



Tool for the comprehensive assessment of competency levels

Application guide



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Instead of an introduction

Technological advances, ongoing social and economic processes, globalisation or the need to take care of the natural environment are just a few items on the list of important factors forcing continuous change in the system of higher education. Adapting to the current expectations of the labour market is challenging and requires comprehensive monitoring of educational outcomes and, above all, constant cooperation between the education sector and employers. For years, there has been discussion about the poor preparation of school graduates entering the labour market, their unsuitable skills or inappropriate levels of knowledge in areas important to employers. Actions undertaken in different EU countries to improve the situation have brought mixed results. As a result, it is important to appreciate initiatives where flexible solutions can be developed in international teams. An opportunity for such international initiatives is provided by the Erasmus+ strategic partnerships.

The Future Professionals project was carried out in a Polish-Hungarian-Finnish-Greek partnership, and its aim was to support universities and teachers by working out solutions permanently improving the quality of remote learning. A key outcome of the project is an IT system for the comprehensive assessment of students' competencies in selected fields of study. The system makes it possible to evaluate students' preparation for entering the labour market, which is possible by assessing their competency levels in various areas and comparing them with what is desired for typical professions in the industry. Together with experts, we created employee profiles, that is, competency matrices for selected professions / positions. We developed several hundred test questions to assess the knowledge, skills and attitudes of students in selected fields of study. Using advanced statistical methods, we prepared an algorithm comparing test results with the requirements set by experts in a given industry, and we also used tools of multidimensional comparative analysis to compare the obtained results with the developed profiles. In order to assess the potential competency gap, we relied on the methods of linear ordering and the Euclidean distance from the employee profile understood as requirements indicated by experts in competence matrices for specific professions. Eventually, we compared the obtained results with these requirements, and presented this comparison in graphic form.

In our project, we focused on four fields of study (analytical economics, management, tourism and automotive) and distinguished eleven types of competencies, including two professional (theoretical knowledge and practical skills) and nine universal ones, that is, competencies which are not linked to any specific fields of study or occupation but which can be useful in any place of work. As far as professional competencies are concerned, we prepared questions dedicated to the main areas of knowledge and skills according to the criteria of specific fields of study. In each of the fields of study analysed, we distinguished four areas that represent their key content. Next, we developed one set of questions for universal competencies, regardless of the field of study, and ensured that

assessments of different types of competencies are comparable. For each type of competency, we distinguished four levels for which we specified expected standards understood as knowledge or skills (according to the European Qualifications Framework). We adopted a progressive description of each standard for subsequent competency levels, which means that a particular level includes the knowledge and skills indicated in the previous one.

It is worth pointing out that the IT tool developed for the comprehensive automatic assessment of students' competencies offers a number of benefits. From the point of view of the student doing a test for a particular field of study, the 'fit' results obtained for a particular profession or position can be used in various ways. First of all, they can be treated as an assessment of the competency gap between what the market expects and what the student can offer. Also, these results can motivate young people to rethink their ideas about dream professions, and eventually become a basis for creating development paths allowing them prepare for entering the labour market in a better way. For academic teachers, the collective assessment of a group of students might provide some guidance on possible revision of the thematic scope of the course, whereas for career advisors it might serve as a good start for one-on-one work with students who need consultation.

In order to take full advantage of the capabilities of this tool, it is necessary to become familiar with the substantive details of the assumptions of its design as well as examples of the interpretation of results. Hence the idea of preparing this guide, which we hope will enable you to use this application in a smooth and problem-free way.

It is worth emphasising the modular nature of the IT tool developed, where specific types of competencies are like little drawers that can be taken out from one place and inserted into another. Owing to this, it is possible to use this tool in different fields of study or specialisations. Naturally, the use of the system for the comprehensive assessment of competencies for other fields of study than those we dealt with in our project will require developing new content – on the one hand, employee profiles for specific professions (competency matrices), and on the other hand, a list of questions verifying one's knowledge and professional skills (test questions as a resource depending on the field of study). The other elements would remain the same.

In the following sections of this guide, we will show you the essential details of the tool and also an example of interpreting the results obtained after completing the test.

This application is available for free on the following website:

<http://forfuture.education>



The Future Professionals



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Main assumptions

The tool for the comprehensive assessment of competency levels was developed as a web application that can be accessed on a computer or any other mobile device (a phone or a tablet). It makes it possible, on the one hand, to assess the level of various types of competencies automatically and, on the other hand, to compare the results of this assessment with the competency profiles for specific professions / positions. A competency profile defines the expected levels of particular competencies in a given profession / position, whereas the expected levels of competencies are defined on the basis of literature reviews and expert opinions. It is worth noting that expert opinions were obtained through individual in-depth interviews conducted in all partner countries with practitioners, specialists in the field and people responsible for employing graduates of the fields of study covered by the project.

The development of the tool required:

- selecting the competencies / groups of competencies to be assessed, defining them and their specific levels,
- selecting professions / positions for each field of study and developing competency profiles for them,
- preparing questions / tasks / problem questions (hereafter referred to as questions) to verify the level of each competency,
- choosing how to assign the appropriate level for each of the competencies assessed,
- choosing a method of comparing the level of competencies of the person being evaluated with the competency profiles for particular professions / positions,
- determining the way of presenting output data – the level of particular competencies, the fit of this level to the competency profiles,
- defining tool functionality – elements that can be configured by the system administrator, solutions that can be applied by the end user (the person whose level of competency is evaluated).

The responses and solutions assumed for each of the questions are discussed in the subsequent sections of this guide.

The assessment of competencies is carried out using either a five-point (from 0 to 4, where 0 means lack of competency and 4 means its high level) or a four-point scale (from 1 to 4, where 1 means a low level, whereas 4 – a high level of competency). The choice of the scale depends on the type of competency and the method of its assessment that has been adopted. Detailed information in this regard can be found in the section dedicated to the characteristics of the questions / tasks / problem questions for verifying the level of competency.

The person whose competency level is to be assessed has to do a test with questions randomly selected by the system. These questions can be organised in a single set (a specific number of questions are randomly chosen from this set) or they can be divided into subsets (a specific number of questions are randomly chosen from each subset). The second solution is particularly useful when it is necessary to take into account different areas of assessment for a given competency.



Groups of competencies

The tool developed as part of the Go4FutureSkills project includes eleven groups of competencies, namely:

- Professional – theoretical knowledge,
- Professional – practical skills,
- ICT – the knowledge of software,
- Linguistic – knowledge of foreign languages,
- Analytical – the ability to solve problems,
- Interpersonal – communication, teamwork,
- Interpersonal – work in diverse teams (e.g. multicultural, multigenerational),
- In terms of organization and self-organization – time management, independence,
- In terms of creativity – generating new ideas, a creative style of work,
- In terms of learning – openness to continuous development,
- Personal – loyalty, commitment, responsibility.

For professional competencies (theoretical knowledge and practical skills), we distinguished four areas for each field of study. In order to ensure clarity, in our guide we used the substantive details of the Management field of study whose selected areas of professional competency assessment are presented in Table 1. It is worth highlighting that the pattern for the other fields of study is the same.

Management
Human Resources Management (HRM)
Project management
Salesforce management
Business management

Table 1.
Selected areas of professional competency assessment for
Management field of study

Source:
own elaboration of the project team.

Noteworthy is the fact that the number of competencies assessed, their type and the number of areas distinguished within a given competency can all be configured by the system administrator. It is possible to assess all the listed competencies, only selected ones or others not included in the tool developed as part of the project. It is not obligatory to divide a specific competency assessment into areas, but it is possible to distinguish their number if needed.

For each competency (competency assessment area, if areas are distinguished) there is a separate definition and also a description of knowledge, skills and attitudes required for each of its levels. The description of different competency levels is progressive – a given level includes the knowledge, skills and attitudes indicated in the previous one(s). The general scheme of the adopted division into levels is presented in Table 2.

Table 2. Levels of competencies

Level 0	Not required
Level 1	Necessary to perform simple and routine tasks that form the basis for further and more specialized activities
Level 2	Necessary to perform tasks in typical situations
Level 3	Necessary to perform complex tasks, both in typical and problematic conditions
Level 4	Necessary to perform many complex tasks of various nature. Leadership and managerial skills If applicable

Source: own elaboration of the project team.

Selected professions / positions and their competency profiles

The professions / positions for the fields of study taken into account in the project were selected on the basis of experts' opinions. The experts were asked to indicate the professions / positions in which they most often employ graduates of these specialisations and the professions / positions that will remain important (popular, desirable, developing) in the next 10 years. Ten such professions / positions have been distinguished for each field of study.

The competency profiles for a given field of study have been prepared in the form of table, in which rows contain specific professions / positions, whereas columns – competencies to be assessed. The numeric values in the cells of the table indicate the desirable level of a given competency (as indicated by the experts) for a person employed in a specific profession / position.

Examples of competency profiles for the field of management can be found in Table 3.



Table 3. Competency profiles for selected professions / positions – Management field of study

	COMPETENCES / PROFESSIONS	professional – theoretical knowledge	professional – practical skills	IT – software literacy	language – knowledge of foreign languages	analytical – problem-solving skills	interpersonal – communication, teamwork	interpersonal – work in diverse teams (e.g. multicultural, multigesational)	organisation and self-organisation – time management, self-reliance	creativity – generating new ideas, creative style of work	learning – openness to lifelong development	personal – loyalty, involvement, responsibility
1	project manager	3	4	3	4	4	4	4	4	3	4	4
2	social media / company image specialist	1	2	2	2	1	1	1	2	4	4	2
3	business analyst	3	3	4	2	4	1	1	4	2	4	3
4	crisis management specialist	1	3	2	2	4	3	3	2	3	3	1
5	interpersonal relations trainer	2	2	1	3	1	4	4	2	2	2	4
6	owner	2	2	2	2	4	4	4	3	4	3	4
7	administration staff	3	4	4	4	3	4	4	4	3	4	4
8	manager (business management)	4	3	4	4	4	4	4	4	4	4	4
9	consultant	4	4	4	4	4	4	4	4	3	4	4
10	salesforce (sales department employee)	3	3	4	3	3	4	4	4	4	4	4

Source: own elaboration of the project team on the basis of expert opinions.

Types of questions to verify competency levels

Using the tool, it is possible to verify the levels of various types of skills and competencies, e.g.: hard skills (professional competencies or ICT skills), soft skills (interpersonal skills, creativity), language skills (knowledge of foreign languages) or analytical skills (problem-solving skills). Due to the diversity of the skills and competencies analysed, the questions were prepared in different ways in order to adequately adapt to the requirements of assessing specific types of competencies. The following types of questions include:

1. Single-choice test questions
2. Single-choice test questions requiring simple actions (e.g. calculations, analysis of results and their interpretation)
3. Questions with declarative answers (e.g. on the basis of a certificate)
4. Questions requiring resolving a problem situation
5. Questions requiring the result to be typed in

Re 1. Single-choice test questions

In these questions, there are four specific answers to choose from (one of which is correct), and also 'Don't know' (to avoid having to guess if someone does not know the correct answer). The questions are formulated in such a way that it is possible to directly select one of the answers. If a person doing the test chooses the correct answer, he or she scores a specific number of points (a configurable option). If, however, they choose the other one, they do not obtain any points at all. Some questions also include answers such as 'All other answers are correct' or 'None of the other answers are correct'. This type of questions was mainly created to assess hard skills e.g. professional competencies – theoretical knowledge, ICT skills (the knowledge of software).

