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Presentation skills of business and economics students: Cluster analysis

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Abstract

Presentation skills are one of the most important tools that are required on numerous occasions in education and business. In most of the business and economics colleagues, presentation skills are taught as part of the curriculum, of at least several courses. Therefore, it could be expected that presentation skills would be highly developed among business and economics students. However, in practice, people develop numerous fears and barriers to the presentation in public. On the other hand, students do not behave in the same manner taking into account their fear towards the presentation in public. The goal of the paper is to investigate if there are homogenous groups of students according to their attitude towards the presentation, both as sources of success and as a source of fear. Cluster analysis has been employed to fulfil the paper goal. Non-hierarchical k-means analysis has been conducted on data collected by the research instrument about the benefits and fears from the presentations on the sample of students enrolled in business and economics colleagues. Results indicate that there are homogenous groups of students according to presentation perceived benefits and fears, but the composition of these groups indicates that perceived benefits and fears of presentations are not always related in the same direction.

Introduction

Oral presentation skills are nowadays highlighted as one of the most important business communication tools (Coffelt, Baker, Corey, 2016). Numerous professions such as Economy and Business, Health, Politics, and Diplomacy recognised the

influence of polished presentation skills as a necessity for a successful career (Ciarocco, 2018). They use presentations for business results discussions, developing strategies, pitching ideas, debating about their opinions, but the impact of the presented depends on the speakers' oral presentation skills (Salem, 2019). Academic researchers acknowledge presentation skills as the most important skills for employment, even in comparison to intelligence, moreover, they point out that poor presentation skills could impede the individual's career (Lent, 2018). Educators expect their graduates to have admirable communication skills so they can become more competitive future job applicants (Brynjolfsson, Rock, Syverson, 2017).

The relevance of presentation delivery cannot be emphasised enough for individuals' career whose success relies on their communication skills with their business associates, partners, and colleagues (Mohammed, 2019). However, not all managers perform well in delivering presentations. There are still several managers who neglect the importance of presentation skills, and there is a number of them who developed some kind of fear towards the presentation in public (Werthes, Mauer, Brettel, 2018). There are various types and origins of fears and anxieties towards oral presentation deliveries, although numerous academics confirmed that the fear is lower when the material is well-rehearsed (Leigh, Claek, 2018). Therefore, for a person to develop full potential from their presentation skills, it is important to learn and evolve them from the earliest stages of education (Dede, 1996).

Oral presentation, debating and persuasion skills are included in curricula even in elementary schools nowadays (Roy, Macchiette, 2005). Learning presentation skills should not be limited to communication subjects, they should be nurtured at all times, and be included in different sorts of tasks so that students learn to organise information, connect to their audience, time and management, develop both inter and intrapersonal communication skills by balancing from serious to relaxed tone to keep their audience attentive and evolved (Roussel, Joulia, Tricot, 2017).

The purpose of this paper is to explore the business students' attitudes toward presentation delivery, and investigate if there are homogenous groups of students according to their attitude towards the presentation, both as sources of success and as a source of fear. If the investigation confirms that students could be sorted into groups, it could be helpful for future investigations on the topic, in the search for answers in finding the origin of fear as well as the possible solutions and the factors, which can reduce or eliminate the fear. The research is conducted by cross-analysis of descriptive statistics, factor analysis, cluster analysis, and the non-hierarchal k-means analysis to extract the most knowledge as possible from the data presented.

The paper is organized in the following manner. After the Introduction, the Literature review is presented which provides deeper insight on the topic with relevant previous investigations included. Following, the Methodology section where methodology, data, sample characteristics, and the statistic analyse are described. The result section provides an interpretation of the statistical outputs from the research. The discussion section highlights the findings from the investigation. Finally, the Conclusion section provides the key knowledge from the research followed by the limitations and future investigation recommendations alongside the concluding remarks.

Literature review

Business schools pay special attention to teaching oral presentation skills to prepare their students for competitive and asperously business surroundings of the modern world (Ramesh, 2010). In business schools, excellent presentation skills are understood as the set of abilities that provide students to engage with the public during presentation delivery, clearly transmitting the knowledge, interacting, and understand

the mindset of the audience (Cleverism, 2020). Moreover, higher education institutions emphasise presentation skills as they provide enhanced learning process and develop creativity and articulation (Henard, Roseveare 2012). Presentations make students open their minds and comprehended different concepts and methods, and remember the learned material for a longer period (Çetin, Eymur, 2017).

Suktikanaport (2014) investigated a sample of 280 department heads in various business fields, where respondents associated different communication skills to succeed. The oral communication skills, alongside writing skills, were rated higher than all other communication skills. The study concluded that refined presentation skills are essential not only to individuals' business success but to the whole company.

