Article

Internet Users' Approach to HRM Portals in the Context of Sustainable Development—A Comparative Analysis of Poland and Türkiye

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Abstract: The purpose of this article was to identify the characteristics of HRM (Human Resources Management) portals that can contribute to building a smart, sustainable society in two countries: Poland and Türkiye. The analyzed countries were selected due to their similar economic situation, as well as differences in terms of culture and customs and varying degrees of ICT (Information and Communications Technology) implementation in the economy. Conducting the survey at this particular moment was intended to objectivize users' opinions on the HRM portals and their attributes that may contribute to mitigating the effects of the crisis and facilitating economic development toward the creation of a sustainable society. The survey was conducted in April 2022. It was carried out in both countries and covered a group of more than 850 respondents. The CAWI (Computer Assisted Web Interview) method was used in the survey. The differences between results were identified, and the degree of verification of the hypothesis was established and discussed in this paper. In the first stage of the study, the respondents' environment was examined, as well as their opinions on the use of HRM portals. The second phase consisted of assessing the attributes of the most well-known HRM portals that can contribute to building a smart, sustainable industry. As a result, the finally distinguished features included the characteristics that were most important to the users of the portals and those that supported the development of HRM portals due to their innovativeness. The study fills the research gap regarding the potential impact of HRM portals and their prospective use in first restoring the economic balance of a sustainable society.

Keywords: human relation management portal; smart society; smart industry; sustainable development

1. Introduction

Increasing digitization and automation manifested, among other things, by the growth of Internet applications in the economic and social spheres, leads to the development of the phenomenon of Industry 4.0. Its next stage is to be a smart industry (Industry 5.0), as an element closely related to the smart economy, or more generally, Smart Society 5.0. For several years, many researchers and business practitioners have emphasized that such phenomena can only fully develop in a sustainable society. Thus, it emerges that the growth of the smart industry is directly proportional to the development of a sustainable society. Smart society encompasses and is a derivative of a number of components [1–3].

They include:

- Smart economy—the use of the latest technologies (high-tech), automation, computerization and digitization of economic industries and individual industrial organizations and institutions that serve them; the concept also includes smart industry;
- Smart mobility—the implementation of intelligent transport communication solutions to support economic processes with remote management and monitoring of industrial and social processes;

- Smart environment—the application of intelligent information and communication systems to optimize the use of resources, including human resources, and protect the environment from excessive use, damage and destruction;
- Smart habitants and their life—use of the phenomenon of lifelong learning, appreciation of the place and role of learning in private and public life, transfer of innovative solutions to the economy, creating know-how, computerization and digitization of access to health care, education, social activities and state administration;
- Smart governance—use of ICT tools in the process of governance, management and co-management, and creation of procedures to streamline the activities of government and local administration at all levels.

Sustainable development, on the other hand, is generally understood in terms of maintaining a balance between the three main spheres of development: economics, society and ecology [4]. In order to achieve it, one should:

- In the economic sphere, strive for the dynamic growth of the economy—through the development of innovation associated with the use of information and communication technologies, the development of a modern labor market, and the development of ecologically "clean" methods of production and logistics;
- In the social sphere, improve human and social capital by increasing civil rights, including the right to work, and increasing social solidarity;
- In the ecological sphere, preserve the natural environment in line with economic development and human capital development, strive for the stabilization of ecosystems, removal, minimization and remediation of pollution [5].

It is impossible not to notice the common relations in both concepts, where, in addition to a number of social and economic factors, attention has been paid to ensuring the development of human capital and guaranteeing the right to work.

Undoubtedly, HRM portals are one of the most important tools for finding work associated with the demand for it from the economy. They are also, in a sense, a balancing factor between supply and demand in the labor market. Their modernization can become part of the process of the creation of a smart industry, which is an important part of a smart society.

This reasoning has become the first motivating factor for the authors to address the issue of the place and role of HRM portals in Poland and Türkiye, which may play an important part in restoring the balance in the labor market and contribute to creating a smart industry in line with the principles of sustainable development.

The second motive was the fact that the world literature, even though it includes numerous analyses on HRM [6–8], it does not examine the importance of online job portals as a tool for facilitating job search. The period of COVID-19 pandemic accelerated or even enforced the move of job search processes to the Internet, and this phenomenon so far has not been studied to a sufficient degree.

The third reason was related to worsening economic conditions in both countries, which are already causing increasing problems in finding employment opportunities that would be in line with candidates' aspirations, education and acquired skills. In addition, the high dynamics of change, i.e., freezing/thawing of economic sectors, require flexible solutions, which would enable the rapid movement of workers from industry to industry. Modern HRM portals may become important tools to support job seekers under challenging circumstances.

In addition, the literature lacked references to evaluations of HRM portals in countries with different cultures and customs. Therefore, the study also considered the international context since, as the literature sources suggest, the preferences regarding such portals expressed by job seekers in one country may not necessarily coincide with those indicated by individuals from another country. It is important to note that this observation has broadened the research perspective considerably.

Therefore, the authors decided to fill this research gap that existed at the time the analyses were conducted.

The main purpose of this article was to identify the contribution of the HRM (Human Resources Management) portals to the formation and implementation of smart industries, which constitute an important part of the smart society. The study on which the analysis, discussion and conclusions concerning this topic are based was conducted after the coronavirus (COVID-19) pandemic in April 2022. The survey was carried out simultaneously in two geographically and culturally distinct countries: Poland and Türkiye. The choice of the research samples was dictated by similar economic issues at the time and the relative ease of obtaining the necessary data from cooperating universities: the University of Warsaw (Poland) and Uşak University (Türkiye).

In order to achieve the above goal, the following structure was adopted in the paper. After the introduction, the second section presents an overview of the literature. The third part shows the methodology and the research sample examined in the study. The analysis of the results, comparison and discussion, are presented in the next section. The last part contains conclusions resulting from the conducted study, the limitations of the current research and directions for further analyses.

2. Literature Review

As can be seen from the considerations presented above, the literature on the subject takes into account various aspects related to the use of HRM systems and also includes international comparative analyses. Although the publications cover a wide range of topics, the studies carried out so far have not dealt with the complexity or the combination of various problems such as technical, security-related, economical, practical and socio-cultural aspects of the use of HRM systems. In particular, the issues related to the suitability and usability of these systems in supporting the development of a smart society. To some extent, this article fills this research gap.

In recent years, there has been a rapid development of information systems based on the latest technologies, covering all areas of life and the economy. These technologies include intelligent systems turning into Big Data Systems, Internet of Things (IoT), Internet of Everything (IoE), Augmented Reality (AR) and Virtual Reality (VR), etc. These systems are increasingly connected by high-speed networks and integrated with each other. Their basis, however, is the mass processing of data and the mass delivery of that data to decision-makers in order for them to make correct management decisions. With highly sophisticated analytical tools at their disposal, such as predictive analytics, predictive modeling, real-time scoring or optimization, etc., [9] industry executives can use advanced analytics to obtain historical data on production processes. On this basis, it is possible to identify and optimize the factors that affect production capacity and product performance. In addition, modern network technologies such as cloud computing or fog computing enable analysts and managers to obtain basic production and marketing data in real time. Integration and analysis processes now include not only structured data but also semi-structured and unstructured data. The resulting information is used in data-driven [10] as well as strategic decision-making [11]. This requires smart industry development to be based on the following:

- Improving the quality of products and services and increasing customer satisfaction through tailoring goods to individual needs of customers (transition from mass production to individual, customized production), engaging consumers in the processes of design and development of goods (changing them into prosumers) as well as facilitating the development of production processes and services provided with the application of intelligent CRM (Customer Relationship Management) systems [8];
- Using automated, flexible and specialized production, which is capable of immediate conversion to products required by the customer [12];
- Introducing the latest technologies in production processes (e.g., 3-D printing, advanced robots, nanomaterials, piezoelectric crystals, etc.) to implement the idea of personalized and environmentally safe production [13];

- Engaging highly qualified staff to operate and oversee these highly automated and intelligent systems in order to maintain and control production processes effectively and efficiently and ensure their continuous development. The abovesaid employees should have high technical and managerial competence [14].