This type of question looks as follows:

Treść pytania:		
<input type="checkbox"/> answer 1	<input type="checkbox"/> answer 2	<input type="checkbox"/> 'Don't know'
<input type="checkbox"/> answer 3	<input type="checkbox"/> answer 4	

Re 2. Single-choice test questions requiring simple actions

In this type of questions, like in the previous one, there are four specific answers to choose from (one of which is correct), and also 'Don't know' (to avoid having to guess if someone does not know the correct answer). The questions are formulated in such a way that the selection of the correct answer must be preceded by a simple calculation or analysis. If a person doing the test chooses the correct answer, he or she scores a specific number of points (a configurable option). If, however, they choose the other one, they do not obtain any points at all. This type of questions was mainly created to assess hard skills e.g. professional skills – practical or analytical skills (the ability to solve problems).

This type of question looks as follows:

Treść pytania:		
<input type="checkbox"/> answer 1	<input type="checkbox"/> answer 2	<input type="checkbox"/> 'Don't know'
<input type="checkbox"/> answer 3	<input type="checkbox"/> answer 4	

Re 3. Questions with declarative answers

In these questions, the end user determines his or her own level of a particular competency by selecting one of the available options from a list. The list contains four answer options indicating the different levels of a given competency from the lowest to the highest. Questions of this type can be used for self-assessment in the case of competencies for which specific norms have been set for the different levels (knowledge, skills and attitudes, which make it possible to assign an appropriate level, have been defined), for example, language skills (knowledge of a foreign language on the basis of one's certificate). The results obtained are not scored, but a certain competency level is automatically assigned.

This type of question looks as follows:

Self-assessment of a specific competency / skill (e.g. the English language):	
<input type="checkbox"/> level 1 (Beginner, A1)	<input type="checkbox"/> level 2 (Pre-Intermediate, A2)
<input type="checkbox"/> level 3 (Intermediate, B1)	<input type="checkbox"/> level 4 (Upper-Intermediate, B2)

Re 4. Questions requiring resolving a problem situation

These questions are formulated as descriptions of specific problem situations, whereas the answer options present possible ways of dealing with them. The person undergoing the assessment has to analyse all the options and decide which they would choose to solve the problem. It is worth noting that there are no right or wrong answers – instead, each answer option is assigned a specific competency level. It is due to the fact that certain behaviours reveal higher or lower awareness of the desirable course of action to be taken in a specific problem situation. Thus, the selection of one of the answer options results in the assignment of a higher or lower level of a given competency. In each of these questions there are four answers to choose from – different courses of action for solving a given problem. The questions formulated in this way, as descriptions of specific problem situations, are supposed to assess soft skills e.g. interpersonal skills (communication, teamwork), organization and self-organization skills (time management, independence), creativity (generating new ideas, creative work style) or personal skills (loyalty, commitment, responsibility).

This type of question looks as follows:

Description of a problem situation. What would you do? How would you behave in this situation? What actions would you take? How would you solve this problem?	
Possible course of action no. 1.	Level 1
Possible course of action no. 2.	Level 2
Possible course of action no. 3.	Level 3
Possible course of action no. 4.	Level 4

It should be emphasised that the specific courses of action and levels assigned in the second column of the table appear in different order, not necessarily from the lowest to the highest level.

Re 5. Questions requiring the result to be typed in

When answering these questions, the end user has to solve a task / problem and type the result in (in words or numbers). There are no possible answer options to choose from, and only one result is correct. In order to provide a logical answer, it is necessary to perform some simple calculations or an analysis of the situation. Next, the system checks whether or not the result is correct (according to the previously defined value expressed in words

or numbers). If it is correct, the system assigns a specific number of points (a configurable option). If it is not, the user does not receive any points at all. Such questions are mainly used to assess professional competencies, e.g. practical or analytical skills.

This type of question looks as follows:

Task content. Question. Answer:

space to type the result in (in words or numbers)

When assessing the level of a given competency, one type of question was most often asked, except for the situation when different types of questions could be used to perform the assessment (type 1, 2 and 5). This applies, for example, to professional competencies (practical or analytical skills).



Assigning an adequate competency level based on assessment results

For each competency, the level assigned to it is the outcome of the answers to the questions given as part of the assessment of that particular competency. The way in which the results of answers are aggregated depends on the type of question, but output values indicating the level of each competency have the same form and the same set of values defined by integers between 0 and 4 or 1 and 4. A value of 0 indicates no competency, 1 a low level of competency, whereas 4 a high level of competency, with the remaining values indicating intermediate states. A value of 0 may appear when questions are aggregated by adding up the values obtained from the answers (scored questions), especially when each of these answers is incorrect.

In the application prepared as part of the project, we adopted the following method of assigning a competency level to each type of questions:

- **Scored questions (a single-choice test, a single-choice test requiring simple actions, requiring the result to be typed in)**

The system calculates the total number of points obtained for answering each randomly selected question within a given competency. The sum of the points obtained determines the adequate level of that competency, expressed in natural numbers from 0 to 4. On the basis of the number of points scored, the user doing the test is qualified to a particular level in the following way:

- Level 0 – the number of points scored is 0
- Level 1 – the number of points scored is from 1 to x
- Level 2 – the number of points scored is from $(x+1)$ to $2x$
- Level 3 – the number of points scored is from $(2x+1)$ to $3x$
- Level 4 – the number of points scored is from $(3x+1)$ to $4x$

where x is a number set in an option that can be configured by the application administrator. This means that the correct answer can be assigned a value of 1 or higher. The values can be the same or different depending on the question.

For example, assuming that the user receives 1 point for each correctly answered question and there are 4 questions for a given competency, a score of 0 means level zero, a score of 1 classifies the user to the first level of that competency, a score of 2 to the second, a score of 3 to the third, and a score of 4 to the fourth, the highest.

- **Questions with declarative answers**

In questions where the person doing the test assesses his or her competencies on their own, the assigned level is determined by integers from 1 to 4 according to the final declarative level selected by the user (1 means the lowest level, whereas 4 – the highest). For example, if during the assessment of language skills (knowledge of a foreign language) on a scale from A1 to B2 the user selects:

- A1, he/she will be assigned level 1,
- A2, he/she will be assigned level 2,
- B1, he/she will be assigned level 3,
- B2, he/she will be assigned level 4.

Questions requiring resolving a problem situation

For this type of questions, the user is assigned a specific level of the competency being assessed based on each problem situation that he/she resolves (in each question). This level is then converted into an integer from 1 to 4 according to the level obtained by the person answering this particular question (1 means the lowest level, whereas 4 – the highest). In the next step, the arithmetic mean values of these numbers are calculated.

In case this mean value is not an integer, it is rounded to 0 decimal places according to mathematical rules of rounding. For example, a person who answers four questions concerning a specific competency receives the following results: level 2, level 3, level 2 and level 4. These values are converted into numbers corresponding to a given competency level, that is, 2, 3, 2, 4. Ultimately, the assessment level for this competency will be Level 3:

$$\frac{2 + 3 + 2 + 4}{4} = 2,75 \approx 3$$

Comparing competency levels with competency profiles

The comparison is made individually for each assessed competency and in an aggregative manner for the whole set of competencies covered by the study. When comparing a single competency, differences between the level achieved by the user and the level required for a given profession / position are evident. In aggregate comparisons, on the other hand, the system calculates the Euclidean distance between the results obtained for all the competencies assessed and the desirable values for each competency as defined in the competency profile. In order to calculate the Euclidean distance, it is necessary to use the following formula:

$$d_{iw} = \sqrt{\sum_{k=1}^p (z_{ik} - z_{wk})^2}$$

where:

- d_{iw} – distance between the competency level of the assessed person and the competency profile for a given occupation / position,
- p – number of assessed groups of competencies,
- z_{wk} – the level required in the competency profile for a given (kth) competency,
- z_{ik} – the level obtained by the assessed person for a given (kth) competency.

Distances are dissimilarity measures between the person participating in the test and the pattern (the competency profile). The larger the distance, the lesser the degree of similarity between the competency level of the test subject and the competency level defined in the competency profile of a given profession / position. This means that the competency level of the person doing the test deviates to a greater extent from the competency level required for that specific profession / position. It is important to note that the differences between the competency level values obtained by the end user and those indicated as desirable in the competency profile can be both positive and negative – the person being assessed can have a higher or lower level of a given competency than specified for a given profession / position. Hence, large distances obtained do not always indicate the presence of a large competency gap; the increase in their value may also be caused by a situation in which the end user displays higher levels of certain competencies than specified in the profile. Therefore, when interpreting results, it is necessary not only to rely on distances, but also to analyse in detail the directions of deviation for each competency.

For each person whose competencies undergo assessment, a ranking of the fit to the professions / positions chosen within a given field of study is created upon the values of the distance measures. The basis for creating the ranking is the distance of the competency level of the person assessed from the specific competency profiles of the professions / positions (competency requirements for the profession / position). The shorter the distance, the closer the level of competencies of the person assessed to the levels of the specific competencies indicated in the competency profile for a given profession / position. The first position in the ranking goes to the profession with the lowest value of the distance measure, followed by the others in ascending order (that is, from lowest to highest). The ranking created in this way makes it possible to state to what extent the competencies already possessed make it possible for the person to be successfully employed in specific professions / positions, and whether it is necessary to take any development measures (for specific competencies).



Presentation of output data

In the tool for assessing competency levels and comparing them with what is required, as defined in the competency profiles, it is possible to find graphic and tabular representation in the following cross sections:

1. Results of the competency test presented in graphic form (a general report).
2. Results of the competency assessment compared with the requirements for a specific profession / position the closest and the furthest from the test subject in graphic form (a general report).
3. Results of the test subject's distance for all professions / positions covered by the study in tabular form (a detailed report).
4. Results of the assessment of the person's competency levels for all professions / positions covered by the study in graphic form (a detailed report).
5. Results of the assessment of a group of people for each competency in tabular form (a report for the organisation).
6. Results of the average scores of a group of people for each competency in graphic form (a report for the organisation).
7. Changes in the level of competency over time – at least two tests done by the same person (a comparison report).

Re I.

The report presents specific competency levels with the use of a bar chart. The scale of the chart corresponds to the adopted level for determining the degree of achieving a given type of competency from 0 (or 1) to 4. The specific levels mean the following:

- 0 – no competency
- 1 – a low level of competency
- 2 – a below-average level of competency
- 3 – an average level of competency
- 4 – a high level of competency.

An example of this chart is presented in Figure 1.