The fear of presentation delivery is another distinctive reason for institutions to include presentations into curricula. Many people experience occasional or permanent fear and anxiety of public speakers, and the educators' goal is to reduce it or eliminate it. Furthermore, the fear of presentation delivery soon became a prominent source for academic researches. Numerous authors investigate difficulties with presentation delivery and explored different ways to eliminate anxiety and improve the quality of the presentation performance (Dell'osso, Saettoni, Papasogli, 2002).

The preliminary papers on the topic were focused on the solutions for oral presentation anxiety. Rubin, Rubin, Jordan (1997) paper was the first who suggested that the practice and the repetition are the pivotal methods for stress elimination and performance improvement during presentation delivery. Alshare, Hindi (2004) recognised that oral presentations in the classroom are beneficial to both students and educators. The authors stressed out computer-based student presentations as a valuable teaching method for students to achieve a deeper understanding of the curricula. A year later, Susskind (2005) confirmed the previous research and connected the MS PowerPoint usage in the classroom with student confidence, motivation, self-efficiency, and success on the task. Some authors, such as Sukitkanaporn, Phoocharoensil (2013), and Christianson, Payne (2011) concentrated on attempts to determine elements of a successful presentation and the factors that increase presentation-delivering anxiety.

Sideris and Kafetsios (2008) introduced the connection between the parenting environment and the anxiety during presentation delivery. The same authors in 2008 presented another investigation result where they correlate parenting styles with the levels of fear while presentation delivery and school task performance (Sideridis, Kafetsios, 2008). A recent investigation from Sugeng and Suryani (2018) confirm the previous work findings and distinguishes self-confidence as the key factor of presentation delivery, and state that students' self-confidence depends on both parents and educators. Discoveries from such researches were highly useful for schools and other educational institutions, where they could implement acknowledged supportive communication methods which positively impacted students results, confidence, and, consequently, presentation skills (Šimičević, Jurić, Ćurlin, 2020).

Numerous methods concentrated on practical methods that enhance students' presentation delivery performance. Already mentioned authors, Christianson, Payne (2011) came up with a format that helps students with visual effects and time management which resulted in more convincing and engaging presentations. Popescu (2013) identified student attitudes toward public speech and tested their skills in presentation delivery. Authors Van Ginkel, Gulikers, Biemans, 2017), made a significant impact by carrying out an extensive literature review where they synthesized the data from all previous investigations on the topic and as a result produced the key seven principles for developing oral competences.

In the year Çetin and Eymur (2017) introduce a novel conceptual model based on the argument-driven inquiry (ADI) developed on the social cognitive theories of learning which helped students to increase their presentation skills. Recent investigations on the topic also rely on disruptive technologies as a key factor which improves presentation delivery, Boetje, Van Ginkel (2020) emphasise virtual reality as a method to practice presentation skills where both anxious and non-anxious students gained benefits from practising before a VR audience, while McGovern, Moreira and Luna-Nevarez (2020) allowed the participants of the research to assess and upgrade their oral presentations skills. The investigation establishes that the usage of AR can be highly valuable to educational institutions to increase their oral presentation performance and reduce anxiety and fear by delivering it.

Methodology
Data
This research has been conducted on a sample of 495 students Business and Economics students from Zagreb, Croatia. The final sample consist of a total of 367 female and 128 male students range from 18 to 25 years old. Most students were 21 (39,8%) years old, following the age group of 22 (18%), and 19 (15.4%) years old. 10.9% of respondents were 23 years old, and 5.9% of respondents were 24 years old. 17 students (3.4%) had 25 years while participating in this investigation, and, finally, only 1 student (0.2%) was 18 years old. The majority of respondents fell into the age group between 19 and 23 years old.

Table 1 Sample characteristics

	Frequency	%	Cumulative %
Gender			
Male	128	25.9	25.9
Female	367	74.1	100
Age			
18 years	1	0.2	0.2
19 years	76	15.4	15.6
20 years	32	6.5	22
21 years	197	39.8	61.8
22 years	89	18	79.8
23 years	54	10.9	90.7
24 years	29	5.9	96.6
25 years	17	3.4	100
Type of school			
Gymnasium	261	52.7	52.7
Business secondary school	203	41	93.7
Another secondary school	31	6.3	100
Total	495	100	

Source: Authors' work.

The respondents finished three different types of secondary schools in Croatia: gymnasium, business secondary school, and other secondary schools. More than half of students came from gymnasium (52.7%), 41% graduated business secondary schools and 6.3% finished other secondary schools. Table 1 displays sample characteristics obtained for the research purpose.

Research instrument

Given the research topic, the study is based on the questionnaire for measuring the perceived benefits and fears of delivering presentations. The research instrument was comprised out of four dimensions: (i) Fear at delivering presentation, (ii) Problems while delivering a presentation, (iii) Perceived success at delivering a presentation, and (iv) Strategies in stimulating audience attention when presenting.

