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FACTORS OF STUDENT'S WILLINGNESS TO PROVIDE FEEDBACK TO EDUCATION PROCESS

FAKTORY OCHOTY ŠTUDENTOV POSKYTNÚŤ SPÄTNÚ VÄZBU NA VZDELÁVACÍ PROCES

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Tomáš Bačinský pôsobí ako odborný asistent na Fakulte manažmentu, ekonomiky a obchodu Prešovskej univerzity v Prešove. V rámci výskumu sa venuje najmä problematike determinantov kvality vzdelávacieho procesu a ekonomickej aktivite turizmu. Na fakulte vyučuje matematiku, štatistiku a predmety s informatickým zameraním.

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Abstract

The aim of this study is to analyze factors, which influence type and complexity of student's feedback on educational process. Its importance is mainly felt by educational institutions, which consider content student as a competitive advantage. 662 survey respondents (university students) were judging eight taught subjects and characteristics of their teacher by giving percentage answers to simple questions, while having the option to answer last openended question, giving positive or negative verbal feedback or suggestions for improvement. An impact of questionnaire's type (online, paper) and popularity of subject and teacher on complexity of student's feedback and their perception of subjects are analyzed. A significant positive correlation between assessed characteristics of subject and teacher and overall complexity of feedback is identified.

Key words: student's feedback, subjects, teachers

Abstrakt

Cieľom tejto štúdie je analyzovať faktory, ktoré ovplyvňujú typ a komplexnosť spätnej väzby študentov na vyučovací proces vzdelávacej inštitúcie. Dôležitosť spätnej väzby pociťujú hlavne vzdelávacie inštitúcie, ktoré si uvedomujú, že spokojný študent môže byť vnímaný ako konkurenčná výhoda. Prieskumu sa zúčastnilo 662 univerzitných študentov, ktorí hodnotili

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osem predmetov a vlastnosti ich vyučujúcich percentuálnou mierou spokojnosti, pričom mali možnosť vyjadriť pozitívny alebo negatívny postoj v poslednej otvorenej otázke, zisťujúcej slovnú spätnú väzbu alebo návrhy na zlepšenie. V analýze sú zisťované vplyv distribúcie dotazníka (fyzická, elektronická), obľúbenosti predmetu alebo učiteľa na komplexnosť poskytnutej spätnej väzby a celkové vnímanie predmetu, pričom bol nájdený kladný korelačný vzťah medzi hodnotením rozvrhovej jednotky (predmetu a vyučujúceho) a komplexnosťou celkovej poskytnutej spätnej väzby.

Kľúčové slová: spätná väzba študentov, predmety, vyučujúci

Introduction

In these times when education is being considered a way to success, a way to differentiate, public and private sector of education compete for applicants. These choose the product according to many factors. Among others, ratings, working potential and references are the core source of decision-making information. References, as a first-hand source is provided by students with experience and direct connection to educational institution. Therefore, it is institution's primary goal to have satisfied customers – content students. To use the best of product's potential, students' feedback needs to be obtained on regular basis. The willingness to provide one and its complexity, however, may be influenced by several factors. The aim of this study is to analyze factors, which influence type and complexity of student's feedback on educational process. In this paper, a contentment with aspects of taught subject and its teacher's characteristics, together with type of survey are considered, and their impact on complexity of feedback statistically verified.

Theoretical background

During last few decades student's feedback on education has become an important tool of quality management and improvement in university education. The feedback itself has been a subject of research of several authors from economical, managerial, pedagogical, and psychological point of view. Williams and Kane (2012) suggest that issues in student feedback surveys differ between studied disciplines and levels, where they are carried out (institutional and national). Hatziapostolou and Paraskakis (2010) increase the effectivity of student's feedback on their learning using online feedback system, while pointing at lack of motivation and difficulty in relating to and reflecting on comments as most discouraging aspects. Malie et al. (2011) found significant positive correlation between students' online feedback and the students' performance on the course.

According to Eng et al. (2015), male students and younger students rate online feedback system (online surveys) significantly higher when compared to female or older students. Al Ansari et al. (2020), in their study, further underline the importance of student's feedback, which affects teaching quality in mostly positive or neutral way (increase in score between two assessments). Figas et al. (2017) describe, in their study, how the use of online feedback system helps students to express their opinion anonymously or to ask questions they are normally afraid to ask, which naturally leads to increase in quality of education. Richman et al. (2019) describe in a case study how students' feedback can affect systematic course quality improvement in medical education.

