
DIGITALIZATION AND ARTIFICIAL INTELLIGENCE IN THE HOTEL AND RESTAURANT SECTOR, AND THE ATTITUDES OF THE STAFF

Valentin Kotsakov, PhD Student
Sofia University "St. Kliment Ohridski", Bulgaria

Abstract. The report presents the results of a survey of the human resources employed in the hotel and restaurant sector in the municipality of Devin, conducted in the period March-April 2024, regarding their own knowledge and skills, attitudes and concerns about digitization and the introduction of artificial intelligence. The human resources are the most important factor for the development of the modern organization and the implementation of modern policies depends on their motivational, moral and ethical value. That is why knowing and analyzing the state of the human resources, their needs and expectations is very important in our dynamic modern days. For the region of Devin it is characteristic that a large part of the local population is directly dependent on the tourism. The aim of the study is to investigate the level of the organizations and their employees about the current trends in digitization and the introduction of artificial intelligence, as well as the level of the employees knowledge, skills and need of trainings about this area, and whether they feel threatened by artificial intelligence. The analysis made in this survey can be used as a model for researching employees in other sectors and regions in Bulgaria.

Keywords: human resources; knowledge; skills; training; digitization; AI

JEL: A11; A14; Q55; Q56; Z32

Introduction

A lot of authors are united around the opinion that the human resources are the most important factor for the development of any modern organization, and the quality of offered tourist products and services depends on their educational and qualification level, motivation, moral and ethical values (Assenova et al., 2010; Borisov et al., 2018; Vodenska & Assenova, 2011; Iliev, 1993, 2016; Lambova, 2015; Paunov et al., 2013; Petrova & Genev, 2015; Petrova et al., 2019; Ribov, 2003a, 2003b; Slavejkov & Najdenov, 2009 etc.). We observe how technological innovations and artificial intelligence support the activities of the people and partly seize some specific activities in our modern days. There are three main ways in which the technology can be applied to the hotel and restaurant sector: by replacing, assisting or completely transforming the work of the employees. However, the human resource in the sector is and will continue to be crucial, even for the lower skilled activities.

It is difficult to determine the exact number and, respectively, the percentage of the people employed in the tourism in Bulgaria due to the fact that many of the persons employed in this sector are counted in different directions by the official statistics. According to the World Travel and Tourist Council (WTTC 2021 Annual Research: Key Highlights), the employed people in the tourism for 2019 are 10.6% of all the employed in the Bulgaria. Whatever the actual percentage of the employees is, it is significant and is indicative of the importance of the sector for the country's economy. In addition to the large number of directly employed, the sector has a significant impact on a number of other sectors of the country.

The modern management means to lead thinking subjects with relevant knowledge, skills and abilities, to form and strengthen their consciousness and mentality, determined by a complex of adequate motivating influences to activate their purposeful, initiative and creative behavior. Also, the successful human resource management requires a deep understanding of the social and cultural changes that the society and the organizations are experiencing, generational change and their attitudes to the workplace, and the opportunities available to the current employees (Petrova et al., 2019).

The success of a modern organization depends on how competitive it is, and this largely depends on the use of modern technology. And the success of technological innovations in the hotel and restaurant sector depends on how they are positioned and adapted to the specific object. The importance of the technological innovation is increasing, as well as the need for a balanced approach that satisfies both the business requirements and the employees, but also meets the expectations of the younger generations in an increasingly digitized world. The increase in the technological development and digitalization, among other benefits, can lead to higher productivity and a corresponding increase of the remuneration received by the employees.

The technological, as well as other industrial revolutions so far, brings to the mankind more positive than negative aspects. Ribov (2003a: 401-407) defines that the purpose of IT is not only to “increase productivity, save money and prepare more informed decisions”, but above all “to work for the management, to respond to the market dynamics, to create, maintain and deepen the competitive advantage”. The real power of the technology is to apply solutions for problems we don't even think that they exist.

The tourism establishments are inevitably part of the industrial world and take advantage of new technologies as much as they can. Nowadays, we cannot imagine a kitchen without a convection oven, cleaning without a vacuum cleaner, reception without a computer with specialized software, but we also cannot imagine a hotel without chefs and waiters (there is already development of robot waiters or piccolo, but their capabilities are limited far from humans), much less without a receptionist capable to answer all the

countless questions and issues raised by guests. The new technologies are constantly coming to assist the service staff, such as the digital receptionist with functions such as sales, digital tours, reservations, check-in/check-out, issuing vouchers, quick connection with departments such as front office, housekeeping and maintenance, generation of inquiries and etc., but these activities are also only for the benefit of the service staff, without completely replacing the people.

