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STATISTICAL ANALYSIS OF THE INFORMATION SUITABILITY OF COST ACCOUNTING FOR STRATEGIC AND OPERATIVE MANAGEMENT IN HIGHER EDUCATION

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Abstract: A drop in permanent income, higher education reform, rising salary costs, competitive pressure, the struggle to keep the balance between quality and tuition fees and other numerous challenges That higher education is facing, imposes the need for more sophisticated management models and innovative cost accounting models, such as activity-based costing (ABC). The concept of activity-based costing provides relevant information on costs and cost drivers of all higher education institution activities, thereby helping the institution develop its strategy based on high-quality activities while reducing operational costs, as well as define organizational policies to plan, control and evaluate efficiency and effectiveness of its operational activities. The general objective of this paper is to test the correlation between the selected variables using the appropriate statistical methods and to review the attitudes of employees in financial departments of higher education institutions in the Republic of Serbia regarding the knowledge, advantages and disadvantages that activity-based costing can bring.

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1. Introduction

Long-term economic crisis and COVID-19 crisis have brought numerous and significant changes in the higher education system concerning its work organization, autonomy, financing and control. The increasing number of private higher education institutions, limited state budget and reorganization of the existing public higher education institutions have led some institutions to closure and created new ones. All this has put the problem of their survival and financial sustainability in the foreground (Sursock, 2014). The European University Association deals with the issue of financial sustainability of the universities in Europe (Estermann & Claeys-Kulik, 2013). This association insists that universities need to have satisfactory and sustainable state funding, while, on the other hand, they should find ways to identify and adequately interpret the costs of all activities and ensure funding from various sources, and not only from the budget, all in order to have better autonomy and reduce financial risks.

Since each higher education institution faces a limited budget, it is of particular importance to determine adequate tuition fees and reduce operational costs while, at the same time, increasing the quality of services. The limited budget and the need for investment, in order to increase the quality, thus, impose the need for rational spending and determining a more realistic tuition fee in order to attract and retain students. This necessitates an adequate cost accounting concept that would bring a more comprehensive cost control and help set more adequate tuition fees at higher education institutions. The European University Association insists that universities apply cost accounting for better analysis of activities, more efficient resource allocation, industry-wide comparison, better understanding of investment decisions and, as well as better strategic and operational decision-making, which will bring greater return on the costs of project activities and long-term financial sustainability. Such is the concept of activity-based costing, which, by identifying cost drivers, gives managers information about each activity, based on which they can make decisions about what corrective measures to take to ensure the optimal resource allocation and reduce the costs to a minimum.

The paper consists of three parts. The first part of the paper gives the analysis of previous studies on the application of cost accounting in higher education institutions. The research methodology is explained in the second part of the paper, while the final part analyzes the results of the empirical research and indicates the views of accounting experts in higher education institutions in the Republic of Serbia.

2. Literature review

Back in 1989, there was a case study on the application of activity-based costing at universities, which revealed that this costing concept more accurately identified cost drivers, thus improving the quality of the decision-making process (Port &

Burke, 1989). Mitchell got to the similar results in his research on the application of activity-based costing at theuniversities in Great Britain. The results of his research showed that a fifth of the respondents applied this concept and were very satisfied with the comprehensive and detailed information about costs, considering that the concept helped in rational allocation of central costs to academic departments and enabled better strategic and operational decision-making (Mitchell, 1996). In 1998, Cooper developed an activity-based costing model for a higher education institution based on the premise that departmental activities directed the institution's resource consumption (Cooper, 1998).

Naido conducted research on cost accounting in private universities in South Africa on two occasions. The results of the 2005 research show that all analyzed universities apply the traditional cost accounting systems. However, the results of his 2010 research testify to the fact that a significant number of universities abandoned the traditional accounting concept and turned to activity-based costing (Naido, 2011). Jarrar, Smith and Dolley conducted a case study to check the feasibility of implementing activity-based costing at an Australian university. They came to the conclusion that the success of this concept significantly depends on the organizational culture, the alignment of the concept itself with the organization's strategy and continuous improvement programs (Jarrar et al., 2007).

