



# Human Resources Hospitality Employment Perspective: Cluster Scenario for Selected Tourism Industries

Žarko Rađenović<sup>1</sup>   
Tatjana Boshkov<sup>2</sup>

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**Abstract:** *Creating an employment policy and its perspective development within the tourism industry depends on the successful management of human resources. This research aims to determine the significance of the impact of certain employment indicators on the performance of hospitality human resources in the European Union countries (including the United Kingdom), Norway, Switzerland, Turkey, and several Balkan countries. The annual job fluctuation and changes in tourist potential enable the performance analysis of employment indicators within a shorter period, in this case for 2019 and 2020. The authors will use multiple hierarchical regression to determine the magnitude of the contribution of individual indicators to job permanency in the tourism industry. The cluster analysis based on Ward's method and squared Euclidean distance will group countries according to the performance of employment indicators in tourism. In this way, the most dominant group of countries will be formed, and during the mentioned period, will be shown the eventual movement of particular countries to clusters where better conditions prevail, in the tourism industry labor market. The cluster structure changes in the analyzed years should prove the fluctuation of human resources in the tourism industry, which depends a lot on the education level.*

## 1. INTRODUCTION

The management of human resources in tourism in recent years is a real challenge given the rapidly growing development of the tourism and hospitality industry and therefore their significant contribution to the development of the economic activity. Consequently, the quality selection of employees in the tourism industry is an extremely important segment in the provision of services, especially in the case of competitive advantage between tourist destinations in different countries. The development of human resources management policy in tourism implies understanding the needs of the market in terms of tourist preferences as well as the customization of services to increase the competitive advantage of a particular tourist destination.

That is why it is extremely important to recruit employees in the tourism industry based on their education and skills to improve the quality of service and ensure the re-arrival of tourists to a particular destination in the future. As a labor-intensive activity, the tourism sector should enable the influx of those employees who can pay full attention to tourists and ensure the popularity of the destination in the future, which is achieved by motivating employees, constant training, and maintaining job permanence, and competitive earnings.

Therefore, in creating the strategy and policy of human resources management in the tourism sector, it is extremely important to determine the trajectory of employees in tourism following their education, age, and skills to provide the best possible service to new tourists.

<sup>1</sup> Innovation Center, University of Niš, Univerzitetski trg 2, 18000 Niš, Serbia

<sup>2</sup> Faculty of Tourism and Business Logistics, University "Goce Delchev" – Stip, North Macedonia

Competitiveness of earnings concerning other economic branches is very important so that employees have the motivation to improve their skills, which is indirectly reflected in the satisfaction of visitors to a particular tourist destination.

To see the discrepancy in the perspective of the development of employment policy in tourism, this paper will analyze the impact of certain employment indicators on the permanence of work in tourism. Also, the cluster analysis will cover the grouped countries of the European Union, Turkey, Norway, Switzerland, and some Balkan countries, by similarity concerning employment indicators, to see which countries are leaders in the field of human resources in tourism. Cluster analysis is used to get a picture and describe in real terms the human resource management and tourism employment perspective for a short-term period (from 2019 to 2020) (Hermawati et al., 2019). That was a period (2020) that has been affected by the pandemic COVID-19 structural changes in each economic sphere, especially in tourism.

## **2. LITERATURE REVIEW**

Human resource management in the tourism industry is important starting the necessity for economic development, generally. The tourism sector has its revolution regarding technology, knowledge, human attitude, and desire, personal preferences. In this way, a tourism company is a highly regulated powerhouse that stabilizes the economic environment. Employees in an organization, from executives to tellers, must have a higher level of integrity and trustworthiness and also work-life balance which is rated as the most important out of the many facets of a career. “Measure of subjective career success is typically attitudes, emotions, and perceptions of how individuals feel about their accomplishments rather than the objective amount of achievement” (Arthur et al., 2005). Taking into account that creating an employment policy and its perspective development within the tourism industry depends on the successful management of human resources we should define it. Management of human resources is constituent of the tourism sector. Managing this sector means well connecting the individual attitude and the organization’s goals. The tourism sector needs human resources in a more specific way regarding the fact that its HRM delivers services. It’s not a product that can be controlled before the product is delivered. Firms that operate in the tourism sector use specific models to select the right people that will carry for tourists’ needs.

Equally the employer may decide to change their business activity in the future which may adversely impact future job opportunities for individuals; as part of succession or diversity planning a tourist organization may decide to appoint people from outside thereby reducing the opportunities available to existing employees, or it may be that during a recession or economic slowdown redundancy impacts on an individual’s career. King (2004) has identified several principles that it is claimed underpin the effective provision of management of human resources within an organization. Author King highlights several important segments and characteristics that need to be observed to have effective human resource management. In this context, he emphasizes the importance of the right information to identify potential opportunities. It is also considered that every employee should show proactivity in performing their tasks but also intentions for career advancement because the tourism sector is dynamic. In this regard, the dynamics itself require a rapid change in the way of providing services and type of services according to the wishes of tourists.

Employees will also be motivated to give their best only if the top management monitors and rewards their enthusiasm of employees. King (2004) has also suggested that effective

management of human resources contains five components, that are important in the case of the tourism industry too:

- Career planning and support. This involves activities including setting through personal development plans, appraisal, and development reviews, development programs, and work experience.
- Career information and advice. This involves activities including career counseling and coaching, career workshops and courses.
- Developmental assignments. This involves activities including external or internal secondments, project assignments and work shadowing, and international assignments.
- Internal job markets and job allocation processes.

