

Kononiuk, Anna; Gudanowska, Alicja E.

Article

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THE APPLICATION OF THE CUSTOMIZED SERVQUAL MODEL FOR CAREER GUIDANCE TRAINING: INDUSTRY 4.0 CHALLENGES

Anna KONONIUK , Alicja E. GUDANOWSKA *

*Faculty of Engineering Management, Bialystok University of Technology,
Wiejska 45A, 15-351 Bialystok, Poland*

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Abstract. The importance of vocational guidance is growing, and the focus on modern tools enabling the development of competences such as flexibility, the ability to identify trends shaping the labour market and considering different scenarios of its development seem to be indispensable to survive in the world of work. The goal of the paper is to demonstrate a methodology and the outcomes of a research focused on the difference between the ideal characteristics and impressions of completed education by career counsellors in Poland. The research methods used are: the literature review, bibliometric analysis and the analysis and logical construction method. To diagnose the educational offerings the authors applied a modified SERVQUAL model. The observed gaps demonstrate the presence of significant discrepancies between the evaluation of the completed courses and the expectations of the respondents. Therefore, the expectations of those who took part in the survey about the quality of education in the field of vocational guidance are not fulfilled. The results of the analysis allow also to conclude that curricula only take little account of trend and scenario analysis tools specific to Industry 4.0; and this demonstrates a major challenge for including this curriculum content in the area of vocational guidance.

Keywords: SERVQUAL model, educational offering, career guidance, Industry 4.0, bibliometric analysis, VOSviewer software, labour market.

JEL Classification: M10, M12, C00.

Introduction

Economic, social and technological challenges arising from globalization, digitization and automation are the marks of today's times. The mature Industry 4.0 is becoming substantially more evident not only in production processes and management issues, but also in economic practice. As noted by Karabegovic et al. (2020, p. 3) *one is witnessing major changes in all industry branches, with new business methods, product system transformation, consumption,*

*Corresponding author. E-mail: a.gudanowska@pb.edu.pl

delivery and transportation emerging, owing to the implementation of new technological discoveries that include: robotics & automation, Internet of Things (IoT), 3D printers, smart sensors, Radio Frequency Identification (RFID), etc. Nevertheless, the current knowledge about the competences required in Industry 4.0 is limited (Pejic-Bach et al., 2020). Entrepreneurs are endlessly adapting or readapting to demanding environmental circumstances, thus building the organisational capability to spot weak signals that are used to scan the environment and make systems more sensitive to emerging changes (Takala & Heino, 2017). Hence, it seems to be highly important to provide career counsellors with the tools for analysing trends and creating alternative scenarios for career development.

The main motivation of the article is to demonstrate the methodology – using the SERVQUAL model and the main outcomes of a nationwide survey addressed to career guidance practitioners. Generally, The SERVQUAL model is applied for testing the quality of the service as perceived by the customers. The authors of the article did not find a paper referring directly to the application of the SERVQUAL model to vocational guidance, although applications of this model to higher education already exist in the literature. Goumairi et al. (2020) describe the practical use of the SERVQUAL model to a group of students attending a public engineering school. The model enabled them to find out that the greatest influence on service quality have tangibles (including physical installations) demonstrating a negative quality gap at the level of -2.0275 . Tóth and Surman (2019) describe a complex approach for measuring service quality for courses evaluation using a postcourse questionnaire. The outcomes of their research translate into managerial decisions needed to be taken for project work courses and supervisory actions in line with “plan–do–check–act philosophy”.

The respondents of the nationwide survey expressed their opinions about quality of training for guidance counsellors, especially in the context of including tools for trend analysis and creating alternative career paths into curricula. The research focuses on the differences between the desired characteristics of the course offerings and the view of the courses completed by career counselors in Poland. The selection of this country was motivated by two premises. Firstly, it seemed important to study this phenomenon in Poland, mainly due to the fact that the level of digitalisation in Poland is one of the lowest in Europe, despite the high dynamics of changes taking place in this field. Secondly, the authors of the study obtained funding for the realisation of their research plans.

The research was carried out within the “Horizons of the Future” project which was executed under the “Dialogue” programme of the Ministry of Science and Higher Education. The aim of this endeavor was to elaborate foresight research tools that will be beneficial in educational processes and will serve as backing in career counsellors daily practice. The outcomes of the project are pertinent to the specialists in the field of career development planning. The consortium of the project consisted of the Lukasiewicz Research Network represented by the Institute of Sustainable Technologies (National Research Institute) in Radom and Bialystok University of Technology.

The article consists of five main parts. The first part is devoted to a literature review of the essence of the SERVQUAL model and its applications supported by the bibliometric verification of the cognitive gap in applying the SERVQUAL model to professional counseling. In this section, a literature review of Industry 4.0 is also presented. The second part,

demonstrates the research methodology consisting of five main steps. The third section of the article focuses on the presentation of the results on the discrepancies in education expectations in the area of vocational guidance. The fourth part focuses on the discussion of the main outcomes of the article, and the fifth part presents the main conclusions of the article.

1. Literature review

1.1. SERVQUAL model

The research was based on the SERVQUAL model posited in 1988 by Berry, Parasuraman, and Zithamel (Parasuraman et al., 1988). The SERVQUAL model is applied to test the quality of the service as perceived by the customers. There are many different applications of this model in the existing published works. It has been used to measure the service quality in fields such as education (Datta & Vardhan, 2017; Yousapronpaiboon, 2014; Pohyae et al., 2016; Zareinejad et al., 2014), banking sector (Ahmed et al., 2017; Ali et al., 2014), insurance and health services (Siami & Gorji, 2012; Butt & de Run, 2010; Papanikolaou & Zygiaris, 2014).