Degtjarjova et al. (2018) provide complex analysis of term "quality of education" as perceived by all stakeholders of higher education institutions; from which students' perception is considered in this paper, as it is mainly their decision to attend chosen university.

Data and methodology

Research sample consists of 662 randomly selected students. A questionnaire was formed, which included questions about taught subject and how it is being perceived, contentment with teacher's skills and characteristics, and room for overall evaluation and suggestions (an open-ended question, which was encouraged to be answered). Received answers form following statistical variables with mentioned values:

- *Subject* basic non-numerical variable with seven values {S1-S7} describing taught subjects of the field of Mathematics, Statistics, and Informatics,
- *Version* type of survey; the distribution of the questionnaire {print, online},
- *Quality* describes contentment with quality and complexity of provided knowledge throughout the course of subject {0-100},
- *Clarity* intelligibility of provided knowledge {0-100},
- *Lucid* ability of teacher to understandably talk about subject (teaching quality) {0-100},
- Solver willingness to communicate and to solve problems in class {0-100},
- *Punctual* ability to start and finish on time {0-100},
- *Impressive* general evaluation and rating of other unmentioned aspects {0-100},
- *Complexity* the complexity of feedback measured in number of characters {0-1671}.

Frequency table with average values (Avg.) and their standard deviation (S.D.) of contentment with all six aspects *Quality* – *Impressive* for variables *Subject* and *Version* can be seen in Table 1.

	Subject								Version	
	<i>S1</i>	<i>S2</i>	<i>S3</i>	<i>S4</i>	<i>S5</i>	<i>S6</i>	<i>S7</i>			
Count	277	95	41	44	193	8	4	Print	363	
Avg.	95	90	92.53	93.91	93.01	97.92	98.83	Online	299	
<i>S.D</i> .	6.36	5.05	3.47	13.72	9.92	2.99	1.34			
Table 1 – Frequency table for Subject and Version and contentment with aspects										

Source: author's own calculations

It is observable that while *Count* varies, the contentment is throughout all subject similarly highly rated with relatively low dispersion of data. Descriptive statistics (minimum value *Min.*, maximum value *Max.*, average value *Mean*, *Median*, standard deviation *S.D.*, and number of missing observations *Miss. Obs.*) for variables *Quality*, *Clarity*, *Lucid*, *Solver*, *Punctual*, *Impressive* and *Complexity* are shown in Table 2.

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	Quality	Clarity	Lucid	Solver	Punctual	Impressive	Complexity
Min.	0	0	4	8	10	9	0
Max.	100	100	100	100	100	100	1671
Mean	91.06	88.79	94.38	95.83	95.46	95.87	138.92
Median	94	92	98	99	99	99	86
<i>S.D.</i>	11.84	14.07	9.57	7.86	8.97	7.70	162.17
Miss. Obs.	0	2	4	2	1	0	0

 Table 2 – Descriptive statistics of student's contentment aspects and feedback complexity

 Source: author's own calculations

Regardless of subject, lowest average score was received by *Clarity* (88.79), which makes the difficulty of subject highly rated potential problem. The highest average percentual contentment is related to teachers' general approach to students (*Impressive* with rating of 95.87). *Complexity* of feedback varies significantly (*S.D.* = 162.17).

Several tests (OLS model, ANOVA, Mann-Whitney U-test) are calculated to answer following questions using Gretl software.

- *Q1*: Is there a connection between average contentment with subject (and teacher) and complexity of provided feedback from student?
- *Q2*: Are there significant differences between subjects in student's contentment?
- *Q3*: Are students more willing to answer optional general feedback question in paper surveys than in online surveys?
- *Q4*: Is there a correlation between how students perceive subject and teacher?