Manuel tried to present a hybrid model of activity-based costing at a faculty in Portugal, which is not too complex and provides reliable and accurate information about costs, and serves as an important basis for strategic and operational decision-making at this higher education institution. It is a combination of the concept of activity-based costing and traditional costing. The activity-based costing-like part of this hybrid model is suitable for cost tracking and allocation in technical support department, administration, library, student services desk and public relations office, while the traditional costing-like part of the model is more suitable for cost tracking and allocation in financial department, maintenance and support staff activities because their specific operations make it difficult to implement the concept of activity-based costing (Manuel, 2011). Gordon, Fisher and Maelah also agree that the concept of activity-based costing is primarily useful in the library, technical support department, procurement and payroll departments at universities (Gordon & Fisher, 2011; Maelah, et al., 2011).

In 2011, Maelah, Amir, Ahmad, and Auzair conducted a case study of the application of the activity-based costing concept at a public university in Malaysia, where they used operating cost data from 2008 and 2009 to determine the cost per student at each academic program. The authors discovered that the university applied traditional cost accounting system, which used the number of students as the basis for cost allocation, obtaining the average cost per student at the faculty level. The study shows that activity-based costing would provide a more accurate, comprehensive and detailed overview of cost structure of each academic program than the traditional costing model used. Also, according to this study, the existing

system of costing underestimates costs per student in graduate studies, while overestimating postgraduate studies costs.

Furthermore, other research results indicate that the concept of activity-based costing has proven to be more successful in providing information for more accurate course pricing at higher education institutions than traditional costing systems (Ali, 2012). In 2015, Özyürek and Ulutürk conducted a case study of the application of activity-based costing in a private school in Ankara. The results of their study show that this concept easily identifies non-value-added activities and provides more reliable information about the costs of all activities that will help the school more accurately define its competitive prices. The information under this concept contributes to faster and easier strategic and operational decision-making, better personnel management and capacity planning, more adequate use of limited resources and the development of effective measures to reduce costs, which increases work productivity and profits (Özyürek & Ulutürk su 2015). Also, the case study on the application of this concept to define more accurate tuition fees at a private faculty shows that the current tuition fees are unrealistic and cannot cover the costs of all activities, so it is necessary to increase them by 15% in order to keep the existing standard, or by even 30% if the aim is to increase quality (Lestari & Mardini, 2018).

In order to investigate the attitudes of the respondents employed at higher education institutions in the Republic of Serbia regarding information suitability, advantages and disadvantages of activity-based costing, we set the following hypotheses:

H1: Activity-based costing brings the most suitable information to users in the field of management accounting and SMA.

H2: Accurate information about costs, cost improvement and control and easier indirect cost allocation are the main benefits of activity-based costing.

H3: According to the respondents, higher education institutions lack professional staff and managers and employees are not interested enough to implement new cost accounting systems.

H4: There are no statistically significant differences between male and female respondents regarding the expected benefits from the application of ABC and the reasons why it is not possible to apply ABC in higher education institutions.

H5: There are no statistically significant differences between the age categories regarding the expected benefits from the application of ABC and the reasons why it is not possible to apply ABC in higher education institutions.

3. Methodology of empirical research

The research objective in this paper is to examine the attitudes of finance and accounting employees at higher education institutions in the Republic of Serbia. The paper examines the views on the application of cost accounting in organizations, knowledge of their advantages, benefits of application and potential problems that may be encountered during the implementation of activity-based costing.

To conduct the empirical research, the authors use data collected using questionnaires. The questions are prepared based on a literature review and questionnaires used by numerous authors in this field (Alshamlan & Zverovich, 2018, Hashim, 2015; Hashim, 2014; Cardos et al., 2012; Varzaru, 2022; Botha & Toit, 2017). The first part of the questionnaire relates to the general characteristics of the organization (location, type of educational institution, number of employees, number of students, etc.) and socio-demographic questions related to respondents (gender, age, workplace and length of service in the same or similar position). The second part of the questionnaire examines the cost structure and respondents' views on the application, accuracy and satisfaction with the information they get from the current cost accounting system for the needs of strategic and operational management, reasons for application and expected challenges when implementing activity-based costing and the impact of digital information technologies on the usefulness and improvement of different cost accounting systems for the needs of strategic and operational management. The second part of the questionnaire uses a five-point Likert scale to indicate the level of agreement with the given items. Respondents can choose from 1 – I do not agree at all to 5 – I completely agree.