Table 2 Research instrument measuring perceived benefits and fears of delivering presentations

Dimension	Research items	Measurement
Fear at delivering presentations	Q1_1. Fear that I will be unsuccessful / at the presentation Q1_2. Fear of being criticized Q1_3. Fear that I will turn out funny Q1_4. Fear that my colleagues will make fun of me Q1_5. Fear of revenge	Likert scale (1-fear is not present at all, 2-fear is rarely present, 3-fear is sometimes present, 4-fear is often present, 5-fear is always present)
Problems while delivering the presentation	Q2_1. What about the hands? Q2_2. How loud to speak? Q2_3. What if the public reacts badly? Q2_4. What if I have too much material? Q2_5. What if I have too little material? Q2_6. What if my voice starts to tremble? Q2_7. What if I misjudge the time?	Likert scale (1-problem is not present at all; 2-problem is rarely present; 3-problem is sometimes present; 4-problem is often present; 5-problem is always present)
Perceived success at delivering a presentation	Q3_1. I know well the material I expose when I present Q3_2. I look convincing when I present Q3_3. I respect the audience and their views when I present Q3_4. I adapt the presentation to the audience Q3_5. I hold the audience's attention throughout the presentation	Likert scale (1-I do not agree at all; 2-not agree; 3-undecided; 4-agree; 5-fully agree)
Strategies in stimulating audience attention when presenting	Q6_1. I surprise the audience with something Q6_2. I ask the audience a question Q6_3. I pique the audience's curiosity Q6_4. I remind the audience of something that everyone remembers Q6_5. I say something dramatic Q6_6. I'm quoting something Q6_7. I am briefly silent to highlight part of the speech	Likert scale (1-I do not agree at all; 2-not agree; 3-undecided; 4-agree; 5-fully agree)

Source: Authors' work.

The fear of delivering presentations dimension rates of fear of presentations between students measured by Likert scale as (1-fear is not present at all, 2-fear is rarely present, 3-fear is sometimes present, 4-fear is often present, 5-fear is always present). Research items for Fear at delivering presentation dimensions are connected to fear of unsuccessful presentation, fear of criticism, fear of being mocked at, and fear of revenge.

The second dimension, Problems while delivering a presentation, examines problems that may occur while delivering the presentation, and consists of seven research item questions: (i) What about the hands? (ii) How loud to speak? (iii) What if

the public reacts badly? (iv)What if I have too much material? (v) What if I have too little material? (vi) What if my voice starts to tremble? (vii) What if I misjudge the time? Research items are measured with a Likert scale as (1-problem is not present at all; 2-problem is rarely present; 3-problem is sometimes present; 4-problem is often present; 5-problem is always present).

The third dimension, Perceived success at delivering a presentation is focused on affirmative questions regarded to presentation performance and knowledge of the material, convincing performance, and connection with the audience. Dimension is also measured by the Likert scale as (1-I do not agree at all; 2-not agree; 3-undecided; 4-agree; 5-fully agree).

The fourth and final dimension contained in this investigation is Strategies in stimulating audience attention when presenting which include seven questions related to strategies of stimulating audience while presenting such as including quotes, questions, pauses, and surprises into the presentation. The simulating strategies dimension is measured by the Likert scale as the Likert scale (1-I do not agree at all; 2-not agree; 3-undecided; 4-agree; 5-fully agree). Table 2 presents a Research instrument measuring anxiety at delivering presentations.

Statistical analysis

Data obtained by the questionnaire survey were analysed on the four following steps using various statistical methods: (i) 1st step – Descriptive statistics and reliability analysis calculated for all the variables at the total sample; (ii) 2nd step – Factor analysis that was used to reveal the underlying structure from a large dataset. The variables were included in a dataset under the a priori premise that each variable may be correlated with any factor; (iii) 3rd step – Cluster analysis employed to fulfil the paper goal. Cluster analysis is one of the best ways to comprehend a large set of variables and to separate them into homogenous groups, and (iv) 4th step – Chi-square of cluster membership and demographic characteristics

Descriptive statistics and reliability analysis

Descriptive statistics and Cronbach's alpha for an observed sample and the research instrument are displayed in Table 3. The average grade is the lowest for Q1_5, research item "Fear of revenge" which indicates that students perceive the fear of revenge as the lowest fear while delivering presentations. On the other hand, the highest average grade has research items from the "Perceived success at delivering a presentation" dimension, the question "I respect the audience and their views when I present" have the highest average grade (4.09) following the "I know well the material I expose when I present" with the average grade 3.91 which means that students are confident about their approach towards their audience as well as their knowledge about presented material.