When selecting employees in the tourism industry, it is necessary to pay attention to social factors, where Beltrami emphasizes the following (Beltrami 2011):

- Consolidation of fundamental labor rights, such as a journey of 40 hours a week.
- Periods of unemployment, compensation, and remuneration for the holidays.
- Recognition of congestion and poor welfare in most European cities, due to the good weather of the south, choosing its beaches as the ideal place for recovery.

Therefore, tourism professionals and researchers should consider that the identity and consciousness of the people that live in a region can influence the external image of a cluster, for example, in the resources management, promoting innovation, establishing relationships with external agents, and especially the strategies for attracting tourists (Chavez et al., 2016). Tourism employment should not purely be seen as a production factor, but also as a social phenomenon (e.g. number of persons employed, their socio-demographic profile conditions of work, motivation, etc.). The starting point in thinking about competency is to recognize that there is a difference between what someone knows and what they can do effectively. „Organizations are facing incredible pressures in multiple areas (economy, technology, structure, society in general) to adjust to the new, evolving demands of their constituencies and to become more efficient and competitive within their environments” (Ballout, 2007). In a tourism organizational context, the focus on competency rather than knowledge should ensure that there is a detectable impact on operational effectiveness and performance as a result. Accordingly, the development of knowledge-based tourism confirms the importance of intellectual capital in the field of tourism, which indicates that employability whose content is human capital becomes a prerequisite and key factor in the success of an individual’s career. (Guo et al., 2012).

There is some debate about the relationship (if any) between the terms ‘competency’, ‘competence’, and ‘skill’ concerning this topic. Some writers and indeed practitioners tend to regard the terms as interchangeable, others see a difference between them. Competence can refer to an ability of an individual to deliver what is required in terms of output. The distinction between competency and skill is less easy to identify, as in its broadest sense a skill reflects the ability to ‘do’ something. So skill can be defined as expertness. Boyatzis (1982) overcame this difficulty by suggesting that competency comprised any or all of the following elements:

- Traits. This aspect of competency reflects the characteristics or innate qualities that an individual possesses and which impact their performance at work.
- Motives. Some people are motivated to deliver superior performance and to achieve good results for many reasons.
- Skills. This aspect would be a skill as reflected in the traditional sense of the term as outlined above.

- Self-image. The self-image that individuals hold about themselves influences how they interpret the world around them and their circumstances and will consequently form the basis of how they decide to interact with those situations.
- Social role. This aspect of competency reflects the acceptable and conventional social norms and behaviors that exist in a particular context.

Salaman and Taylor (2002) identified that several weaknesses were inherent in the application of the competency approach concerning management jobs, including:

- An emphasis on behavior marginalizes the effect on success through other factors in the social, cultural, and organizational context.
- Most will emphasize a small, narrow set of behaviors and attitudes whereas most management jobs will involve a wide range of tasks and requirements.
- There is a tendency to focus on current competency requirements rather than on long-term management development.
- There is an inbuilt assumption that management decision-making and action are always rational and aimed at achieving the highest performance.
- There is an assumption that managers are results-driven whereas in practice they must balance many competing pressures in deciding which outcomes must take precedence.

### **3. METHODOLOGY**

The primary methodological framework in this research is based on the application of multiple hierarchical regression and hierarchical cluster analysis. Namely, by applying multiple hierarchical regression, the authors aim to determine which of the human resources hospitality indicators contributes the most to creating employment policy in the tourism industry in European Union countries (including the United Kingdom). The methodological framework will cover within its research Norway, Turkey, Switzerland as well as Balkan countries such as Serbia, Northern Macedonia, and Montenegro. The analyzed values of indicators from the Eurostat Database will also be used for the application of cluster analysis where countries will be grouped according to the performance of indicators. The aim of applying cluster analysis is to find a dominant cluster in a relatively small and narrow time interval for 2019 and 2020, as well as to determine the migration of countries to clusters with better performances. The implementation of cluster analysis determines statistically significant differences between clusters by applying appropriate statistical techniques. The mentioned cluster analysis was conducted in IBM SPSS 26.0 as one of the possibilities of using the information contained in a multidimensional observation (Hitka et al., 2017).

In this research, an agglomerative procedure was used to conduct a hierarchical cluster analysis. First, the distances of all units to each other are calculated, and then the groups are formed through joining or separating techniques. The merging technique (agglomerative, hierarchical method) starts from the fact that each unit is alone in a group of one member. Close groups are gradually merged until all the units in one group are finally found. In agglomerative procedures, each object or unit of observation begins as its cluster. In the following steps, the two closest clusters (or individuals) are combined into a new cluster, thus reducing the number of clusters by one in each subsequent step. Finally, all individuals are grouped into one large cluster (group). For this reason, agglomerative procedures are sometimes called construction methods. An important feature of hierarchical procedures is that earlier results are always ranked among later results. In “agglomerative” methods, each object is treated in the first step as a

separate cluster. Then the two nearest objects merge into the first cluster. Arithmetic means for each variable are calculated for each cluster. Then, for each object, the square Euclidean distance to the arithmetic mean of the cluster is calculated. These distances are summed for all cluster members. Those clusters for which the total (total) sum of these deviations is the smallest are merged.

