Assessment Centre for Quality Related Position

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Abstract  
Organizational change is a challenge for any company seeking to improve performance in a competitive marketplace. A key factor for improving the performance of a company is the recruitment of competent employees. In 2020, and more specifically since the coronavirus crisis, the whole world has begun to move towards remote working, whether individual or collective, due to its well-known advantages, such as reduced costs and working time. In this respect, for any company that wants to evaluate in a solid way the competences of candidates for the desired positions, with a reduction in costs and time, remote recruitment will be an ideal solution. In this article, we propose an Assessment Center model named Assessment Center Qual Position, that assess quality-related competences that enables companies to evaluate and select candidates remotely while dealing with the subjectivity of qualitative assessment. This approach is based on the assessment center model, the fuzzy 2-tuple representation model and the degree of similarity.

Keywords  
Remote recruitment, Assessment Center, 2-tuple, Degree of similarity, competence and Quality management.

1. Introduction  
Traditional recruiting has always been based on simple interviews, asking questions that have become standard and are known to all candidates. It has also relied on selecting candidates based on their academic and professional qualifications. However, the latest version of ISO 9001: 2015 emphasizes the role of the competence concept in improving an organization’s performance and implementing a quality management system. In fact, academic and professional qualifications and years of experience are not sufficient to judge a candidate's level of competence. Therefore, competence has become a real challenge for organizations. In this paper, we define competence as the mobilization of knowledge, know-how, and know-whom to perform activities in a defined context. According to Le Boterf (1994), competence, by its very nature, is not observable and can only be observed and measured through the performance of actions. For Malglaive (1994), competence is "knowledge in use". In other words, it is adapted to action and its various occurrences. Le Boterf (2000) explains clearly that: « competence is always the competence of an actor in a situation ». According to a definition provided by (Gilbert and Thionville 1990; Malglaive 1994; Zarifian 2001), competences are linked to work situations and are contextual. Similarly, the Mouvement des Entreprises de France (MEDEF 2002) states: « A professional competence is a combination of knowledge, know-how, experience and behavior exercised in a specific context. 

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It can be seen in a professional situation, from which it can be validated. It is therefore up to the company to identify, validate and develop it.

From these few quotes, we can understand that competence is contextualized, constrained, resourced, and exists only in action. This means that a person can only be considered competent if he/she is placed in a given situation and judged on what he/she has done. On the other hand, the fact that two persons have undergone the same training does not mean that they are both capable of applying and mobilizing all of the knowledge they have acquired to a given situation. This means that it is the real-life situation that tests the individual’s competence. It's becoming clear that traditional recruitment, which evaluates candidates based on their academic and professional qualifications and simple questions, is a process that can't assess the real competences of future job holders. For this reason, it is crucial to create a process that places candidates in a real-life situation that can reveal their real acquired competences. For this purpose, the assessment center model is the best solution.

Moreover, as it is necessary to deal with the subjectivity of the experts' evaluation of competences, the 2-tuple method with degree of similarity is adopted to compare the competences acquired by each candidate with the competences required for the desired position. Our aim is to create a model for remote recruitment of quality-related job candidates that is efficient and meets ISO 9001:2015 requirements, while addressing the subjectivity of expert assessments and competences.

This article is structured as follows: The second section presents a literature review on Assessment Center and an introduction to the 2-Tuple presentation model. In the third section, the research method used in this article is described with an illustrative example. The results and the discussion are presented in the fourth section. Finally, section five contains the conclusions of this research with perspective.

2. Literature Review

Competent employees are the key to company success. Therefore, recruiting is an important function in human resource management (Harky 2010), which allows the selection of competent candidates. According to Petrescu et al. (2015), recruitment is an essential condition for the creation and operation of an organization. For Vardarlier (2014), recruitment is a strategic decision in which the selected candidates are expected to work for the organization for a long time, and make a significant contribution to it through their talents and experience. Likewise, Zafar (2021) claimed that recruitment plays an important role in ensuring employee performance and positive outcomes for the organization.