None of the research questions was excluded from further research as none of the research questions was not above three standard deviations. We included Cronbach's alpha coefficients for four dimensions included in the research, to analyse internal consistency and the reliability of the research instrument. Considering Nunnaly (1994) recommended the cut-off value of 0.70, from which all Cronbach's alpha values are higher, internal consistency and the reliability of the research instrument is confirmed.

Table 3 Descriptive statistics and Cronbach's alpha

	N	Min	Max	Mean	Std. Dev.	Cronbach's alpha
Fear at delivering presentations						
Q1_1	495	1	5	3.02	1.144	0.882
Q1_2	495	1	5	2.76	1.147	
Q1_3	495	1	5	2.68	1.250	
Q1_4	495	1	5	2.26	1.209	
Q1_5	495	1	5	2.06	1.073	
Q1_6	495	1	5	2.17	1.162	
Problems while delivering the presentation						
Q2_1	495	1	5	2.48	1.092	0.801
Q2_2	495	1	5	2.16	1.063	
Q2_4	495	1	5	2.37	1.059	
Q2_5	495	1	5	2.63	1.078	
Q2_6	495	1	5	2.38	1.060	
Perceived success at delivering a presentation						
Q3_1	481	1	5	3.91	0.948	0.818
Q3_2	487	1	5	3.63	0.943	
Q3_3	480	1	5	4.09	0.985	
Q3_4	486	1	5	3.59	1.053	
Q3_5	488	1	5	3.30	0.955	
Strategies in stimulating audience attention when presenting						
Q4_1	495	1	5	2.54	1.077	0.823
Q4_2	495	1	5	2.49	1.087	
Q4_3	495	1	5	2.86	1.001	
Q4_4	495	1	5	3.09	1.061	
Q4_5	495	1	5	2.34	1.062	
Q4_6	495	1	5	2.81	1.089	
Q4_7	495	1	5	2.23	1.071	

Source: Authors' work.

Factor analysis

Factor analysis is conducted to extract common factors from the analysis. Factor analysis is a multivariate statistical method that makes the correlation without the same group of data whose purpose is trying to reduce the loss of information (Singh, Malik, Mohan, 2004). For this investigation, the principal component analysis method is used, following the Varimax with Kaiser Normalization rotation method.
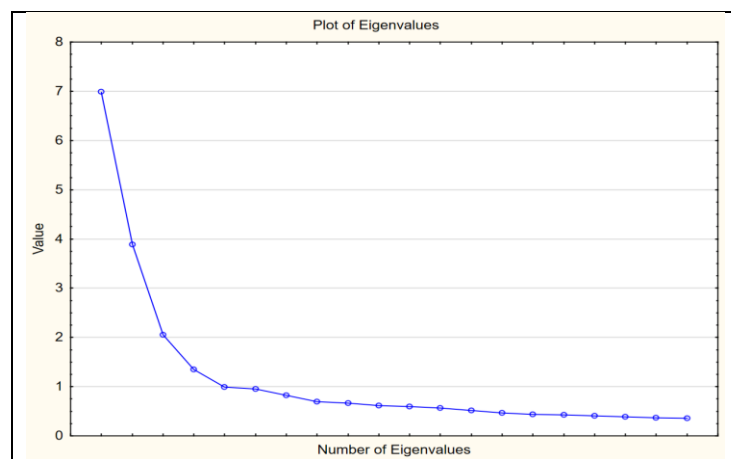

Figure 1 Scree plot

Source: Authors' work.

The Scree plot available in Figure 1. Shows the relevance of the common factor as well as characteristic root values. The figure shows that the two first two common factors bear the most information in this investigation so they are extracted for further investigation as the main factors.

Table 4 Initial eigenvalues and extraction sums of squared loadings

| Value | Eigenvalues Extraction: Principal components | | | |
	Eigenvalue	% Total variance	Cumulative Eigenvalue	Cumulative %
1	6.990524	27.96210	6.99052	27.96210
2	3.890122	15.56049	10.88065	43.52258

Source: Authors' work.