The application of the model enables to identify the gaps also known as the five critical moments to determine the final assessment of service quality.

Thanks to the identified gaps, it is possible to identify a range of areas for improvement (Seth et al., 2005). Often, the SERVQUAL model is used for the detection of the gap between the expected quality and perception of the actual service, which is linked with the presence of the fifth gap in the theory posited by Parasuraman et al. (1985). As the model is widely used in practice, some reflection is carried out on its evaluation and practical usefulness. The literature identifies works that encourage the use of the model as well as those that are critical of the model. (Buttle, 1996; Woźniak, 2017).

Although the SERVQUAL model is well established in the literature on the subject, there are still interesting suggestions for combining it with modern techniques. Anabila et al. (2020) describe the use of SEM technique to test the nature of relationships of the constructs envisaged in the research. The authors mentioned above indicated a significant positive relationship between service quality and patient satisfaction. In addition, Xue et al. (2020) applied the grey relational analysis method to create a complete model for the assessment of students' satisfaction with extracurricular education offering in colleges and tested also its practical use with the case of Minjiang University.

The authors of the article did not find a paper referring directly to the application of the SERVQUAL model to vocational guidance, although applications of this model to higher education already exist in the literature. Goumairi et al. (2020) describe the practical use of the SERVQUAL model to a group of students attending a public engineering school. The model enabled them to find out that the greatest influence on service quality have tangibles (including physical installations) demonstrating a negative quality gap at the level of -2.0275). Tóth and Surman (2019) describe a complex approach for measuring service quality for courses evaluation using a post-course questionnaire. The outcomes of their research translate into managerial decisions needed to be taken for project work courses and supervisory actions in line with "plan-do-check-act philosophy".

The critical analysis of the existing published works allowed the authors of the article to construct a measurement tool which allowed for the assessment of the educational offerings' quality and the methodology of teaching within the framework of vocational guidance training. The statements prepared were split into two sections: (1) the perception of career guidance' educational offerings completed by the survey respondents invited for the research and (2) those statements based on the opinions of the survey participants on what education should ideally address.

1.2. Bibliometric verification of the cognitive gap in applying the SERVQUAL model to professional counselling

The authors of the article combined the literature review with bibliometric analysis. For this purpose, publications with a reference to the terms *SERVQUAL* and *counselling* were obtained from the Web of Science (WoS) database and Scopus database. Only a few publications in both databases were found (Scopus – 3 publications and WoS – 1 publication). Therefore, the authors decided to examine in which areas and contexts the SERVQUAL model appears. Again, publications were retrieved from both databases, but this time, only those that reference the term SERVQUAL were retrieved. The search in the Web of Science database generated a list of more than 1280 publications while the search in the Scopus database generated a

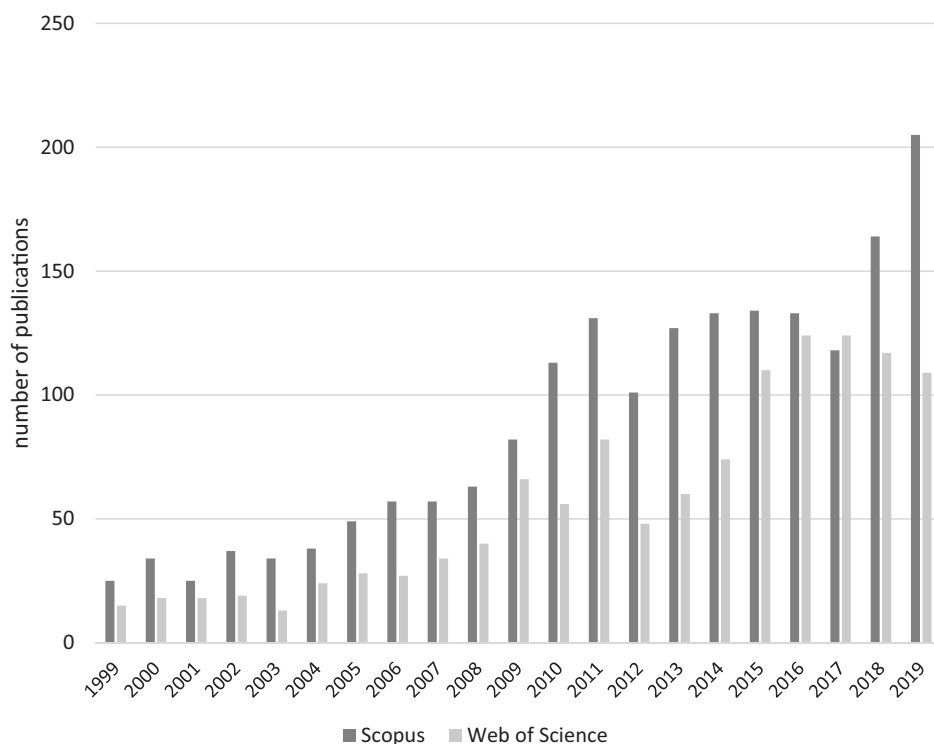


Figure 1. Number of scientific publications (articles, conference papers and book chapters) in the Scopus and Web of Science databases in 1999–2019 related to SERVQUAL (source: own elaboration based on data from the Scopus and Web of Science databases)

list of approximately 2000 publications. The numbers of publications covering articles (81%), post-conference works (18%) and book chapters (1%) in the last 20 years are presented in Figure 1. The inquiries for both databases were in the form of the following query: *TITLE-ABS-KEY (servqual) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp") OR LIMIT-TO (DOCTYPE, "ch"))*.