Data for the analysis of accounting experts' views was collected through an online survey and a telephone survey during December 2023. The questionnaires were e-mailed to finance and accounting departments and deans with a note that a questionnaire should be filled out by a person engaged in accounting. A total of 100 questionnaires were sent. A large number of respondents asked for help while filling out the questionnaires, so the majority of questionnaires were filled out by phone. A total of 70 questionnaires were collected for the purposes of researching the opinions of accounting experts, of which 67 were valid, while the remaining three questionnaires did not contain answers to the questions related to the application of the cost accounting system and were excluded from the statistical processing and data analysis. Table 1 shows some characteristics of the observed sample.

Table 1 Some characteristics of the sample

Variables	Frequency	Valid %	Cumulative %
Region			
Belgrade region	28	41,8	41,8
Vojvodina region	14	20,9	62,7
Šumadija and Western Serbia region	13	19,4	82,1
Southern and Eastern Serbia region	12	17,9	100,0
Institution			
College	7	10,4	10,4
Academy	7	10,4	20,9
Faculty	53	79,1	100,0
Number of employees			
32-172	39	58,2	58,2
173-382	23	34,3	92,5
383 and more	5	7,5	100,0
Number of students			
247-1348	33	49,3	49,3
1349-2449	17	25,4	74,6
2450-3551	8	11,9	86,6
3552-4652	4	6,0	92,5
4653-5754	2	3,0	95,5
5755-6856	1	1,5	97,0
6857 and more	2	3,0	100,0

Source: Authors

Table 1 shows that the Belgrade region (41.8%) dominates the structure of higher education institutions, while the remaining three regions share an approximately similar share, ranging from 17.9% in the region of Southern and Eastern Serbia to 20.9% in the region of Vojvodina. Moreover, faculties are a dominant sample with a share of 79.1%, while academies and colleges have an equal share of 10.4% each. If we look at the sample according to the number of employees, 58.2% of institutions have 32-172 employees, 34.3% have 173-382 employees, while only 5 institutions have more than 383 employees. Table 2 provides an overview of socio-demographic characteristics of the respondents.

Of the total number of respondents, 73.13% are female, while 26.87% are male. The largest number of employees in higher education institutions are over 50 years old (43.3), while 35.8% of employees are aged 40-50, and only 20.9% are aged 30-40. When we analyze the sample based on the level of education, we see that the largest number of respondents have completed basic academic studies (46.3%). Regarding their positions, the largest number work as accountants, namely 65.7% of

the total number of respondents. The sample is dominated by employees with 13-17 years of work experience of (44,8%).

Table 2 Socio-demographic profile of respondents

Variables	Frequency	Valid %	Cumulative %
Gender			
Male	18	26,9	26,9
Female	49	73,1	100,0
Age			
30-40	14	20,9	20,9
41-50	24	35,8	56,7
51 -65	29	43,3	100.0
Education			
Secondary school	1	1,5	1,5
College	11	16,4	17,9
Faculty – basic academic studies	31	46,3	64,2
Faculty – master academic studies	22	32,8	97,0
PhD	2	3,0	100,0
Occupation			
Financial analyst	11	16,4	16,4
Financial manager	1	1,5	17,9
Controller	2	3,0	20,9
Manager	2	3,0	23,9
Accountant	44	65,7	89,6
Head of economic and financial sector	1	1,5	91,0
Head of financial and accounting affairs	3	4,5	95,5
Head of material and financial affairs	1	1,5	97,0
Head of accounting	2	3,0	100,0
Work experience			
2-12	22	32,8	32,8
13 – 27	30	44,8	77,6
28 and more	15	22,4	100.0

Source: Authors, using SPSS

The collected data was analyzed using the statistical package for social sciences IBM SPSS Statistics 20.0 (Statistical Package for Social Sciences - SPSS, Version 20.0). The reliability and internal consistency of variables were measured using Cronbach's Alpha coefficient. Descriptive statistics was used to measure the central tendency (arithmetic mean, median, mode) and measure variability (standard deviation). The normality of distribution of variables was examined with the help of computational (Kolmogorov-Smirnov test and Shapiro-Wilk test) and

graphical methods. As it was not possible to apply the t-test and ANOVA, we used non-parametric tests, the Mann-Whitney U test and the Kruskal Wallis Test.

4. Research results and discussion

The results of Hashim's study confirm that the benefits of applying the concept of cost accounting in higher education institutions are the same as in other non-profit and for-profit organizations in all sectors (Hashim, 2012; 2013; 2014; 2015), which numerous other authors also agree with. To analyze the research results, we used papers on the application of this concept in both manufacturing and service sectors.