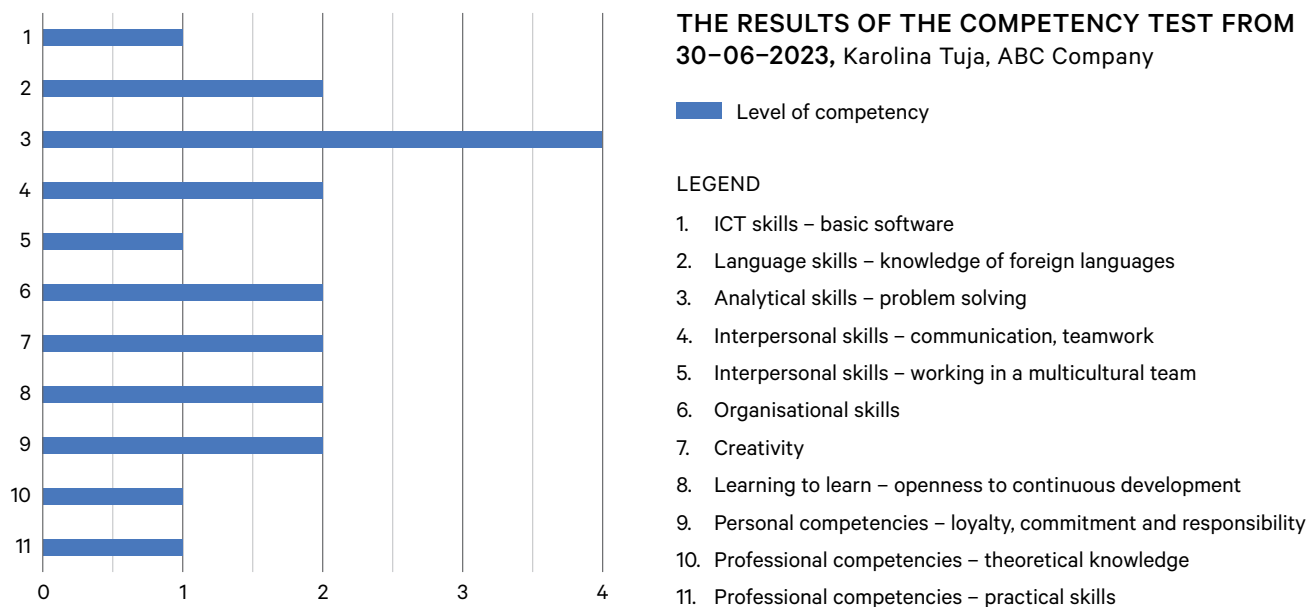


Figure 1. Chart presenting the assessment of a given person's competencies (an example)

Source: own elaboration.

Note: Karolina Tuja is a fictional person – the name has been created for the purposes of the guide.

Re 2.

The bar chart presents specific competency levels in relation to two professions / positions. On the left, there is a profession / position for which the levels of required competencies are the closest, whereas on the right – a profession / position for which the distances are the largest.

The analysis of charts makes it possible to:

- assess competency levels of university graduates in relation to the requirements of the competency profiles (recommendations for employment, job search),
- assess competency gaps (the need to take development measures),
- assess competency surpluses (enabling the person to look for a job in a more demanding profession / position).

An example of this chart is presented in Figure 2.

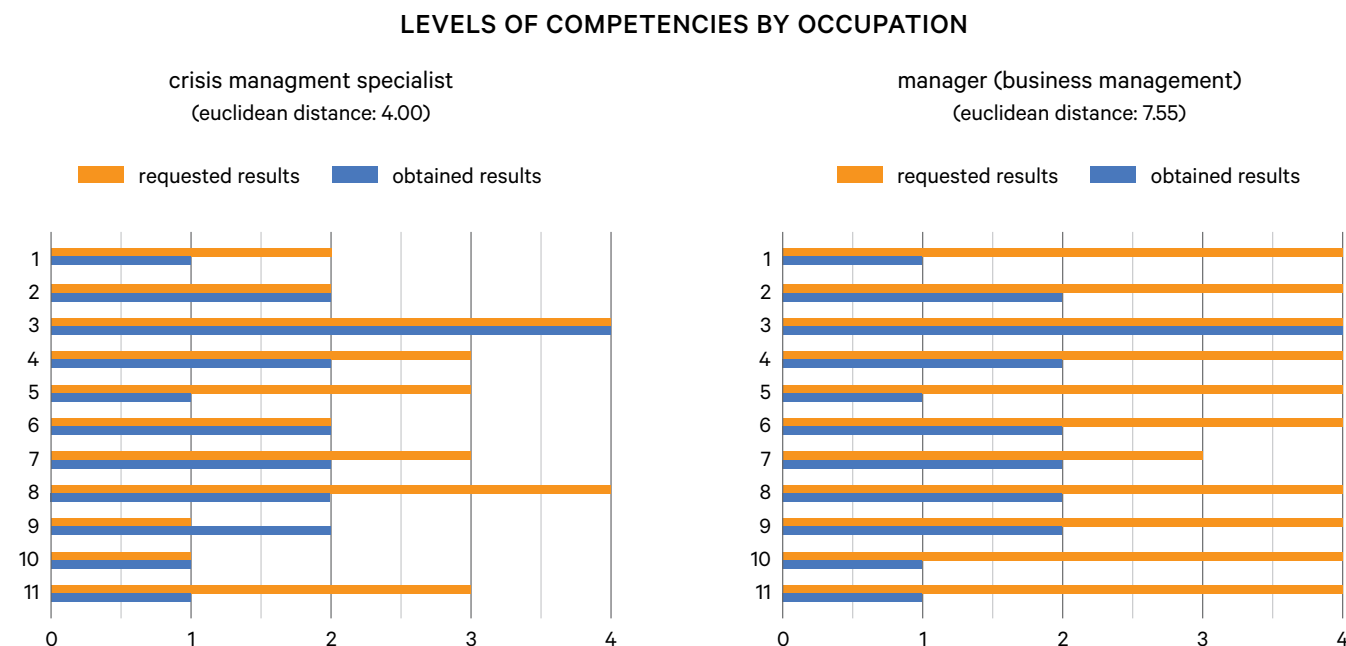


Figure 2. Chart presenting the assessment of a given person's competencies in relation to the required competencies for a specific profession / position – the best and the worst fit (an example)

Source: own elaboration.

Re 3.

In this table, all the professions / positions taken into consideration for a given field of study have been included. The order was established according to the distance measure, that is, the misfit to a given profession / position. The first place in the ranking is taken by the profession / position which fits best a given candidate's profile (his/her competency levels). Subsequent places indicate a larger difference between the candidate's profile and the requirements for a specific profession / position.

It is essential to take into account the fact that the results are not only indicative of a competency gap. The differences are determined by discrepancies between the competency profile of the person assessed and the requirements for specific professions / positions, and it might happen that his or her competency level goes beyond the requirements set for a given profession / position. For this reason, the table presents not only distances resulting from the overall assessment, but also these caused by surpluses and deficiencies in competencies – cf. Table 4.

Table 4. Euclidean distances between the person's competency levels and the requirements of the competency profiles; the evaluation of importance of competency gaps and surpluses

THE RESULTS OF THE COMPETENCY TEST FROM 30-06-2023, Karolina Tuja, ABC Company			
Occupation	Euclidean distance	Surpluses	Shortages
crisis managment specialist	4.00	1.00	3.87
social media / company image specialist	4.47	3.16	3.16
owner	5.00	0.00	5.00
business specialist	5.20	1.00	5.10
interpersonal relations trainer	5.48	3.00	4.58
projekt manager	6.86	0.00	6.86
salesforce (sales department employee)	6.86	0.00	6.86
administration staff	7.07	1.00	7.00
consultant	7.42	0.00	7.42
manager (business management)	7.55	0.00	7.55
<p>The Euclidean distance was used to assess the fit between the level of competency and the requested level for a given occupation. The lower the value of the distance, the better the fit.</p> <p>The table shows the occupations starting with those for which the fit of the competency level is the best (the smallest distance) to those for which the difference in the competency level is the largest (the largest distance).</p>			

Source: own elaboration.

Re 4.

Each person taking part in the assessment can compare his or her competency levels with the requirements set for professions / positions on the chart. This allows them to take an interest in their own professional development and be better prepared for entering the competitive labour market, particularly when their career plans are precise.

Figure 2 presents an example of comparisons (the best and the worst fit); study participants receive analogous results for each of the professions / positions distinguished within a given field of study.

Re 5.

From the point of view of a group of end users (year of birth, type of education, specific demographic characteristics), it is important to receive aggregated results. Such results can be obtained in tabular form presenting competency levels for each member of this group. An example of such a summary is presented in Table 5.

Table 5. Assessments of specific competencies in a group of people

User / Category	ICT skills – basic software	Language skills – knowledge of foreign languages	Analytical skills – problem solving	Interpersonal skills – communication, teamwork	Interpersonal skills – working in a multicultural team	Organisational skills	Creativity	Learning to learn – openness to continuous development	Personal competencies – loyalty, commitment and responsibility	Professional competencies – theoretical knowledge	Professional competencies – practical skills
Karolina Tuja	4.00	3.00	2.00	4.00	4.00	4.00	3.00	4.00	4.00	4.00	4.00
Krzysztof Plot	2.00	2.00	3.00	2.00	0.00	1.00	1.00	4.00	3.00	3.00	4.00
Marcin Lot	2.00	2.00	3.00	2.00	3.00	3.00	2.00	1.00	2.00	4.00	1.00
Klaudia Mara	4.00	3.00	3.00	2.00	1.00	3.00	2.00	2.00	4.00	3.00	2.00
Agnieszka Rak	0.00	1.00	0.00	4.00	4.00	3.00	3.00	2.00	4.00	4.00	4.00

Source: own elaboration.

Note: These people are fictional – their names have been created for the purposes of the guide.

Re 6.

This tool can also generate average results of assessments of a group of people taking part in the study in terms of specific competencies. The results of average ratings are presented in bar charts using the scale from 0 to 4, as in the case of individual end users. An example of such a chart is presented in Figure 3.

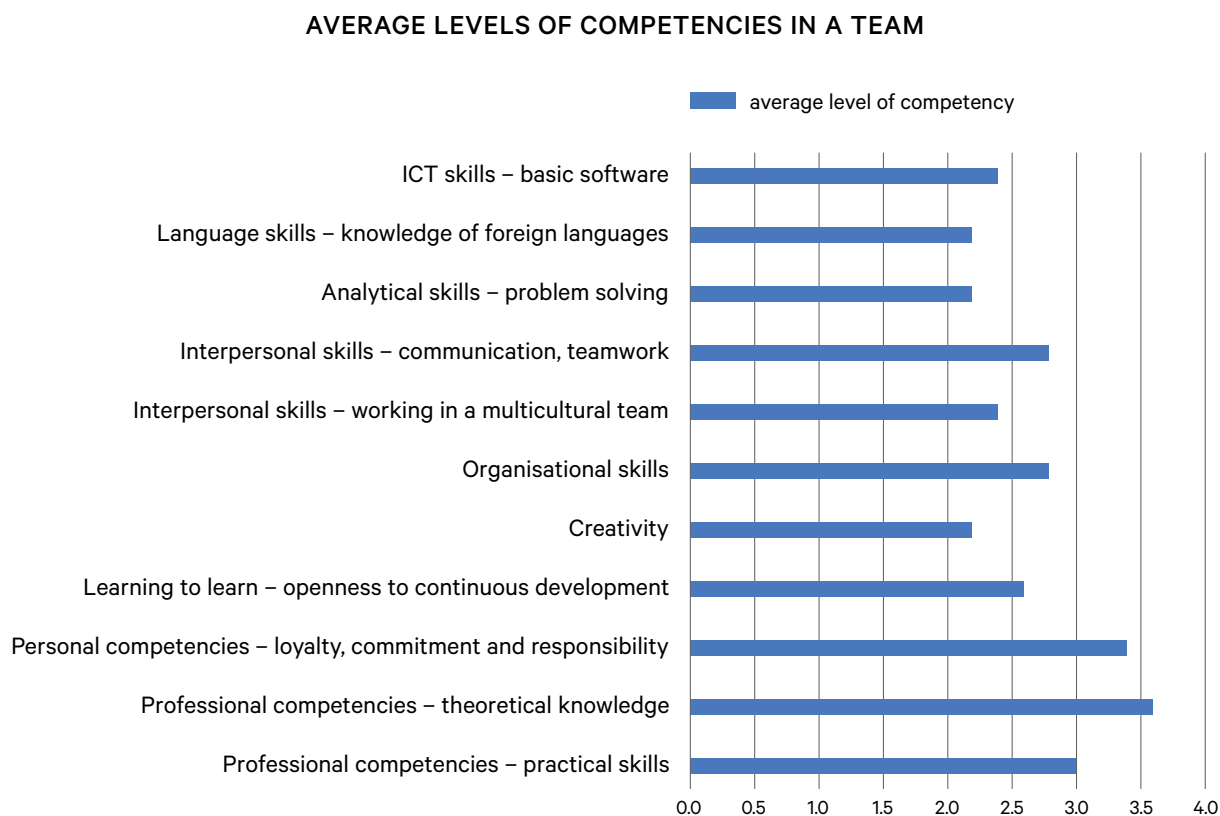


Figure 3. Average assessments of competency levels of a selected group of end users

Source: own elaboration.