As seen from the analysis of Figure 1, the popularity of the issue in publications indexed in both databases has increased. Apart from 2017, the number of publications retrieved from Scopus exceeded the number of papers retrieved from the WoS since the Scopus database is much more extensive. Therefore, the Scopus database was selected for further analysis. The number of related existing published works indexed in the Scopus database reached a certain constant level after 2010, oscillating from 101 to 134 publications; meanwhile, in the last two years, there has been a greater interest in the SERVQUAL model (164 publications in 2018 and 205 works in 2019).

The most popular areas can be found by examining the areas (identified using the categories of the work classified in the Scopus database) in which the works were retrieved. These areas were presented using a word cloud (Ejdys et al. 2019). In Figure 2 the number of works in the area is reflected in the font size. The most works can be found in the following areas: business, management and accounting; social sciences; computer science; engineering; medicine and decision sciences. The most popular areas are quite diverse, which may prove the versatility of the SERVQUAL model. The attractiveness of the SERVQUAL model is influenced by the high potential of its use as a research tool.



Figure 2. The most popular areas of publication classification for the SERVQUAL model in the Scopus database (source: own elaboration based on data from the Scopus databases)

Using the data of the basic description of the general publications, a map of the co-occurrence of keywords introduced by the authors of the publications was prepared. Taking care of visualization clarity, keywords occurring at least 10 times in the analyzed set were taken into account. The filtering word (SERVQUAL) was also rejected as a criterion for the selection of the publications. The data were aggregated and visualized using the VOSviewer software, which handles large amounts of data very well. The program highlights the frequency of occurrence of particular data in the network and also the frequency of their co-occurrence (Gudanowska, 2017a, 2017b). The results are presented in Figure 3.

The most common keywords are located in the centre of the network (Figure 3). Incidence of a keyword was also represented by font size of the name of the given node and the size of nodes corresponding to each of the emerging words. Figure 3 shows that the network achieved is quite dense and that there are many links in the network. The centre of the network is service quality, which is the context to which most works referred. The terms that appeared most often apart from service quality in the context of SERVQUAL in the

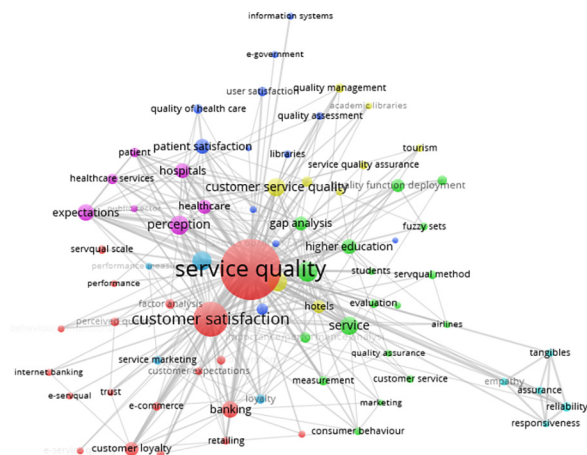


Figure 3. Keyword co-occurrence map characterizing the SERVQUAL context-related ap-plications indexed in the Scopus database from 1989 to 2019 (source: own elaboration using VOSviewer software)

generated set of articles were the following: customer satisfaction, perception, satisfaction, customer service quality, expectations. In addition, banking, patient satisfaction and higher education also appeared.

One of the features of the VOSviewer software is merging the analyzed data set into clusters, which are then colour-coded on the map. Cluster membership indicates the most frequent co-occurrence of the given phrases (it does not mean that a given phrase does not occur with others). The created clusters included a group of concepts related to banking, e-commerce, retailing, and trust in the context of customer loyalty and satisfaction. An interesting group was the area related to education, including higher education, with terms such as measurement or marketing. Another cluster created included issues from thematic areas such as the following: e-government, information systems and libraries. SERVQUAL was also analyzed in scientific publications in the areas of medicine (the keywords that appeared in this cluster were healthcare, healthcare services, hospitals, patients, and perception) and tourism (represented by the terms tourism and hotels). Not surprisingly, there was also a distinctly separate small group of terms presenting the scholars' focus on tangibles, assurance, reliability, responsiveness and empathy, which constitute the model's dimensions.

The authors of the article noticed a clear cognitive gap in relation to the use of the SERVQUAL model for professional counselling. A search in the Scopus database using SERVQUAL and career counselling returns only one publication by Engelland et al. (2000). This article addresses the application of a modified SERVQUAL scale that can be used as part of an ongoing programme of service quality improvement for career service centres on college campuses. The issues of vocational guidance training programmes are not mentioned in the article. A search using SERVQUAL and career planning returns 24 results. However, qualitative analysis of the obtained results demonstrates that the issues of career planning are not present in the articles.

1.3. Industry 4.0 – challenges for the labour market

The transformation towards Industry 4.0 strongly influences the meeting of new customer requirements and the use of innovative technologies. This, in turn, is linked with appropriate staff qualifications (Li et al., 2017) and changes the contemporary labour market. The solutions defining the new reality are – among others – robotization, automation, big data, cloud computing, cloud manufacturing, cyberphysical systems, the Internet of Things and the Internet of Services (Stadnicka et al., 2017; Siderska, 2020; Siderska & Jadaan, 2018).