Regarding the Assessment Center, it is an effective recruitment tool that was developed during the Second World War in response to the desperate need to identify individuals who were capable of performing certain types of leadership tasks. In fact, many organizations use Assessment Center tool to help select personnel, especially to fill management and leadership positions. It consists of a series of individual and group tests, activities and simulations which place candidates in real-life situations in order to assess their individual aptitudes and competences, with the aim of selecting the best for the jobs to be filled. In the following lines, we provide some definitions of the Assessment Center. Noe and Steffy (1987) stated that «The assessment center is a popular technique for identifying individuals with managerial talent and providing feedback to participants regarding their developmental needs for career progression». They also claimed that the assessment center is one of the most popular and effective methods for identifying managerial talent. Klimoski and Brickner (1987) defined assessment centers as standardized instruments for evaluating personality traits that can then be used to predict future job success. For Lum (2015), an Assessment Center is: «a means for measuring human potential by predicting future behaviors through the use of behavioral simulations that measure an assessee's ability to handle future responsibility».

In 2015, the International Taskforce on Assessment Center Guidelines points that: «An assessment center consists of a standardized evaluation of behavior based on multiple inputs». Ricardo et al. (2019) explained that the assessment center is a tool that allows the improvement of employability by measuring the degree of development of the competences acquired by the student through a series of predefined situations. For Lara-Prieto and Niño-Juárez (2021), an Assessment Center is a standard practice for evaluating the behavior of individuals through a series of simulations in which a group of assessors observe and record their behavior. According to Yudhistira (2022), an Assessment Center is seen as a standard and a guideline to be followed.
when selecting employees. Khairudin (2023) defined the Assessment Center as: « a method in assessing and evaluating a person in order to produce superior performance with a systematic process of the skills possessed ». Thornton III (2005) identified three objectives for the use of Assessment Center: identifying candidates for promotion, diagnosing the current leader's strengths and weaknesses for more effective development planning, and developing leadership competences and expanding organizational development. In the same vein, Ariesthiawat (2022) cited the following objectives of the assessment center: selection of personnel, promotion and development of a company's managers.

Gofur Ahmad (2015) identified the following general stages of Assessment Centers: identification of the standard requirements for job competences, determination of the competence assessment methods, management of the implementation of the Assessment Center, and implementation of the Assessment Center. Febri Surya and Kasim (2022) characterized the Assessment Center as: 1) A tool and not a place, it is a process consisting of a set of methods that used to assess competences, 2) A measure of human potential as it is a platform that shows the real competences of employees, 3) A method for predicting future behaviour. It is a method that allows to assess the individual’s competences that can be used to predict their performance in future jobs, 4) a behavior, it consists of a series of simulations to measure a person's behavior in real situations. According to DeBaylo (2020), the activities of the Assessment Center are conducted by a number of trained assessors.

Robertho and Al Hidayat (2021) states that: « the Assessment Center is a standardized method to assess or measure the potential and predict an individual success to run a position through several measuring tools/simulations or assessment methods based on the job competency and conducted by several assessors ». It was clear to us that the assessment of competences through an Assessment Center is carried out by a number of assessors. In the fact, in the literature and in the industry sector, we find that the candidate's score is calculated without taking into account the subjectivity of the experts' opinions and of competences. Therefore, in our model, we adopted the 2-tuple representation model to aggregate the experts' opinions, taking into account the subjectivity of the experts' opinions and of competences. We have also used the degree of similarity to identify the gaps between the required competences and the acquired ones.

1.2 Preliminaries

The 2-tuple linguistic representation is a model introduced by Herrera and Martinez (2000), based on word calculus, i.e. it translates linguistic values (words or sentences) into numerical values. Each linguistic value is represented in the form of a 2-tuple representation \((s_i, \alpha)\), where \(s_i\) is a linguistic value and \(\alpha\) is the value that expresses the translation. This model is the best solution to deal with the subjectivity of qualitative criteria without distorting the initial information.

Consider a set of linguistic terms by \(S = \{s_0, s_1, \ldots, s_g\}\) and the numerical result of the aggregation operation by \(\beta \in [0, 1]\) :

- The 2-tuple representation corresponding to the numerical result \(\beta\) can be obtained as follows:

\[\Delta : [0, 1] \rightarrow S \times \left[ -\frac{1}{2g}, \frac{1}{2g} \right]\]

\[\Delta(\beta) = (s_i, \alpha) \begin{cases} s_i & i = \text{round}(\beta \times g) \\ \alpha = \beta - \frac{i}{g} & \alpha \in \left[ -\frac{1}{2g}, \frac{1}{2g} \right] \end{cases}\] (1)

- The numerical result \(\beta\) is transformed into the equivalent linguistic representation by the following function:

\[\Delta^{-1} : S \times \left[ -\frac{1}{2g}, \frac{1}{2g} \right] \rightarrow [0, 1]\]
3. Methods

