ratings of the identified institution and programme level quality attributes (see Table 1). The null hypotheses were rejected in all cases except for one attribute, that is, no significant difference was found between the related importance and performance evaluations of I10 (application process) on institution level. To sum up, significant differences could be detected between the cohesive importance and performance values in all the remaining attributes at both levels. Apparently, all importance evaluation medians were above the related performance medians.

Netnography

The questionnaire also included two narrative questions addressing the most positive and the most negative experience students gained during their HE studies. We truly believe that besides the statistical analysis, the thorough investigation and interpretation of narrative comments could help the institutions to improve the service quality level of the relevant processes and to identify specific areas of improvement.

Students' narrative responses were analysed by a so-called netnography software. This software works with an automated text analysis to understand the voice of customers. It "…identifies sentiment and detects topics in each verbatim comment, revealing hidden patterns and pain points in your VOC data. With the recognition of brands, persons and locations, you can improve customer satisfaction where it matters the most." (Zurvey, 2021)

The positive and negative narrative comments were analysed separately. In each case, the software looked for the words, topics mentioned the most times and evaluated their level of "extremism" on the very negative-very positive scale with numeric values providing a classification (very negative, negative, neutral, positive, very positive) as well. The most frequent phrases from the pool of positive experiences were teacher, education, knowledge, learning, university, quality, helpfulness, manners, practice, preparedness. The most frequent phrases from the group of negative experiences were lecturer, teacher, education, knowledge, learning, university, quality, practice, attitude, curriculum. As shown above, both the positive and the negative comments relate to the same terms: lecturer experience and attitude, education and learning. That is, the respondents gave feedbacks more on the programme level and not directly related to the institution level, which supports that the total experience of students mostly originates from the programme and classroom level interactions with lecturers (e.g. Park and Choi, 2014; Voss *et al*., 2007)

The software produced 2 numeric and 2 coded values, an opinion index according to the positive and negative level of the comments, and a classification based on the range of the opinion indices. The opinion indices of the positive and negative

comments were added together in the case of each respondent resulting in a new variable.

These 5 variables were analysed by nonparametric tests searching for significant differences by using the same segmentation criteria applied at the previous analyses. The results showed the following significant differences:

- master students gave stronger positive comments, but they had a number of negative comments as well,
- full-time students gave stronger and more negative comments,
- younger students gave stronger and more negative comments,
- state-financed students gave stronger positive and less strong negative comments in average, but altogether, they addressed more negative thoughts,
- the total satisfaction level of the students coincides with the comments meaning that there was significant difference in all 5 values according to the total satisfaction evaluation (3 levels).

As the comments were strongly related to the total satisfaction of the students, we compared the results of the statistical analyses based upon the segmentation criteria, the average perception evaluations and the total satisfaction evaluations of the respondents and the comment variables. The results of the various analyses conducted are consistent with each other.

Conclusions

The aim of the paper was to introduce a questionnaire utilized for the identification and measurement of service quality attributes related to the institution and the programme level operation of HEIs. The survey was disseminated among Hungarian HE students.

Both on the institution and the programme level, the generally younger full-time bachelor students rated the importance of career and international opportunities significantly higher (I1, I2, I8, P3, P6) than master students. On the programme level, they also found the curriculum (P5) more important. These results are in line with the fact that a general bachelor student has no or less labour market experience. This brings the message that bachelors rely on the support of the institution to help with their successful entry to the labour market which could also be strengthened by studying abroad. At the same time, the reputation of their programme is under evaluated which claims that without work experience they are not able to perceive how the degree of their study programme could contribute to the success of their recruitment. The fee-paying students rated the importance of I3 (lecturers' scientific work and professional reputation) P2 (institutional infrastructure and equipment) and P7 (programme reputation) higher.