The distance between two objects is determined as the sum of square differences in values for each variable. The Euclidean distance between two points is the line of the hypotenuse of a right triangle. Euclidean distance is used to calculate specific measures such as simple Euclidean distance and square, or absolute, Euclidean distance which is the sum of squares. The square Euclidean distance has the advantage that it does not take the square root that speeds up the calculation process, so it is a recommended measure for Ward's clustering methods. Ward's method was applied to form an agglomeration scheme to identify groups of countries that are similar to each other, but also different from other groups of countries (Rađenović et al., 2022). According to available data from Eurostat Database and literature, the authors have decided to analyze the following indicators:

- Employed persons by full-time/part-time activity (X1)- „The distinction between full-time and part-time work is generally based on a spontaneous response by the respondent. The main exceptions are the Netherlands and Iceland where a 35-hours threshold is applied, Sweden where a threshold is applied to the self-employed, and Norway where persons working between 32 and 36 hours are asked whether this is a full- or part-time position.“ (Eurostat- the statistical office of the European Union, 2017a)
- Employed persons by age groups (X2)- Employed persons are all persons between 15 and 74 years of age who worked at least one hour for pay or profit during the reference week or were temporarily absent from such work. The employment rate is the percentage of employed persons in the total population. (Eurostat- the statistical office of the European Union, 2017b)
- Employed persons by educational attainment level (X3)- “The educational attainment level of an individual is the highest ISCED (International Standard Classification of Education) level completed, the successful completion of an education program being validated by a recognized qualification, i.e. a qualification officially recognized by the relevant national education authorities or recognized as equivalent to another qualification of formal education.” (Eurostat- the statistical office of the European Union, 2017c)
- Permanency of job (permanent or temporary) (X4)- Unit of measure is the type of an employment contract in total measured in thousands according to workability population. (Eurostat- the statistical office of the European Union, 2017d)
- Average seniority of work with the same employer (X5)- Unit of measure is the period in years. (Eurostat- the statistical office of the European Union, 2017e)
- Employed persons and employees by sex and full-time/part-time activity (X6)- Unit of measure is employees by sex in total measured in thousands. (Eurostat- the statistical office of the European Union, 2017f).

Based on the values of indicators for both observed years, descriptive statistics were performed in Table 1.

Correlation analysis for 2020 also shows similar values as for the previously observed year where there is statistically significant conjunction between the mentioned indicators (Table 3).

**Table 1.** Descriptive statistics for human resources hospitality indicators for 2019 and 2020

Indicator	N	Min	Max	Mean	Stdev.	Indicator	Min	Max	Mean	Stdev.
X1_2019	35	201	42400	7778.78	10678.96	X1_2020	194.50	41861.70	6929.57	9720.51
X2_2019	35	20	4077	690.39	1098.37	X2_2020	16.90	4070.30	561.82	930.18
X3_2019	35	201	42400	7778.78	10678.96	X3_2020	194.50	41861.70	6929.56	9720.51
X4_2019	35	178	38322	6459.09	9006.67	X4_2020	172.0	37821.80	5748.67	8218.36
X5_2019	35	50	9489	1747.47	2532.46	X5_2020	36.40	8917.20	1425.22	2121.59
X6_2019	35	201	42400	7778.78	10678.96	X6_2020	194.50	41861.70	6929.57	9720.51

\*Note: X1\_2019- Employed persons by full-time/part-time activity; X2\_2019- Employed persons by age groups; X3\_2019- Employed persons by educational attainment level; X4\_2019- Permanency of job (permanent or temporary); X5\_2019-Average seniority of work with the same employer; X6\_2019- Employed persons and employees by sex and full- time/part-time activity; X1\_2020- Employed persons by full- time/part-time activity; X2\_2020- Employed persons by age groups; X3\_2020- Employed persons by educational attainment level; X4\_2020- Permanency of job (permanent or temporary); X5\_2020-Average seniority of work with the same employer; X6\_2020- Employed persons and employees by sex and full- time/part-time activity.

Source: Authors' calculation based on Eurostat Database

**Table 2.** Pearson Correlation between selected indicators for 2019

		X4_2019	X3_2019	X1_2019	X2_2019	X5_2019	X6_2019
Pearson Correlation	X4_2019	1.000	.994	.994	.928	.964	.994
	X3_2019	.994	1.000	1.000	.942	.977	1.000
	X1_2019	.994	1.000	1.000	.942	.977	1.000
	X2_2019	.928	.942	.942	1.000	.978	.942
	X5_2019	.964	.977	.977	.978	1.000	.977
	X6_2019	.994	1.000	1.000	.942	.977	1.000
Sig. (1-tailed)	X4_2019	.	.000	.000	.000	.000	.000
	X3_2019	.000	.	.000	.000	.000	.000
	X1_2019	.000	.000	.	.000	.000	.000
	X2_2019	.000	.000	.000	.	.000	.000
	X5_2019	.000	.000	.000	.000	.	.000
	X6_2019	.000	.000	.000	.000	.000	.