As stated by Prihadi (2004), the Assessment Center is not a place, but rather a process or a method for the evaluation and measurement of the potential and future competences of individuals. It is on the basis of this principle that we support in this article the creation of a virtual Assessment Center called Assessment Center QualPosition. In other words, we are encouraging companies to create an online Assessment Center that allows them to evaluate candidates’ competences with less cost and time, but in a solid and accurate way. The focus of our research is the development of a virtual Assessment Center process that enables companies to recruit competent candidates for quality positions, while considering the requirements of ISO 9001:2015 and the subjectivity of competences and assessors’ opinions. Our proposed model is described in Figure 1:

**Preparation phase:**

The purpose of an assessment center, as mentioned above, is to evaluate the candidates through a series of exercises and tests in order to select the best candidate for the desired position. To this end, it's important to begin the process by identifying the Assessment Center dimensions on which candidates will be evaluated. The company should determine the profile of the desired position and select the most important competences required to evaluate new employees. In the literature, we often find identification by job analysis, which is based on interviews and observations with supervisors, and administration, such as Pynes and Bernardin (1992), which used it with a factorial analysis of results for the selection of junior police officers. We also find authors using the critical incident method, like Lievens (1999), who used it to identify assessment center dimensions for selecting a District Sales Manager.

On the issue of choosing competences as Assessment center dimensions, Mumpuni (2023) explains that the assessment center is still considered a solid method for measuring soft competences. In our Assessment Center QualPosition model, which aims to evaluate candidates for quality-related positions, we adopted the method developed by Bahom et al. (2018) to identify Assessment Center dimensions. This method is based on a referential approach, considering the ISO 9001:2015 requirements, and on the AHP method, used to weight the identified required competences. Once the dimensions (required competences) of the Assessment Center QualPosition have been identified using the Bahom et al. (2018) method, the company should identify the assessors. According to Zedeck (1986) and Lievens (1999), the assessors often participate in role-playing, discuss the assessments with other assessors, prepare the final reports and give feedback. In addition, the number of candidates to be assessed should be determined before the start of the creation of the assessment tests and simulations.

**Design phase:**

This phase consists of the description of the activities to be performed by the candidates. Each activity or exercise should be a judgment that indicates the level of one or more of the acquired competences. Thus, in order to create the virtual platform of the Assessment Center, it is first necessary to choose the right tools and methods for the execution of the activities, individually or collectively, for example: Introspection Test, Psychometric Test, Role Play, Quizzes, Puzzles, Presentation Exercises, In Basket Game, Serious Games and Simulations. In this section we describe the design of the QualPosition Assessment Center as follows:

Firstly, the company should create a virtual platform that is accessible to both candidates and assessors.; secondly, it should prepare a video recording that will introduce candidates to the tasks of the position for which the candidate may be hired, and another video recording that will orient and explain the functionality and steps of the Assessment Center, so that each candidate knows the functionality of the Assessment Center and how to use the virtual platform correctly. The next step is to develop the various tests and simulations that will allow assessors to determine the level of competence acquired by candidates. Let us take the example of:

**Quizzes:**

This game consists of a questionnaire designed to test an individual's knowledge of a particular subject. The questionnaire can take the form of a multiple choice or true/false
answer, or it can be a question that requires a short answer. For example, the company may ask the candidate (future quality manager or coordinator) about the requirements of ISO 9001, definitions of quality-related terms (e.g. definition of Total Quality and Deming's wheel), principles and approaches related to the quality management system. It may also ask about the role of the quality policy and manual, or the importance of describing organizational processes.

Crossword puzzle:
In this exercise, the candidate must find all the words in a grid using the given definitions, e.g. definitions of quality indicators, quality control and evaluation tools, and types of performance.

Simulation:
For Febri Surya and Kasim (2022), the simulation is: « a series of tests and exercises that describe situations where the assessee is required to do something - such as meeting with customers, talking to subordinates, writing strategic plans, responding to letters and memos, etc. ». In 2015, the International Taskforce on Assessment Center Guidelines, defined a simulation exercise as « an assessment technique designed to elicit behaviors representative of the targeted behavioral constructs and within a context consistent with the focal job ». According to Khairudin and and Wiyarni (2023), « Performance someone who is done during a simulation exercise, reflects or predict their behavior in carrying out the duties of that position ». The simulation is therefore a sample of a real work situation that can be used to predict and assess the competences acquired by a new employee. In the simulation, the company records a 3D video or audio file describing scenarios from real-life situations similar to the daily routine of the position to be filled and expects the candidate to react to them. The candidate's reaction allows assessors to measure his or her competences and predict his or her ability to perform the position and future responsibilities.