Table 5 Rotated component matrix

Variable	Factor 1	Factor 2
Fear at delivering presentations		
Q1_1	**0.705975**	-0.130414
Q1_2	**0.754119**	-0.089484
Q1_3	**0.752591**	-0.190796
Q1_4	**0.759859**	-0.120580
Q1_5	**0.635054**	-0.011084
Q1_6	**0.678011**	-0.110280
Problems while delivering the presentation		
Q2_1	**0.529116**	-0.114840
Q2_2	**0.608143**	-0.052374
Q2_3	**0.761797**	0.036388
Q2_4	**0.668512**	0.076172
Q2_5	**0.649956**	-0.046567
Q2_6	**0.745938**	-0.132637
Q2_7	**0.703136**	-0.013897
Perceived success at delivering a presentation		
Q3_1	-0.150922	**0.564845**
Q3_2	-0.356725	**0.519020**
Q3_3	-0.099583	**0.457787****
Q3_4	-0.066613	**0.641147**
Q3_5	-0.187252	**0.622126**
Strategies in stimulating audience attention when presenting		
Q4_1	-0.063930	**0.709545**
Q4_2	-0.018706	**0.674779**
Q4_3	-0.102298	**0.769731**
Q4_4	-0.033560	**0.706441**
Q4_5	0.072678	**0.605172**
Q4_6	-0.011864	**0.394881****
Q4_7	0.071687	**0.483265****
Expl.Var	6.450218	4.430428
Prp.Totl	0.258009	0.177217

Note: ** excluded from analysis due to the low factor loadings.
Source: Authors' work.

The initial eigenvalues extraction and extraction sums of squared loadings are presented in Table 4. The results show that the first two eigenvalues of the common factors denoted as 1 and 2 have the variance contribution 27.96% and 15,16% and the total cumulative variance contribution rate 43.52%.

Table 5 shows factor loadings normalised with the Kaiser Normalization method. Table 5 shows a rotated component matrix, where factor loadings normalized with the Kaiser Normalization method are presented. The extraction method was the Principal components. Following the results presented in Table 5, the variables (items) Q3_3, Q4_6, and Q4_7 are excluded from the further investigation; since their values are, lower than 0.5.

Cluster analysis

The cluster analysis with the K-means algorithm has been conducted to systematize research data into meaningful structures. The maximum average distance was applied to determine initial centroids. Subsequently, the Squared Euclidian distance was applied to iteratively distribute research data to the cluster with the closest centroid.

Figure 2 presents the graph of cost sequence, which displays the error function for the various numbers of clusters and proposed the best numbers of clusters for the given dataset. The error function presented can be explained as the average distance of observations in tested research to the cluster centroids to which the observations were assigned (Tibshirani, Walther, Hastie, 2001).

The goal is to minimise the cluster cost to the desirable level. The graph recommends two clusters as the best number of clusters to be included in this investigation. However, the graph shows a continuous decrease of the error function, without a point where it would stop decreasing. Therefore, the four-cluster solution was selected as an optimal one, and four clusters will be observed in further investigation.
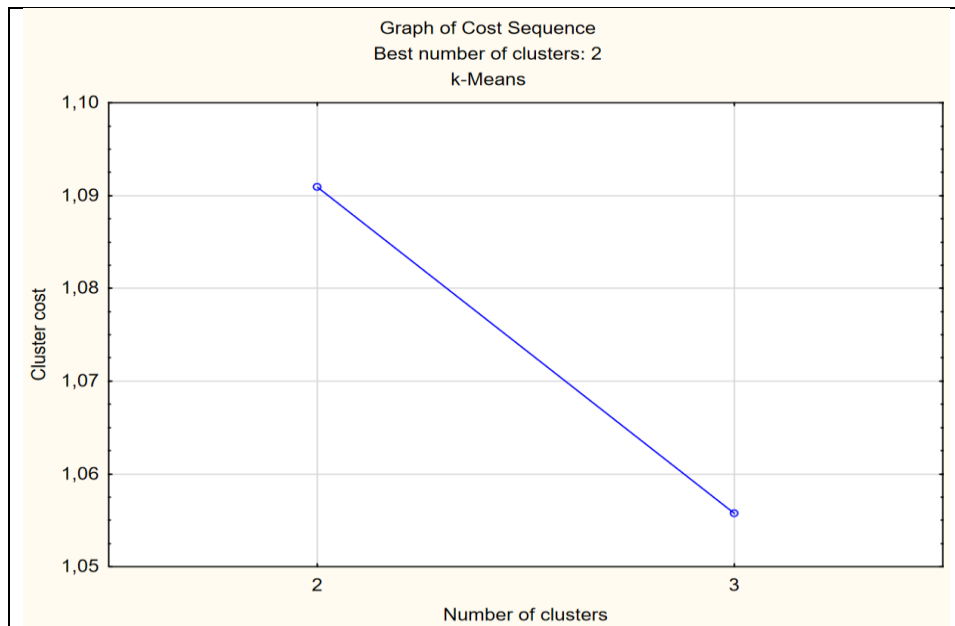

Figure 2 Graph of Cost Sequences
Source: Authors' work (2020)

Furthermore, the ANOVA analysis was conducted for four clusters. Table 2 shows the 22 items left in the research without three items excluded in the previous steps.