The challenge of the labour market in the context of the popularization and, with time, dissemination of Industry 4.0 is the proper modification of both working conditions and requirement profiles. One of the pillars of the new Industry is automation supported by artificial intelligence, thanks to which technologies will progressively support standard and repetitive duties. Therefore, the need for employees who will be able to operate the machines will increase (Schulz, 2015). The dynamic development of technology will affect the division of labour between people and machines and the replacement of many current occupations with robots or digital objects. Employees will be transferred to different duties than before, and it will be necessary to develop new skills in terms of programming processes, defining procedures or transferring the initiative to machines (Gudanowska & Kononiuk, 2020).

Those professional activities where contact with another person is typically valued, such as education or people's service and care, will be less responsive to change, but in the case of uncomplicated mental work in areas such as public administration, manufacturing, transport or logistics, jobs could disappear. However, according to the World Economic Forum, more new jobs better suited to the needs of the digital world will be created, and new sectors of the economy and new professions will appear as a result of the creativity of workers. There will be changes in the ways tasks are conducted and in the understanding of professions and forms of employment, and work-related networking will increase (Śledziwska & Włoch, 2020).

The level of digitisation of the economy in Poland is significantly different from the levels of both the United States and Western Europe (ASTOR, 2017). Paradoxically, although the Polish economy is one of the fastest digitalizing (Arak & Bobinski, 2016), it ranks last in the European Union in terms of digitalization of the economy, the state and the workforce (ASTOR, 2015). It is influenced, among other things, by its structure, including the dominance of very small enterprises for which investing in technology is a challenge and their competitive advantages are based mainly on maintaining low labour costs rather than implementing modern technologies and developing the ability to use these machines (Gudanowska & Kononiuk, 2020). Digitisation in Poland requires funding and investment in technology, and developing an appropriate set of employee competences (Gudanowska, 2017b; Moczydłowska, 2018) and creating an appropriate organisational culture that will ensure the loyalty of the most talented (Deloitte, 2018).

It is predicted that by 2030 in Poland, as a result of a decrease in the demand for work involving routine tasks, it will be necessary to increase investment in ICT and digital technologies and to improve the digital competences of employees. The level of these competences will determine an employee's professional success and his or her competitiveness on the labour market, job security and salary (Głomb et al., 2019). In addition, the European Commission

has highlighted the need for education in combining soft skills with solid digital skills. The research indicates that there are large deficits in the soft skills (e.g., communication, project management, team management, ability to cooperate, etc.) and digital competences of Polish employees (European Commission, 2018).

Digital competences, which are of growing importance, can be understood as “the broad set of knowledge, skills and attitudes that determine the efficient and conscious use of new technologies and active participation in the information society” (Gudanowska & Kononiuk, 2020). As noticed by Vuorikari et al. (2016), they cover five areas of competence: (1) information and data literacy, (2) communication and collaboration, (3) digital content creation, (4) safety and (5) problem solving. Strong and widespread digital competences will be complemented by cognitive competences enabling the continuous development and expansion of skills and knowledge, as well as emotional and social competences, which are guidelines in a flexible and distributed work environment helping workers to manage change (Śledziewska & Włoch, 2020). The training and development of employees seem to be essential in this context, and the entire education system must learn to respond to changing requirements (Gehrke et al., 2015; Janssen et al., 2016).

2. Research methodology

The research methodology developed by the authors of the article consisted of five steps (Figure 4). The first step was a literature review enhanced by bibliometric analysis of the scientific publications collected in the Scopus database linked with the SERVQUAL model and a study of the existing published works where this term was combined with the subject of vocational guidance, as described in a previous chapter of the article.

In the second stage of the adopted methodology, the dimensions for the modified SERVQUAL model and the content of the statements (presented in Table 1) were selected. Those were achieved by analysing selected European and national qualification frameworks, legal acts regulating professional tasks in the field of vocational counseling in Poland, the

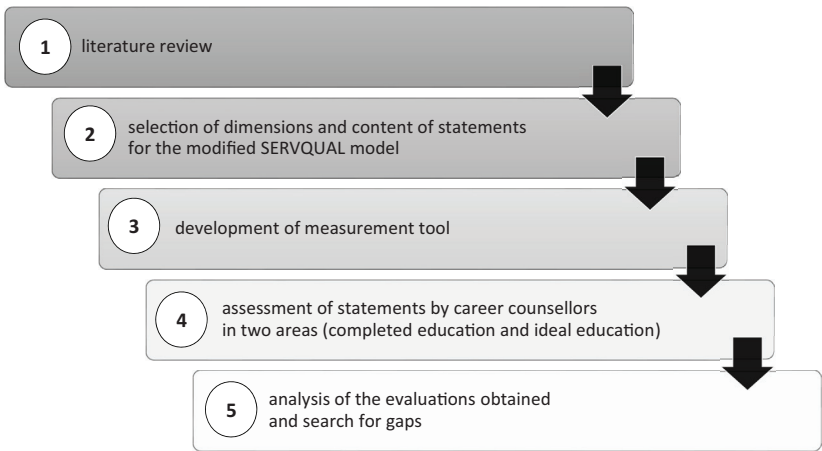


Figure 4. Research methodology

Table 1. The contents of the statement evaluated both for completed and ideal career guidance training