We calculated Cronbach's Alpha coefficient for each question to which the respondents had to answer by circling the number on the Likert scale. With this coefficient, we examined the scale's internal consistency, i.e. its reliability. (Pallant, 2011). Ideally, the value of this coefficient should be greater than 0.7. (DeVellis, 2003). All obtained results in our case are greater than 0.7, so we can conclude that the internal consistency of the analyzed scale is considered acceptable.

After the reliability check, we also check the normality of distribution of the used variables. To test the normality of distribution, we used the Skewness and Kurtosis calculation methods, as well as the Kolmogorov-Smirnov and the Shapiro-Wilk tests. We also used graphic methods (Histogram, Box Plot and Normal Q-Q diagram). The criterion for confirming the assumption of normality of distribution in the Kolmogorov-Smirnov test and the Shapiro-Wilk test is a significance level (Sig.) greater than 0.05 (Manasijević, 2011). Computational and visual methods show that the data do not have a normal distribution, so further research will be based on non-parametric tests.

The results of the electronic questionnaire show that 80.6% of higher education institutions use a cost accounting system. Almost all institutions apply cost accounting based on actual costs. Nevertheless, the respondents know of other systems of cost accounting as well, and among the most famous is activity-based costing.

Table 3 shows how respondents evaluate information that traditional and modern cost accounting systems bring them and its usefulness for the needs of management accounting and strategic management accounting and business improvement.

The analysis of the usefulness of traditional and modern cost accounting systems for the needs of strategic management indicates that the respondents gave the highest rating to actual costing (AM = 3.82), i.e. viewed on the Likert scale, the most common rating the respondents gave was 4 (Mod.=4). The employees in higher education institutions gave the lowest rating to the usefulness of Kaizen accounting (AM= 3.25). When it comes to modern cost accounting systems, the respondents gave the highest average rating to the usefulness of information coming from activity-based costing ($M=3.43$; $\sigma<1$). When it comes to other

modern cost accounting systems, the respondents did not give particular preference to any innovative cost accounting system (Me=3 and Mo=3). This analysis proves Hypothesis 1. The stated results are in accordance with the research results by Marlina, E., & Tjahjadi (Marlina & Tjahjadi, 2021).

Table 3 Descriptive Statistics - The usefulness of applying the cost accounting system

Usefulness of the application of CAS for the needs of management accounting and SMA Cronbach's Alpha=0,929	N	Min	Max	AM	SD	Med.	Mod.
Usefulness of CAS – actual costing	67	1	5	3,82	0,833	4	4
Usefulness of CAS – standard	67	1	5	3,39	0,920	3	4
Usefulness of CAS – stan. variable	67	1	5	3,36	0,811	3	3
Usefulness of CAS (activity-based costing)	67	1	5	3,43	0,874	3	3
Usefulness of CAS – target cost	67	1	5	3,33	0,824	3	3
Usefulness of CAS – Kaizen	67	1	5	3,25	0,785	3	3
Usefulness of CAS – during product lifecycle	67	1	5	3,27	0,783	3	3

N – number of respondents, Min.- minimum, Max- maximum, AM - arithmetic mean, SD – standard deviation, Med. – median, Mod. – Mode.

Source: Authors, using SPSS

Table 4 shows the reasons for the application of activity-based costing in higher education institutions. It gives the results of descriptive statistical analysis of the reasons for applying the concept of activity-based costing.

Table 4 Descriptive Statistics – Expected benefits from the application of ABC

Expected benefits from the application of ABC Cronbach's Alpha=0,954	N	Min	Max	AM	SD	Med.	Mod.
Cost improvement and control	67	1	5	3,82	0,886	4	4
Accurate information about costs	67	1	5	3,85	0,764	4	4
Better performance evaluation	67	1	5	3,63	0,868	4	3
Cost reduction	67	1	5	3,61	0,852	4	4
Precise allocation of overhead costs	67	1	5	3,78	0,813	4	4
Easier business analysis	67	1	5	3,46	0,910	4	3
Better response to managers' information needs	67	1	5	3,70	0,798	4	3
Improvement of existing CAS	67	1	5	3,70	0,888	4	4

N –number of respondents, Min.- minimum, Max- maksimum, AM - arithmetic mean, SD – standard deviation, Med. – median, Mod. – Mode.