Re 7.

The application also makes it possible to visualise changes over time in the level of specific competencies for a person who took part in the assessment at least twice. The chart with results was prepared in the form of summary of changes (in plus and in minus). Positive changes are presented by green bars, whereas negative (decrease in competency levels) by red ones. The graphic representation of result comparison is shown in Figure 4.

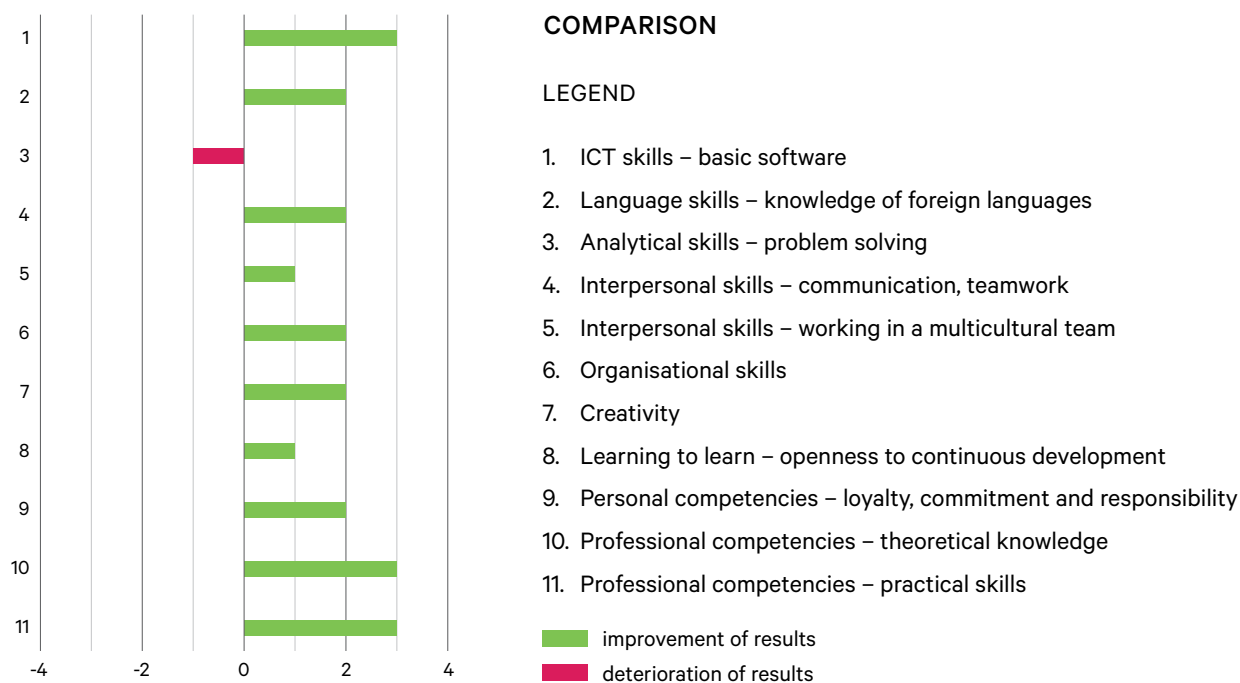


Figure 4. Visualisation of change in competency levels over time

Source: own elaboration.

Tool functionalities – elements to be configured by the system administrator

The system administrator can define, add, delete, edit and configure the following elements:

GROUPS	
Specialities	
Expert opinions	
Competencies	
Categories	
Organisations	
Tests	
	Users
	GDPR consent

The description of the specific elements is presented in Table 6.



Table 6. Elements that can be configured by the system administrator

ELEMENT	SPECIFICATION
GROUPS	The group is the basic element of the entire system configuration. Changing the group changes other configuration elements, such as positions, competencies or tests. E.g. field of study.
USERS	The user is the final recipient of the application. There are two types of users: administrator and regular user. The administrator has access to the administrator panel and is responsible for system configuration, while the user is the target recipient who will perform the competency test in order to assess the scope defined by the administrator.



EXPERT OPINIONS	<p>Expert assessments determine the level of competence within a specific position that should be obtained by the user in order to meet the requirements for a given position.</p> <p>Expert ratings is a matrix of the following size: ‚number of competencies’ x ‚number of positions’.</p>
SPECIALITIES	<p>Specialities inform about a specific position in a given industry. Specialties are related to competencies. Each specialities prefers certain levels of individual competences (expert assessment). These values illustrate whether a user with certain levels of various competencies is suitable for work in a specific position.</p>
COMPETENCIES	<p>Competencies illustrate the area of knowledge, skills and attitudes in a specific scope. The target user is checked under various competencies and reaches a certain level for each of them. The levels are used to assess the user’s competence level against the background of the requirements for various positions.</p>
CATEGORIES	<p>Categories allow the administrator to create sets of competencies. This is important when there is a need to eliminate the number of competencies into a smaller number of categories (grouping e.g. soft and hard competencies; knowledge, skills and attitudes).</p>
ORGANISATIONS	<p>The organisation connects the target users of the system into groups in order to collectively present the results of competency tests.</p> <p>A member of a given organisation affects the average grades obtained by its participants.</p>
TESTS	<p>A test is a set of questions generated for a specific user. The user performs a test to verify the levels of their various competencies.</p> <p>Based on the results of the competence level assessment, the user can assess himself against the background of various positions defined in the system.</p>
GDPR CONSENT	<p>The basic requirements for the effectiveness of a valid legal consent are defined in Article 7 and specified further in recital 32 of the GDPR.</p> <p>Consent must be freely given, specific, informed and unambiguous. In order to obtain freely given consent, it must be given on a voluntary basis.</p>

Tool functionalities – what the end user can do

Creating an account

The end user may create an account in the system himself / herself or have it done by the system administrator. The data required to create the account include a name and surname, an e-mail address and a password. During the registration, the user might be assigned to a specific group.

Password reminder

The user can retrieve the password by entering their e-mail address (the one previously registered in the system). Hence, it is important that this e-mail address is real and accessible by the user.

Doing a competency test

The test does not activate automatically – it must be assigned to the user by the administrator. There is a specific amount of time to complete the test (the option set by the administrator), but it does not have to be finished during one session. Results are saved continuously, and when returning to the test the user starts where the previous session ended.

Questions in the competency test

Questions which the user has to answer are randomly selected from a general pool of questions for each competency / area distinguished within a given competency (their number, character and score can be configured by the administrator). The order of the questions is random.

Results

After completing the test, the end user receives general and detailed reports with results, which can be downloaded in pdf files and saved on any device (e.g. a computer, a memory stick etc.). The results are usually presented in graphic form, that is, bar charts and tables (cf. Presentation of output data – general and detailed reports).

Assessment of professional competencies – basic questions

This section of our *Application guide* allows users to interpret the results they have obtained in a proper manner and is dedicated to people who have completed the competency test for any field of study. We hope that our instructions will contribute to the effective use of these results.

Why do I need that?

Every person has different talents, aptitudes and abilities, on the basis of which it is possible to determine inclinations to perform specific professional duties. Being aware of them may facilitate career planning – aptitudes are likely to show whether or not a given person will fit into a specific professional position.

The knowledge of one's own talents and aptitudes also helps to find the right career path – you can map out your development direction and, owing to that, reach your full potential. By finding a profession that fits you, you will find it easier to make the next steps on the road to career success.

Competencies can be seen as a combination of knowledge, skills and behaviour which enable professional tasks to be carried out at a certain level, and complement the necessary experience, personality characteristics and attitudes.

How is that possible?

Interestingly, competencies can be measured and estimated. Whatever method you choose, the first step is to define and scale your key competencies. Becoming familiar with the definition and its indicators makes it possible to point out the specific behaviours that we consider to be expected, e.g. being result-oriented = commitment to tasks + using one's own abilities and potential + paying attention to the quality of work done + coping with difficulties.

However, it is not enough to state that a given person possesses a particular competency – it is definitely more useful to learn at which level this competency is. For this reason, we use a 4-point scale. Owing to such a construction of the measurement method, it is possible to create both a description of the overall functioning of the person and a description of its specific indicators.

Creating a matrix with indicators described at different levels of competency mastery also makes it possible to relate specific results to the levels of expected values. It seems that the highest results are not always the best – a competency level that is too high may lead to rapid occupational burnout. Due to that, it is better to look for an employee who possesses the skills at the level that the company needs – neither too low, nor too high, or a position that is tailored to one's abilities.

What competencies are we talking about?

When talking about competencies, it is worth emphasising that they are not the same as either skills or knowledge. Competencies are only evidenced by the ability to use the knowledge acquired, supported by certain aptitudes, experience and so-called talents.

Competencies can be divided into hard and soft. The former can also be referred to as 'technical', and they are often confirmed by exams or certificates. Soft competencies, or interpersonal skills, are related to the social and personal aspect – they focus on human behaviour and attitudes that a person adopts in a specific situation, e.g. creativity, communication skills, ability to work in a team.

We can acquire and develop both types of competencies throughout our life.

However, the type of competency which we consider crucial depends on the work environment. For example, for a production worker the most crucial will be hard skills such as procedures they have to follow, whereas for a sales representative – soft skills, including communication and flexibility.

Why are soft skills so important?

Nowadays, soft skills are becoming more and more important when making an ultimate decision about employing a given candidate. Easier access to knowledge and education, as well as technological development, makes it increasingly important to possess soft skills, e.g. innovation, teamwork skills (also in a multicultural environment). Their assessment is of particular importance when:

- choosing training and courses (identifying training needs makes it possible to select courses / training most necessary and useful for development),
- building a career path (it makes it possible to determine the level of professional development, and indirectly gives insight into motivation to work and develop),
- recruiting employees (soft skills influence company's atmosphere and culture).

What can I win by doing the test?

Gaining insight into your competency profile allows you to create a tailored training programme and plan your career path. It focuses on your development, accelerates it, and allows you to improve your work as well as self-efficacy. It enables you to answer the questions such as: What am I good at? Where can I use my skills? What kind of work fits my personality?

Obtaining answers to the above questions is important. After all, in addition to financial stability, a job should give you the opportunity to develop, fulfil your ambitions and achieve your goals.

Who is the professional competency test for?

The competency test is dedicated to everyone, regardless of his or her career development.

People who are just starting their professional activity should have a chance to explore their preferences – this, as well as hints and guidance that they can obtain in this way, might help them make important decisions. Sketching one's profile can also be useful for people who are considering changing jobs or retraining. Last but not least, describing one's own competencies makes it possible to choose appropriate methods to facilitate personal development and thus foster the achievement of the next steps in one's career.

However, you should bear in mind that the competency test is intended to help you gain knowledge and increase the awareness of yourself. This is not an oracle! Rather, it provides suggestions and hints, pointing to areas worth developing and investing in. It is to support you by suggesting methods to adopt in your professional and personal development.

What precisely will I find out?