Source: Authors' calculation based on Eurostat Database

**Table 3.** Pearson Correlation between selected indicators for 2020

		X4_2020	X3_2020	X1_2020	X2_2020	X5_2020	X6_2020
Pearson Correlation	X4_2020	1.000	.994	.994	.923	.964	.994
	X3_2020	.994	1.000	1.000	.932	.974	1.000
	X1_2020	.994	1.000	1.000	.932	.974	1.000
	X2_2020	.923	.932	.932	1.000	.973	.932
	X5_2020	.964	.974	.974	.973	1.000	.974
	X6_2020	.994	1.000	1.000	.932	.974	1.000
Sig. (1-tailed)	X4_2020	.	.000	.000	.000	.000	.000
	X3_2020	.000	.	.000	.000	.000	.000
	X1_2020	.000	.000	.	.000	.000	.000
	X2_2020	.000	.000	.000	.	.000	.000
	X5_2020	.000	.000	.000	.000	.	.000
	X6_2020	.000	.000	.000	.000	.000	.

Source: Authors' calculation based on Eurostat Database

The correlation analysis (Pearson Correlation) for indicator values for both observed years was first performed in IBM SPSS 26.0. Thus, the values of the correlation coefficients for 2019 are extremely high and positive, which only indicates a strong correlation of selected indicators/ variables that act in the same direction on creating employment policy in the tourism industry. In addition, in the Sig. column (Table 2) could be realized that all correlations are statistically significant.

Applying multiple hierarchical regression in this research, the authors aim to determine which of the independent predictor variables by sequential introduction into the regression model most affects the dependent variable - Permanency of job. As can be seen in the Model Summary table for 2019, the adjusted coefficient of determination explains more than 90% of the variability in the model which means that the regression model is valid. Also, a Durbin-Watson test value of 1,489 or less than 2 indicates that the model tends to have no autocorrelation (Table 4).

**Table 4.** Model summary for hierarchical regression model in 2019

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				Durbin-Watson	
					R Square Change	F Change	df1	df2		Sig. F Change
1	.994 <sup>a</sup>	.989	.988	978.176	.989	2849.528	1	33	.000	
2	.995 <sup>b</sup>	.989	.989	961.069	.001	2.185	1	32	.149	
3	.995 <sup>c</sup>	.990	.989	958.243	.000	1.189	1	31	.284	1.489

a. Predictors: (Constant), X3\_2019

b. Predictors: (Constant), X3\_2019, X2\_2019

c. Predictors: (Constant), X3\_2019, X2\_2019, X5\_2019

d. Dependent Variable: X4\_2019

**Source:** Authors' calculation based on Eurostat Database

In order to prove the validity of the regression model in terms of the statistical significance of the variables in the model, the ANOVA procedure was conducted for both years. In the column Sig. for 2019 we see that there is a statistically significant difference between the variables included in the model because the value in all three steps of the hierarchical regression is less than 0.05 (Table 5).

**Table 5.** ANOVA procedure for regression model for 2019

Model		ANOVA <sup>a</sup>				
		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2726507598.196	1	2726507598.196	2849.528	.000 <sup>b</sup>
	Residual	31575312.343	33	956827.647		
	Total	2758082910.539	34			
2	Regression	2728525980.965	2	1364262990.483	1477.028	.000 <sup>c</sup>
	Residual	29556929.574	32	923654.049		
	Total	2758082910.539	34			
3	Regression	2729617762.475	3	909872587.492	990.898	.000 <sup>d</sup>
	Residual	28465148.063	31	918230.583		
	Total	2758082910.539	34			

a. Dependent Variable: X4\_2019

b. Predictors: (Constant), X3\_2019

c. Predictors: (Constant), X3\_2019, X2\_2019

d. Predictors: (Constant), X3\_2019, X2\_2019, X5\_2019

**Source:** Authors' calculation based on Eurostat Database

From the table of regression coefficients for 2019, after the hierarchical regression in three steps, it can be seen that the independent variable *Employed persons by educational attainment level* have the greatest influence on the dependent variable *Permanency of job*. Thus, with the growth of the level of education in the tourism industry, there is a greater opportunity for job maintenance and making career progress. In the Sig. column for 2019, the indicator *Employed persons by educational attainment level* has a statistically significant value in all three steps of hierarchical regression (Table 6).

**Table 6.** Hierarchical regression coefficients for variables in 2019

Model	Coefficients <sup>a</sup>							
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.*	95.0% Confidence Interval for B		
	B	Std. Error	Beta			Lower Bound	Upper Bound	
1	(Constant)	-63.891	205.597		-.311	.758	-482.180	354.399
	X3_2019	.839	.016	.994	53.381	.000	.807	.871
2	(Constant)	-105.934	203.994		-.519	.607	-521.455	309.587
	X3_2019	.903	.046	1.070	19.590	.000	.809	.997
3	X2_2019	-.662	.448	-.081	-1.478	.149	-1.575	.250
	(Constant)	-94.168	203.680		-.462	.647	-509.575	321.240
	X3_2019	.969	.076	1.148	12.772	.000	.814	1.123
	X2_2019	.011	.762	.001	.014	.989	-1.543	1.564
	X5_2019	-.565	.519	-.159	-1.090	.284	-1.623	.492

a. Dependent Variable: X4\_2019

Source: Authors' calculation based on Eurostat Database

The Model Summary (Table 7) table as a result of hierarchical regression showed similar results of the adjusted coefficient of determination and Durbin-Watson statistics for the variables in 2020. Accordingly, in this case, too, it is a valid regression model.