Source: Authors, using SPSS

Of eight analyzed variables related to the benefits of activity-based costing, the respondents gave the best average rating to "accurate information about costs" (AM = 3.85), followed by "cost improvement and control" (AM = 3.82) and "precise allocation of overhead costs" (AM=3.78). The respondents gave the lowest average rating to easier business analysis. However, if we take into account that there is no normal distribution and, that being the case, when analyzing descriptive statistics, arithmetic mean is not a true measure of the average, we looked at the median and mode. The median value of all reasons for applying activity-based costing is 4, which means that half of the respondents gave a rating below 4, and the other half above 4. The most common rating for cost improvement and control, accurate information about costs, cost reduction, precise allocation of overhead costs and improvement of existing CAS is 4 (Me=4). For other reasons (better performance evaluation, easier business analysis and better response to managers' information needs) the most common rating is 3 (Mo=3), so we can conclude that the respondents do not have a defined attitude regarding these reasons. These results are similar to previous research results (Cardos at al., 2012; Zhu & Chen, 2000).

In further research, we wanted to know the reasons why the employees in higher education institutions do not support the application of activity-based costing. Using the Likert scale, the respondents rated the satisfaction with the current costing system, high costs and long implementation process, complexity in process design, the lack of management and employees' support and interest and the lack of professional staff. An overview of descriptive statistics is provided in Table 5.

Table 5 Descriptive Statistics – Reasons why it is not possible to apply ABC

Reasons why they do not support ABC Cronbach's Alpha=0,907	N	Min	Max	AM	SD	Med.	Mod.
Satisfaction with the current system	67	1	5	3,25	1,035	3	3
High implementation and maintenance costs	67	1	5	3,34	0,880	3	3
Long implementation process	67	1	5	3,39	0,937	3	4
Complex design of the data collection process	67	1	5	3,31	0,874	3	3
Lack of management and employees' support and interest	67	1	5	3,45	0,958	3	3
Lack of professional staff	67	1	5	3,54	0,943	4	4

N –number of respondents, Min.- minimum, Max- maksimum, AM- arithmetic mean, SD – standard deviation, Med. – median, Mod. – Mode.

Source: Authors, using SPSS

Of six analyzed variables that refer to the reasons why respondents do not support activity-based costing, i.e. to the expected challenges during its implementation, "lack of professional staff" got the best average rating (M=3.54), while "satisfaction with the current costing system" (M=3.25) got the lowest rating,

with smaller oscillations in the response structure itself because of standard deviation greater than 1 (σ>1). For all the remaining reasons, standard deviation is below 1 (σ<1), so we can conclude that the respondents largely agree with the ratings of these variables. Therefore, the respondents single out "lack of professional staff" (M=3.54), "lack of management and employees' support and interest" (M=3.45) and "model implementation poses a great burden and lasts a long time" (M=3.39), thus confirming Hypothesis 3. The stated results are in accordance with the previous research in other countries (Alshamlan & Zverovich, 2018; Madwe, 2020; Cardos at al., 2012; Al-Basteki & Ramadan, 1998; El-Ebaishi, 2003; Zhu & Chen, 2000).

In order to test H4: There are no statistically significant differences between male and female respondents regarding the expected benefits of applying ABC and the reasons why it is not possible to apply ABC in higher education institutions, we applied the Independent Samples T test. Bearing in mind that the normality of the distribution of the selected variables does not exist, we used the non-parametric alternative, the Mann-Whitney U test.

Table 6. Test Statistics[a]

Expected benefits from the application of ABC	Cost improvement and control	Precise information about costs	Better performance evaluation	Cost reduction	Precise allocation of overhead costs	Easier business analysis	Better response to managers' information needs	Improvement of existing CAS
Mann-Whitney U	436.0	433.0	418.0	439.5	384.5	409.5	372.0	403.0
Wilcoxon W	1661.0	1658.0	1643.0	1664.5	1609.5	1634.5	1597.0	1628.0
Z	-.076	-.123	-.349	-.023	-.862	-.478	-1.047	-.570
Asymp. Sig. (2-tailed)	.939	.902	.727	.982	.389	.632	.295	.568

a. Grouping Variable: Respondents' gender

Source: Authors, using SPSS

Table 6 shows that there is no statistically significant difference between men and women when they evaluate the expected benefits from the application of ABC (Sig > 0.05, p= 0.939, p= 0.902, p= 0.727, p= 0.982, p= 0.389, p= 0.632, p= 0.295, p= 0.568). Descriptive statistics shows that men gave a slightly higher average rating to all items, but that it is not statistically significant. The men gave the highest average rating (M=3.89) to "precise information about costs", as well as "cost improvement and control" and "response to managers' information needs", while the women also gave the reason the highest average rating to "precise information about costs" (M=3.84), then "cost improvement and control" (M=3.80)

and "precise allocation of overhead costs" (M=3.71). Based on the views on the reasons for implementing activity-based costing rated with higher average ratings (M≈4) and standard deviation values below 1 (σ<1), we can conclude that the respondents largely agree with the ratings of these variables.