Intelligent HRM systems (not just e-HRM—electronic Human Resources Management) should be used to help executives and corporations secure and allocate employees and teams capable of meeting these challenges. Undoubtedly, current HRM systems, especially networked systems, mark the beginning of such development. The automation and transformation of HRM systems would help to transform them into specific robotic "headhunters". They would be able to associate job seekers' offers with reported industry or service needs. In addition, they would also help to penetrate the market and respond to the demand for personnel with specific, often high competencies. Such a development should become one of the cornerstones of the smart industry [15,16]. Therefore, the authors believe that the analyses they are conducting can accelerate these processes and contribute to and facilitate the development of a smart industry and smart society.

The change in HRM against the background of the use of new technologies is not without significance for understanding, and it is also important to look at the directions that determine the future. Thite M. pointed to the evolution of HRTechnology interface leading up to the incorporation of the digital world in Human Resource Development's design thinking, strategizing and execution [6].

HRM is generally used to indicate a more strategic approach to personnel management and typically one that entails a greater emphasis on employee involvement and development [17]. It has been determined that the effect of Human Resources Management on performance is significant [18]. The links between Human Resource Management and organizational performance have been clearly seen and verified in the literature [19]. Companies care about the effectiveness of their recruitment processes that will attract personnel who will add value to their organizations. This is why they are implementing various techniques of recruitment to contribute to effectiveness and efficiency [20]. Every national and international business has to identify their manpower needs, employ qualified personnel to meet these needs, motivate them in order to increase their productivity, and train them in line with changing technology-related and environmental conditions. Human resource planning is a very important issue for business success. The basis of human resources planning is to ensure the current and future high productivity of employees and to keep the number of employees at an optimum level [21,22].

Electronic Human Resource Management (e-HRM) includes integration mechanisms and contents shared between HRM and Information Technologies (IT) [23]. Electronic Human Resource Management (e-HRM) is often assumed to increase HRM service quality [7,24].

The rapid development of the Internet during the last years has also boosted the implementation and application of electronic Human Resource Management (e-HRM). When HRM Departments make use of the Internet and related technologies to support their activities, the process becomes e-HRM. e-HRM is understood as the complete integration of all HRM systems and processes based on common HRM data and information and on interdependent tools and processes [25,26].

Human Resource Management (HRM) executives are feeling pressured by the threat of new development in recent years: Electronic Human Resource Management systems, also known as e-HRM. Consultants and other experts purport that this phenomenon will decrease the number of HRM employees, reduce costs, and stimulate a more strategic approach by HRM departments. Is e-HRM really a "threat" or will the service to management and employees actually improve with e-HRM? This is discussed in e-human resources [27]. In the business of screening job applicants, recruiters are increasingly dependent on information systems, especially digital resume databases. However, the current literature does not provide a consensus on the requirements for resume content for digital recruiting [28].

There are some types of e-HRM. The current e-HRMM literature distinguishes three types of e-HRM; Operational e-HRM, Relational e-HRM and Transformational e-HRM [25,29,30].

Many factors, such as the size of the enterprises, their institutional structure, and the sector in which they operate, affect e-HRM practices. However, lately, it is seen that the majority of businesses include human resources sections on their corporate websites. These departments are effectively used by some businesses to fulfill their functions. However, some businesses create human resources sections on their websites only to announce information about human resources [31]. Corporate websites have played a very important role in the recruitment process in recent years. Institutions can reach job seekers through their websites, inform them about human resources policies and practices and offer them the opportunity to apply online. Similarly, potential human resources can have information about the institution and human resources practices from corporate websites [31]. Although information and publications about recruitment are frequently encountered in the Human Resources Management literature, there are few publications on employment,

In the literature on HRM, there are few such publications on the current, active search for specific, competent employees who meet the needs of companies [32]. Private employment agencies have a pool of millions of candidate resumes obtained through their websites and online employment platforms they are members of. Again, through these portals and their own websites, thousands of employers advertise for vacant job positions. While performing all HR services, employment agencies rely on electronic media in terms of processes related to collecting the candidate's resume, returning the candidate's resume by e-mail, and placing an advertisement for the employer, in addition to the traditional methods of telephone and other interview techniques [33]. Corporate websites, the content of which is prepared by the institutions, include information on the company products or services, the company history, mission, values, organizational structure, crucial information provided by the organization and public relations publications, internal vacancies, personnel needs profiles, job application forms as well as webpages that contain e-mail contact addresses for sending resumes [33]. Job seekers gather information about jobs using third-party recruitment websites or electronic job search services. These sites act as an intermediary in collecting information about employers or job seekers electronically [34]. The electronic recruitment process includes the following steps. They are as follows: identifying recruitment needs, submitting job requests, approving job requests via job database, posting job advertisements on the Internet, searching job databases online by job seekers, online pre-screening/online self-assessment, the submission of candidates applications directly to the database, the selection of applications in the database by online search, the online evaluation of resumes and applications, the interview of the employer or hiring manager, shortlisting candidates/ pre-employment screening, the proposal of the job and the conclusion of the employment agreement [35].

Most of those who send their CVs/resumes replying to job offers are actively seeking job opportunities while being unemployed. However, the most attractive candidates are individuals who are already employed and whose skills and competencies are demanded by institutions. It is unlikely that these candidates will send a CV/resume or apply for a job using these portals [33,36].

The data from 2006 indicate that most of the surveyed organizations already incorporated electronic recruitment technologies into their structures through private employment agency sites or human resources pages on corporate websites. However, since private employment agency sites attract more candidates, many businesses prefer to benefit from the candidate pool of these sites. Thus, as far as businesses are concerned, eHRM solutions may be advantageous for them in many respects [37].

Recent global rankings show that Indeed.com ranks first among the most visited websites in April 2022 for the job postings and employment category. The average time visitors spend on the website is 6 min, and they see an average of 7.74 pages per visit. Myworkdayjobs.com and hh.ru are second and third on the list. Glassdoor.com ranks fourth in the list of the most popular jobs and employment websites. Kariyer.net ranks

first in Türkiye as the most visited job postings and employment website in April 2022. They make up the top three of the most popular job postings and employment websites in Türkiye, with indeed.com in second place and yenibiris.com in third place. Moreover, Pracuj.pl ranks first in Poland as the most visited job postings and employment website in April 2022. Together with gowork.pl in second place and jooble.org in third place, they make up the top three of the most popular jobs and employment websites across Poland [38].

Comparisons of computer systems supporting human capital management are also carried out in the business area. Not only solutions used in the organization [39,40] are compared but also HRM portals [41]. The authors paid attention not only to the functionalities of these solutions but also to the business processes that the software supports. The most important comparison criteria include applicant tracking system, performance management, onboarding, human resources information system (HRIS) and employee engagement. Other comparisons focus on software maturity indicates areas such as payroll and benefits administration, automation, mobile access and self-service [42]. In other software quality assessments, attention is paid to core HR (benefits, employee records, payroll, etc.), talent management (compensation, learning, performance, recruitment, succession), workforce management (scheduling, time and attendance), and service delivery (employee and manager self-service) [43,44]. In the comparisons of HRM portals, attention is drawn to such elements aspects as onboarding and introduction packets, policies and procedures, job descriptions and recruitment processes, benefits and entitlements, staff directories and bios, photos and links to company news and announcements [45]. In scientific papers, the issue of the role of human capital management was also analyzed from the point of view of the problems caused by the COVID-19 pandemic, pointing to the importance of remote work or, more broadly, labor mobility [46]. The aspects of implementing practices related to sustainable human capital management are also discussed [47].

3. Research Method

3.1. Description of the Method

The review of the literature on the use of modern technologies, in particular, Internet services in management and industry, as well as the experience of our own research into the issues conducted so far, allowed the authors to formulate the following steps of the research method:

- Defining the goal and methodology of the study, selecting and justifying a research sample in the two examined countries: Poland and Türkiye;
- Preparing a pilot version of the questionnaire to verify the correctness and comprehensibility of the questions;
- Developing and improving the first prototype of the survey, creating the final version of the questionnaire and subsequent translation of it into the national languages of the surveyed populations;
- Carrying out survey questionnaires by means of the CAWI (Computer-Assisted Web Interview) method, involving a random selection of groups of respondents;
- Analyzing and discussing the findings by means of comparative analysis and measuring distance metrics;
- Drawing conclusions and making recommendations with a view to using HR services more effectively and supporting the development of smart industries;
- A similar methodology in international comparison surveys was used to evaluate, e.g., bank web services [48], mobile marketing [49] or smartphone and mobile applications usage [50].