Results

To **answer** Q1, Pearson correlation coefficient (r) and OLS model are calculated. Tested variables *Complexity* and *Avg*. (average values of rated aspects) result in

r = 0.10066, t(660) = 2.59921, with two-tailed p-value 0.0096,

meaning small strength of relationship between variables where p < 0.05 denotes its statistically significant r. Resulting OLS model is in form

 $Complexity_i = -50.19 + 2.02 Avg_i + u_i.$

Regression coefficient β_1 is significant at 0.01 level. An increase in average rating of contentment with subject and teacher rises the complexity of feedback by two points, meaning the better are subject and teacher perceived by students, the more willing they are to give more complex, contributing feedback. More exact model is available when considering only average rating of teacher's characteristics (*AvgTeach*) as a regressor:

 $Complexity_i = -155.44 + 3.08 AvgTeach_i + u_i,$

with all regression coefficients significant at 0.1 level, meaning teacher has even higher average impact on complexity (3.08 points per one point increase).

Question Q2 is answered using ANOVA analysis. Null hypothesis states that there is no significant difference between subjects (S1-S7) in students' average contentment. The

assumption of normality was tested, but not proven. Results of non-parametric Kruskal Wallis test can be seen below.

Kruskal-Wallis chi-squared (T) = 85.84, df = 6, p-value = 0

According to results, *p*-value denotes statistical significancy on 0.01 level, null hypothesis is rejected, so there is statistically significant difference between contentment rating of *Subjects* (and their teachers). Same results were obtained considering only contentment with subjects (variables *Quality* and *Clarity*; T = 68.21, *p*-value = 0) and contentment with teachers (variables *Lucid*, *Solver*, *Punctual*, *Impressive*; T = 135.45, *p*-value = 0) separately. It means that there is a difference in how subjects and teachers are perceived and judged by students.

The preference of questionnaire's type when answering optional open-ended questions is solved by testing null hypothesis: there is no significant difference in complexity of feedback between paper and online surveys. Normality of data was tested and the assumption of it was rejected (*p*-value = 0), hence, to **answer question** Q3 a Mann-Whitney U-test is used with following results in Table 3.

		п	W	$oldsymbol{U}$	
	sample 1 (print)	299	67325	86062	
	sample 2 (online)	363	152128	22475	
	$z_{1,2} = \pm 12.98$	Two-t	ailed p-valı	ue = 0.00	
Table	3 - Mann-Whitney U-tes	st Com	plexity acco	ording to V	ersio
S	Source: authors' data acc	ording	to calculation	ons in Gret	1

Resulting *p*-value means rejecting null hypothesis, and thus there is significant difference in student's willingness to provide optional complex feedback (via open-ended answered question) between online and print survey. This can be observed on difference of average count of characters (58.26 print and 205.36 online). Possible explanations are comfort and speed of writing on computer in comparison to handwriting and higher degree of perceived anonymity.

To **answer question** *Q4*, Pearson correlation analysis was performed, and OLS model is suggested (without outliers) with no heteroskedasticity present (White's test $TR^2 = 0.659$, *p*-value = 0.719). Following are calculated values of correlation and regression analysis, describing relationship between average contentment with subject (*AvgSubj*) and with its teacher (*AvgTeach*).

$$r = 0.477035$$
, $t(656) = 13.9018$, with two-tailed p-value 0.00,
 $AvgSubj_i = -10.67 + 1.056 AvgTeach_i + u_i$.

Regression coefficient β_1 is significant at 0.01 level. One point increase in average student's contentment rating of teacher rises the average student's contentment rating of taught subject by 1.056 points, meaning the teacher can impact student's perception of subject and, therefore, also indirectly the willingness to provide complex feedback to education process or



educational institution. The impact, though natural (teacher is perceived as an important provider of subject knowledge), works both ways and is not to be underestimated.

Conclusion

Findings in this paper can help educational institutions to optimize process of feedback obtaining and thus being more competitive via adjusting product qualities. However, one receives likely different feedback when asking about education or an institution providing it, depending on the subject which is being taught during the time of survey. There is also significant difference in complexity of feedback between types of survey, favoring online survey, which leaves only the problem of motivation. It is strongly suggested to have reserved time for survey during online education. Answered questions in this paper deserve more in-depth research. The willingness to provide complex feedback may vary according to students' current state of mind, time during the day and relationship to surveyor. Furthermore, better answers to questions Q1 (better fitting type of relationship between contentment and *Complexity* of feedback) and Q4 (relationship between student's contentment with subject and its teacher) could be obtained using non-linear regression models, which is to be a subject of further research.

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