Undoubtedly, one of the most serious challenges in our days is the penetration of the technological innovation and artificial intelligence into almost every aspect of the human activity. The technological revolution we are witnessing is undoubtedly viewed with fear because of the risk of job losses. According to a study conducted by Grace et al. (2018), “artificial intelligence will outperform humans at translating from foreign languages (by 2024), writing high school essays (by 2026), driving a truck (by 2027), retailing (by 2031), writing a bestseller (by 2049), and surgery (by 2053). Researchers estimate that there is a 50% chance that in 45 years artificial intelligence will surpass humans in all fields, and in 120 years all human activities will be fully automated”.

At September 2023, there was conducted a survey among people from the tourism industry in Bulgaria, as part of a large European project (Pantour, 2024). The results of the survey strongly indicate that there is a large gap between the knowledge and skills of the employees and what the modern situation actually requires. The technological innovation is a big challenge for everyone, but especially for the managers. That is why knowing and analyzing the state of the human resources, their knowledge, skills, attitudes and concerns are very important in our dynamic modern days. It makes this analysis very relevant.

Research methodology

This report was prepared on the basis of an analysis of a survey carried out among the employees employed in the hotel and restaurant industry on the territory of the municipality of Devin, who are the subject of the survey. The purpose of this survey is to explore the knowledge, skills, attitudes and concerns of the human resources regarding digitization and the entry of artificial intelligence to the sector. The area of Devin has a rich history in offering health and balneo-recreational services thanks to the good combination of climate-geographic features and the beneficial treatment of the mineral waters, and in recent years it has established itself as one of the leading balneo resorts in Bulgaria.

Almost all of the employed persons in the researched sector are local for the municipality. The lack of an alternative for employment in other sectors leads to the fact that a large number of the employees rely on developing in

this sector. The significance of studies like the present one is confirmed by the opinion of Cholakova & Dogramadjieva (2019), who share the opinion that studying the opinions and attitudes of the local population is of great importance because they are among the key stakeholder groups to be considered when it comes to adaptation strategies for sustainable tourism development, i.e. to a certain extent, the assumption can be accepted that the opinion of the employees employed in the hotel and restaurant sector in the municipality of Devin coincides with the opinion of the local population.

The survey, on the basis of which this report was prepared, was conducted in the period March-April 2024, and for greater reliability of the survey and elimination of undesirable influences, the survey was anonymous, and the employees were given the opportunity to fill in the questionnaires independently. A weakness of this approach is that there are questions that may not be understood correctly. There are also many survey cards that are not filled in at all. There were received 92 completed questionnaires, and the data was processed using the software product SPSS, version 21.0.0.0, summarized and presented in graphic and tabular form.

The survey contains 24 questions. They are divided into several groups: assessment of own digital knowledge and skills; factors related to the learning about the subject; questions related to the frequency of the use of technologies and software platforms, expectations and concerns of the employees, regarding the entry of technological innovations and artificial intelligence in the sector; and sample identification questions. Most of the questions are closed and simple (with one possible answer). Three of the questions were opened (asked where employees could express their opinions and suggestions), but there were very few responses to them, which is also a weakness of the anonymous self-completion of survey cards. The evaluation questions are based on a 5-point Likert scale.

The survey cards were mainly filled out by the employees of the large hotels and restaurants in the city of Devin, where the situation is different compared to the small establishments, which dominate as a number on the territory of the municipality of Devin, but with less employees. For economic reasons, the small establishments have more limited access to modern technologies.

For the purposes of the present analysis, there was also used data from the official statistics of the NSI (2008-2021). Until 2008, the NSI did not have data about the employed people by sectors. For many years, the statistical information has not been fully used in the tourism researches in our country (Marinov 2002). However, a number of developments show that despite of the limitations (and taking into account these limitations) it can serve for meaningful analyzes of the tourism development at different levels (Marinov 2002; Dogramadjieva 2013). At the recent years (after our entry into the EU),

the tourism statistics in Bulgaria (including the hotel and restaurant statistics) had significantly improved (Dogramadjieva 2013), but as far as those employed in the tourism are concerned, significant deficits continue to exist. A weakness of the information about the employed persons in the hotel and restaurant sector, according to the NSI data, is that in order for the employees to be counted as working in this sector, the employing companies must have the same basic code of economic activity, i.e. from NSI data, it is possible to establish the minimum, but not the real general population of those employed in the sector. Another disadvantage is that the employment data is on an annual basis, whereas employment in the tourism is highly seasonal. In the context of the specific study, this means that they cannot track the seasonal fluctuations in the employment of the hotel and restaurant industry in the municipality of Devin, and the empirical observations show that some of the accommodation places temporarily suspend their activities during the winter period. It is important to note that the period of the conducting the survey coincides with seasonally low employment of the employees in the hotel and restaurant sector in the municipality of Devin, which leads to a relatively small number of the completed questionnaires.