The test measures the following competencies:

1. Professional – theoretical knowledge
2. Professional – practical skills
3. ICT – the knowledge of software
4. Linguistic – knowledge of foreign languages
5. Analytical – the ability to solve problems
6. Interpersonal – communication, teamwork
7. Interpersonal – work in diverse teams (e.g. multicultural, multigenerational)
8. In terms of organization and self-organization – time management, independence
9. In terms of creativity – generating new ideas, a creative style of work
10. In terms of learning – openness to continuous development
11. Personal – loyalty, commitment, responsibility

according to the following scale:

- Level 1:** Competencies necessary to perform simple and routine tasks that form the basis for further and more specialised activities.
- Level 2:** Competencies necessary to perform tasks in typical situations.
- Level 3:** Competencies necessary to perform complex tasks in both typical and problematic conditions.
- Level 4:** Competencies required to perform a wide range of complex tasks of a diverse nature.

These competencies are also described in relation to professions / positions typical for a given field of study. In the case of management, these include:

1. Project Manager
2. Social media / Company Image Specialist
3. Business Specialist
4. Crisis Management Specialist
5. Interpersonal Relations Trainer
6. Owner
7. Administration staff
8. Manager (business management)
9. Consultant
10. Salesforce (sales department employee)

What are these competencies all about?

COMPETENCIES	COMPONENTS
Professional – theoretical knowledge	<p>A. Project management</p> <ol style="list-style-type: none"> 1. Ability to achieve objectives in a constantly changing business environment. 2. Ability to initiate, plan, execute, monitor, supervise and close a project. <p>B. Company management</p> <ol style="list-style-type: none"> 1. Ability to plan, organise, direct and control. 2. Ability to develop objectives and manage performance. 3. Ability to create and implement strategies for business development. 4. Ability to create and lead a team of people while ensuring high quality of service. 5. Ability to create a cooperative atmosphere at work. 6. Ability to develop new solutions to meet customers' needs and improve internal processes to boost productivity. 7. Ability to manage budgets and monitor financial standing. 8. Ability to set performance standards, compare actual results with standards and take corrective action.
Professional – practical skills	<p>C. Sales management</p> <ol style="list-style-type: none"> 1. Knowledge of marketing tools and communication techniques. 2. Ability to establish and maintain relationships and cooperation. 3. Ability to comply with organisational rules and regulations. 4. Customer service skills. 5. Stock and supply chain management. <p>D. Human resources management</p> <ol style="list-style-type: none"> 1. Ability to create and maintain the HR potential of the company. 2. Ability to develop and implement HR strategies and initiatives. 3. Ability to develop and monitor overall HR strategies, systems, tactics and procedures. 4. Ability to foster a positive working environment. 5. Ability to supervise and manage a performance assessment system. 6. Ability to assess and monitor training needs.



ICT skills – basic software	<ol style="list-style-type: none"> 1. Ability to use computers to access, evaluate, store, create, present and exchange information. 2. Ability to communicate and participate in collaborative networks via the Internet. 3. Working knowledge of popular computer applications (word processor, spreadsheet, storing, analysing, presenting data). 4. Familiarity with the Internet (e-mail, networking tools, understanding the opportunities and potential risks of the Internet).
Language skills – knowledge of foreign languages	<ol style="list-style-type: none"> 1. Linguistic skills (the degree of mastery of the language subsystems: phonetic, grammatical, lexical, syntactic and orthographic). 2. Sociolinguistic skills (necessary for social communication in a language). 3. Pragmatic skills (knowledge of the principles by which messages are organised, structured and applied so that they can fulfil communicative functions appropriate to the context and type of interaction).
Analytical skills – problem solving	<ol style="list-style-type: none"> 1. Logical thinking (understanding and selecting information and making conclusions). 2. Ability to analyse data, interpret results and use them in decision-making. 3. Familiarity with methods of analysis and reasoning. 4. Ability to search for necessary information, assess its reliability and select appropriate methods of analysis.
Interpersonal skills – communication, teamwork	<ol style="list-style-type: none"> 1. Ability to communicate information (orally and in writing) in a clear and transparent manner, listen to others and understand their needs. 2. Ability to flexibly adapt the form of the message to different audiences. 3. Ability to create an atmosphere of openness by seeking agreement and compromise. 4. Ability to establish positive relationships with others and to be aware of one's own role and the impact of actions taken on overall team performance. 5. Willingness to undertake activities that improve and facilitate the achievement of common goals by sharing knowledge, experience and information. 6. Ability to offer support, to be open to other people's ideas, opinions and feelings, and to be able to prioritise group decisions over one's own interests.
Interpersonal skills – working in a multicultural team	<ol style="list-style-type: none"> 1. Ability to identify cultural conditions and the impact they have on perception, evaluation and performance. 2. Ability to change one's perspective, shape interactions and carry out professional tasks in a multicultural environment in a manner that enables misunderstandings and conflicts to be avoided. 3. Ability to accept and respect cultural differences, to flexibly adopt cultural norms and to adjust one's own way of acting to achieve set goals.



Organisation and self-organisation	<ol style="list-style-type: none"> 1. Organisational efficiency, independence and effectiveness. 2. Ability to use one's own and the team's time effectively. 3. Ability to organise work, create plans and schedules, ensure resources needed to complete a task and set deadlines as well as priorities. 4. Ability to modify action plans when the situation requires it. 5. Ability to perform tasks effectively without direct supervision or assistance. 6. Ability to identify problems, suggest effective solutions and anticipate consequences, and being able to adequately assess the occurrence of risk factors.
Creativity	<ol style="list-style-type: none"> 1. Ability to generate new ideas and work in a creative manner (as a characteristic of an individual / group). 2. Ability to solve a wide variety of problems, both in personal and professional life, and to generate creative solutions. 3. Ability to think outside the box, to stimulate curiosity, to break away from rational, conventional ideas and formalised procedures, to let your imagination run free, to pay attention to the non-standard and accidental things, and to incorporate a variety of solutions and alternatives.
Learning competencies – openness to continuous development	<ol style="list-style-type: none"> 1. Ability to arrange one's own learning through effective management of time and information, both individually and in groups. 2. Awareness of one's own learning process and needs, the ability to identify available opportunities and overcome obstacles in order to learn successfully. 3. Ability to acquire, process and assimilate new knowledge and skills, and to seek and use guidance. 4. Ability to make use of previous learning experiences and general life lessons in order to use and apply knowledge and skills in a variety of contexts.
Personal competencies – loyalty, commitment and responsibility	<ol style="list-style-type: none"> 1. Ability to pursue goals consistently and carry out actions despite obstacles and difficulties. 2. Being conscientious and accurate when performing duties. 3. Accepting responsibility for the results and outcomes of one's work, being able to admit when one has made a mistake, accepting feedback and being willing to correct one's behaviour and ways of doing things. 4. Willingness to acquire knowledge, qualifications and skills. 5. Honesty and loyalty to others, respecting applicable laws and rules.

I have completed the test. What is next?

You will receive your test results in the form of different charts. Each of them contains different valuable information that may allow you to broaden your knowledge about yourself, and is worth taking a close look at.

When analysing the results, we look at them qualitatively, that is, we describe the functioning of a particular person but do not compare him/her with any statistical averaged profile.

To simplify matters, Table 7 outlines the specific knowledge, skills and attitudes that are described by the different competencies.



Table 7. Content areas of specific competencies

COMPETENCY	WHAT DOES IT DESCRIBE?
ICT skills	<ul style="list-style-type: none"> • MS Excel • Other MS Office applications • Computer skills • Familiarity with the Internet
Language skills	<ul style="list-style-type: none"> • The knowledge of foreign languages.
Analytical thinking	<ul style="list-style-type: none"> • Forecasting • Statistics • Analytical thinking • Ability to process numerical data • Ability to draw conclusions • Logical thinking
Interpersonal skills – communication, teamwork	<ul style="list-style-type: none"> • Teamwork (ability to cooperate) • Building relationships with internal customers – employees from other areas or departments • Building relationships with external customers • Ability to establish and maintain positive relationships with colleagues, co-workers and customers • Empathy – the ability to understand other people's situations • Solidarity – supporting each other as a team in difficult situations, a sense of community, working for common goals, being able to prioritise group's interests over one's own • Communication skills – communicating accurately and clearly, the ability to listen, ask questions and take into account the information obtained; adapting flexibly to the interlocutor and allowing others to be heard • Negotiation skills – factual argumentation, the ability to persuade and win others over to do a task together, coming to an agreement
Interpersonal skills – working in a multicultural team	<ul style="list-style-type: none"> • Ability to work in a multicultural community • Ability to work with people from different generations • Openness towards people with special needs
Organisation and self-organisation	<ul style="list-style-type: none"> • Working under time pressure • Controlling one's own emotions, acting in a considerate and controlled manner even in difficult situations, expressing an optimistic attitude, avoiding transferring stress to others, reflecting on one's own behaviour and learning from mistakes • Quick action and problem solving



Organisation and self-organisation	<ul style="list-style-type: none"> • Multitasking, managing complexity • Optimising activities – ability to prioritise • Managing one's own time – planning one's tasks and the resources needed to complete them (tools, materials, information) • Timeliness of tasks • Adjusting the way of working to changing conditions • Dealing independently with problems as they arise, suggesting appropriate solutions • Ability to assess risks • Courage to act and search for information
Creativity	<ul style="list-style-type: none"> • Creative thinking • Unconventional approaches to problems • Ability to make quick decisions • Ability to make good / accurate decisions • Practical problem solving • New ideas / inventiveness • Innovation
Learning competencies	<ul style="list-style-type: none"> • Flexibility • Ability to adapt to changing conditions • Quick adoption of new technologies • Willingness to develop / learn • Openness to change • Seeking practical improvements and solutions • Ability to learn quickly
Personal competencies – loyalty, commitment and responsibility	<ul style="list-style-type: none"> • Precision and reliability – paying a lot of attention to the quality of tasks performed • Performance of tasks on the basis of applicable regulations, rules, standards and procedures • Pursuing goals despite obstacles and difficulties • Responsibility – accepting responsibility for the results and outcomes of one's work, being able to admit when one has made a mistake, accepting feedback and being willing to correct one's behaviour and ways of doing things • Self-motivation and commitment • Availability • Loyalty to the employer • Honesty • Willingness to further improve one's competencies and work on areas requiring development • Appropriate manners and demeanour • Self-confidence • Assertiveness

Source: own elaboration.

When interpreting the profile obtained, it is useful to translate the levels one has achieved into the following assessment of the development of specific competencies:

- Level 1:** Competency developed at a basic level
- Level 2:** Competency developed at an average level
- Level 3:** Competency development at an average quality level
(unstable in challenging and stressful situations)
- Level 4:** Very good (and stable) development of the skills included in the given competency



How to interpret my profile?

STEP ONE – specific competency levels, a general chart

In order to make it easier to understand how to interpret the results obtained, the whole process will be discussed with reference to an example of a competency profile.

Figure 5 shows the level of development of Karolina's competencies. An analysis of this chart gives an insight into how she functions, and it also shows what her strengths and weaknesses are.