**Table 7.** Model summary for hierarchical regression model in 2020

Model	Model Summary <sup>d</sup>									
	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				Sig. F Change	Durbin-Watson
					R Square Change	F Change	df1	df2		
1	.994 <sup>a</sup>	.988	.988	906.395	.988	2681.000	1	32	.000	
2	.994 <sup>b</sup>	.988	.988	915.213	.000	.386	1	31	.539	
3	.994 <sup>c</sup>	.989	.988	917.0190	.000	.878	1	30	.356	1.448

a. Predictors: (Constant), X3\_2020

b. Predictors: (Constant), X3\_2020, X2\_2020

c. Predictors: (Constant), X3\_2020, X2\_2020, X5\_2020

d. Dependent Variable: X4\_2020

Source: Authors' calculation based on Eurostat Database

A statistically significant difference between the mentioned indicators was proved in the ANOVA procedure for 2020 (Table 8).

**Table 8.** ANOVA procedure for regression model for 2020

Model	ANOVA <sup>a</sup>					
		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2202579099.259	1	2202579099.259	2681.000	.000 <sup>b</sup>
	Residual	26289645.387	32	821551.418		
	Total	2228868744.646	33			
2	Regression	2202902681.598	2	1101451340.799	1314.985	.000 <sup>c</sup>
	Residual	25966063.049	31	837614.937		
	Total	2228868744.646	33			
3	Regression	2203641034.148	3	734547011.383	873.500	.000 <sup>d</sup>
	Residual	25227710.498	30	840923.683		
	Total	2228868744.646	33			

a. Dependent Variable: X4\_2020

b. Predictors: (Constant), X3\_2020

c. Predictors: (Constant), X3\_2020, X2\_2020

d. Predictors: (Constant), X3\_2020, X2\_2020, X5\_2020

Source: Authors' calculation based on Eurostat Database

**Table 9.** Hierarchical regression coefficients for variables in 2020

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-75.385	191.873		-.393	.697	-466.217	315.447
	X3_2020	.840	.016	.994	51.778	.000	.807	.874
2	(Constant)	-92.014	195.578		-.470	.641	-490.899	306.870
	X3_2020	.867	.045	1.025	19.114	.000	.774	.959
3	X2_2020	-.295	.474	-.033	-.622	.539	-1.261	.672
	(Constant)	-83.841	196.158		-.427	.672	-484.449	316.768
	X3_2020	.924	.076	1.093	12.104	.000	.768	1.080
	X2_2020	.290	.784	.033	.370	.714	-1.311	1.892
	X5_2020	-.516	.551	-.133	-.937	.356	-1.640	.609

Source: Authors' calculation based on Eurostat Database

The output table of the regression model for the values of regression coefficients as in 2019 also shows a statistically significant and the largest impact of the indicator *Employed persons by educational attainment level* on the tourism industry workplace permanence (Table 9).

#### 4. RESULTS AND DISCUSSION

The following analysis of the empirical part of this chapter is oriented on cluster analysis as a type of multivariate technique. The cluster analysis was conducted using a hierarchical agglomeration approach, where Ward's method was used to form the agglomeration scheme. Ward's procedure means that "the average value for each variable (center of the cluster) is calculated for each cluster, and then the square of Euclidean distance from the center of the cluster is calculated for each object, after which the distance for the objects is summed" (Simović et al. 2020, p.620).

In this way, countries were grouped by similarity, but also differences between groups of countries were identified based on the values of the mentioned indicators. "Cluster membership is assessed by calculating the total sum of squared deviations from the mean of a cluster. The criterion for fusion should be the smallest possible increase in the error sum of squares". As can be seen in the agglomeration schedule table (Table 10) from 2019, the smallest possible increase in the error sum of square is after the fifth step. It could be concluded the same fact for the agglomeration schedule table (Table 11) for the 2020 year because of the same number of iterations after which there is no significant increase in the error sum of square (Kol'veková et al., 2019).

Looking at the changes in the agglomeration scheme in the last few iterative steps (in this case five), the authors concluded that five clusters were formed in both years, which is presented on the map charts (Figure 1) for EU countries together with the United Kingdom, Norway, Turkey, Switzerland, and some Balkan countries.

The first cluster's map chart for 2019 shows five groups of analyzed countries according to mentioned indicators. It could be concluded from the distribution of countries by clusters that Cluster 1 is the largest cluster which consists of 17 countries (Stryzhak et al., 2021). The single-country cluster is Germany. The following cluster map chart (Figure 2) shows the distribution of countries within five clusters for 2020. As can be seen directly in 2020, Germany is a single-country cluster. On the other hand, in 2020, based on the values of the analyzed indicators, there are evident structural changes in clusters considering their transitions from previous groups, compared to 2019.