According to Lievens (1999), each simulation exercise should be limited to a duration of between 15 and 45 minutes. This is because the candidate's behavior is presented at a very rapid pace (Gaugler and Thornton, 1989). In addition, since the simulation exercise allows the candidate to be put into practice by being asked to perform tasks to measure his or her know-how, it is necessary to carefully choose the right simulation exercises, i.e. those that reflect the managerial tasks of the job and the organizational context, and that allow the assessors to easily measure the acquired competences of the candidate by measuring his or her performance. According to Lievens (1999), simulation must meet three requirements: external validity, internal validity, and feasibility. As examples of simulation exercises: After having provided the candidate with all the necessary information, the company may ask the candidate to analyze the risks and opportunities and to draw up a plan of action. It may also ask the candidate to solve a problem and make a decision, or to calculate the cost of poor quality.

Role-play:
the company asks the candidate to assume the role of an imaginary character and interact with them. For example, the company creates an online workshop in which the candidate must inform, train, and raise awareness among employees about quality issues. The company could also create an online meeting where candidates discuss steps to take on a new project. Another example is to put the candidate in a role-playing situation with a customer and ask him to measure his satisfaction. These exercises will allow the evaluator to assess a candidate's know-how and know-whom.

**Assessment phase:**
The main task of the assessors is to observe and measure the competences acquired by the candidates. This can be done either directly (on-line with the candidates) or indirectly (through recorded videos). Once the virtual Assessment Center has been set up, the experts evaluate the competences acquired by the candidates in terms of linguistic values. Each linguistic evaluation is then transformed into an appropriate fuzzy numerical value (Table 1). Then, an agreed value for each competence is calculated for each candidate:

\[
(s_{ij}, \alpha_{ij}) = \Delta \left( \frac{1}{k \sum_{k=1}^{m} \Delta^{-1}(s_{ij}^k, \alpha_{ij}^k) \times w_j} \right)
\]

\((s_{ij}, \alpha_{ij})\) : Average evaluation of competence \(j\) acquired by candidate \(i\)
\(k\) provided by expert \(i\) acquired by candidate \(j\) of competence Evaluation: \((s_{ij}^k, \alpha_{ij}^k)\)
\(j\)Value of importance (weight) of the competence : \(w_j\)
\((j=1,2,..,m), (i=1,2,..,n), (k=1,2,..,K)\)

The next step is to determine the similarity index between the acquired and required levels of each competence for each candidate using the following formula:

\[
J(C_j, C_i) = \frac{(C_j \cap C_i)}{(C_j \cup C_i)} = \frac{(s_{ij}, \alpha_{ij}) \cap (s_{ij}, \alpha_{ij})}{(s_{ij}, \alpha_{ij}) \cup (s_{ij}, \alpha_{ij})}
\]

\(J(C_j, C_i)\) : Index of the similarity between the level of the required competence \(j\) and the level of the same competence acquired by the candidate \(i\). \((j=1,2,..,m), (i=1,2,..,n)\)
\(C_j\) : Required competence \(j\)
\(C_i\) : Competence \(j\) acquired by candidate \(i\)

Finally, we propose a candidate index to select the best candidate. The best candidate is the one with the highest index. The following formula is used to calculate the index:

\[
I_i = \frac{\sum_{j=1}^{m} J(C_j, C_i)}{m}
\]

\((i=1,2,..,n), (j=1,2,..,m)\)

**4. An illustrative example of the Assessment Center QualPosition**
We use the following example to demonstrate the feasibility of our model.
Let's suppose that a company wants to recruit a quality manager through the Assessment Center QualPosition. After identifying the competences required for a quality position using the demarche of Bahom et al. (2018), and creating tools (tests, simulations) to reveal candidates' acquired competences, evaluators will start to assess the level of acquired competences of the candidates.
Let's suppose a set \(\{C_1, C_2, C_3\}\) of required competences of equal importance, selected to assess candidates for the position of Quality Manager, and a set of candidates \(\{A_1, A_2, A_3\}\) evaluated by two assessors \(E_1\) and \(E_2\) who will express their opinion on the candidates' acquired levels by linguistic values described in Table 2.
Table 1. Evaluation scale