The survey distributed in both countries covered the following aspects:

- Respondents' approach to the issue of job search;
- The technical and organizational infrastructure, as well as ways of looking for a job;
- Problems related to job search;
- Familiarity with local (national) HR portals and their use for respondents' job search;

- Evaluation of the functionality of the most frequently used HR portals;
- Evaluation of the weights (preferences) of the various criteria used to assess HR portals;
- Evaluation of the advantages and disadvantages of HR portals.

The most popular HR portals indicated by the respondents were evaluated on the basis of the following characteristics:

1. Automatic application—the ability to automatically apply to offers from specific industries, regions and provinces, etc.;
2. Additional attachments to the application—attaching additional information and files when applying for an offer via one's profile on the job portal;
3. Filter—a filtering mechanism that allows users to narrow down the list of searched offers according to selected criteria;
4. Offer categorization—dividing offers into industries/sub-industries they belong to and into specific provinces;
5. Most sought-after professional groups—showing job advertisements by the most sought-after professional groups;
6. Similar offers—showing similar offers next to a particular offer, for example, from the same province or industry or with the same/similar job title;
7. Notifications—possibility to sign up for notifications about new job offers;
8. Sending a link to an offer—sending a link to an offer to a friend;
9. Recommending offers—suggesting job offers to a candidate based on data from their profile and application history;
10. Rearch engine—a search engine allowing users to search job advertisements applying a variety of criteria of the offer, including keywords;
11. Remembering/saving offers—the ability to save offers viewed by the user and go to the list of the offers they saved;
12. Earnings in the job offer (providing information about earnings next to the job offer);
13. Application management—the ability to arrange applications according to various criteria as well as to check the stage of recruitment it is at with the employer;
14. Candidate profile address—a unique URL address to the candidate's profile, for example, www.portalpracy.pl/jan-kowalski;
15. CV/resume as a document—a resume uploaded as a document in pdf, doc, rtf or other formats. The candidate who would like to change something in the document must upload it from scratch each time;
16. CV/resume in the form of a profile—the ability to create a resume in the form of a profile by filling in the appropriate fields of the form on work experience, education, qualifications and other data;
17. Additional attachments to the profile—the ability to attach additional files to the profile, such as scans of diplomas and references, photos, graphics, etc.;
18. Profile editing—if a user can set up a resume in the portal as a profile, they can also edit it. Entering data while completing the form is facilitated by the ability to preview it;
19. Generating a file based on the profile—if the resume can be edited in the profile, the user can use the functionality of generating a resume as a file. Such a resume can also be used outside the portal;
20. Showing employers who have viewed the candidate's profile as well as the number of views;
21. Determining the visibility of the resume—the ability to determine the visibility of the candidate's resume: hidden—only employers whose offer the candidate replied to can see the information; anonymous—visible in the resume database, but it does not contain personal information, open—visible and contains personal information;
22. Prompter—prompting words and phrases in the fields of forms to be filled, e.g., after typing the first letters of the name of the city, relevant options to choose from appear;

23. Profile completion process expressed as a percentage—the percentage of completion of the candidate's profile showing how many percent of the profile is already completed;
24. Message to the employer—the possibility to contact the employer by sending them a message in the portal;
25. Video with self-presentation—the possibility for the candidate to publish a video of self-presentation;
26. Saving the profile in the form of a document—the ability to save a CV/resume in the form of a document (pdf, doc) based on the profile, with the option to use it outside the portal;
27. Surveys for candidates—surveys for candidates to check knowledge in a particular field, opinions of respondents or psychological predispositions;
28. Articles—articles on topics related to the labor market;
29. Blog—a blog within the portal is usually not part of the site but is closely related to it. Its task is to promote the main website, so it should contain a link to it;
30. FAQ, help, demo—frequently asked questions, help and demo;
31. Salary calculator—a salary calculator for estimating the net salary based on the gross amount and vice versa;
32. Expert contact—the possibility of virtual contact with an expert;
33. Webpages for specific target groups—separation of webpages of the site intended for specific groups of candidates (e.g., students, specialists, specific industries);
34. Guides/tutorials—tutorials on the labor market, job search, preparation of application documents, preparation for a job interview;
35. Salary comparison—the possibility to check and compare salaries in different industries, regions and provinces;
36. Rankings—rankings, e.g., of the most popular professions, employers, industries, etc.;
37. Searchable dictionary of professions—a dictionary/list containing descriptions of industries and specific occupations in industries;
38. Interview simulation—an interactive solution that helps a candidate prepare for a job interview. Conducting an online conversation with a computer, a user may practice answering questions that might be asked at a real recruitment meeting. The interview can be profiled depending on the candidate's specific industry and work experience;
39. CV/resume templates and other documents—resume templates in various languages, laws and regulations, the Labor Code and other documents useful to candidates,

In order to assess individual features of the HR portal, the survey used the abbreviated, standard Likert scale [51,52], where:

- 0.00—the feature does not occur;
- 0.25—the level of occurrence of the feature is minimal (sufficient);
- 0.50—the level of occurrence of the feature is medium;
- 0.75—the level of occurrence of the feature is good;
- 1.00—the level of occurrence of the feature is maximum.

In order to determine the HR portal features conducive to the creation and development of smart industries in the analyzed countries and to identify differences between the samples evaluations, the following analyses were carried out:

- Firstly, the authors calculated the percentage fulfillment of a feature in a particular country, including a positive or negative impact on the phenomenon under study;
- Secondly, a comparison was made of the shares of users' responses from both countries and established the differences in percentage points;
- Thirdly, two measures of distance were calculated—the city distance (the sum of the absolute values of the differences between the results obtained in both countries) and the Euclidean distance (the root of the sum of squared deviations of the results obtained in both countries). However, with this measure, the effect of large individual differences between dimensions (outliers) is suppressed because it is not squared;

- Fourthly, the standard deviation is a measure of volatility that demonstrates the spread of the value of some measure (e.g., the difference between the results obtained for two separate countries) around its mean. In this case, the overall distance is calculated as a combination of the average differences between the results of the characteristics obtained from the questionnaires and their clustering around the average difference in the group of indicators;
- Additionally, the authors put forward the H0 thesis: there is no difference between Poland and Türkiye in terms of the sizes of individual criteria against the H1 thesis: about the existence of differences, with the assumed probability α of 0.05;
- Finally, the level of fulfillment of the requirements of the distinguished features of HR portals was compared from the point of view of their support of the idea of creating and developing smart industries.

The analysis also allowed the authors to create a ranking of the most popular and optimal (from the user's point of view) HR portals in the two examined countries.

3.2. Research Sample Analysis

The study was conducted in early April 2022. The research sample was chosen from randomly selected student groups of the Faculty of Management of the University of Warsaw (Poland) and the University of Uşak (Türkiye). The random selection of student groups and the non-compulsory nature of the study (freedom to accept or decline an invitation to participate in the research) caused some differences in the number of responses: in Poland, 461, full responses in total, and in Türkiye, 407. Nevertheless, the research sample showed a high similarity due to the following factors:

- Respondents came from the same academic community;
- Similar age and similar activity on the Internet (see: Table 1).

Table 1. Selected sample attributes.

Demographic Data	Poland	Türkiye	Average	Difference
Gender				
Women	66%	68%	67%	2%
Men	34%	32%	33%	2%
Age 18–25	95%	81%	88%	14%
Average age	21	21	21	0%
Place of origin				
Cities 200 thousand+	61%	47%	54%	14%
Cities 51–200 thousand	6%	32%	19%	26%
Cities 21–50 thousand	8%	11%	10%	3%
Small towns <20 thousand	8%	5%	7%	3%
Villages	17%	6%	12%	11%
Education				
Secondary	83%	9%	46%	74%
Undergraduate	16%	87%	52%	71%
Higher	1%	4%	3%	3%
Financial status (situation)				
Very good	19%	6%	17%	13%
Good	55%	7%	46%	48%
Sufficient	2%	13%	4%	11%
I am not financially independent	8%	36%	13%	28%
Average	16%	27%	18%	11%
Bad	0%	12%	2%	12%
Activity on the Internet	99%	97%	98%	2%

The survey analyzed responses from 868 survey participants out of the group of 1296 individuals invited to take part in the survey questionnaire (67% response rate). A total of 461 Polish students and 407 Turkish students provided full answers to the questions contained in the questionnaire.