**Table 10.** Agglomeration scheme for 2019

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	18	32	480.355	0	0	2
2	18	28	5609.293	1	0	4
3	14	24	14617.953	0	0	14
4	16	18	25244.248	0	2	9
5	1	22	39829.513	0	0	11
6	6	33	64494.993	0	0	14
7	25	26	121215.333	0	0	12
8	17	20	197161.118	0	0	17
9	13	16	286299.874	0	4	24
10	4	29	379313.254	0	0	15
11	1	30	525672.349	5	0	17
12	7	25	687002.616	0	7	19
13	11	15	857113.961	0	0	22
14	6	14	1037504.141	6	3	22
15	4	34	1274453.834	10	0	18
16	3	27	1630168.034	0	0	20
17	1	17	2192103.369	11	8	20
18	2	4	2780149.016	0	15	19
19	2	7	4068374.340	18	12	23
20	1	3	5772377.289	17	16	27
21	19	23	7985284.794	0	0	30
22	6	11	10454962.237	14	13	24
23	2	8	14122801.785	19	0	27
24	6	13	20595996.980	22	9	31
25	10	35	37217621.025	0	0	29
26	9	12	57979550.610	0	0	28
27	1	2	112388832.397	20	23	30
28	9	21	177212000.132	26	0	32
29	10	31	253951968.914	25	0	32
30	1	19	415561843.843	27	21	31
31	1	6	752792806.758	30	24	34
32	9	10	1266002370.461	28	29	33
33	5	9	2393308562.677	0	32	34
34	1	5	14649265346.090	31	33	0

Source: Authors' calculation based on Eurostat Database



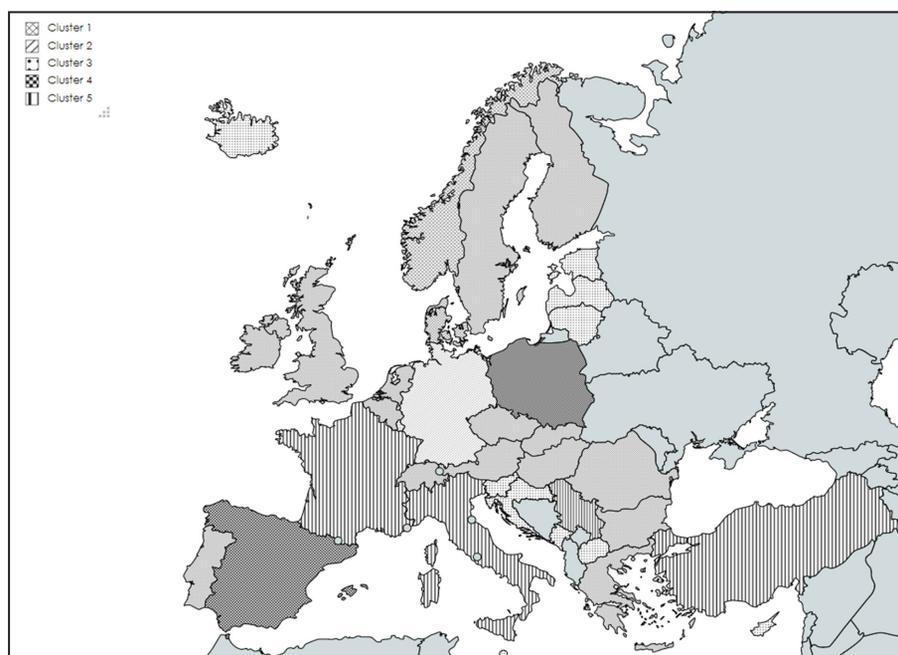
**Figure 1.** Clusters' map charts for 2019

Source: Authors' elaboration based on conducted cluster analysis in IBM SPSS 26.0

**Table 11.** Agglomeration scheme for 2020

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	28	32	1049.580	0	0	5
2	16	18	3545.485	0	0	5
3	1	22	8941.475	0	0	12
4	14	24	22742.430	0	0	14
5	16	28	42451.958	2	1	10
6	6	33	73355.378	0	0	14
7	25	26	128526.408	0	0	11
8	17	20	197013.762	0	0	18
9	4	29	277035.082	0	0	15
10	13	16	373128.954	0	5	24
11	7	25	515446.844	0	7	19
12	1	30	671486.734	3	0	18
13	11	15	842023.274	0	0	22
14	6	14	1014216.966	6	4	22
15	4	34	1238202.106	9	0	17
16	3	27	1537266.071	0	0	20
17	2	4	1929247.811	0	15	19
18	1	17	2529540.205	12	8	20
19	2	7	3828372.624	17	11	23
20	1	3	5417054.157	18	16	28
21	19	23	7693343.862	0	0	29
22	6	11	10060667.176	14	13	24
23	2	8	13754218.390	19	0	28
24	6	13	20075637.083	22	10	31
25	10	35	34586210.843	0	0	27
26	9	21	51811582.268	0	0	30
27	10	12	100000272.761	25	0	30
28	1	2	153229554.836	20	23	29
29	1	19	312545100.765	28	21	31
30	9	10	571118901.858	26	27	32
31	1	6	900065815.615	29	24	33
32	5	9	2192240622.610	0	30	33
33	1	5	11760307878.020	31	32	0

Source: Authors' calculation based on Eurostat Database

**Figure 2.** Clusters' map charts for 2020

Source: Authors' elaboration based on conducted cluster analysis in IBM SPSS 26.0

Descriptive statistics for the obtained groups of countries (clusters) are based on the indicators mean in both observed years. As can be seen in Table 12, the highest mean for all indicators in 2019 has the single-country cluster Germany, which means that this cluster is the most dominant and that it has the most favorable conditions in the labor market in the tourism industry. Also, the fifth cluster consisting of France, Turkey and the United Kingdom shows that the conditions in it are better for most indicators compared to other clusters, except Germany of course. Thus, it is concluded that the permanence of jobs does not have a high frequency of changes in Germany and the employment perspective is very favorable with efficient human resource management in the German tourism industry. Serbia is in the first cluster of 17 developed countries from the European Union, which only indicates there are positive tendencies in the sphere of the Serbian tourism employment perspective. Other countries in Western Balkans, such as Montenegro and North Macedonia, are in the third cluster, which has weaker human resources conditions in the tourism industry (Table 12).