In the case of performance evaluations, a general conclusion cannot be easily drawn. The part-time students were significantly more satisfied with the HE experi-

ences regarding the examined attributes. Bachelor students were more satisfied with the career opportunities after studies (I2, P3), and the respondents with no work experience evaluated their international experience higher, and the skills and abilities of their lecturers lower. The younger students were more satisfied with their career opportunities after their studies (I2 and P3) and with the international opportunities (I8), while less satisfied with almost all the other attributes (I1, I3, 14, 16, P1, P2, P4, P5, the total satisfaction).

The comparison of the netnography results to the statistical results showed that in many aspects master students are more satisfied than bachelor students. Bachelor students seem to have more negative experiences than master students. Full-time and younger students highlighted both positive and negative experiences but altogether they are less satisfied than part-time students. State-financed students are to point out more negative experiences, but they also had very strong positive experiences.

As a conclusion, the results are to demonstrate that HE students gain their primary service quality perceptions at the programme level directly influencing the total student experience through the interactions as "moments of truth" at the direct service encounters with institutional actors. This highlights the relevance of the bottom-up approach when enhancing service quality in HE. However, in the relevant literature significantly more paper investigates the service quality at the macro institution level where the direct interactions between the students and the staff are further away from the everyday student perceptions of quality.

Appendix

Table 3: Results of the statistical analyses

	Attributes	Program level	Financial form	Program type	Work experience	Age	Satisfaction (5 cat.)	Satisfaction (3 cat.)	Satisfaction (2 cat.)
Importance	I1	0.076	0.135	0.001	0.127	0.005	0.466	0.630	0.816
	I2	0.206	0.225	0.013	0.014	0.030	0.398	0.051	0.138
	I3	0.447	0.031	0.309	0.070	0.058	0.540	0.392	0.660
	I4	0.625	0.341	0.278	0.107	0.963	0.395	0.107	0.244
	I5	0.478	0.677	0.428	0.180	0.367	0.771	0.247	0.489
	I6	0.816	0.257	0.333	0.501	0.228	0.558	0.259	0.262
	I7	0.701	0.061	0.421	0.211	0.954	0.348	0.175	0.259
	I8	0.921	0.959	0.082	0.985	0.027	0.379	0.773	0.926
	I9	0.215	0.389	0.265	0.150	0.197	0.911	0.562	0.832
	I10	0.215	0.917	0.823	0.546	0.640	0.010	0.001	0.002
	P1	0.312	0.634	0.413	0.324	0.640	0.183	0.437	0.437
	P2	0.597	0.044	0.126	0.332	0.611	0.502	0.739	0.901
	P3	0.049	0.600	0.008	0.050	0.001	0.855	0.859	0.702
	P4	0.778	0.531	0.408	0.088	0.059	0.988	0.909	0.965
	P5	0.092	0.860	0.216	0.357	0.045	0.445	0.305	0.342
	P6	0.828	0.450	0.018	0.945	0.006	0.860	0.584	0.829
	P7	0.798	0.003	0.001	0.147	0.015	0.000	0.000	0.000
Performance	I1	0.615	0.758	0.000	0.963	0.037	0.000	0.000	0.000
	I2	0.014	0.511	0.182	0.125	0.078	0.000	0.000	0.000
	I3	0.666	0.777	0.004	0.999	0.142	0.000	0.000	0.000
	I4	0.433	0.472	0.008	0.085	0.243	0.000	0.000	0.000
	I5	0.822	0.821	0.001	0.855	0.734	0.000	0.000	0.000
	I6	0.485	0.302	0.000	0.876	0.646	0.000	0.000	0.000
	I7	0.474	0.598	0.250	0.401	0.588	0.000	0.000	0.000
	I8	0.069	0.051	0.490	0.008	0.032	0.000	0.000	0.000
	I9	0.226	0.564	0.149	0.161	0.098	0.000	0.000	0.000
	I10	0.664	0.274	0.264	0.921	0.802	0.000	0.000	0.000
	P1	0.448	0.700	0.000	0.030	0.009	0.000	0.000	0.000
	P2	0.314	0.079	0.030	0.250	0.454	0.000	0.000	0.000
	P3	0.021	0.187	0.113	0.064	0.100	0.000	0.000	0.000
	P4	0.051	0.207	0.001	0.267	0.008	0.000	0.000	0.000
	P5	0.856	0.166	0.000	0.990	0.165	0.000	0.000	0.000
	P6	0.168	0.593	0.370	0.142	0.566	0.000	0.000	0.000
	P7	0.239	0.305	0.560	0.843	0.583	0.000	0.000	0.000
Total satisfaction		0.637	0.955	0.001	0.876	0.384			