Table 6. ANOVA analysis

	Between SS	df	Within SS	N	F	p-value
Q1_1	244.898	3	357.882	468	106.751	0.000***
Q1_2	285.511	3	318.724	468	139.744	0.000***
Q1_3	387.663	3	336.013	468	179.979	0.000***
Q1_4	325.468	3	354.275	468	143.315	0.000***
Q1_5	167.989	3	366.416	468	71.521	0.000***
Q1_6	265.690	3	357.274	468	116.011	0.000***
Q2_1	120.389	3	427.475	468	43.934	0.000***
Q2_2	149.556	3	376.775	468	61.922	0.000***
Q2_3	245.498	3	309.416	468	123.774	0.000***
Q2_4	155.861	3	375.730	468	64.712	0.000***
Q2_5	170.423	3	369.659	468	71.920	0.000***
Q2_6	422.752	3	390.765	468	168.770	0.000***
Q2_7	190.206	3	334.498	468	88.706	0.000***
Q3_1	47.771	3	372.492	468	20.007	0.000***
Q3_2	85.300	3	322.749	468	41.230	0.000***
Q3_4	80.641	3	441.969	468	28.464	0.000***
Q3_5	72.531	3	346.111	468	32.691	0.000***
Q4_1	130.462	3	389.519	468	52.249	0.000***
Q4_2	132.564	3	416.959	468	49.597	0.000***
Q4_3	144.928	3	319.511	468	70.761	0.000***
Q4_4	128.839	3	396.712	468	50.664	0.000***
Q4_5	88.556	3	417.899	468	33.058	0.000***

Source: Authors' work.

The table suggested that the null hypothesis, which indicates that the means between the indicator observed statistically differ has been rejected at the 1% statistical significance so all variables are statistically significant. The given results confirm that the selection of four clusters to analyse data is justified.

Relationship of cluster membership and demographic characteristics

Chi-square cluster membership and demographic characteristics have been comprised to identify the relationship between clusters that emerged from the investigation and specific demographic characteristics.

The results presented in the first cluster membership table shows the relationship between the four structured clusters and gender. From a total of 472 students answers who participated in the cluster analysis, 354 female and 118 male students participated.

Cluster 1 consists of the most participants, 148, from which 109 are females, and 39 are males. In Cluster 2, from a total of 131 students included, 101 are females, and 30 are males. Cluster 3 contained the fewest students, a total of 82, from which are 61 females, and 21 male students. Cluster 4 contained a total of 111 students, 83 females, and 28 males. The results present similar gender distributions in clusters, male distribution from 22-26%, and females from 73-78%.

The male students are the most represented in Cluster 1 and the least in Cluster 2, and female vice-versa. However, Pearson Chi-square and M-L chi-square did not

confirm the statistically significant relationship between gender and cluster membership as shown in Table7 and Table 8.

Table 7 Cross-tabulation of gender and cluster membership

Gender	2-Way Summary Table: Gender x Cluster				
	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Total
Male	39	30	21	28	118
Female	109	101	61	83	354
Total	148	131	82	111	472

Source: Authors' work.

Table 8 Chi-square for cluster membership and gender

Statistic	Statistics: Gender x Cluster		
	Chi-square	df	p
Pearson Chi-square	0.4712954	df=3	p=0.92515
M-L Chi-square	0.4755649	df=3	p=0.92423

Source: Authors' work.

The second results from the analysis demonstrate the weak association between age groups and Clusters. A total of 77 students age 19 were, 32 students age 20, 197 students age 21, 89 students age 22, and 77 students age 23, and more were included in the final investigation.

The age group 19 is distributed the most in Cluster 1 and the least in Cluster 2. Students of age 20 are grouped evenly with a deviation of 1 student. Students of age 21 are concentrated the highest in Cluster 1, following Cluster 2, and have by far the lowest concentration in Cluster 3. Age groups 22 and 23 and more have a similar distribution between Clusters 1, 2, and 4 with a much lower number of students in Cluster 3, which means that the older students are underrepresented in Cluster 3. In conclusion, it can be highlighted that younger students are less represented in Cluster 2, and more in Cluster 3, as well as the other Clusters, there is no significant difference between clusters. However, Pearson Chi-square and M-L chi-square did not confirm the statistically significant relationship between any of the age groups and clusters. Tables 9 and 10 show observed frequencies and Chi-square of cluster membership and age.

Table 9 Cross-tabulation between age and cluster membership

Age	2-Way Summary Table: Age x Cluster				
	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Totals
19	26	15	16	20	77
20	7	8	8	9	32
21	71	62	29	35	197
22	22	25	17	25	89
23 and more	22	21	12	22	77
Totals	148	131	82	111	472

Source: Authors' work.

Table 10 Chi-square for cluster membership and age

Statistic	Statistics: Age x Cluster		
	Chi-square	df	p
Pearson Chi-square	19.23040	df=18	p=0.37777
M-L Chi-square	20.56301	df=18	p=0.30203

Source: Authors' work.