The research sample included over 67% of women and over 33% of men. In both countries, the percentage shares of men and women were very similar.

The study sample obtained at universities was dominated by people aged 18–25 (on average, 88% of the population). The average age in the entire examined group is 21 years. The regional structure of the respondents' origin was different and adapted to local circumstances. Most of the respondents, 54%, came from cities with more than 200,000 inhabitants (in Poland—61%, in Türkiye—47%, a difference of 14%).

In second place—an average of 19%—there are respondents coming from medium-sized cities with 51–200 thousand residents (in Poland—6%, and in Türkiye—32%, a difference of 26%). Seventeen percent of respondents come from small and very small towns.

Among the surveyed population, the largest group (52%) included people with undergraduate and secondary education levels (46%). This apparently depends on the particular year of studies of the students examined in the research: in Poland, undergraduate studies (secondary education—83%), and in Türkiye, postgraduate studies (87% of graduates). To some extent, the above-mentioned factors also influenced the professional status of the respondents. It is particularly evident in the case of Türkiye, where 4% of the respondents declared being employed (post-graduate studies), and 90% are students—mainly higher education level. It is interesting that in Türkiye, there are relatively few working students among the population (2%). In Poland, almost 58% of students declare that they work.

Despite the fact that the research was conducted in a similar environment, a significant variation in the samples examined in both countries occurred. It was particularly evident in the case of professional status, as there was a large difference between the number of students working in Poland and Türkiye (around 56%). However, the differentiation of the two samples increases the chances of generalization.

The differentiation in the values of the specific indicators appears to be relatively large with regard to the social characteristics of the sample. The largest differences occur in terms of the respondents' education so far; it falls within the range of 71–74%. High differences also occur in relation to financial status; in general, respondents from Poland believe that their financial status is significantly better than respondents in Türkiye (48% more respondents believe so).

Despite the differences in specific indicators within groups of general indicators, this variation does not, in any case, exceed the critical FS test value amounting to 1.3099 (for = 0.05; S1 = 460 and S2 = 100 degrees of freedom, respectively). The highest value of the test for the demographic data amounts to 0.2297 for variation in education level and 0.2034 for the place of origin, which does not exceed the critical value and confirms the hypothesis that there is no significant variation between the demographic data of Poland and Türkiye.

The analyses were preceded by a pilot study conducted among students of the University of Warsaw. The students determined whether the questions included in the questionnaire were unambiguous (understandable) and relevant from their point of view. The pilot group (30 people) was selected among students participating in the International Business Program (in English), characterized by broad horizons and experience in terms of international cooperation.

In order to determine the reliability of the data obtained from the tests, the value of Cronbach's alpha coefficient was established. The Cronbach's alpha index was greater than 0.7 (Poland—0.84, Türkiye—0.78), which indicates the high internal consistency of data and allows their use in the study.

In conclusion, the study was conducted on a research sample in a similar academic environment. In terms of the detailed indicators, the samples have shown similar variations, despite different, detailed characteristics.

4. Analysis of Findings and Discussion

The key initial question of the survey, indicating the need for further research, was the question concerning the professional status of respondents, usually included within the demographic data. This place was pointed to by the participants of the pilot study, justifying it by streamlining the research procedure in this way. The question distinguished such categories as a graduate, employee, student and working student. All these categories represent potential and actual users of HR portals. As written in the previous section, there was a large variation here between the number of graduate students and working students, and this variation affects the ways in which HR portals are used (Table 2). The difference between working and non-working students in both countries is established at an average of 53%.

Table 2. Respondents professional status.

Demographic Data	Poland	Türkiye	Average	Difference
Student	41%	90%	50%	49%
Employee	1%	4%	2%	3%
Working student	58%	2%	48%	56%

The next question of the survey already addressed the problem of job search. Respondents approached this problem by selecting one of three possible answers: yes, no and I do not remember. As expected, the examined group (young, educated and ambitious) mainly answered "yes" (91% in Poland, 64% in Türkiye). "I don't remember" responses were a marginal case, with the remaining responses being negative. The results obtained testify to the correct selection of the group for the survey. The relation of absolute differences between "yes" answers to the sum of absolute differences was 97% for the city distance coefficient and 88% for the Euclidean coefficient. The variance and standard deviation are small for the responses for both countries, and the variance of the FS coefficient is also small (0.1715).

The approaches related to job search are slightly different. In Poland, 88% of respondents are looking for work in the local/national market, while in Türkiye, such a group constitutes 93% of all job seekers. It is noteworthy that the number of respondents who were indecisive about the issue in Poland is almost three times higher (8%) than in Türkiye (less than 3%). Among job seekers in the two analyzed countries, there is a great similarity in the preference concerning the choice of search tools. Respondents were presented with the following options to select from:

- Advertisements in the newspaper;
- Registration in the HR portal;
- Searching the websites of workplaces, enterprises, institutions, etc.;
- Advertising in social media;
- Sending resumes by mail to institutions that the respondents know or select from those found on the Internet;
- Inquiring among friends and family—networking concerning job search;
- Submitting applications to companies and institutions: by mail or in person;
- Posting their own job offers in the media;
- Internships, apprenticeships, volunteering;
- Preparing and updating profiles, e.g., on Linkedin, Goldenline.

The findings indicate that the predominant search is in the newspaper (Poland 13%, Türkiye 21%); ex aequo searching the websites of employment establishments, companies and institutions; and inquiring among friends and family took the second position (Poland—13%, Türkiye—11%). In both countries, the least popular option is posting one's own job offers/applications in the media (Poland—2%, Türkiye—2%). The largest difference of 7% occurred in favor of Poland in the categories related to registering in HR portals as well as internships, apprenticeships and volunteering. There is still relatively low interest in

applications/offers in social media (Poland—11%, Türkiye—9%). The opinions concerning job search tools indicate that, although the countries are culturally distinct, in both cases, search methods are essentially similar and largely based on proven traditional solutions. Automated search, understood as automating the entire process of application, identifying and matching the most similar offers of the job seeker and the prospective employer, is not a very common solution. It seems that the reason is not related only to the circumstances of the job market though it is important to mention that due to the high unemployment, we were dealing with the employer's market (however, in Poland's sectoral labor markets, for more than a decade until 2019, the advantage was with the job seeker). Another explanation for the situation may be associated with the lack of awareness that such automated search and matching tools exist. Additionally, this is one of the conditions necessary to focus on if we hope to support the development of the smart industry in the future.

Another question concerned possible institutional and organizational support. Such support, especially in the Internet environment, is essential for the creation of an information and communication society (ICT) and, of course, should be considered as a supporting factor for the creation of any phenomena related to the smart industry, smart business, etc. The following institutions were considered in the survey:

- Temporary employment agencies;
- Human resource consulting agencies or employment agencies;
- Career Offices at the university or similar organizations;
- Local social organizations: e.g., clubs, associations, youth organizations;
- Job exchanges;
- Job fairs;
- Regional labor offices (in line with administrative division, e.g., district, city, provincial offices).

The greatest trust in terms of the support of job search is placed in institutions such as career offices at the university (25%), as the unit closest to the student, and the popular institutions operating outside the university include job fairs (24%) and human resource consulting or placement agencies (17%). Regional labor offices (5%) and temporary employment agencies (6%) are associated with unemployment rather than attractive job offers and, as such, appear to be the least valued options. In Türkiye, the institutions that enjoy the best reputation are consulting or placement agencies (27%), university career offices (19%) and community-based local organizations (17%). Similarly to Poland, temporary employment agencies (3%) and job exchanges (5%) are not highly valued. The biggest differences occur in terms of the approach to regional labor offices (11%) and personnel consulting or placement agencies (11%) in favor of Türkiye and job fairs (10%) in favor of Poland.