The municipality of Devin represents 17.83% of the territory of the Smolyan region. The population is 12,097 inhabitants, of which 6,527 (54%) live in the town of Devin. The town itself is located 710 meters above the sea level in the Rhodope Mountains and it combines a varied relief, picturesque nature, a mild climate and the presence of mineral springs in a small hollow about 2 km west of the confluence of the Devinska River and the Vacha River. Devin is situated 220 km away from Sofia, 45 km from Smolyan and 35 km away from one of the main mountain tourist resorts in Bulgaria “Pamporovo”. The municipality has a rich ammount of natural and anthropogenic resources, but they are not enough well utilized. There is a lack of good transport accessibility to the area. There are operating 1.06% of the accommodation facilities of the country with 0.41% of the beds on the territory of the municipality of Devin, which is indicative for the significantly smaller average capacity of the establishments. Most of the visitors are Bulgarians. There is a lack of a purposeful policy for promoting the destination as a whole (there is no electronic tourist portal, neither a tourist information center), but the local business is not united in this direction either (Kotsakov, 2024).

General overview of the personnel employment in the municipality of Devin

The economically active population (labor force) for 2021 on the territory of the municipality is 5,958 people, with the employment rate of 52.2%. By the end of 2022, the total unemployment is 10.5%, but the real situation, as it is also the author's expert opinion, that there are almost no people

willing to start working (Kotsakov, 2024). The number of the employed persons on the territory of the municipality of Devin in the hotel and restaurant sector can be tracked from Table 1 (NSI 2008-2021). The conclusion that can be made from it is that those employed in the sector, represent a significant share of the total employed persons, which is indicative of the importance for the economy and for the local population, generally.

Table 1. Employed persons in the municipality of Devin

Year	Total	Hotel and restaurant sector	% of all the employed
2008	4 513	473	10,5%
2009	4 353	514	11,8%
2010	2 734	399	14,6%
2011	2 378	331	13,9%
2012	2 148	296	13,8%
2013	2 092	240	11,5%
2014	2 185	226	10,3%
2015	2 378	278	11,7%
2016	2 508	287	11,4%
2017	2 563	304	11,9%
2018	2 652	331	12,5%
2019	2 914	253	8,7%
2020	2 727	197	7,2%
2021	3 111	239	7,7%

Results of the empirical research

Structure of the sampling

There were received 92 completed survey cards, which represents 38.5% of the people employed in the hotel and restaurant sector in the municipality of Devin according to the official statistics (NSI 2021). This high proportion provides reliable results and allows to be made important conclusions about the general population. The majority of the employees (Table 2) are women (72%), which is typical for the employed people in this sector and corresponds to previous research concluded in the region. 45% of the employees are at the age category of 35-54 years, and the young people (16-24 years) are just 12%. The people with high education dominate (67%), and those with low education are significantly less (9%) – results that are quite different from the average for the country (25% basic and lower, 50% high and 25% university education). 90% of the employees are employed year-round, and almost all of them (96%) are full time. This is an interesting indicator that is not only related to employers, but also to the attitudes of the employees

themselves who want permanent work. The share of the employees who define themselves as managers and owners is just 4%, and the dominant part (88%) of the respondents are classified as service personnel. The relatively low turnover of the employees and their relatively long-term commitment to the industry is impressive for this sector. 45% of all the respondents have been in the hotel and restaurant sector for more than 10 years and 39% of the employees have that much experience at the same workplace – indicators that are far above the standard for the sector in the country. According to Ivanova (2018), until 1989, one of the main problems facing the development of the quality tourism was precisely the high level of turnover. Just 7% of the respondents have been in the sector for less than one year, which is a relatively low percentage, considering that employment in the sector is seen as a temporary activity until finding a “more serious job”.