TANGIBLES		Cronbach's alpha
1	The application of modern educational tools by teaching staff	0.838
2	The application of interactive educational games by teaching staff	
3	The use of interactive whiteboards for group work by teaching staff	
4	The use of online games by teaching staff	
RELIABILITY		Cronbach's alpha
5	The development of the capability to define individual and occupational objectives	0.946
6	The development of the capability to build different career scenarios	
7	The development of the capability to encourage others to undertake lifelong learning	
8	Acquisition of the capability to analyse technical and industrial trends (e.g., automation, robotization, and digitalization) and their influence on the labour market	
9	The capability to analyse economic trends (e.g., the level of salaries, shortage and surplus occupations, factors influencing the labour demand) and their influence on the labour market	
10	Including in curricula methods and tools that allow analysing social trends such as ageing of the society or migration processes) and their influence on the labour market	
11	Including in curricula content relating to the professions and competences of the future in education programmes	
12	Including content in curricula devoted to cause and effect analysis in the context of the labour market as a complex system	
13	Including in the training programmes methods that make it possible to analyse environmental uncertainty	
14	Inclusion of group work methods in training programmes (e.g., educational board games, brainstorming, and the project method)	
RESPONSIVENESS		Cronbach's alpha
15	The inclusion of common content allowing for individual and group career guidance for people of every age representing every social group	0.837
16	Possibility to choose a specialisation in vocational guidance (e.g., guidance for youth, guidance for adults, career design and coaching, etc.)	
17	Updating curricula in career guidance training in response to changing research and technological trends	
18	The inclusion of guidance practitioners among the vocational training staff	
19	The inclusion of economics specialists among the vocational training staff	
20	The inclusion of sociology specialists among the vocational training staff	
21	The inclusion of psychology specialists among the vocational training staff	
ASSURANCE		Cronbach's alpha
22	Efficient moderation of the group processes by the teaching staff	0.795
23	Creating an atmosphere conducive to creative discussion in the career guidance training	
EMPATHY		Cronbach's alpha
24	Acquisition of the capability to use a broad perspective of the reality and recognise and receive different points of view	not calculated

framework programme of postgraduate studies in educational and professional counseling and seven career guidance course offerings in Poland. Developed dimensions and statements were motivated by the scope of the research, which focused mainly on the trend analysis and scenario analysis present in the curricula. Finally, the statements were selected based on the confrontation of the career guidance course offerings with the results of a brainstorming session among six leading experts of the project who deal with the labour market and foresight research methodology.

The authors, using the SERVQUAL model, wanted to determine the perceptions and expectations of course participants in a broader context, hence the developed questionnaires included 24 statements. However, it is worth noting that six of the statements (numbers 6, 8, 9, 10, 11 and 13) referred directly to the essence of the Industry 4.0 concept or its elements. The remaining questions present the broader context in which professional counselor education in Poland takes place.

It should be noted that the original model consists of the following five dimensions: tangibles, reliability, responsiveness, assurance and empathy (Wang et al., 2015). A detailed description of each model dimension and the original statements can be found in the works of Parasuraman et al. (1988), Zeithaml et al. (2000), Lee and Lin (2005). The authors of the article decided to preserve the original dimensions of the study, but the individual items of the scale were adjusted to the research context.

On the basis of the literature review, the authors constructed a measurement tool which allowed for the evaluation of the quality of the educational offerings vocational guidance training. The measurement scale consisting of 24 variables grouped into five dimensions is a reliable measurement tool. Reliability analysis of the developed scale was carried out using Cronbach's alpha values, which were counted separately for 4 subscales (Table 1). It should be noted that the Cronbach's alpha statistic was not calculated only for the empathy dimension, due to the fact that this dimension was represented by the one statement. Cronbach's alpha values are high for all the remaining dimensions (value above 0.795), and in the case of the second dimension it even reached a value above 0.94. The obtained results are satisfactory as acceptable threshold or cut-off values are usually at the level ≥ 0.70 (Griethuijsen et al., 2015; Taber, 2018)

Next, a survey was conducted to which vocational counsellors were invited. The research was implemented using the modified SERVQUAL model.

The authors assumed an evaluation of disconfirmation between the demands for the quality of the vocational counselling offerings and their current status based on the perception of vocational guidance education by those who have completed it in this field. The evaluation was conducted by collecting the opinions of the survey participants on 24 statements using a 7-point Likert scale measuring the level of agreement of respondents with statements prepared according to five theoretical dimensions of the SERVQUAL model, i.e., tangibles, reliability, responsiveness, assurance, and empathy.

The survey research lasted three months and was carried out in the first quarter of 2019. It was completed by 178 respondents coming from all provinces of Poland. The sample was selected in a purposive manner using the snowball technique (a recruitment technique in which research participants are asked to assist researchers in identifying other potential respondents (Kirchherr & Charles, 2018)). The authors of the article decided on this technique

because they assumed that there would be difficulties in recruiting experts at random as it is hard to estimate the size of the population of career counsellors in Poland. Thus, the experts invited to the study invited further experts. Vocational advisors represented a variety of institutions. 30% of respondents represented counsellors from labour offices. Those from labour offices were followed by advisors employed in the following locations: elementary schools (16%), career offices located at different tertiary education institutions (13%) and schools of technical profile (11%) and general high schools (8%).

The lowest percentage in the surveyed group were career counsellors employed at the university as academic teachers (2%) and counsellors from degree I or II industrial schools (3%).

In the last step of the adopted methodology, an analysis of the obtained results was conducted, and gaps in the assessments of counsellors were sought.