Among the main difficulties in looking for a job, Polish respondents mentioned primarily: writing a cover letter (25%), visiting a prospective employer (21%) and attending a job interview (19%). In Türkiye, undoubtedly, the most difficult part of the recruitment process is the job interview (48%) and the visit to the prospective employer (20%). The third place was taken by choosing from among existing offers (11%). However, unlike in Poland, writing a cover letter does not cause such difficulty (only 1%, the difference when compared to Polish respondents amounts to 24%). The biggest difference is recorded with regard to experienced difficulties related to the interviews (29%).

The next two questions of the survey concerned respondents' opinions on the advantages and disadvantages of using HR portals in the job search process (Figure 1). Polish respondents primarily pointed to the better chances of finding a job (25%), mainly due to a wide range of related offers (37%) advertised in HR portals. Survey results from Türkiye also focused on these first two advantages, with increased chances of obtaining a job coming in the first place (29%) and a broad range of offers coming in second (23%). They paid the least attention to the relative affordability of the service, similar to Turkish respondents (6%). The biggest difference (13%) between the results from Poland and Türkiye occurred in the category of a wide offer.
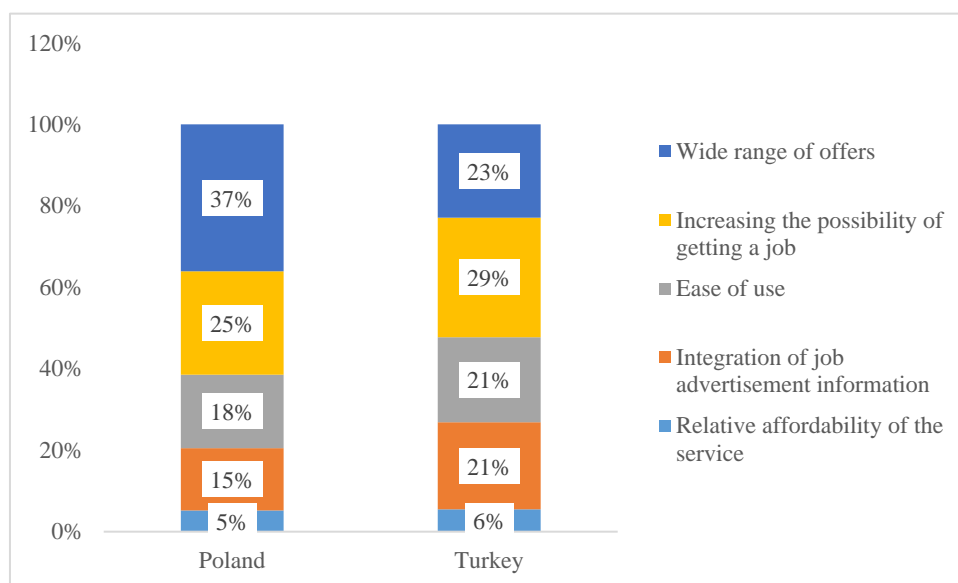
Figure 1. Advantages of HR portals in the opinions of respondents in Poland and Türkiye; Source: own study.

Such significant differences did not occur with regard to identifying the fundamental disadvantages of HR portals (Figure 2). Respondents from both countries agreed that their primary disadvantage is the length of time needed to wait for a result. This is the opinion of 40.86% of respondents from Poland and 40.28% from Türkiye. This is probably due to the lack of association between the employer's offer and the candidate's interests (Poland—33%, Türkiye—28%) and results in the perceived low efficiency of the job search (Poland—23%, Türkiye—25%). The differences range is established at only 1–4%. What is clear in this case is the lack of automated association of employer's and candidate's offers or resultant automated matching.
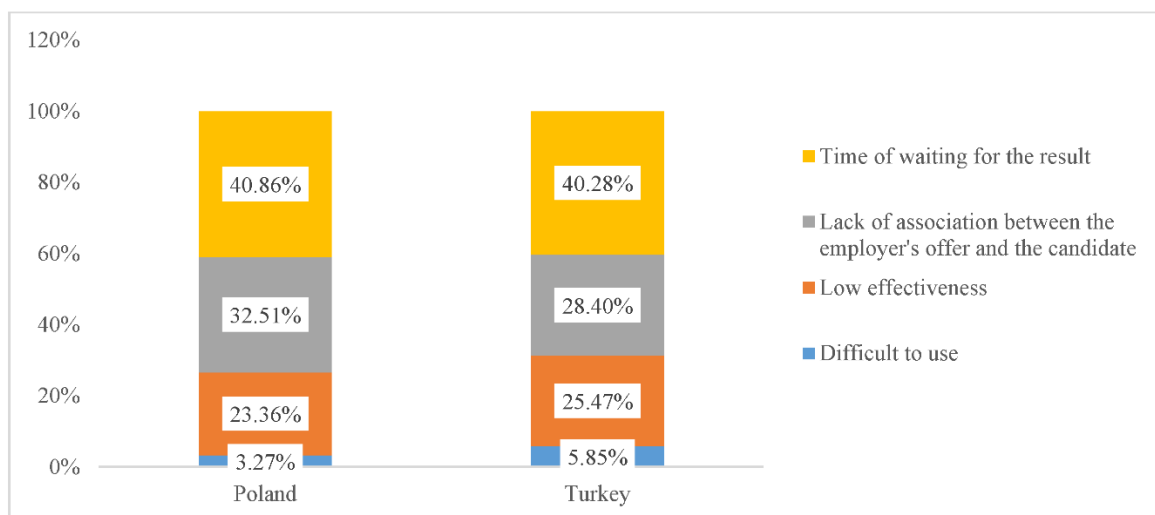

Figure 2. Disadvantages of HR portals in the opinions of respondents in Poland and Türkiye; Source: own work.

The next questions of the survey consisted of detailing the study and analysis of specific online solutions. The first step concerned the knowledge and use of HR recruitment portals in Poland and Türkiye. From among the proposed list of the most common portals on the Internet (obtained after typing the phrase: human relation portal, or job portal in Polish or Turkish into the Google Chrome search engine), respondents selected the

portals that they knew and that they used during their job search. A marginal number of respondents, i.e., 3–5% (within statistical error), did not use these portals. Next, the specific features of these portals were evaluated. A list of 40 detailed features is presented in Section 3.1; it was obtained as the sum of the characteristics obtained and standardized by reviewing the listed portals. Respondents from both countries evaluated the characteristics of the portal they used most often.

The list of portals obtained from the Internet search is presented in Table 3.

Table 3. Most popular HR portals in Poland and Türkiye in April 2022, based on students' opinions.

Poland	Türkiye
pracuj (www.pracuj.pl)	işkur (www.iskur.gov.tr) government, public
olx (www.olx.pl/praca/)	kariyer.net (www.kariyer.net)
gumtree (www.gumtree.pl)	linkedin (www.linkedin.com)
praca (www.praca.pl)	eleman.net (www.eleman.net)
aplikuj (www.aplikuj.pl)	cv yolla (www.cvyolla.com)
jobs (www.jobs.pl)	secretcv (www.secretcv.com)
absolvent (www.absolvent.pl)	iş bul (www.isbul.net)
gratka (praca.gratka.pl)	işin olsun (www.isinolsun.com)
gazeta praca (www.gazetapraca.pl)	yenibir iş (www.yenibiris.com)
info praca (www.infopraca.pl)	elemanonline (www.elemanonline.com.tr)
lingua job (www.linguajob.pl)	gel başla (www.gelbasla.com)
praca tobie (www.pracatobie.pl)	eleman uzmani (www.elemanuzmani.com)
q pracy (www.qpracy.pl)	lescard (www.lescard.com)
mega praca (www.megapraca.pl)	pariyer (www.pariyer.com)

The portals which proved to be best-known among respondents in Poland included: www.pracuj.pl, www.OLX.pl/praca/, www.Gumtree.pl, www.praca.pl, www.aplikuj.pl, www.jobs.pl and www.absolvent.pl. In Türkiye the most popular portals were: www.iskur.gov.tr, www.kariyer.net, www.linkedin.com, www.eleman.net and www.cvyolla.com. Both the first two portals in Poland and Türkiye were known by almost a quarter of respondents.