Table 7 provides an overview of the results of the Mann-Whitney U test for the purposes of checking statistically significant difference in the male and female respondents when it comes to the reasons why ABC should not be applied.

Table 7. Test Statistics

Reasons why they do not support the application of ABC	Satisfaction with the current system	High implementation and maintenance costs	Long implementation process	Complex design of the data collection process	Lack of management and employees' support and interest	Lack of professional staff
Mann-Whitney U	339.000	404.500	387.500	365.000	315.000	352.000
Wilcoxon W	510.000	575.500	558.500	536.000	486.000	523.000
Z	-1.526	-.561	-.812	-1.171	-1.899	-1.342
Asymp. Sig. (2-tailed)	.127	.575	.417	.241	.058	.180

a. Grouping Variable: Respondents' gender

Source: Authors, using SPSS

Also, there is no statistically significant difference in the agreement of respondents of different genders (Sig > 0.05, p= 0.127, p= 0.575, p= 0.417, p= 0.241, p= 0.058, p= 180, p= 111). Unlike the previous group of questions, to these questions women gave answers with a statistically insignificant higher average rating compared to men. Women gave the highest average rating to "the lack of professional staff" (M=3.63) and "the lack of management and employees' support and interest" (M=3.57). "Model implementation poses a great burden and lasts a long time" (M=3.43) follows, while the remaining three, "satisfaction with the current costing system", "high implementation and maintenance costs" and "model design, data collection and working processes are too complicated", got the same average rating (M=3.37). In all cases, the value of standard deviation is below 1 (σ<1), so we can conclude that female respondents largely agree with the ratings of these variables. Unlike women, men gave the same highest average rating to "high implementation and maintenance costs", "model implementation poses a great burden and takes a long time" and "lack of professional staff" (M=3.28). "Model design, data collection and work processes are too complicated" (M=3.17), "thelack of management and employees' support and interest" (M=3.11) and "satisfaction with the current costing system" (M =2.94) follow, with

slightoscillations in the response structure itself because the value of the standard deviation is greater than 1 (σ>1).

The above analysis proves Hypothesis 4 because no statistically significant differences were observed in the male and female respondents regarding the expected benefits from the application of ABC and the reasons why it is not possible to apply ABC in higher education institutions.

To test Hypothesis 5, we applied univariate one-factor analysis of variance (ANOVA). Also, due to the non-existence of normality of distribution of the variables, we applied the Kruskal Wallis Test, as an adequate non-parametric alternative.

Table 8. Test Statistics[a,b]

Expected benefits from the application of ABC	Cost improvement and control	Precise information about costs	Better performance evaluation	Cost reduction	Precise allocation of overhead costs	Easier business analysis	Better response to managers' information needs	Improvement of existing CAS
Chi-Square	.783	.865	.380	.095	.419	.346	.301	.310
df	2	2	2	2	2	2	2	2
Asymp. Sig.	.676	.649	.827	.954	.811	.841	.860	.857

a. Kruskal Wallis Test
b. Grouping Variable: Respondents' age

Source: Authors, using SPSS

Table 8 shows that the age of the respondents does not significantly affect the attitude about the expected benefits from the application of ABC. Finally, we tested the existence of a statistically significant difference between the three categories of respondents regarding the reasons why ABC should not be applied. The results of the analysis are given in Table 9.

Table 9 shows a statistically significant difference in the respondents' attitudes by categories when it comes to the length of the implementation process and the lack of management and employees' support and interest (Sig < 0.05; p= 0.047 and p= 0.039). When it comes to other questions, there is no statistically significant difference in respondents' attitudes. It is interesting that the respondents between the ages of 41 and 50 recognized the long implementation process and the lack of management and employees' support and interest as the biggest drawback for the application of activity-based costing.