Table 2. A sample of the survey of employees in the "Hotel and restaurant industry" sector in the municipality of Devin

		Number of respondents	Relative share (%)
Gender	Male	22	24%
	Female	66	72%
	I don't want to answer	4	4%
	Total	92	100%
Age	16-24 years	11	12%
	25-34 years	13	14%
	35-44 years	22	24%
	45-54 years	27	29%
	Over 55 years	19	21%
	Total	92	100%
Education	Basic or lower	8	9%
	High	62	67%
	University	21	23%
	Other	1	1%
	Total	92	100%
Type of work	Permanent	83	90%
	Seasonal/temporary	4	4%
	Internship	3	3%
	On call/hourly	2	2%
	Total	92	100%
	Full time	88	96%

Type of employment	Part time	4	4%
	Total	92	100%
A level in the hierarchy	Employee	81	88%
	Expert/Specialist	7	8%
	Manager/Owner	4	4%
	Total	92	100%
How long have you been at this profession?	Less than 1 year	7	8%
	1-2 years	8	9%
	3-5 years	19	21%
	6-9 years	22	24%
	More than 10 years	36	39%
	Total	92	100%
How long have you been at this working place?	Less than 1 year	6	7%
	1-2 years	4	4%
	3-5 years	17	18%
	6-9 years	24	26%
	More than 10 years	41	45%
	Total	92	100%

Evaluation of the own knowledge and skills

The relatively high assessment (Fig. 1) of the employees employed in the hotel and restaurant sector on the territory of the municipality of Devin own knowledge, is impressive. The proportion of those who answered that they were not familiar should not be overlooked either. 22.8% (almost 1/4) of the surveyed employees do not understand the term “digitalization” well. Regarding the technical skills of using artificial intelligence, 16.3% answered that they did not have such knowledge, and 18.5% doubted their skills in working with tools based on artificial intelligence. These answers are also surprising against the background of the structure of the sample, from which it is evident that the majority of those hired are rank-and-file employees. From the following questions, it remains to be established whether these answers correspond to the real situation, or simply that the respondents either did not understand the questions correctly or did not correctly assess their own knowledge and skills.

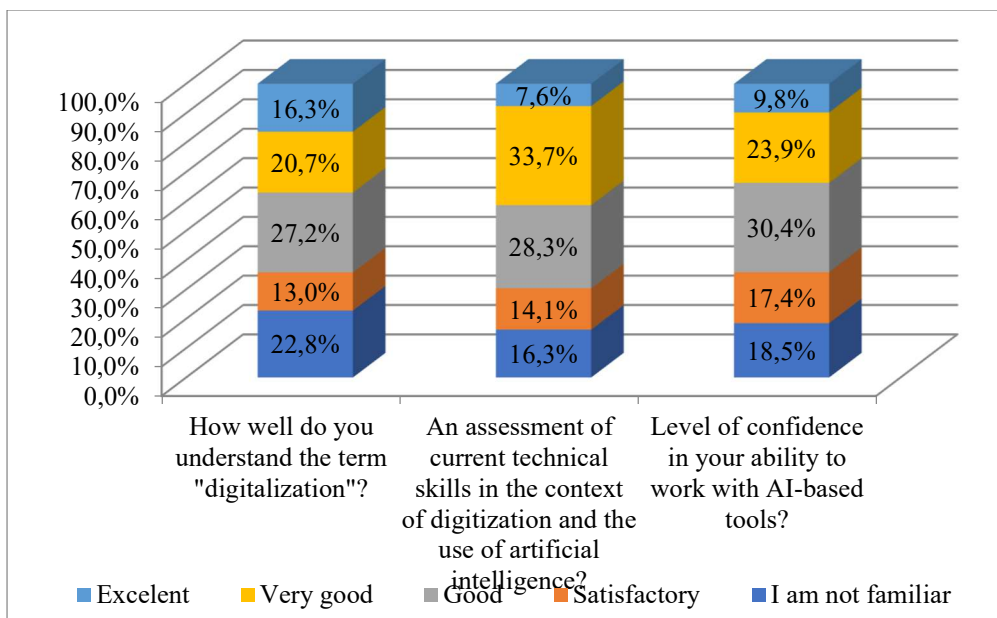


Figure 1. Assessment of the own knowledge

Frequency of the usage of technologies and software platforms, employee expectations and concerns

An interesting question is the frequency of the usage of software platforms that include elements of artificial intelligence. (Fig. 2). Just 19.6% answered that they often use such platforms. These answers are reasonable in the context of the specific work that is done in the hotel and restaurant sector, where a large part of the employees mainly use manual labor and do not have access to high technologies. The results given to this question do not correspond with the answers given by the employees regarding their own knowledge and skills. These results also raise concerns about the entry of the modern technologies into the establishments on the territory of the town of Devin. The management will certainly face serious learning obstacles as well as reluctance in the future. If the survey had been extended to the territory of the entire municipality, the results would certainly have been even worse. As it was specified – the research was mainly carried out among the employees of the large hotels and restaurants in the city, where it is assumed that they have more access to modern technological tools, compared to the smaller vows, which in fact dominate in number in the territory of the municipality.