Table 11 Cross-tabulation between the type of school and cluster membership

School	2-Way Summary Table: School x Cluster				
	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Total
Gymnasium	87	70	43	48	248
Business secondary school	52	52	36	55	195
Another secondary school	9	9	3	8	29
Totals	148	131	82	111	472

Source: Authors' work.

Table 12 Chi-square for cluster membership and type of school

Statistic	Statistics: School x Cluster		
	Chi-square	df	p
Pearson Chi-square	7.492339	df=6	p=0.27770
M-L Chi-square	7.657710	df=6	p=0.26427

Source: Authors' work.

The third results show a weak relationship between cluster membership and the type of school. Students from the gymnasium are mostly concentrated in Cluster 1 and all of the students from business and the other schools show even distributions among Clusters 1, 2 and 4 with the lower rate of distribution among Cluster 3. However, Pearson Chi-square and M-L chi-square did not confirm the statistical difference between genders as the p values are higher than alpha so the 0th hypotheses cannot be rejected. Tables 11 and 12 present observed frequencies and Chi-square of cluster membership and age.

Discussion

The k-means cluster analysis of survey responses was undertaken from the 472 Business and Economy students from Croatia, which were included in final investigations. Figure 3 presents the graph of mean values of 22 item survey responses left in the research across four identified clusters. Given cluster, means reveal the existence of differences between clusters according to the observed individual indicators the survey responses (Figure 3).

By comparing cluster means, some interesting conclusions about student groups can be brought. A similar pattern trend has been observed for all clusters included, however, the responses are displayed on different levels. Furthermore, taking into account all observed items, research items from the question group "Perceived success at delivering a presentation" obtained the highest mean values, which also correlate with descriptive statistic results. Additionally, trends for all other question groups are similar. Cluster 2 and Cluster 3 show the most similar cluster means pattern for Q1 and Q2 question groups, as for the Q3 and Q4 Clusters 1, 3, and 4 display similar answer patterns, which are indicated by similar variables numbers.
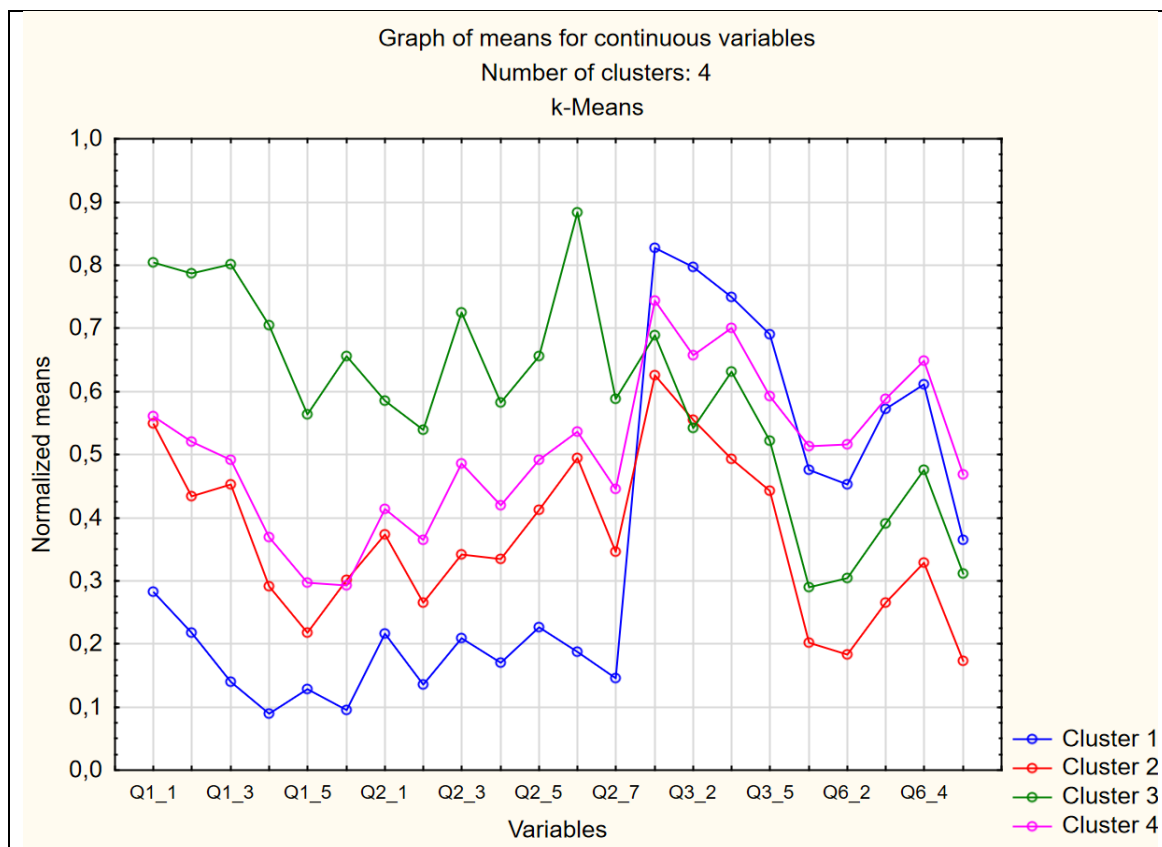
Figure 3 Standardized cluster means