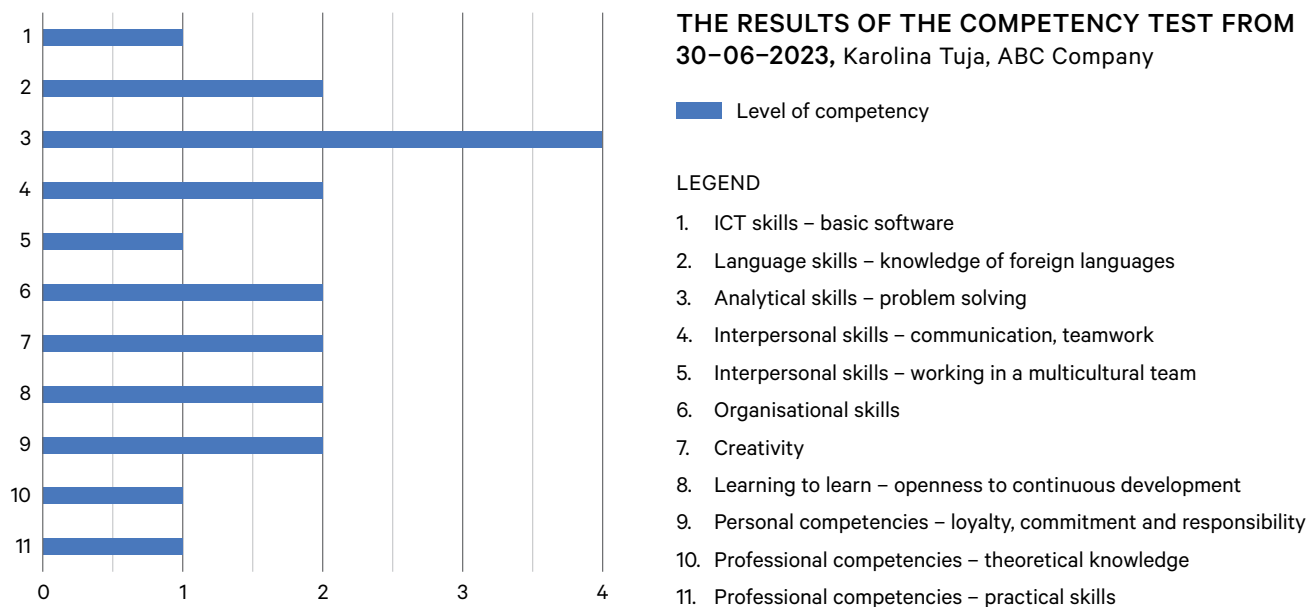


Figure 5. Results of Karolina's competency test
Source: own elaboration.

In order to assess Karolina's competencies, it is necessary to take into account the length of each bar:

COMPETENCIES	LEVEL OF DEVELOPMENT
<ul style="list-style-type: none"> • Problem solving 	Very good
—	Average
<ul style="list-style-type: none"> • Openness to continuous development • Knowledge of foreign languages • Organisation and self-organisation • Communication and teamwork • Creativity • Personal competencies 	Average
<ul style="list-style-type: none"> • Working in a multicultural team • Professional competencies (theoretical knowledge and practical skills) • ICT skills 	Basic

Each competency contains different components (cf. Table 7), from which we can infer the functioning of the person under assessment. Therefore, it is necessary to describe the different components based on the level of development of the competencies analysed.

What does this look like for Karolina?

Karolina's strengths include analytical thinking (level 4), that is, the ability to process numerical data and make conclusions, logical thinking, the knowledge of forecasting methods and tools and statistical processing.

Her weaknesses, on the other hand, comprise working in multicultural teams, professional competencies and ICT skills (level 1).

On this basis, it is possible to conclude that Karolina finds it difficult to work with people from other cultures and generations (that is, much older or much younger than her). Also, she does not seem to understand the needs of people functioning in a non-standard way (e.g. people with disability).

She might not consider herself a management specialist. She does not possess sufficient competencies related to project management and/or business management and/or sales management and/or human resources management.

Most likely, she is just beginning her career and lacks experience as well as expertise. Certainly, the best thing she can do is broaden the knowledge of the sector she works in.

The other competencies are developed at an average level, which indicates the need for comprehensive development.

According to the results, Karolina might find it difficult to work under pressure – she is not always able to control her own emotions or remain optimistic. She experiences difficulty adapting to changing environments, requirements and demands. Tasks that require independent action undermine her sense of confidence and effectiveness. She may find it difficult to acquire new skills, and it takes time and practice for her to obtain new competencies, too. For this reason, Karolina does not always see opportunities for practical improvements. Discovering alternative solutions to problem situations and dealing with complexity require additional attention and a lot of effort and courage in action and thinking, which Karolina sometimes lacks. This is connected with rather low efficiency in optimising activities, setting priorities or managing her own time, which translates into a failure to achieve specific goals in a timely manner.

Working on maintaining self-motivation and proper quality of tasks performed, based on applicable standards and rules, as well as taking responsibility for the outcomes and results of her own actions, being prepared to seek and accept feedback, and willingness to improve her behaviour and ways of doing things, will significantly improve Karolina's functioning.

Karolina's very high level of analytical thinking combines with a poorer level of creative thinking. Therefore, elements such as innovation, inventiveness, out-of-the-box thinking and creativity are really worth strengthening.

Moreover, it seems worthwhile for Karolina to improve her cooperation and teamwork skills. Establishing and maintaining positive interpersonal relationships will improve her effectiveness. Improving her attitudes towards others will enhance her ability to have a broad understanding of different situations, and it will also reduce the strain she feels because of stressful experiences. Her highly analytical thinking should translate into negotiation skills, but for this to be possible, Karolina needs to improve her communication skills – in terms of her ability to speak accurately and to listen to others.

It would also be a good idea for her to improve the knowledge of foreign languages, which, in addition to increasing her self-confidence, would translate into her ability to understand different situations.

As it is possible to see from the example discussed, the analysis of the general chart alone provides a lot of information that increases knowledge about the person / self and outlines areas that are worth investing in, as well as those which constitute resources and worth relying on in everyday life.

Are there any additional correlations between the competencies?

The definitions of specific competencies suggest that the development of one of them may also indirectly influence the others. In order to check whether such correlations exist or deduce whether a given characteristic / quality is demonstrated by the person in everyday functioning, it is worth taking two aspects into account:

I. Levels of competencies that belong to the following groups:

- interpersonal (communication skills, teamwork + working in a multicultural team) → both speak of interaction skills and a certain social sensitivity;
- professional (theoretical knowledge + practical skills) → both aspects are necessary for a person to be called a professional;
- personal competencies + organisation and self-organisation skills → they will insight into the ability to cope with stress and self-confidence.

The greater the consistency in the level obtained, the more likely it is that a given competency will be stable, despite changing circumstances and situational demands. It is also more probable that a given characteristic will be demonstrated in real actions and not only in personal declarations.



2. Correlation between result levels in the following constellations:

Analytical thinking – Working in a multicultural team	The greater the convergence of the levels of the two competencies, the more stable and useful the competency development.
Analytical thinking – Organisation and self-organisation	If there is any discrepancy, it means: a) poor ability to control emotions, which affects logical thinking and/or b) too much focus on data and possible inaccuracies, which causes excessive concentration and thus impairs the ability to manage
Creativity – Openness to continuous development	The greater the convergence, the better the ability to put ideas into practice.
Personal competencies – Interpersonal skills – Communication, teamwork	The greater the discrepancy, the higher the likelihood of excessive focus on the quality of outcomes and overusing one's resources, timeliness and interpersonal relationships.
Analytical thinking – Creativity – Personal competencies	All levels 4 → possible excessive attachment to self-presentation attitude and trying to give answers in line with the answer key (= distorted results in favour of the test subject).
Organisation and self-organisation – Creativity – Learning competencies – Openness to continuous development	If creativity and openness to development are at Level 4, whereas organisation and self-organisation skills at max. = Level 2 → there might be a tendency towards performing activities in a cursory manner, lack of specialisation and beating about the bush.

Conclusions for Karolina:

- Interpersonal skills: the ability to work in a multicultural team is 1 level lower and ranks at the basic one → we can therefore assume that in a diverse, complex and attention-demanding situation Karolina would feel insecure. She may demonstrate difficulties in empathising and understanding, which may have a negative impact on the quality and durability of the relationships established.
- Professional competencies (theoretical knowledge + practical skills) are at the same low level. In both areas, it is possible to notice deficiencies that affect both understanding and behaviour. However, there is no discrepancy in Karolina's functioning between how she talks / thinks about management and how she uses her experience.
- Personal competencies are at the same level as organisation and self-organisation skills, suggesting average but stable stress management skills and levels of self-esteem.

- There is a significant discrepancy between analytical thinking and working in a multicultural team (3 points), which may suggest that in highly complicated situations filled with complexities and details, Karolina tends to get lost. Excessive complexity makes it difficult for her to collect and analyse all the available data – she has difficulty determining their validity and becomes cognitively distracted.
- There is a 2-point discrepancy in results between analytical thinking and organisation and self-organisation skills, which makes it possible to assume that Karolina lacks skills in dealing with tension and emotions, which affects both her mental functioning and task performance.

Aspects that remain stable:

- creating and implementing a vision and being able to put ideas into practice,
- adapting the final quality to one's own resources, which will make it possible to maintain timeliness and good interpersonal relationships, and provide a basis for taking care of oneself and preventing the occurrence of occupational burnout or workaholism.

STEP TWO – ranking of professions

In step two, we are leaving Karolina's general functioning aside for a moment, and we are going to take a closer look at her professional prospects (in the area of management).

The specific results can be related to the 10 professions / positions for which the competency sets (required by the industry) were developed, as we discussed earlier and which can also be seen in the summary in Table 8.

The positions have been ranked in terms of the relevance of Karolina's characteristics to what practitioners expect. The order was determined by means of the Euclidean distance from the desired model, that is, the competency profile for the profession / position developed on the basis of expert opinion (more information available in *Comparing competency levels with competency profiles*).

Again, we can make this step part of the overall analysis of Karolina's competency profile or treat it separately and analyse the suggestions in the professional development.

Table 8. Karolina's competency levels vs. expectations for specific professions / positions

THE RESULTS OF THE COMPETENCY TEST FROM 30-06-2023, Karolina Tuja, ABC Company			
Occupation	Euclidean distance	Surpluses	Shortages
crisis management specialist	4.00	1.00	3.87
social media / company image specialist	4.47	3.16	3.16
owner	5.00	0.00	5.00
business specialist	5.20	1.00	5.10
interpersonal relations trainer	5.48	3.00	4.58
projekt manager	6.86	0.00	6.86
salesforce (sales department employee)	6.86	0.00	6.86
administration staff	7.07	1.00	7.00
consultant	7.42	0.00	7.42
manager (business management)	7.55	0.00	7.55
<p>The Euclidean distance was used to assess the fit between the level of competency and the requested level for a given occupation. The lower the value of the distance, the better the fit. The table shows the occupations starting with those for which the fit of the competency level is the best (the smallest distance) to those for which the difference in the competency level is the largest (the largest distance).</p>			

Source: own elaboration.

The current level of Karolina's career development indicates that the most suitable position for her is that of crisis management specialist, whereas the least suited to her profile 'for today' is that of manager.

According to the summary presented in Table 8, the position of crisis management specialist will require Karolina to meet some expectations when it comes to her development (see column Shortages), which, however, will not be overwhelming or impossible to fulfil. At the same time, there is a surplus of some of her competencies, but not to the extent that they could pose a risk of making her feel bored or leading to burnout in this role.

Compared with the least suitable position – that of manager (business management) – we can see that Karolina's competency profile is significantly 'underperforming' and, at the same time, does not indicate any resources which she could rely on.

Obviously, this is only a suggestion, not a certainty, and these results should be viewed as an indicator or guideline useful in the short term, not as a definite frame in the context of global professional development.

If Karolina would like some suggestions or guideposts on how she might develop her career in the field of management, she should select the first 2-3 professional positions from the list and relate them to her ideas and interests.

As the summary in Table 8 shows, to establish herself as a professional, it would be worthwhile for Karolina to consider the positions of crisis management specialist, social media / company image specialist and business owner.