Figure 2: Importance evaluations at the institution level

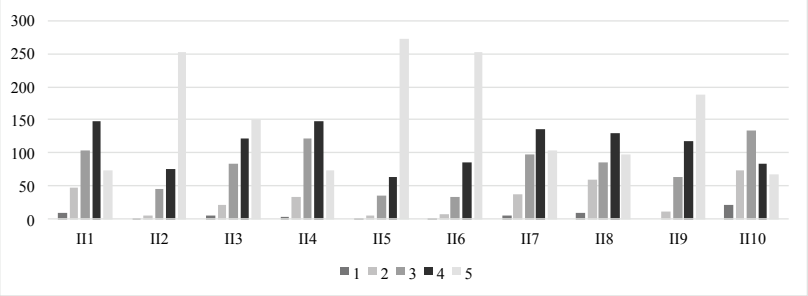


Figure 3: Importance evaluations at the programme level

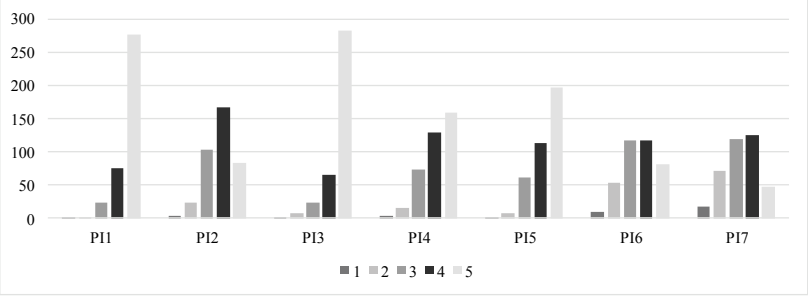


Figure 4: Performance evaluations at the institution level

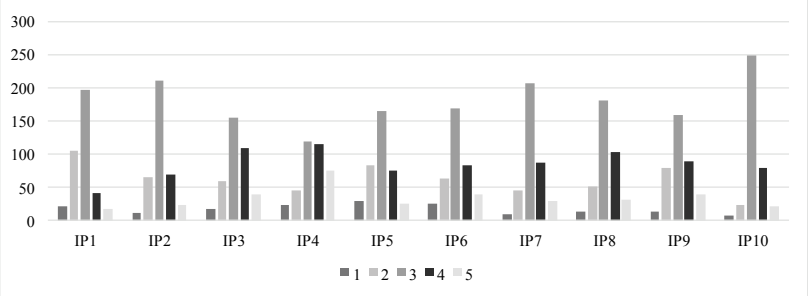
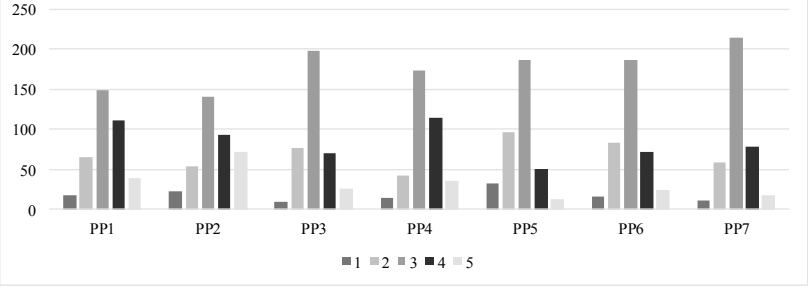


Figure 5: Performance evaluations at the programme level



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