3. Results

Following the research procedure presented by Kędzior (Ed.) and Nazarko (Ed.) (2010), the arithmetic averages and standard deviations resulting from the evaluation of the statements were plotted on one plane with the lines representing the means of all statements and the mean standard deviations (Figure 5).

The plane divided in this way allowed us to distinguish four representative areas:

- unanimous high average rating of statements related to completed vocational guidance training (high average rating of all statements and low standard deviation, i.e., highly homogeneous ratings),

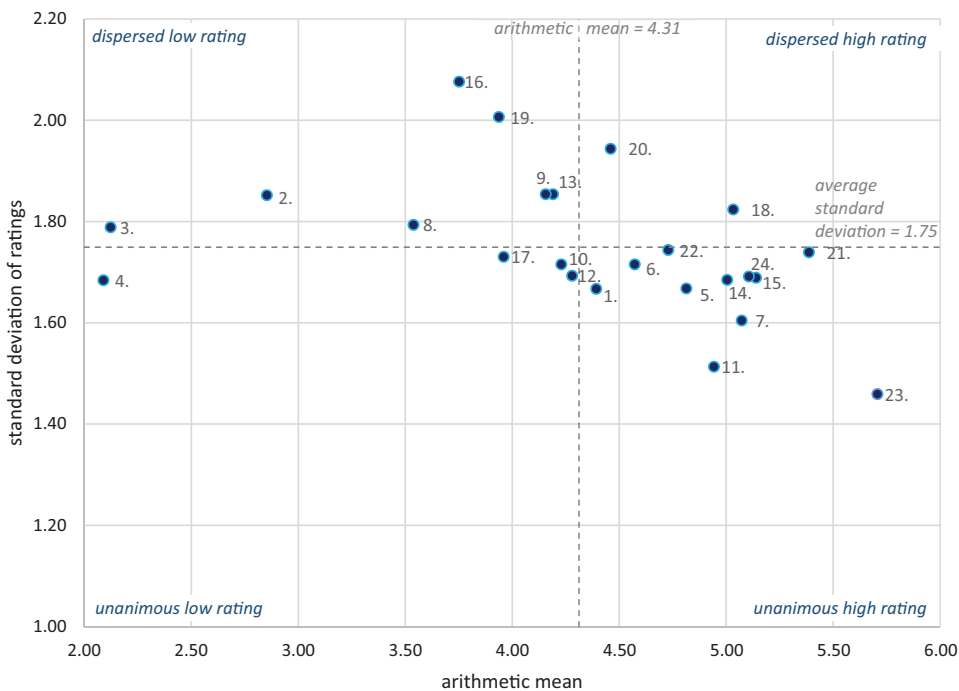


Figure 5. Distribution of 24 statements relating to the completed vocational guidance course

- unanimous low average rating of statements related to completed vocational guidance training (low average rating of all statements and low standard deviation, i.e., lowly homogeneous ratings),
- dispersed high average rating of statements related to completed vocational guidance training (high average rating of all statements and high standard deviation, i.e., highly heterogeneous ratings), and
- dispersed low average rating of statements related to completed vocational guidance training (low average rating of all statements and high standard deviation, i.e., lowly heterogeneous ratings).

Based on the data presented in Figure 5, it can be seen that the experts agreed and rated the following statements the highest: 1, 6, 5, 14, 15, 24, 21, 11 and 23. In addition, the consistently lowest ratings were given to statements such as 4, 17, 10 and 121.

Both high and low unanimous ratings may indicate similar experiences of the respondents in the area of vocational counselling.

The respondents were the least unanimous (both in the area of low and high ratings) on the following statements: 3, 2, 8, 16, 19, 9, 13, 18 and 20. Divergences in the ratings for the above statements may be subject to further research.

As in the case of the analysis of the assessments obtained for the training of vocational guidance counsellors, the average values obtained from the assessment of the statements and the standard deviation were plotted on a single plane using straight lines representing the average assessment of all the statements and the average standard deviation (Figure 6).

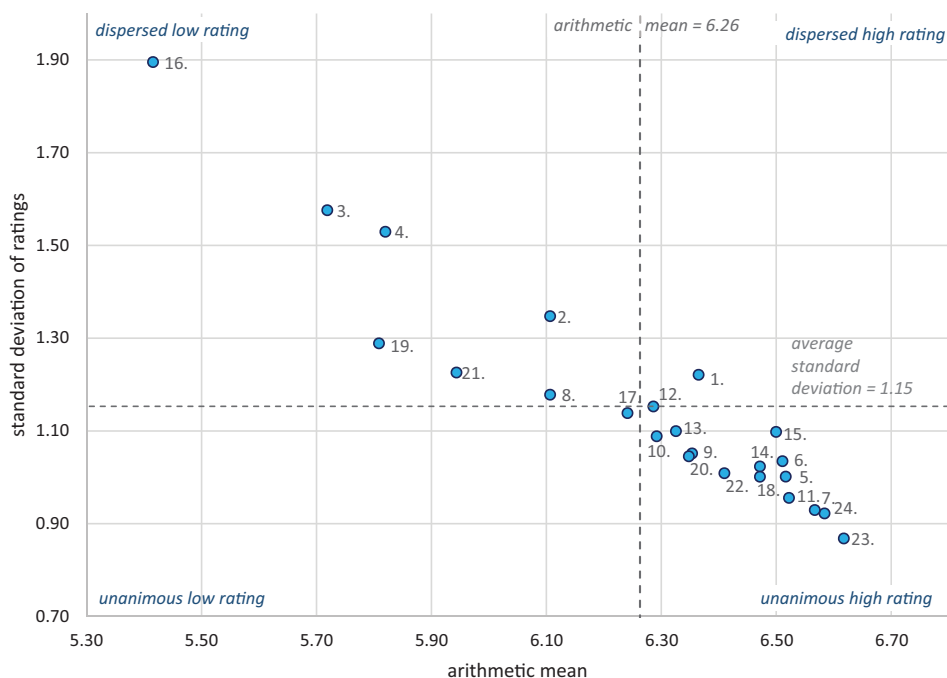


Figure 6. Distribution of 24 statements related to the ideal vocational guidance course