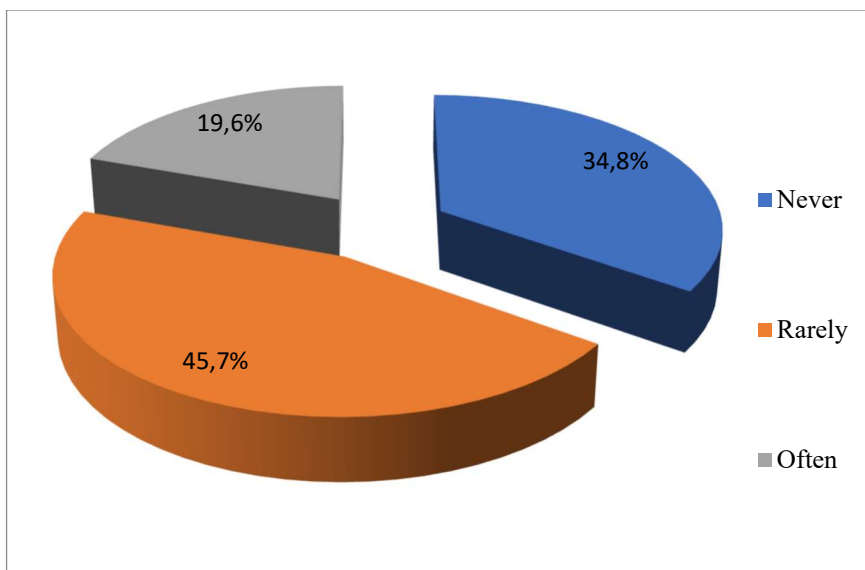


Figure 2. How often do you use technologies and software platforms that include elements of artificial intelligence?

A greater proportion of the surveyed employees (Fig. 3) believe that artificial intelligence can improve the efficiency and accuracy of processes in the hotel and restaurant sector. Just over 1/4 (27.2%) are the people who categorically answered that artificial intelligence cannot help, and these are to a significant extent employees who mainly perform work that can hardly be replaced, such as maids, maintenance, kitchen staff etc.

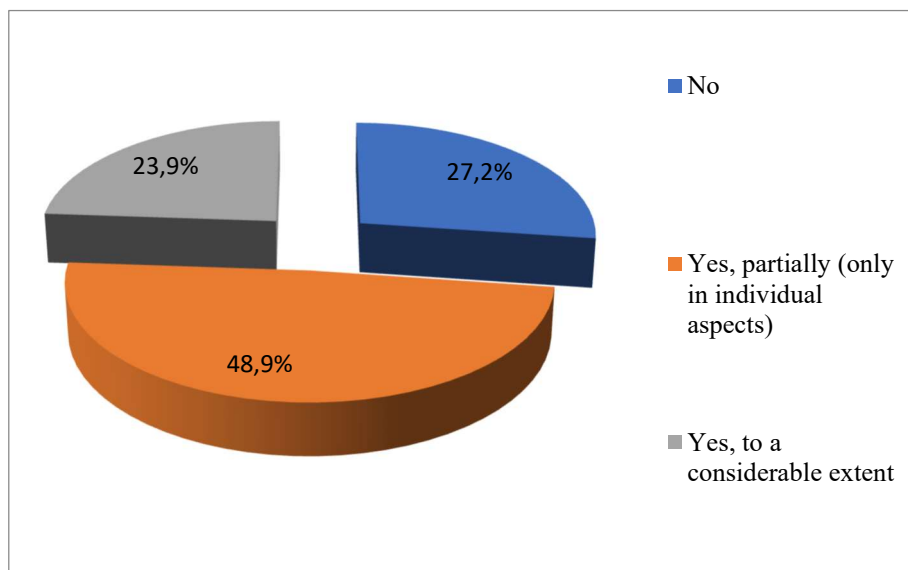


Figure 3. Do you believe that artificial intelligence can improve the efficiency and accuracy of processes in your field of activity?

Almost the same answers are observed for the question of the future change of the methods and processes concerning the work in the sector (Fig. 4). Here, however, the final answers are higher – skeptics occupy a higher share, reaching almost 1/3 of all respondents (31.5%), and optimists who say that digitization and artificial intelligence will have a significant impact on the sector in the future are 30.4%.