The use of HR portals coincides with the respondents' awareness of their existence and functioning, with the use of the first two portals exceeding 30% in Poland and settling at 20% in Türkiye.

Only the above-mentioned portals were further analyzed. They were selected for cases in which at least 10 respondents admitted to knowing and using the listed portals in their job search.

A detailed analysis of the characteristics of HR portals allows their users to realize the following:

- What basic elements and functionalities do HR portals consist of/should consist of from the customer's point of view?
- To what extent do existing HR portals fulfill these requirements?
- Which of the existing HR portals is the best, and what is the ranking of these portals?
- Which of the constituent elements/functionality can contribute to approximating/ providing balance in the labor market?
- Which of these elements can contribute to building and developing the smart industry?

On this basis, the users can create a ranking of the relevance of individual characteristics of HR portals and identify those features that, when automated, can contribute to building a smart industry and smart business.

In order to evaluate individual HR portals, a summary table was built, in which the average results of the evaluation made by each respondent were placed for each website they use most often. In addition, the extent to which a particular website meets users' maximum requirements and the extent to which an attribute in each portal fulfills a user's requirements were calculated in the study. The two cross-sections were analyzed separately for portals in Poland and in Türkiye.

A summary evaluation of the most popular and most frequently used HR portals in Poland yielded the following results (Figure 3).
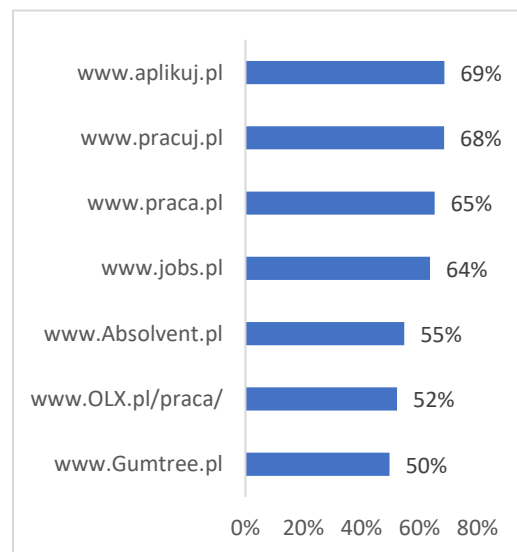

Figure 3. Ranking of the most popular HR portals in Poland in 2022; Source: own work.

The portals fulfilled about 50% of user requirements.

The portals occupying the first positions in Türkiye (Figure 4) included: eleman.net, which took the first place; a well-known and popular www.linkedin.com portal that was in the second position; and the official government portal www.iskur.gov.tr, which found itself in third place. The second interesting feature is that, on average, Turkish users rated the most popular HR portals at levels 3–4% higher than Polish respondents. In addition, none of the rated portals reached a rating of around 50%. This is due to the fact that HR portals in Poland have existed longer than those functioning in Türkiye, and users tend to be more demanding. The low rating of some of them is also due to the dominance of outdated designs or communication techniques with their clients. The patterns presented in the best-rated portals should prompt others to modernize their online services if they want to survive in a competitive market.
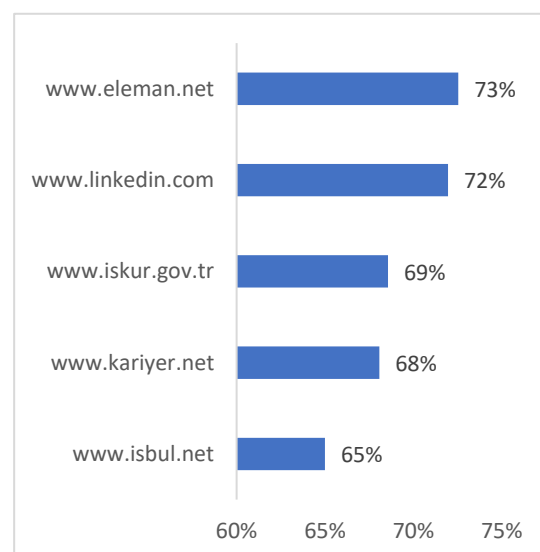

Figure 4. Ranking of the most popular HR portals in Türkiye in 2022; Source: own work.

The second cross-section resulting from the analysis of HR portals appears to be more relevant to our current analysis; it is a cross-section of the attributes by which individual portals were evaluated. In this case, both the variation in opinions on individual attributes of portals in the two countries and their distribution were definitely greater. The difference between opinions on the fulfillment of individual criteria according to Polish users is 30% (35–85%); in the opinion of Turkish users, it is only 10% (65–75%). Thus, the average rating for Polish respondents is 62%, and for Türkiye, it amounts to 71%. In the case of Poland, 22 attributes are below average, and in the case of Türkiye, it is only 17. Among the first ten attributes in both countries, three of them are the same: suggesting offers, categorizing offers and editing the job seeker's profile. These are undoubtedly the kind of attributes that in relation to HR portals, can support the emergence and development of modern forms of smart industry. Nevertheless, the differences found in the other categories may also be due to cultural differences and differences in the development of electronic business technology in the two countries. The results of the ranking are shown in Figure 5.

Further analysis of the differences occurring in the evaluation of the attributes of the most popular HR portals suggests that they are due to the longer existence of this type of service on the Polish market and the greater customers' familiarity with this type of service. Hence, less popular attributes such as suggesting offers, sending a link to an offer, and automatic applications received higher ratings. These categories also show the largest differences (reaching 15%) in comparison to the results of assessments obtained in Türkiye. Moreover, attributes typical of electronic commerce, such as the quality of the search engine and the filter, which allows the user to narrow down offers, appear to be very important to the respondents. The majority of active e-commerce portals also have information about similar products and all kinds of notifications. The smallest difference in the Polish ranking is recorded with regard to automatic application, and this is one of the factors that can, together with the potential future fully functional matching of offers of the job seeker and the prospective employer, have the greatest effects on the emergence and development of the smart industry and the balance of the labor market in the analyzed countries. The top ten ratings of the most popular HR portals in Türkiye are different. Some of this is probably due to cultural differences (e.g., earnings in a job offer—salaries are often negotiated, and salary negotiation is part of the hiring process) or the lack of a standardized survey format for candidates (which was also considered one of the biggest problems of using these portals in Türkiye), as well as different guides/tutorials resulting from the less transparent and intuitive operation of Turkish portals. The biggest differences (reaching 20%) in comparison to Polish portals related to earnings in the job offer, surveys for candidates and generation of a file based on the profile may result from cultural differences and technological development in the past. The greatest consistency regarding the fulfillment of user requirements is found in the category of guides. A summary of these rankings is shown in Table 4.
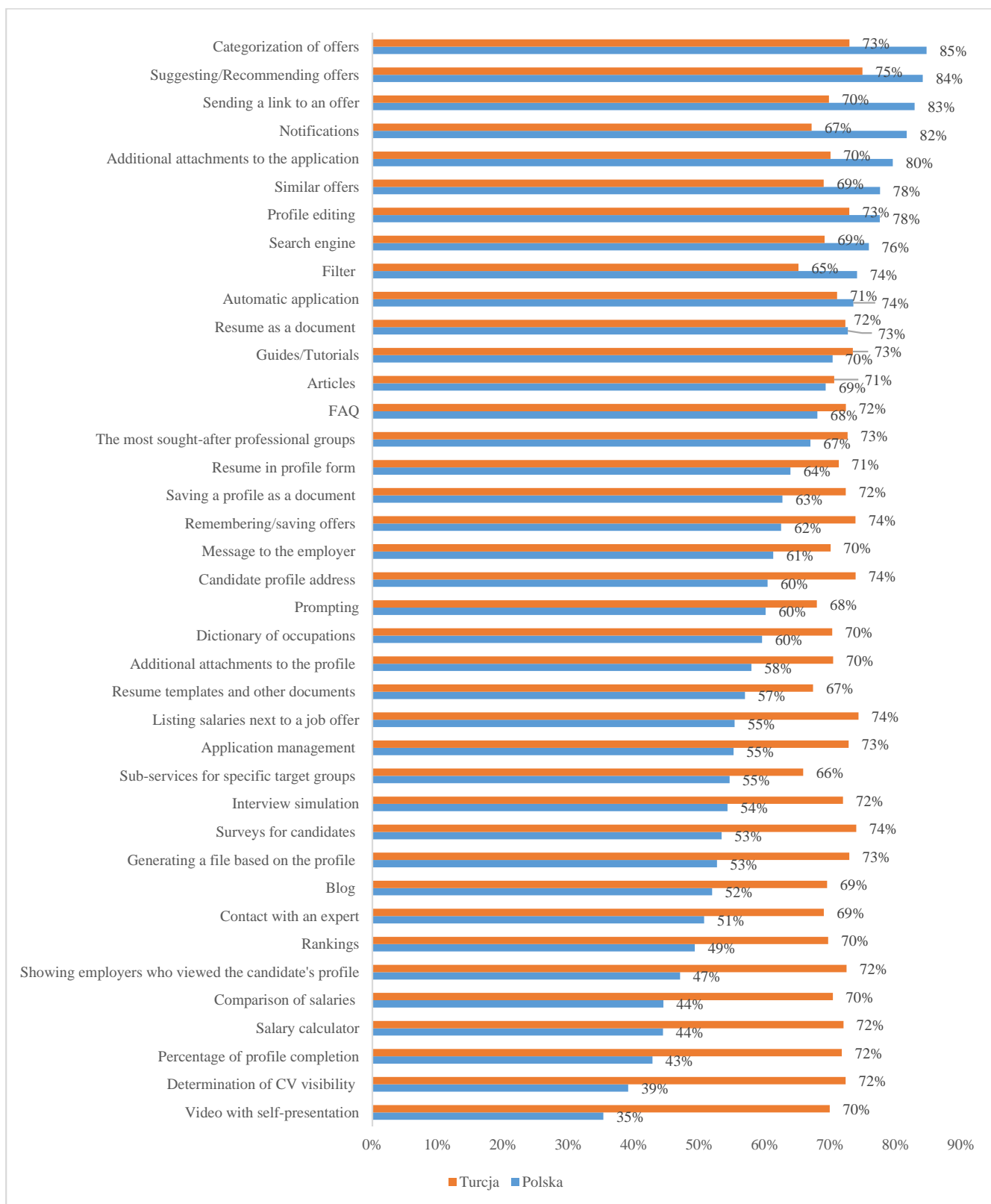
Figure 5. Attributes meeting the requirements of HR portal users in Poland and Türkiye in 2022; Source: own study.