**Table 12.** Indicators' mean within clusters for 2019

CLU	Number of Countries	Mean 2019					
		X1_2019	X2_2019	X3_2019	X4_2019	X5_2019	X6_2019
1	17 (Belgium, Bulgaria, Czechia, Denmark, Ireland, Greece, Hungary, Netherlands, Austria, Portugal, Romania, Slovakia, Finland, Sweden, Norway, Switzerland, Serbia)	4383.82	379.06	4383.82	3672.74	933.49	4383.82
2	1 (Germany)	<b>42400.10</b>	<b>4077.30</b>	<b>42400.10</b>	<b>38321.80</b>	<b>9489.30</b>	<b>42400.10</b>
		<b>(max)</b>	<b>(max)</b>	<b>(max)</b>	<b>(max)</b>	<b>(max)</b>	<b>(max)</b>
3	11 (Estonia, Croatia, Lithuania, Latvia, Luxembourg, Malta, Slovenia, Iceland, Montenegro, North Macedonia, Cyprus)	711.32	51.77	711.32	616.25	169.71	711.32
4	3 (Spain, Italy, Poland)	19866.70	1081.73	19866.70	15961.83	3876.87	19866.70
5	3 (France, Turkey, UK)	29302.57	3275.80	29302.57	23548.53	7435.10	29302.57

**Source:** Author's calculation based on Eurostat Database through SPSS

**Table 13.** Indicators' mean within clusters for 2020

CLU	Number of Countries	Mean 2020					
		X1_2020	X2_2020	X3_2020	X4_2020	X5_2020	X6_2020
1	18 (Belgium, Bulgaria, Czechia, Denmark, Ireland, Greece, Hungary, Netherlands, Austria, Portugal, Romania, Slovakia, Finland, Sweden, Norway, Switzerland, North Macedonia, UK)	4333.65	356.01	4333.65	3626.07	858.01	4333.65
2	1 (Germany)	<b>41861.70</b>	<b>4070.30</b>	<b>41861.70</b>	<b>37821.80</b>	<b>8917.20</b>	<b>41861.70</b>
		<b>(max)</b>	<b>(max)</b>	<b>(max)</b>	<b>(max)</b>	<b>(max)</b>	<b>(max)</b>
3	11 (Estonia, Croatia, Lithuania, Latvia, Luxembourg, Malta, Slovenia, Iceland, Montenegro, Cyprus)	702.08	46.04	702.08	609.88	154.06	702.08
4	2 (Spain, Poland)	17822.15	932.05	17822.15	14585.50	3429.65	17822.15
5	4 (France, Italy, Serbia, Turkey)	25568.06	2202.86	25568.06	20036.73	5466.70	25568.067

**Source:** Author's calculation based on Eurostat Database through SPSS

In 2020, indicators' mean within clusters is still the largest for country-cluster Germany. However, this year there have been some structural changes in terms of countries' movement into clusters that have better performance of indicators. This is especially true for North Macedonia, which moved to the first cluster, while Cyprus lost its place in the first cluster and moved to the third cluster with less favorable indicator values.

The same happened with the United Kingdom, where this country migrated to the third cluster from the fifth, which means decreasing in human resources indicators' performances in the tourism industry. Italy and Serbia migrated to the fifth cluster where France and Turkey are located, where the fifth cluster together with the second cluster is dominating in relation to the others (Germany). Thus, it is concluded that Serbia has made significant progress in 2020 in terms of human resources policy in the tourism industry (Table 13).

In order to confirm the correctness and validity of the cluster analysis and the statistically significant difference in the average values of variables among the clusters, the authors performed the ANOVA procedure. Based on the Sig. column a statistically significant difference in the average values of variables among the cluster is confirmed since the value in this column is less than 0.05 (Table 14).

**Table 14.** ANOVA procedure

Indicators	Mean Square	F	Sig.*	Indicators	Mean Square	F	Sig.*	
X1_2019	Between Groups	943046497.059	268.970	.000	X1_2020	760221877.561	285.469	.000
	Within Groups	3506139.337				2663058.756		
X2_2019	Between Groups	9529373.364	98.563	.000	X2_2020	6077240.111	41.528	.000
	Within Groups	96683.172				146342.364		
X3_2019	Between Groups	943046497.059	268.970	.000	X3_2020	760221877.561	285.469	.000
	Within Groups	3506139.337				2663058.756		
X4_2019	Between Groups	667448866.279	226.799	.000	X4_2020	541095480.642	243.333	.000
	Within Groups	2942914.847				2223683.520		
X5_2019	Between Groups	52308144.741	177.891	.000	X5_2020	34102340.877	81.543	.000
	Within Groups	294045.431				418215.115		
X6_2019	Between Groups	943046497.059	268.970	.000	X6_2020	760221877.561	285.469	.000
	Within Groups	3506139.337				2663058.756		