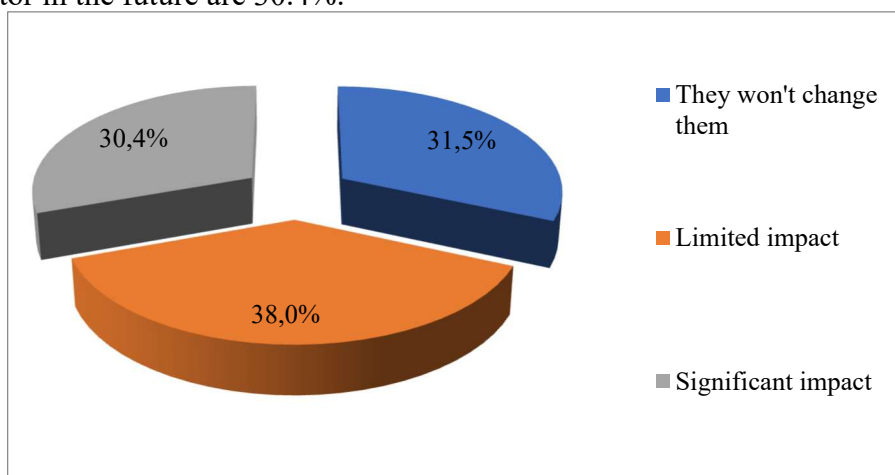


Figure 4. To what extent do you believe that digitization and artificial intelligence will change the methods and processes of working in the sector in the future?

To the open question, that concerns specific areas in the specific field of activity where employees see greater potential for the application of artificial intelligence, there were given such answers as self-check-in and check-out of guests, which the work of receptionists can be implemented as a facilitation; processing reservations and marketing campaigns.

Just 1/3 (33.7%) of the surveyed employees are worried about their jobs due to the introduction of automation and artificial intelligence (Fig. 5). There are almost as many who think that the situation for the employees will be improved. These are good indicators regarding the future entry of modern technologies into the sector and their eventual boycott by the employees.

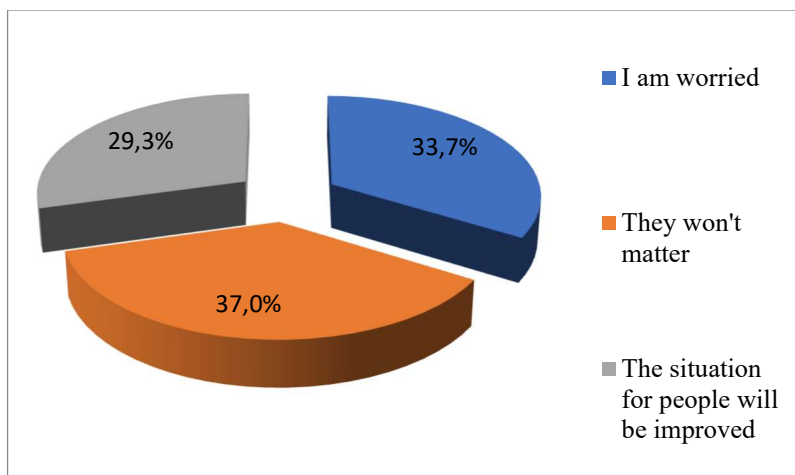


Figure 5. Concerned about possible threats to hotel and restaurant jobs as a result of the automation and the growing role of the artificial intelligence?

The importance of this question for the acceptance and respective rejection of digitization and the entry of artificial intelligence in the hotel and restaurant sector lead to its more detailed breakdown (Fig. 6). The gender distribution shows that men are much more optimistic than women. It is observed much more pronounced anxiety about the younger generation (up to 24 years). Visibly flooding them with information from everywhere leads to uncertainty about their future work activities. At the other extreme are the people over 55 years who worry the least. Just 15.8% of them are worried, which is reasonable considering their foreseeable departure from the labor market and the specific type of activity they perform. About the level in the hierarchy, it can be concluded that the lower an employee is, the more threatened he feels. All the managers and owners who were surveyed answered that, in their opinion, the situation for the people will be improved. The same conclusions can be drawn about the educational level of the employees. As the education increases, the optimistic attitudes increase at the expense of the pessimistic ones. Higher educated people experience less anxiety. Here again, the opinion is reinforced that a wider explanatory campaign is needed, regarding the pros, cons and threats that this next technological revolution contains.