The plane divided in this way made it possible to distinguish four representative areas:

- unanimous high average rating of statements related to ideal vocational guidance training (high average rating of all statements and low standard deviation, i.e., highly homogeneous ratings),
- unanimous low average rating of statements related to ideal vocational guidance training (low average rating of all statements and low standard deviation, i.e., lowly homogeneous ratings),
- dispersed high average rating of statements related to ideal vocational guidance training (high average rating of all statements and high standard deviation, i.e., highly heterogeneous ratings), and
- dispersed low average rating of statements related to ideal vocational guidance training (low average rating of all statements and high standard deviation, i.e., lowly heterogeneous ratings).

Based on the data presented in Figure 6, it can be concluded that the experts agreed on most of the high scores (10, 13, 9, 20, 22, 15, 14, 6, 5, 11, 7, 24, and 23). This shows that there are no discrepancies in the education expectations in the area of vocational guidance. The respondents presented more diverse opinions based on the low grades. The experts showed the least agreement on statement 16, which refers to the possibility of choosing one educational path related to the specifics of present and potential professional activities (e.g., career guidance for professionals, working with young people, career coaching and design, etc.). Analysing the data presented in Figure 6, we found that the respondents rated the statements for the ideal course much higher, as evidenced by the average value of 6.26 compared to education completed with an average of 4.31, which may indicate high requirements for the quality of educational training. In addition, the respondents were more consistent in their assessments, as evidenced by the low standard deviation of 1.15 compared to the standard deviation of 1.75 for the completed courses.

In order to determine the gap between the completed and ideal education, a summary of the individual average grades on the statements was prepared (Figure 7).

The largest gap related to differences between expectations and actual use of online learning games by guidance teachers (–3.73). A high gap could also be observed for the application of interactive games with the educational purposes as part of career guidance counsellors training (–3.25). A slightly smaller but still considerable gap (–2.57) was observed in the statement referring to students' ability to identify and analyse technological trends (e.g., automation, robotisation, and digitisation) and their implications for the labour market. The lowest gap (–0.56) in the assessment of completed and ideal training was observed in the statement referring to the involvement of sociologists in career guidance activities and the next lowest referred to the atmosphere in classes being conducive to creative discussions (–0.91).

The authors of the article assume that the reasons for such large differences may be due to the fact that the staff teaching careers guidance most probably represent an older generation that does not follow technical innovations such as the use of online games in their practice. They also lack modern tools to analyse trends and their impact on the labour market. On the other hand, they seem to feel comfortable in leading creative discussions or in engaging experts of other, related specialties, such as sociologists.