**Source:** Author's calculation based on Eurostat Database through SPSS

**Table 15.** Levene's Statistic for analyzed years

Indicators	Levene's Statistic	Sig.	
X1_2019	Based on Mean	3.940	.018
	Based on Median	2.659	.066
	Based on Median and with adjusted df	2.659	.085
	Based on trimmed mean	3.872	.019
X2_2019	Based on Mean	10.663	.010
	Based on Median	2.987	.047
	Based on Median and with adjusted df	2.987	.117
	Based on trimmed mean	9.125	.000
X3_2019	Based on Mean	3.940	.018
	Based on Median	2.659	.066
	Based on Median and with adjusted df	2.659	.085
	Based on trimmed mean	3.872	.019
X4_2019	Based on Mean	6.468	.012
	Based on Median	4.626	.009
	Based on Median and with adjusted df	4.626	.025
	Based on trimmed mean	6.388	.002

X5_2019	Based on Mean	8.867	.010
	Based on Median	3.409	.030
	Based on Median and with adjusted df	3.409	.077
	Based on trimmed mean	8.231	.000
X6_2019	Based on Mean	3.940	.018
	Based on Median	2.659	.066
	Based on Median and with adjusted df	2.659	.085
	Based on trimmed mean	3.872	.019
X1_2020	Based on Mean	2.857	.054
	Based on Median	1.895	.153
	Based on Median and with adjusted df	1.895	.173
	Based on trimmed mean	2.810	.057
X2_2020	Based on Mean	8.436	.010
	Based on Median	7.510	.001
	Based on Median and with adjusted df	7.510	.014
	Based on trimmed mean	7.997	.000
X3_2020	Based on Mean	2.857	.054
	Based on Median	1.895	.153
	Based on Median and with adjusted df	1.895	.173
	Based on trimmed mean	2.810	.057
X4_2020	Based on Mean	6.480	.012
	Based on Median	2.855	.054
	Based on Median and with adjusted df	2.855	.105
	Based on trimmed mean	6.283	.002
X5_2020	Based on Mean	10.531	.010
	Based on Median	8.688	.000
	Based on Median and with adjusted df	8.688	.018
	Based on trimmed mean	10.279	.000
X6_2020	Based on Mean	2.857	.054
	Based on Median	1.895	.153
	Based on Median and with adjusted df	1.895	.173
	Based on trimmed mean	2.810	.057

\*Statistical significance at level 0.05

**Source:** Authors' elaboration based on conducted cluster analysis in IBM SPSS 26.0

In order to determine the validity of the set model for cluster analysis, the authors used one of the statistical instruments - the test of homogeneity of variance (Table 15). The mentioned test “starts from the null hypothesis that the variance is the same in all samples if  $P > 0.05$ . If  $P > 0.05$ , the null hypothesis is accepted, i.e., the alternative is rejected, which implies such a situation that the variance is equal for at least one pair of samples” (Simović et al., 2020, p. 623). The results confirmed that there is no statistically significant difference between variations in a given sample (Levene's Statistic). This fact is shown in the column Sig. for both analyzed years in the section Based on Mean which implies acceptance of the null hypothesis according to which variance is homogeneous for a given variable by groups (Rađenović et al., 2022).

## 5. CONCLUSION

The applied multiple hierarchical regression led to the conclusion that the greatest impact on the permanence of work has an indicator related to the educational level of employees in the tourism sector. Namely, the level of education and qualifications, as well as the skills that contribute to the improvement of the tourist service, certainly have an impact on increasing

the earnings of employees working in tourism, as well as on consistency when it comes to the career path of employees.

Multiple hierarchical regression and its stepwise involvement of independent variables in the regression model found that even individually, the educational level has the highest impact on the perspective of employees in tourism, as evidenced by the fact that  $p < 0.05$ . Stable employment contracts based on work-ability potential depend on the long-term training of employees in the tourism industry and the transition to a higher level of education, which is confirmed by the results of regression analysis.

On the other hand, using cluster analysis, the authors determined which countries are dominant in terms of analyzed indicators. In both years, the most dominant cluster is Cluster 2 for all employment tourism indicators. Cluster 2 presents Germany as a single-country cluster. In other clusters, there have been significant structural changes, given that some countries have significantly changed their position when it comes to employment tourism indicators. For example, Serbia moved from Cluster 1, in which it was in 2019, which is the second most dominant, to Cluster 5, which has significantly lower performance compared to Cluster 1, in which this country was. This only indicates the great turbulence in the labor market in tourism in 2020, which is marked by the stagnation of tourism development due to the global pandemic.

In 2020, however, Italy moved to Cluster 5, which has a better performance compared to Cluster 4, which it was in 2019 when it comes to the labor market in tourism. The United Kingdom and North Macedonia also advanced in 2020 and moved from Cluster 5 and Cluster 3 to Cluster 1, respectively, which is second in dominance. It could be concluded that a flexible employment policy in the tourism industry could have results even in extreme business conditions such as a pandemic, which could be a recommendation for human resource management in the future.

## 6. FUTURE RESEARCH DIRECTION

Future research should be focused on identifying key factors influencing the permanence of jobs in the tourism industry in order to adapt human resource management as much as possible to trends in tourism and tourist destinations. Constant education and monitoring of technological trends regarding the formation of e-booking systems also groups countries based on digital literacy of the tourism labor force, which can be the subject of cluster analysis. The efficiency of the hospitality of information systems influences the choice of tourist destinations, which is another indicator for future research.

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