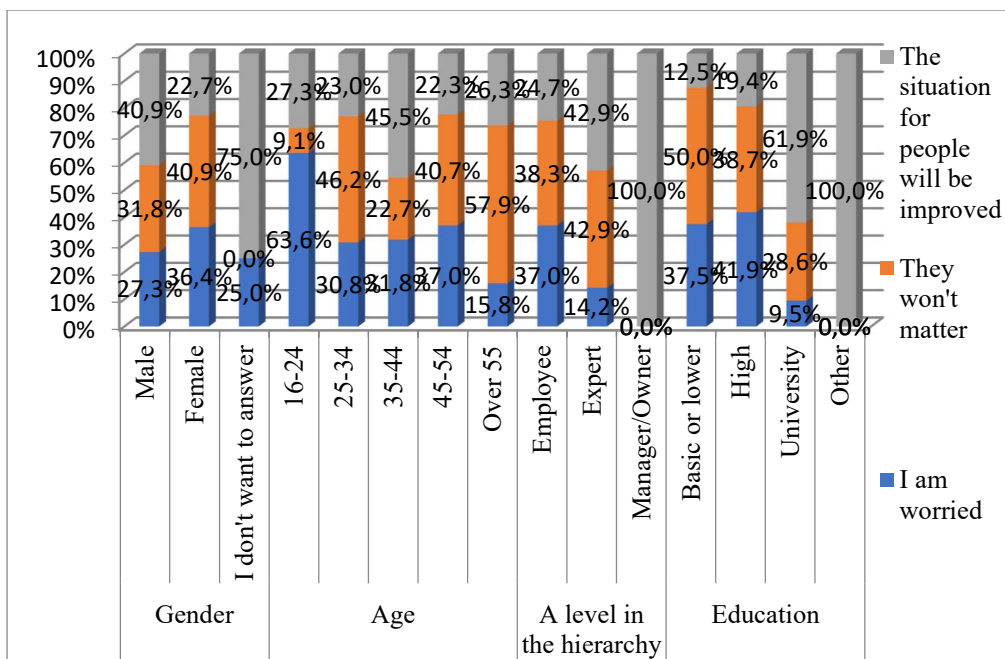


Figure 6. Concerned about possible threats to hotel and restaurant jobs as a result of the automation and the growing role of the artificial intelligence - breakdown?

Regarding the security and protection of the personal data, collected and processed by the systems based on artificial intelligence (Fig. 7), almost half (43.5%) of employees feel worried. This suggests that a more comprehensive awareness campaign is needed among employees to convince them of the benefits of the introduction of modern high technologies based on artificial intelligence. To some extent, people are disturbed by the large flow of news stories about misuse of personal data. About 1/4 of people are optimistic and these are again people with higher education and respectively higher level in the hierarchy.

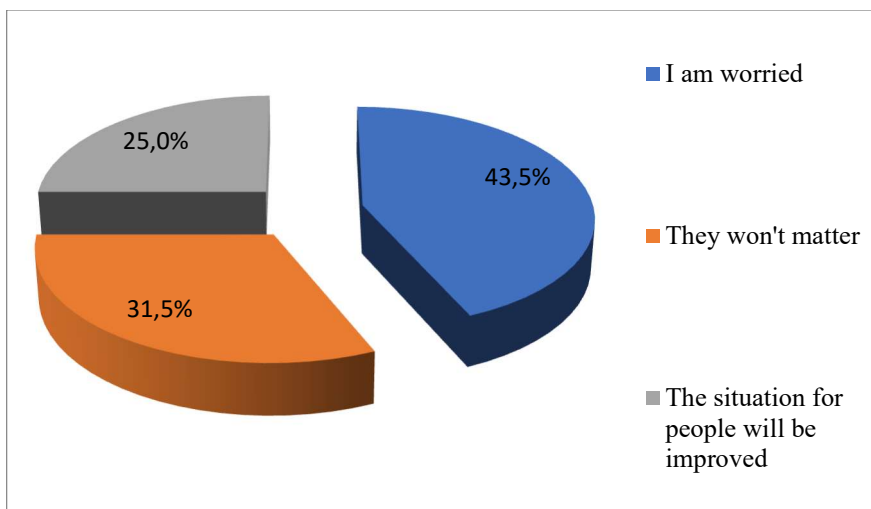


Figure 7. Concerned about insufficient protection of employees' personal data and personal space related to the collection and processing of information by AI-based systems?