As it is possible to note, the range of indications for specific areas of professional activity is quite wide, which means that there is a good chance that she will find a position in line with her idea of a career path.

NOTE: based on the summary concerning the fit to specific professions / positions, we are unable to provide more specific information on which competencies are in short supply and which are in surplus.

If there is a large discrepancy between what the person doing the test has in mind and the set of positions generated by the program in relation to the competency profile, there are two solutions:

1. A fair and thorough analysis of one's own characteristics in relation to the real requirements set for a particular position. Perhaps the specifics of a dream job are such that the person interested in it is unable to perform it. For example, a person who is creative and has a vivid imagination, but, on the other hand, displays decision-making difficulties and poor stress resilience, will not be suitable for the position of manager of a large group. He or she, however, could be a brilliant analyst, an image consultant or a development specialist. If this is the case, it may be worth revising one's own ideas about professional development and leaving some of them in the realm of dreams.
2. Treat the dream job as your main aim and develop your skills and qualifications in relation to its requirements. At the same time, treat other suitable professions suggested by the ranking as a starting point or opportunity to emerge on the labour market, to gain some experience and also make new contacts that might be helpful in the future.

STEP THREE – competency levels vs. profession-specific requirements

In order to identify specific development needs, it is useful to look closely at the detailed profiles for particular professions. Focusing on those most and least similar to the profile obtained by the person doing the test – that is, the position at the very top and very bottom of the list – provides the most information.

For Karolina, these are: crisis management specialist (the most suitable) and manager (the least suitable), respectively.

This step also gives an insight into the specific differences between the level of competencies obtained and expected and, supplementing the previous step, it clarifies the uncertainties related to competency surpluses and shortages.

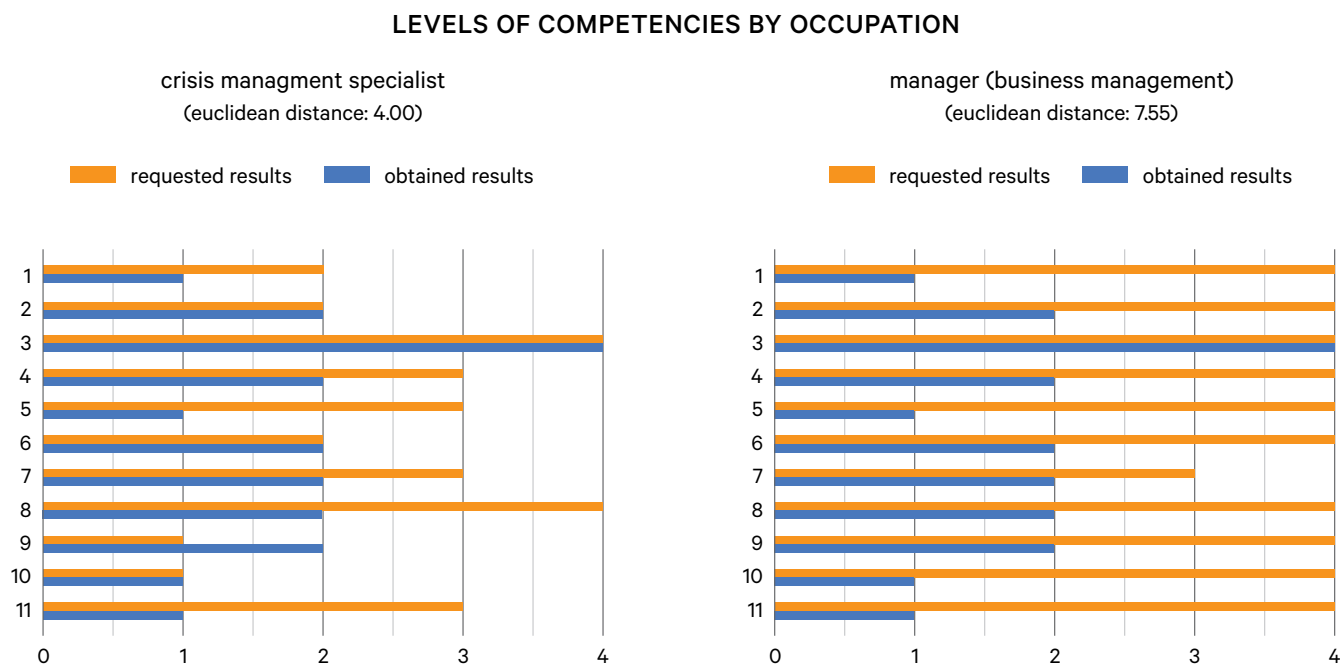


Figure 6. Karolina's competency levels obtained vs. required for specific professions / positions (the best and the worst fit)
Source: own elaboration.

Therefore, let us check where the differences in the length of the orange (expected results) and the blue bars (achieved results) for each competency can be found. If the orange bar is longer, it means that the person doing the test has a shortage of a given competency. If, on the other hand, the blue bar is longer, the level of a given competency is higher than required. Figure 6 presents the chart with the assessment of Karolina's competency levels vs. the levels required for specific professions / positions (the best and the worst fit).

For the position most fitting to Karolina's profile:

Competency shortage	Competency surplus
<ul style="list-style-type: none"> • Organisation and self-organisation • Interpersonal skills – communication, teamwork • Interpersonal skills – working in a multicultural team • Professional competencies – theoretical knowledge • ICT skills – basic software • Personal competencies – loyalty, commitment and responsibility 	<ul style="list-style-type: none"> • Creativity

For the position least fitting to Karolina's profile, we can see the following:

Competency shortage	Competency surplus
<ul style="list-style-type: none"> • Learning competencies – openness to continuous development • Language skills – knowledge of foreign languages • Organisation and self-organisation • Interpersonal skills – communication, teamwork • Interpersonal skills – working in a multicultural team • Professional competencies – theoretical knowledge • ICT skills – basic software • Creativity • Professional competencies – practical skills • Personal competencies – loyalty, commitment and responsibility 	—

The results for both professional positions can be analysed together (if we want to set trends and development suggestions) or separately (if we want to refer to position requirements in relation to Karolina's competency profile).

Thinking of the position of crisis management specialist, we can see that Karolina's asset is creative thinking. Since, according to practitioners' expectations, this skill is in surplus, we suggest that Karolina should use it in situations of uncertainty or feeling inexperienced. This skill will allow her to create alternative solutions, scenarios and ways of doing things, and may also point out non-obvious problem areas where she could find solutions to specific problems.

Working as a crisis management specialist will require Karolina to develop, with professional and ICT skills as the two aspects she should focus on in the first place (the greatest difference in bar length).

Also, improving her expertise and gaining better access to data development techniques and tools will significantly improve her ability to perform effectively.

Another important area of development is broadly understood interpersonal skills, which in turn will translate into efficient teamwork. This will also enable Karolina to manage people effectively, which is particularly important when facing difficult situations that need to be handled.

As far as the position of manager (management) is concerned, it is possible to notice that it would require Karolina to focus strongly on her comprehensive development. This means that trying to get such a position will be ineffective at this point. Carrying out such duties could lead to occupational burnout, a sense of helplessness and decline in self-esteem, self-worth and general well-being at the same time.

Nevertheless, it is worth motivating Karolina to develop and improve her competencies to a higher level. This might have a positive influence on her other skills which can later become additional resources to rely on when handling different situations.

It is also worth noting that the discrepancy between the results for specific competencies in relation to specific positions is connected with the nature of the activities in each management area. For example, a business analyst is expected to have strong skills in analysing information, making conclusions, communicating information accurately, with acceptably low levels of cooperation skills or creativity. A salesperson (sales employee), on the other hand, is expected to have strong skills in working with other people, good manners and language skills. Analytical thinking or openness to continuous development will not play such an important role in this case.

STEP FOUR – competency levels vs. requirements for specific professions

As in step 3, step 4 makes it possible to carry out a development analysis for each of the professions / positions listed. It is worth taking this step if you would like to plan your career so that you can work in a specific profession you have dreamt of, if you dream of retraining in a different professional area or if you seek development or career advice in relation to the possibility of becoming employed in a specific position.

Now, let us imagine that Karolina would like to work as a business specialist (Figure 7).



Figure 7. Karolina's competency levels obtained vs. required for a business specialist

Source: own elaboration.

As far as this profession is concerned, we can see that Karolina's results in relation to these skills and competencies are too low (predominance of the orange bar): ICT skills, organisation and self-organisation skills, learning skills, personal skills – loyalty, commitment and responsibility and professional skills – both theoretical knowledge and practical skills. Interpersonal skills such as communication and teamwork are in surplus (the longer blue bar), whereas analytical skills, the knowledge of foreign languages, the ability to work in a multicultural team and creativity are at a level relevant to that required (bars of equal length).

Based on the results presented in Figure 7, we can suggest that Karolina should work to improve her expertise and the following skills:

- the knowledge of MS Office, MS Excel and other popular applications, as well as the Internet environment (ICT skills),
- the ability to control her emotions and behaviour in difficult and stressful situations and to learn from her mistakes,
- the ability to manage complexity, own time and risk, and to set priorities,
- independence, quick action and problem-solving, and more courage to act and seek information (organisation and self-organisation skills),
- adjusting the way of doing things to changing conditions,
- openness to change, flexibility, adaptability and readiness to learn and seek practical improvements and solutions (openness to continuous development),
- stimulating and maintaining motivation to undertake activities even when facing difficulties,
- taking responsibility for the results and outcomes of her work, seeking feedback and being ready to improve her way of acting and behaviour,
- greater focus on the quality of the activities performed and the results achieved,
- self-confidence and assertiveness (personal competencies).

It is advisable to inform Karolina that, in the area of business analysis, she can enrich her activities with resources from internal and external customer relations (e.g. to obtain information or anticipate trends), communication skills (precise articulation and listening skills) and negotiation abilities (e.g. the ability to convince others and win them over to do a task together).

How can I develop specific competencies on my own?

Today, development opportunities are very diverse. Sometimes, it is worthwhile to take advantage of specialised courses and training (also free of charge) and undertake certified educational steps. Often, however, it is enough to be active on one's own to compensate for deficiencies or develop selected features. Examples of development opportunities for specific competencies are presented in Table 9.