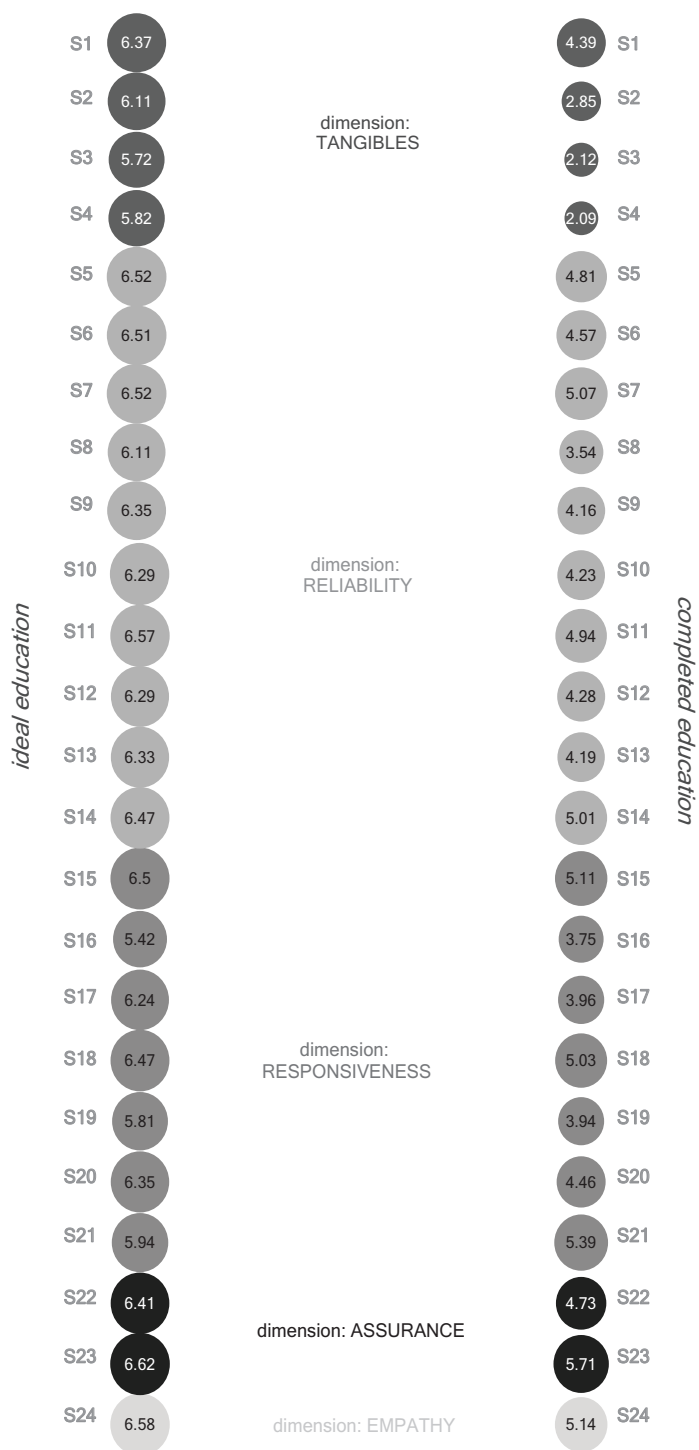


Figure 7. Summary of average grades for individual statements relating to vocational guidance training

Finally, an average gap was derived for all statements included in the survey questionnaire. This gap was at the level of -1.95 . Considering the seven-point scale of the evaluation, the observed gaps demonstrate the presence of relevant differences between the evaluation of the completed courses and the expectations of the respondents in this respect. Hence, we may conclude that the expectations of those who took part in the survey about the quality of education in the field of vocational guidance are not fulfilled.

4. Discussion

Applications of the SERVQUAL model to career guidance are not present in the existing published works, which is evidenced by the outcomes of the bibliometric and the qualitative analysis of the articles on the subject.

The authors of this article state that the scale prepared herein can be used to evaluate the vocational guidance educational offerings in other countries. It may be interesting for future research works to compare results presented in the article with those of the research conducted in countries that represent greater development of Industry 4.0.

The popularisation of the Industry 4.0 idea forces changes in many areas of life and in the labour market. The changes in the nature and conditions of work, the demand for new professions and career planning, as indicated in the literature review, will strongly influence both the daily work of career advisers and their educational process. The ability to analyse trends surrounding career counsellors and their clients seems to be one of the important determinants of the quality of education of both groups. The tools for assessing the quality of education should also cover this aspect.

Generally, the SERVQUAL model could be perceived as a very practical framework for identifying the gaps between the actual and desired states of phenomena and for measuring the quality of service. However, the dimensions of the SERVQUAL model should be tailored to the area in which the survey is carried out.

The modification of the SERVQUAL model seems to be a well-established practice in the literature on the subject, as evidenced by the publications of for example Naveed et al. (2019), Ahmed et al. (2017), Ali and Raza (2017).

It should also be stressed that, due to the context of the survey, the weighting of dimensions may be waived, due to asymmetrical distribution of statements between the dimensions of the model, which was also the case and a limitation of the presented research. The developed model was quite asymmetrical in the number of statements in each dimension (tangibles: 4 statements, reliability: 10 statements, responsiveness: 7, assurance: 2 statements, and empathy: 1 statement) compared to the original model developed by Parasuraman et al. (1988).

The study also gives practical advice on the implementation of curricular content concerning the analysis of trends affecting the labour market and the inclusion of tools which enable the analysis of alternative career paths. For this purpose, career guidance could benefit from inviting foresight experts to develop training programmes. Staff education in innovative educational methods based on interaction (also virtual and online games) is also worth considering. This seems to be particularly relevant in a post-pandemic society, where the model of work provision is constantly changing.

Conclusions

The use of the SERVQUAL model for the diagnosis of educational offering has provided a wealth of information on completed training in the area of vocational guidance.

The article fills a cognitive gap in relation to the application of the SERVQUAL model to professional counselling. The results of the study provided by the responses of 178 career counsellors demonstrated significant differences between the perception of completed career guidance education and the respondents' needs in this area.

The survey was met with enthusiasm among professional advisors who had been expecting changes in their professional environment for many years, especially in terms of adapting their training offering to the changing conditions of the labour market. The survey was supported by a higher number of respondents than originally assumed in the survey. The main recommendation of the research is ensure that the model has no gaps. The analysis carried out demonstrated a gap of -1.95 . Using the seven-level assessment scale, the identified gaps indicate that the expectations of those who took part in the survey about the quality of education in the field of vocational guidance are not fulfilled.

The main limitation of the research is the deviation from weighing dimension of the model, due to asymmetrical number of items in each dimension. This was motivated by the scope of the research, which focused mainly on trend analysis and scenario analysis; therefore, the "reliability" dimension of the modified SERVQUAL model was the most elaborate.

Faced with the challenges posed by Industry 4.0, we argue that the ability to create career scenarios and the ability to analyse trends affecting the labour market should be fundamental skills that a career counsellor knows and implements. Unfortunately, according to the results presented in the following article, we conclude that the themes of the analysis of scientific and technological trends, such as automation, robotization, and digitization and those related with scenario analysis are treated in a negligible way in vocational guidance training programmes. The phenomena mentioned above were reflected in the SERVQUAL model statements elaborated by the authors of the article. Therefore, the main suggestion for further research is to develop and test a methodology for the implementation of trend analysis and scenario methods for vocational guidance.

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Author contributions

All authors have contributed significantly for this research in all phases and sections.

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