Table 4. Similarities and differences in the assessment of user requirements for the HR portal in Poland and Türkiye in 2022.

No.	Attributes for Poland				Attributes for Türkiye			
	Attributes	Poland	Türkiye	Absolute Difference	Attributes	Poland	Türkiye	Absolute Difference
1.	Categorization of offers	85%	73%	12%	Suggesting offers	84%	75%	9%
2.	Suggesting offers	84%	75%	9%	Earnings in the job offer	55%	74%	19%
3.	Sending a link to an offer	83%	70%	13%	Candidate surveys	53%	74%	21%
4.	Additional attachments to the application	82%	67%	15%	Candidate profile URL address	60%	74%	13%
5.	Notifications	80%	70%	10%	Saving offers	62%	74%	11%
6.	Similar offers	78%	69%	9%	Tutorials	70%	73%	3%
7.	Profile editing	78%	73%	5%	Categorizing offers	85%	73%	12%
8.	Search engine	76%	69%	7%	Generating a file based on a profile	53%	73%	20%
9.	Filter	74%	65%	9%	Profile editing	78%	73%	5%
10.	Automatic application	74%	71%	2%	Application management	55%	73%	18%

Interesting conclusions can be drawn not only from comparing the ratings of existing attributes in Poland and Türkiye but also from comparing the preferences of users from both countries and the differences between the results of average ratings and preferences from both countries. For this purpose, a table was constructed in which the places of each attribute in the rankings of ratings and preferences were marked for Poland and Türkiye, respectively, and for the average ratings and preferences in both countries. Then the absolute differences between these positions were calculated. They included:

- Ratings of the ranking resulting from the average ratings made by users of the most popular HRM portals in Poland and Türkiye;
- Ratings of attribute preferences of HRM portals collected in both countries;
- The arithmetic averages of ratings from both countries and the average scores of preferences related to HRM portals.

The least variation in ratings of actual portals between Poland and Türkiye occurred in categories such as candidate profile URL address, sub-services for specific target groups, search engine, additional attachments to the profile and earnings comparison. Only the last two categories can be regarded as attributes that can support the development of the smart industry concept. The biggest differences (more than 30 items) occurred among the two attributes considered among the ten most important criteria: automatic application and sending a link to an offer.

The comparison of preference rankings is slightly different. In the initial positions related to the least variation in opinions on the subject, there were such attributes as a search engine, tutorials, profile editing, notifications, messages to the prospective employer, self-presentation video and rankings. The presented list of indicators with similar ratings shows that users from both countries tend to agree in their perceptions of what should be included in HRM portals rather than the evaluation of real-world portals would suggest. The biggest discrepancies occur in the area of categorization of offers and the percentage of profile completion.

The third cross-section relating to the relationship between average evaluation values and average preference values raises the greatest hopes as regards the possibility of using HRM portals in building a smart industry. The set of least divergent attributes included characteristics indicating the possibility of a broad candidate presentation and automation of matching offers (at present rarely fully operational in current HRM portals or present in

a greatly simplified form): profile-based file generation, candidate surveys, search engine, self-presentation video, filter and candidate profile URL address. The biggest discrepancies occurred in the category of submitting a link to an offer.

The lowest city distance index, mean value, variance and standard deviation occurred in the case of the comparison of grade and preference averages. Euclidean distance was the lowest index obtained for the comparison of preferences. The results are presented in Table 5.

Table 5. Differences in attribute ratings obtained from analysis of actual HRM portals, differences in user preferences, and differences between average ratings and average preferences in Poland and Türkiye.

Attributes	Absolute Differences Poland-Türkiye Comparisons	Poland-Türkiye Preferences	Average of Evaluations and Preferences
Candidate profile URL address	0	26	1
Sub-services for specific target groups	0	10	2
Search engine	1	0	1
Additional attachments to the profile	1	2	4
Earnings comparison	1	24	18
CV/Resume as a document	2	4	2
Blog	3	11	5
FAQ, help, demo	3	7	10
Tutorials	3	1	12
CV/Resume in the form of a profile	4	8	5
Profile editing	4	1	6
Notifications	5	1	4
Filter	6	17	1
Prompting words in search fields	6	2	13
Application management	7	7	7
Message to the employer	9	1	5
CV/Resume templates and other documents	10	6	18
Suggesting/Recommending offers	11	18	3
Contacting an expert	11	8	4
Salary calculator	11	22	10
Job interview simulation	11	12	18
Articles	12	2	13
The most sought-after job groups	13	3	11
Earnings in a job offer	14	27	18
Generate a file based on a profile	16	10	0
Percentage of profile completion	16	28	11
Who viewed the profile	18	8	18
Candidate surveys	19	23	0
Remembering offers	22	8	2
Dictionary/List of occupations	22	11	2
Saving the profile as a document	22	26	2
Video of self-presentation	23	1	1
Determining the visibility of the resume	23	14	5
Additional attachments to the application	24	21	15
Categorization of offers	26	30	3
Rankings	26	1	7
Similar offers	28	5	2
Automatic application	30	16	7
Uploading a link to the offer	33	2	26
City distance	496	424	292
Euclidean distance	583	572	575
Variance	1584	1342	1140
Standard deviation	40	37	34
Average distance in the rankings	13	10	7

The variation in groups of survey questions was as high as in the case of individual detailed attributes. The results are presented in Table 6. The computed statistical coefficients indicate a varying degree of differentiation of results in the analysis of HRM portals in Poland and Türkiye. The smallest differences occurred in the case of city distance for the evaluation of the disadvantages of HRM portals (9.4%) and confidence in job search by HRM portals in the future. In contrast, the lowest variation in the Euclidean distance coefficient occurred in the category of user preference for HRM portal attributes (46.1%). The variance and standard deviation for both countries are the lowest for the attribute choice of a job search tool. Moreover, the value of the F-Snedecor test shows the lowest absolute distance from the threshold value, beyond which the variation between the data from Poland and Türkiye would be insignificant.