<table>
<thead>
<tr>
<th>Linguistic term</th>
<th>Semantic</th>
</tr>
</thead>
<tbody>
<tr>
<td>( s_0 = \text{None(N)} )</td>
<td>(0,0,0.16)</td>
</tr>
<tr>
<td>( s_1 = \text{VeryLow(VL)} )</td>
<td>(0,0.16,0.33)</td>
</tr>
<tr>
<td>( s_2 = \text{Low(L)} )</td>
<td>(0.16,0.33,0.5)</td>
</tr>
<tr>
<td>( s_3 = \text{Medium(M)} )</td>
<td>(0.33,0.5,0.66)</td>
</tr>
<tr>
<td>( s_4 = \text{High(H)} )</td>
<td>(0.5,0.66,0.83)</td>
</tr>
<tr>
<td>( s_5 = \text{VeryHigh(VH)} )</td>
<td>(0.66,0.83,1)</td>
</tr>
<tr>
<td>( s_6 = \text{Perfect(P)} )</td>
<td>(0.83,1,1)</td>
</tr>
</tbody>
</table>

Let's assume that the company requires the following levels of competences: (Medium level of competence \( C_1 \), Medium level of competence \( C_2 \), and Very High level of competence \( C_3 \).

5. Results and Discussion

First, the experts evaluated the candidates' competence in linguistic values. Table 2 shows their evaluations. In this table we can see that the two assessors have some similar opinions, e.g. they both assigned to candidate \( A_2 \) a medium level of \( C_1 \) competence and they are both also assigned to candidate \( A_3 \) a high level of competence \( C_3 \). We can also see that they have approximate evaluation values, for example, assessor \( E_1 \) has attributed a very low value to candidate \( A_1 \) in \( C_1 \) competence, while assessor \( E_2 \) has attributed a low value to him in the same competence. But we can also observe that the two evaluators have some completely different opinions, for example, evaluator \( E_1 \) has attributed a high value to candidate \( A_4 \) in \( C_1 \) competence, while evaluator \( E_2 \) has attributed a very low value to him in the same competence. For this, after collecting the experts' opinions in linguistic form, it should then be converted into appropriate values (Table 1) and calculate the aggregate value for each evaluation. Tables 3 and 4 show the results of this step.

The result of calculating the similarity index using equation 4 is shown in Table 5. Finally, we can calculate the index for each candidate using Equation 5. The result is shown in Table 6.

From Table 2, we can see that candidate \( A_1 \) is judged by both assessors to have a low level of \( C_1 \) competence compared to both candidates \( A_2 \) and \( A_3 \), which explains why his aggregate value is equal to 0.245, which is the lowest value compared to the other candidates (Table 3). From Table 4 it can be seen that the level of candidate \( A_1 \) in competence \( C_1 \) belongs to the very low end of the linguistic range with a translation value of 0.078. We also notice that both assessors rated candidate \( A_2 \) as having a medium level in competence \( C_1 \), (Table 2). Therefore, his linguistic level in this competence belongs entirely to S3 (Medium) with a translation value of 0.

The company required a medium level of \( C_1 \) and \( C_2 \) competences and a very high level of \( C_3 \) competence. From Table 4, we can see that candidate \( A_1 \) has a very low level of \( C_1 \) and \( C_2 \) competences, which is why he has a very low degree of similarity equal to 0.05 in \( C_1 \) and \( C_2 \) (Table 5), which expresses the difference between the acquired and required level of \( C_1 \) and \( C_2 \) competences. We can also notice that candidate \( A_2 \) has a medium level of \( C_1 \) competence (Table 4), which is similar to the required level and therefore has a degree of similarity equal to 1 (Table 5). On the other hand, the same candidate has a low level of \( C_2 \) competence, which is a little lower than the medium level required by the company. This explains the degree of similarity between the candidate's acquired level and the required level, which is equal to 0.39 (Table 5).