Tabela 9. Test Statistics[a,b]

Reasons why they do not support ABC	Satisfaction with the current system	High implementation and maintenance costs	Long implementation process	Complex data collection process	Lack of managers and employees' support and interest	Lack of professional staff
Chi-Square	1.426	4.428	6.134	1.435	6.491	1.275
df	2	2	2	2	2	2
Asymp. Sig.	.490	.109	.047	.488	.039	.529

a. Kruskal Wallis Test

b. Grouping Variable: Respondents' age

Source: Authors, using SPSS

Thus, we can conclude that the results prove H5: There are no statistically significant differences between age categories regarding the expected benefits from the application of ABC and the reasons why it is not possible to apply ABC in higher education institutions.

5. Conclusion

Despite the abundant research and case studies on this subject around the world, it is still insufficiently researched in Serbia. After reviewing the scientific and professional literature, the focus of the analysis has been on higher education institutions in the Republic of Serbia. Our results show that higher education institutions still prefer traditional cost accounting systems, mainly actual costing, while some higher education institutions still do not apply any cost accounting system because, according to respondents, the legislation does not insist on their mandatory application. Moreover, over 50% of the respondents said that they applied cash-basis accounting and that they were not sure if they used any cost accounting system and were not very clear which of the cost accounting systems was mentioned in the survey they used. Also, there were comments that cost accounting was intended for manufacturing organizations and that it did not apply to them. A little more than 1/3 of the respondents stated that they were familiar with activity-based costing, one third of the respondents were not familiar with this accounting system, while one quarter of the respondents were not sure if they could claim with certainty if they knew what activity-based costing was.

The most common benefits recognized by employees at higher education institutions for the implementation of activity-based costing were "precise

information about costs", "cost improvement and control", "response to the managers' information needs" and "precise allocation of overhead costs", while the most common challenges are "the lack of professional staff", " the lack of management and employees' support and interest" and "model implementation poses a great burden and takes a long time". Also, during the analysis, we noticed that there were no statistically significant differences between male and female respondents regarding the expected benefits from the application of ABC and the reasons why it was not possible to apply ABC in higher education institutions, but that all respondents agreed with the ratings of those variables. Finally, we concluded that the only attitudes that differed among the age categories related to possible problems in the application of ABC with a longer implementation process and the lack of management and employees' support and interest. There were no statistically significant differences in other questions.

Although this paper makes a contribution to the literature on examining the potential for the application of activity-based costing, it also has some limitations. The limitations of this research are reflected in the size of the sample, the subjectivity when filling out the survey, and the neglect of the specifics of each of the observed institutions. Also, it is necessary to expand the list of questions that would examine in more detail the factors that affect the implementation of activity-based costing and enable the collection of data through interviews, so that respondents could more fully answer the questions.

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STATISTIČKA ANALIZA INFORMACIONE PODOBNOSTI RAČUNOVODSTVA TROŠKOVA ZA STRATEŠKO I OPERATIVNO ODLUČIVANJE U VISOKOM OBRAZOVANJU

Abstract: Smanjenje stalnih prihoda, reforme visokog obrazovanja, rastući troškovi zarada, pritisak konkurencije, borba za očuvanje balansa između kvaliteta i visine školarine i drugi mnogobrojni izazovi sa kojima se suočava visoko obrazovanje, nameću potrebu za primenom sofisticiranijih modela upravljanja i inovativnih modela obračuna troškova kao što je, između ostalih, obračun troškova po aktivnostima (ABC). Koncept obračuna troškova po aktivnostima pruža relevantne informacije o troškovima i uzročnicima potrošnje svih identifikovanih aktivnosti visokoškolske ustanove, čime doprinosi razvoju strategije ustanove koja se zasniva na implementaciji aktivnosti visokog kvaliteta uz smanjenje operativnih troškova, kao i definisanju organizacionih politika za planiranje, kontrolu i ocenjivanje efikasnosti i efektivnosti njenih operativnih aktivnosti. Opšti cilj ovog rada je da se primenom odgovarajućih metoda statističke analize međusobnog odnosa odabranih varijabli preispitaju stavovi zaposlenih u finansijskim službama na viskokoškolskim ustanovama u Republici Srbiji po pitanju poznavanja, prednosti i nedostataka koje može da donese primena obračuna troškova po aktivnostima.

Ključne reči: obračun troškova, obračun troškova po aktivnostima, visoko obrazovanje, statistička analiza, strategija.

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