One of the biggest stumbling blocks to the introduction of artificial intelligence is the need for a human to communicate with a human. While the younger generations are more likely to trust services from machines and artificial intelligence, the older generations still feel the need of communication with other persons. The degree of anxiety of the surveyed employees in the hotel and restaurant sector in the municipality of Devin, regarding the possible loss of human factor and relationships, is shown in Fig. 7. Here you can clearly see the division, which stems mostly from the different generations. Just 16.3% of the responding officials said that the situation for the people will be improved. These are mainly younger employees. Almost half (46.7%) of the employees feel worried about the loss of the human factor and human relationships, and this could be an obstacle to the future entry of artificial intelligence into the sector.

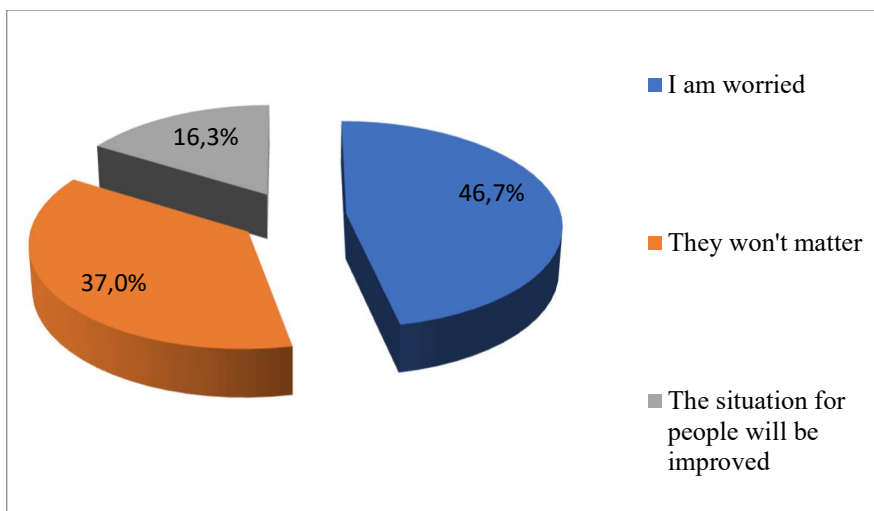


Figure 8. Level of concerning about the potential for loss of the human factor and lack of human relationships as a result of automation and the use of artificial intelligence?

Conclusions

The conducted study sheds light on a topic that has been relatively poorly researched so far, namely – what is the attitude of the employees employed in the hotel and restaurant sector in the municipality of Devin towards modern technological trends, such as digitization and the introduction of artificial intelligence. It is characteristic for the municipality of Devin that a large part of the local population is directly dependent on the tourism in the region. This leads to relatively low staff turnover and high motivation for offering a high quality tourist product. The analysis shows that despite of the high knowledge of the subject that the employees share, the situation is not very good. The modern achievements of scientific and technical progress in this area are still not being rationally used, and this poses risks for the competitiveness of the sector not only in comparison with other competitive destinations, but also in relation to other sectors in the country that attract quality personnel with higher payment.

In general, employees say that the new technologies will make their work easier, but a relatively high share of skeptics is also observed. Relatively few employees are worried about the fact that they will be out of a job as a result of digitization, which is reasonable given for the sector's dependence on the human factor. Researching this factor is important from the point of view of employee attitudes and the possible risk of rejection of modern digital technologies. In general, more highly educated employees and those in higher positions are less worried about digitization and artificial intelligence. Among

the group of stronger concern are young employees, which is a worrying fact. It is definitely needed to be proceeded a wider awareness campaign and training practices among the employees. The high proportion of the employees who worry about their personal data and personal space raises concerns in the possible implementation of new technologies. People seem to be most concerned about the possibility of losing the human factor and human relationships.

The analysis prepared in this way can serve as a model for the study of the employees employed in other sectors and regions of the country and on this basis can be built a unified strategy for the training of the human resources.

A promising direction for future research is the comparison of the results with other similar studies. Making a research on both the employers and the visitors to a destination is also needed for drawing more fundamental conclusions. It is desirable to identify what the attitudes of the visitors are also regarding the absence of the human beings in the service process.

The world is changing at a very fast pace, and this requires a change in the attitudes of the ordinary employees, but also of the companies and, above all, of their management. In the future, only those companies will survive and prosper that manage to adapt to the new realities by finding, retaining, training and making highly motivated and skilled employees perform at their best. The companies of the future must also be able to provide good conditions, including good payment for their employees, and one of the main ways for this is the implementation of modern technologies, including artificial intelligence.

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Valentin Kotsakov, PhD Student

ORCID: 0000-0003-2451-1449

Sofia University "St. Kliment Ohridski"

Sofia, Bulgaria

E-mail: vhk@abv.bg