Table 6. Differences in groups of survey questions between Poland and Türkiye.

Groups of Survey Questions	City Distance	Euclidean Distance	Variance in Poland's Scores	Variance in Türkiye's Scores	Standard Deviation Poland	Standard Deviation Türkiye	F-Snedecor Test
Occupational status	111.4%	171.4%	8.8%	18.8%	28.9%	43.4%	1.5002
Past job searches	53.1%	133.7%	25.0%	8.9%	53.8%	65.9%	0.5958
Job search in the future	10.6%	162.1%	22.5%	26.8%	47.5%	51.7%	1.0901
Choice of a job search tool	25.4%	52.0%	0.2%	0.5%	4.4%	7.0%	1.5903
Institutions that assist in finding a job	56.7%	73.0%	0.6%	0.6%	7.5%	7.8%	0.9605
The greatest difficulty in job search	35.7%	58.5%	0.5%	0.5%	7.3%	7.4%	1.0102
Advantages of HRM portals	26.3%	54.9%	1.3%	0.8%	11.5%	8.8%	0.7633
Disadvantages of HRM portals	9.4%	60.9%	2.0%	1.5%	14.0%	12.4%	0.8842
Evaluation of the attributes of HRM portals in Poland and Türkiye	68.6%	57.6%	44.4%	2.2%	66.6%	14.7%	0.2210
Users preferences for the attributes of HRM portals	16.8%	46.1%	13.4%	9.4%	36.6%	30.7%	0.8388

The hypothesis that there is no differentiation between the attributes of HRM portals in Poland and Türkiye in the assessment of respondents was not confirmed. All the Fisher–Snedecor inverse test coefficients calculated in the groups of survey questions turned out to be lower than the threshold values.

5. Conclusions

As the above findings indicate, the choice of two countries for analysis of the infrastructure and structure of HRM portals usage: Poland and Türkiye were accurate despite the disparity in both research samples and their evaluations. These are two countries with different cultural conditions, customs and past development of Internet applications but with similar economic situations, whose circumstances are far from economic equilibrium. Both countries are characterized by very high and dynamically growing inflation, the onset of economic recession and growing structural unemployment. Leaving aside the political and health-related situation, these are countries where job search tools are now significantly gaining importance. The reason is obvious—they can help restore economic balance by associating the demand for workers with their need for labor.

It is important to note that both countries have been intensively developing their economic potential for several decades, keeping up, to a greater or lesser extent, with the global trends of developing successive stages of the information society and its basic components. Redirecting the development of both the economy and society towards

sustainable, innovative growth aimed at creating a smart society can be supported, among other things, by such tools as HRM portals. In the research conducted:

- The professional status of the respondents and their previous and future job search intentions were determined, as well as the respondents' opinions on the choice of job search tool, the advantages, disadvantages and problems of using HRM portals and the institutional environment in which they are or will be looking for a job;
- The most popular HRM portals in both countries were identified, and their most relevant attributes were assessed;
- The expectations of users seeking jobs through these portals were specified in relation to certain attributes of these portals, identified as in the case of the evaluation of real existing portals;
- A comparison was made, and differences were specified in several cross-sections: a comparison between the results of the evaluation of the attributes of HRM portals in Poland and Türkiye; a comparison of the results of the evaluation of preferences towards the attributes of HRM portals in Poland and Türkiye; and comparison of the results of the evaluation of the real existing attributes of HRM portals with expectations towards them, i.e., customers' preferences;
- Assessments in the Poland–Türkiye cross-section of differences in ten groups of survey questions;
- In addition, a separate ranking of HRM portals in Poland and Türkiye was made on the basis of respondents' evaluations.

In the first part of the survey, the authors were able to establish that the use of HRM portals is not the only tool used to look for a job at present. In Poland, it was placed in fourth place after such traditional methods as placing and reading ads in the newspaper, searching the websites of organizations and institutions, or networking involving friends and family. It also generally does not occur on its own but is accompanied by other job search tools. In Türkiye, the situation is similar in this regard—traditional methods (newspaper advertisement, family networking and browsing websites) are indicated in the first place, and registration in an HRM portal takes a distant seventh position out of ten possible options. Moreover, sending an inquiry to multiple institutions at once is of lesser importance. On the other hand, more than 67% of respondents asked about their opinion on the HRM portals and chose to evaluate them in detail, which means that they had dealt with them in the past, and they were able to express their opinion on the subject.

The second part of the survey made it possible to isolate the most popular and most frequently used HRM portals in both countries and evaluate them on the basis of a detailed set of selected 39 attributes. It is noteworthy that in Poland, the current emergence and functioning of HRM portals is rated only at an average of 60%, and in Türkiye, at an average of 69%. This is a relatively low score, indicating the need to improve HRM portals to include categorizing offers, automating the creation of offers, adjusting offers to demand, i.e., automatic matching of offers, etc. All these assessments, even more strongly emphasized in the evaluation of users' preferences for individual attributes (the third part of the survey), show the need for changes toward creating intelligent HRM portals to support the processes of creating the next stage of the information society.

Detailed analyses of the attributes of existing HRM portals and expectations of their relevance, as well as similarities and differences between them, also made it possible to recommend the features that can contribute to building a smart industry and elements of a smart society in the future (the fourth stage of the survey). The list of such attributes confronted with the expectations of respondents from both countries includes, among others, categories such as categorization of offers, suggesting offers, sending a link to an offer, additional attachments to the application, notifications, issuance of similar offers, properly constructed filter, remembering/saving offers, links to the candidate's profile, etc. Creating a detailed list is the first step to drawing up algorithms for automatically submitting, recognizing, and matching offers without having to perform what candidates fear most—writing a cover letter themselves or visiting a prospective employer combined

with an interview. This would probably require more detailed retrieval of sensitive data from the network (with the candidate's consent), but it would make the recruitment process much easier for candidates and companies.

The next stage of the research, which consisted of establishing differences and similarities in groups of ten questions, only showed that while the differences in the evaluation of the individual components of these questions and attributes were significant, within groups of questions, there was a partial leveling off, the differences were not strong enough to be shown by the inverse F-Snedecor test.

The last stage of the study, coupled with detailed analyses of the attributes of HRM websites, can be useful for business practitioners involved in designing HRM websites.

The study had several limitations. First, it was conducted with the participation of students and employees from the academic community. Admittedly, this was the group most active on the Internet and characterized by an intensive and active job search. However, the same phenomenon, though useful from the point of view of conducting the research, makes it difficult to generalize the conclusions to refer to other populations in both countries.

The second significant limitation was the fact that concepts such as smart industry or smart society are currently being developed in the theoretical rather than the practical sphere, and referring to these not fully specified and definite assumptions in a field such as job search and matching is difficult because prospective users when asked about their ideas for the future, do not know what the specific requirements are for the modern technologies currently being created.

A third limitation was that the work did not take into account random factors such as the political and economic situation, the possibility of a recurrence of a pandemic, or the effects of a prolonged armed conflict in eastern Europe.

Accordingly, the next stage of the research should include the following:

- Expanding the research sample to include other user groups in the context of a number of features such as age, level of education or the current professional and social situation;
- Re-identifying the attributes of the HRM portal in terms of distinguishing and expanding the group of factors that support the processes of building a smart society in reality;
- Increasing the scope of regional comparisons to countries from other cultural backgrounds.

The conducted research brings a valuable contribution to recognizing the characteristics of HRM services that are important to users. A number of publications indicated the importance of using IT solutions in the area of HRM in organizations, but relatively few present the perception of websites of this type from the point of view of their main users—jobseekers. In the area of practical applications, the analysis can become a source of valuable information for practitioners, necessary for the analysis of the maturity of both markets (Poland and Türkiye) in the case of using HRM services. In addition, they indicated a number of important attributes of websites that may constitute valuable advice for designers of HRM portals.

Conflicts of Interest: The authors declare no conflict of interest.

Abbreviations

AR	Augmented Reality
CAWI	Computer-Assisted Web Interview
CRM	Customer Relationship Management
HRM	Human Resources Management
eHRM	electronic Human Resources Management
ICT	Information and Communications Technology
IoT	Internet of Things
VR	Virtual Reality

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