Source: Authors' work.

Based on the mutual relationship of various answers of the four investigated dimensions, clusters can be described in the following manner:

Cluster 1 students group has the lowest average values for variables from "Fear at delivering presentations" groups of questions. Questions "Fear that my colleagues will make fun of me" and "Fear of revenge" are have the lowest mean values, which indicate that students from Cluster 1 perceive the lowest fears of their colleagues. The average means for the variable "I know well the material I expose when I present" are the highest among the Cluster 1 results. All mean values for the group of questions: "Perceived success at delivering a presentation" are the highest within all results, which could connect the students from Cluster 1 with high confidence. This group could be called: Self-confident.

For the students grouped in Cluster 2, the highest average values have been calculated for their presentation material knowledge, but with significantly lower normalized means than Cluster 1. Students in Cluster 2 express mid-level fear. Furthermore, Cluster 2 students comprise the lowest values for both "Strategies in stimulating audience attention when presenting" and "Problems while delivering presentation" groups of questions of all students included in the research. The results for Cluster 2 demonstrate that the students included in the Classroom shows a low level of interest in delivering presentations, which influences their perceived presentation performance. This group could be called: Not-interested.

Cluster 3 student group resulted in a group with the highest values for the "fear of the presentation delivery" dimension, and the lowest for the confidence related dimensions. The question "What if my voice starts to tremble?" which represent the fear that the audience will detect insecurities while presenting, obtained the highest normalized means in all questionnaire. Alongside this fear, students from Cluster 3

expressed high-perceived fear from the unsuccessful presentation, being criticised, and being mocked. Furthermore, the Cluster results in outcome with the lowest values overall for the "Strategies in stimulating audience attention when presenting" group of questions, such as interaction with the public, making pauses, and surprising the audience, which all correlate with a high level of insecurity among Cluster 3 student group. This group could be labelled as Anxious.

Cluster 4 students have the highest variable means for the question group "Perceived success at delivering presentation" same as the students from Cluster 1. However, the students from Cluster 4 had lower means to the item "I look convincing when I present" which indicates that the students from Cluster 4 show a bit more insecurity than a student from Cluster 1. Nevertheless, the Cluster 4 students have the highest results for the question group "Strategies in stimulating audience attention when presenting" from all the four clusters, which could be connected with their attention to details and strategical thinking. Students from Cluster 4 have the lowest means for variables related to colleagues making fun of them, which shows maturity and confidence. This group could be called Strategic.

Conclusion

The purpose of this research was to explore the business students' attitudes toward presentation delivery, and investigate if there are homogenous groups of students according to their attitude towards the presentation, both as sources of success and as a source of fear.

To fulfil the paper goals, a cross-analysis has been undertaken. Descriptive statistics and reliability analysis were calculated for all the variables in the total sample. Factor analysis was performed to unveil the underlying structures of the data, and the cluster analysis to explore can students be grouped according to their attitude towards presentation. Finally, the Chi-square of cluster membership and demographic characteristics has been conducted to explore the possible relationship between demographic characteristics and cluster membership.

Interesting findings emerged from the investigation. Firstly, the result confirms that there are homogenous groups of students according to presentation perceived benefits and fears. The investigation identified four different student groups based on their confidence and interests: Self-confident, Non-interested, Anxious, and Strategic. However, an investigation concluded there is no relationship between cluster membership and demographic characteristics. The results showed that all students fear the most that their voice will start to tremble and show their insecurities and that all students fear the least the revenge of their colleagues.

The findings from the investigation could be beneficial for both academics and practitioners. Academics could benefit from these investigation results and conduct further analysis to explore student characteristics, which groups them into specific clusters. On the other hand, practitioners could use these results to adapt presentation skill teaching into different clusters to achieve better results and provide each student methods they need the most.

However, his research is not without its limits, for instance, more students could be included in the investigation, and more information about students, such as their grades, hobbies, interests in specific classes so the answer to why some student have the characteristic of specific clusters can be revealed. Considering the emerging numbers of papers on this important topic, this also could be direction for future investigations.

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