Table 9. Examples of development opportunities for specific skills and competencies

Competencies	Development opportunities
ICT skills	<ul style="list-style-type: none"> • on-site / online courses • materials and exercise sets published online • specialist books • finding a mentor in one's own environment • following profiles on social media where ICT tips are presented
Language skills	<ul style="list-style-type: none"> • foreign language courses • language learning applications • reading books in foreign languages • listening to broadcasts in foreign languages • listening to music and reading (and translating) the lyrics at the same time • watching films without a voiceover • talking or writing emails in the target foreign language to a friend or colleague
Analytical thinking	<ul style="list-style-type: none"> • jigsaw puzzles • mathematical puzzles, e.g. sudoku • chess • role-playing and board games • reading professional studies / papers
Interpersonal skills – communication, teamwork	<ul style="list-style-type: none"> • courses in psychology, business, e.g. negotiation • interpersonal training • participation in various team projects • team games, e.g. basketball • reading books • party games, e.g. board games • charades • seeking feedback about oneself • watching videos and tutorials on specific topics, e.g. the YouTube platform • making video recordings of one's own speeches and watching them afterwards • doing exercises available in printed materials or on the Internet individually or in small groups • subject-specific textbooks or popular science books • consultations with professionals to increase self-awareness and knowledge of techniques (e.g. with a debt collector, salesman)



<p>Interpersonal skills – working in a multicultural team</p>	<ul style="list-style-type: none"> • voluntary work • reporting events from the perspective of people with special needs • travelling abroad • meeting travellers • broadening one's knowledge of the specific functioning of certain social groups • challenging stereotypes in favour of cognitive curiosity • talking to people from other countries whom we meet in our own environment • social observation
<p>Organisation and self-organisation</p>	<ul style="list-style-type: none"> • training in psychological aspects of emotion or stress management • psychoeducation • applications • logic games • timed and competitive games • keeping a daily schedule / diary • making lists and rosters (to tick off) • ensuring oneself proper relaxation • applications (e.g. to learn how to stay motivated) • activity / difficulty diary • self-diagnosis of one's style of action, certain habits or characteristics using methods available in printed materials or online • identifying smaller areas for change and specifying expected goals • exposing oneself to lesser risk while slowly stepping out of the comfort zone in order to practice and gain experience • increasing self-awareness by observing and keeping notes on one's own experience • seeking feedback on oneself from relatives, friends and professionals
<p>Creativity</p>	<ul style="list-style-type: none"> • contact with art and creative activity • visiting exhibitions and vernissages • participating in group tasks and exchanging experiences and ideas • trying out a variety of activities (to raise or reduce excitement) • working on one's body, e.g. dancing • meditation, relaxation • contact with nature and animals • playing with children • relaxation • popular science and how-to books



Learning skills	<ul style="list-style-type: none"> • developing hobbies (even those not directly related to one's work) • making new and inspiring contacts • seeking authority figures in various fields • workshop assignments • printed and online materials on learning techniques and tools • specifying one's goals (to find oneself in a 'sea of possibilities')
Personal competencies – loyalty, commitment, responsibility	<ul style="list-style-type: none"> • courses in communication • learning social influence and motivation techniques • developing interests (also those not related to one's work) • role-playing and board games • participation in team projects (also those not related to one's work) • participating in workshops and activities individually or in small groups • looking for positive examples in one's own behaviour or environment • carrying out regular self-assessment and self-verification • identifying one's own needs and difficulties • focusing on long-term processes and accepting possible setbacks in one's development • observing people's styles of acting / working • seeking feedback on oneself • increasing self-awareness • identifying one's own priorities and values • videos and literature related to the subject

STEP FIVE – development analysis (comparison of results from two tests)

The method we describe makes it possible to establish a competency profile several times, which is particularly important for the planning of a career path and the subsequent verification of one's achievements. However, the measurement should not take place more often than once in 3 months – this is because the learning and acquisition of new competencies requires time to internalise new techniques and tools.

Karolina did the competency test twice (with a six-month interval) and the results of both measurements are presented in Figure 8. During six months between the tests, she undertook development activities in the area of specific competencies. As it is visible on the comparative chart, the red bars pointing to the left show deterioration (1, 2, 3 or 4 points less), whereas the green ones pointing to the right show an improvement in performance (1, 2, 3 or 4 points more).

The longer the bars, the larger the difference in the levels obtained. However, it may be argued that a difference of 1 point is insignificant and is either related to the person's mood / general condition at the time of doing the test or is due to the random selection of questions and the difficulty of solving a given task, and is therefore coincidental.

In Karolina's results, it is possible to notice a deterioration in the assessment of analytical skills, but we do not interpret this result due to the slight difference compared to the original measurement (1 point).

The remaining competencies have improved, which is a very good sign of Karolina's professional development. The greatest progress can be observed in her professional competencies (theoretical knowledge and practical skills) and ICT skills. The improvement in terms of openness to continuous development and the ability to work in multicultural teams will not be considered as relevant, though. It is possible that Karolina still feels too insecure and will try to avoid complex and non-obvious situations in real-life activities, which is undoubtedly worth sensitising her to.

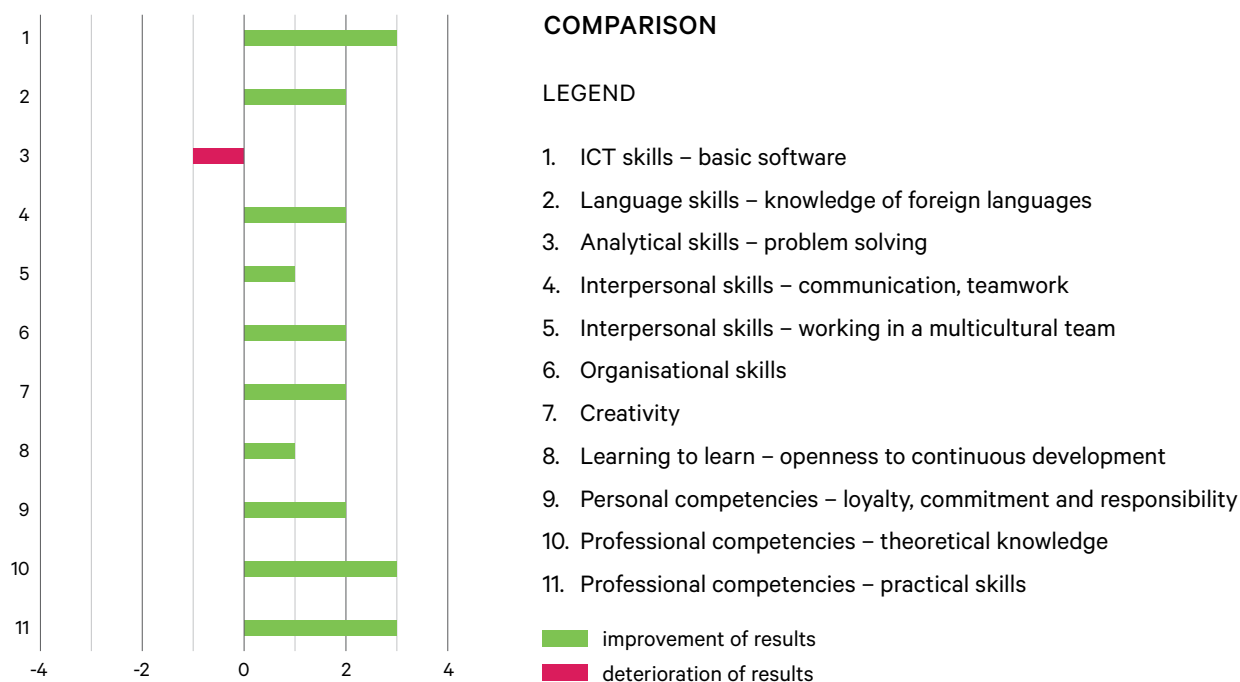


Figure 8. Chart showing the assessment of Karolina's levels of specific competencies on the basis of two tests done 6 months apart

Source: own elaboration.

What might the obtained profile interpretation look like as a whole?

Taking into account the results which Karolina obtained, we can offer the following interpretation:

Karolina's test results allow us to conclude that her overall level of functioning based on the development of selected competencies is average. Her strengths include analytical thinking, that is, the ability to process numerical data and make conclusions, logical thinking, the knowledge of forecasting techniques and tools and statistical processing. Her weaknesses, on the other hand, are working in multicultural teams, professional competencies and ICT skills.

On this basis, we can assume that Karolina finds it difficult to work with people from different cultures and generations (much older or much younger than her). The needs of people functioning in a non-standard way (e.g. people with disability) are not evident to her either. Therefore, in complicated, challenging and attention-demanding situations Karolina might feel insecure. She might experience difficulty empathising and showing social understanding, which can have a negative impact on the quality and durability of her relationships. Excessive complexity can also make it difficult for her to collect and analyse all the available data. Also, she has difficulty determining their importance and can easily become cognitively distracted.

She might not consider herself a specialist in the field of management. She does not possess sufficient competencies related to project management and/or business management and/or sales management and/or human resources management. Most likely, she is just beginning her career and lacks experience as well as expertise. In fact, there are some apparent deficits that limit both her ability to understand and behave, but there is no discrepancy in Karolina's functioning between how she talks / thinks about management and how she uses her experience. Therefore, what Karolina should really focus on is broadening her knowledge of the sector.

Karolina might find it difficult to work under pressure – she is not always able to control her emotions or remain optimistic. She lacks skills in dealing with tension and emotions, which affects her mental functioning and task performance. She experiences difficulty adapting to changing environments, requirements and demands, whereas tasks that require independence undermine her self-confidence and effectiveness. She may find it difficult to acquire new skills, and it takes time and practice for her to obtain new competencies, too. For this reason, Karolina does not always see opportunities for practical improvements. Discovering alternative solutions to problem situations and dealing with complexity require additional attention and a lot of effort and courage in action and thinking, which Karolina sometimes lacks. This is connected with rather low efficiency in optimising activities, setting priorities or managing her own time, which translates into a failure to achieve specific goals in a timely manner.

Working on maintaining self-motivation and proper quality of tasks performed, based on the applicable standards and rules, as well as taking responsibility for the outcomes and results of her own actions, being prepared to seek and accept feedback, and willingness to improve her behaviour and ways of doing things, will significantly improve Karolina's functioning.

It is worth highlighting, however, that the ability to adapt the final quality to her own resources, in the long term, is likely to allow Karolina to maintain timeliness and good interpersonal relationships, and also provide the basis for taking care of herself and preventing the occurrence of occupational burnout or workaholism.

Karolina's very high level of analytical thinking combines with a poorer level of creative thinking. Therefore, elements such as innovation, inventiveness, out-of-the-box thinking and creativity are really worth strengthening. It seems that the ability to create and bring a vision to life, as well as the ability to put ideas into practice, will develop at the same time, enabling Karolina to quickly feel an increase in the quality of her overall functioning.

Moreover, it seems worthwhile for Karolina to improve her cooperation and teamwork skills. Establishing and maintaining positive interpersonal relationships will improve her effectiveness. Improving her attitudes towards others will enhance her ability to have a broad understanding of different situations, and it will also reduce the strain she feels because of stressful experiences. Her highly analytical thinking should translate into negotiation skills, but for this to be possible, Karolina needs to improve her communication skills – in terms of her ability to speak accurately and listen to others.

It seems reasonable that when feeling insecure or inexperienced Karolina should make use of her creative thinking. This skill will allow her to create alternative solutions, scenarios and ways of doing things, and may also point out non-obvious problem areas where she could find solutions to specific problems.

It would also be a good idea for her to improve the knowledge of foreign languages, which, in addition to increasing her self-confidence, would translate into her ability to understand different situations.

The current level of Karolina's career development indicates that the least suitable position for her is that of manager, whereas the best suited to her profile is that of crisis management specialist. Importantly, this position will require Karolina to meet certain expectations when it comes to her development, which, however, will not be overwhelming or impossible to fulfil.

Working as a crisis management specialist will require Karolina to develop, with professional and ICT skills as the two aspects she should focus on in the first place. Improving her expertise and gaining better access to data development techniques and tools will significantly improve her ability to perform effectively.

Another important area of development is broadly understood interpersonal skills, which in turn will translate into efficient teamwork. This will also enable Karolina to manage people effectively, which is particularly important when facing difficult situations that need to be handled.

In her development, Karolina should focus on 3 aspects:

- increasing efforts to acquire knowledge and professional experience,
- learning more about stress and emotion management strategies. It might be useful to take part in some specialist courses, but also take proper care of oneself and discover mechanisms that can reduce tension and increase self-awareness, e.g. sport, meditation, hobbies, etc.,
- improving interpersonal and teamwork skills. In addition to psychology and business courses, team games (both sports, e.g. basketball, and static, e.g. board games or charades) can be useful in this respect, too. It would also be worth considering doing some volunteer work, an overseas internship or student placement.





Tool for the comprehensive assessment of competency levels

Application guide

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