We can see from the evaluations of the experts, which are presented in Table 4 and Figure 2, that candidate \( A_1 \) has very low levels of both \( C_1 \) and \( C_2 \) competences, so he is considered a weak candidate with the lowest
Table 2. Experts' linguistic evaluations

<table>
<thead>
<tr>
<th></th>
<th>E₁</th>
<th></th>
<th>E₂</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C₁</td>
<td>C₂</td>
<td>C₃</td>
<td>C₁</td>
<td>C₂</td>
<td>C₃</td>
</tr>
<tr>
<td>A₁</td>
<td>VL</td>
<td>L</td>
<td>M</td>
<td>L</td>
<td>VL</td>
</tr>
<tr>
<td>A₂</td>
<td>M</td>
<td>L</td>
<td>P</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>A₃</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td>VL</td>
<td>VL</td>
</tr>
</tbody>
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Table 3. Aggregate evaluations

<table>
<thead>
<tr>
<th></th>
<th>C₁</th>
<th></th>
<th>C₂</th>
<th></th>
<th>C₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>0.245</td>
<td></td>
<td>0.245</td>
<td></td>
<td>0.75</td>
</tr>
<tr>
<td>A₂</td>
<td>0.5</td>
<td></td>
<td>0.415</td>
<td></td>
<td>0.83</td>
</tr>
<tr>
<td>A₃</td>
<td>0.33</td>
<td></td>
<td>0.41</td>
<td></td>
<td>0.66</td>
</tr>
</tbody>
</table>

Table 4. Evaluations expressed in 2-tuple

<table>
<thead>
<tr>
<th></th>
<th>C₁</th>
<th></th>
<th>C₂</th>
<th></th>
<th>C₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>(s₁,0.078)</td>
<td></td>
<td>(s₁,−0.078)</td>
<td></td>
<td>(s₃,−0.25)</td>
</tr>
<tr>
<td>A₂</td>
<td>(s₃,0)</td>
<td></td>
<td>(s₂,0.081)</td>
<td></td>
<td>(s₃,−0.003)</td>
</tr>
<tr>
<td>A₃</td>
<td>(s₂,−0.003)</td>
<td></td>
<td>(s₂,0.076)</td>
<td></td>
<td>(s₄,−0.006)</td>
</tr>
</tbody>
</table>

Table 5. The similarity index

<table>
<thead>
<tr>
<th></th>
<th>C₁</th>
<th></th>
<th>C₂</th>
<th></th>
<th>C₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>0.05</td>
<td></td>
<td>0.05</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>A₂</td>
<td>1</td>
<td></td>
<td>0.34</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>A₃</td>
<td>0.34</td>
<td></td>
<td>0.34</td>
<td></td>
<td>0.34</td>
</tr>
</tbody>
</table>

Table 6. Candidate index

<table>
<thead>
<tr>
<th>Candidate</th>
<th>Iᵢ</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁</td>
<td>0.2</td>
</tr>
<tr>
<td>A₂</td>
<td>0.78</td>
</tr>
<tr>
<td>A₃</td>
<td>0.34</td>
</tr>
</tbody>
</table>

candidate index equal to 0.2 (Table 5), even though he has a perfect level of C₃ competence, because the company only requires a very high level of C₃ competence. Candidate A₂, on the other hand, has the highest
index (0.78) and is therefore the best candidate for the position of Quality Manager, since his three levels of competence cover all the levels of competence required by the company (Figure 2). Candidate A₁, with an index of 0.34, is the second best candidate because his competence levels are close to the company's requirements and as shown in figure 2, he has a degree of similarity between the levels of the required and acquired competences C₁ and C₂, higher than that of candidate A₁. The results obtained are very reasonable in relation to the experts' initial assessments. This means that the demarche developed is very useful for evaluating and selecting candidates, without distorting the experts' opinions. The results obtained are very reasonable in relation to the experts' initial assessments. This means that the demarche developed is very useful for evaluating and selecting candidates, without distorting the experts' opinions.

![Similarity degree graph](image)

**Figure 2.** Graphical representation of the degree of similarity between the levels of required and acquired competences

### 6. Conclusion

In this article, we present a virtual Assessment Center designed to help companies remotely recruit the best competent candidates for quality-related positions while meeting the requirements of ISO 9001:2015. The Assessment Center developed is flexible, allowing the company to implement its tests and simulations by identifying the competences required for the desired positions. The approach based on the integration of the linguistic representation of the 2-tuple and the similarity index is used for the competence evaluation and the candidate selection. Indeed, this approach allows to deal with the subjectivity of qualitative nature of competence and the subjectivity of expert opinions. It also helps recruiters select the best candidate using the similarity index, which measures the existing similarity between the candidate's profile and the company's required profile. Moreover, the competence levels acquired by candidates, calculated as 2-tuple, give companies an idea of new employees' competence levels and plan appropriate training programs for them.

For perspective, we will implement this Assessment Center QualPosition model in a company that wants to recruit a quality-related position.

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**Biographies**

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