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## Enterprises' Classification According to Required Employees' Competencies Profile

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**Abstract:**

**Purpose:** The authors set two main goals to analyze the significance level and difficulty of obtaining particular types of employee competencies and, on this basis, to build a two-dimensional perception map. In addition to conduct a segmentation and analysis of the surveyed entities according to their demand profile for critical competencies, characterised by high significance and difficulty of obtaining.

**Design/Methodology/Approach:** The research was conducted among 381 managers of companies operating in Eastern Poland. The evaluation concerned employees' competencies in terms of their significance and the difficulty of obtaining on the market. The obtained results were used by the authors to develop a perception map and to identify critical competencies, subsequently used as enterprise segmentation criteria. Finally, the enterprise clusters obtained in the segmentation process were analysed according to a number of differentiating variables.

**Findings:** As a result of the research, a perception map describing employees' competencies enabling the designation of 4 groups called by the authors, 'inconvenient', 'secondary', 'must have' and 'critical'. The group of critical competencies includes 3 constructs, each from among personal and professional competencies. Furthermore, the segmentation analysis has shown that the most optimal way to divide the surveyed entities into 3 segments differ from each other in the surveyed issues.

**Practical Implications:** The competence perception map presented in this article allows for a precise determination of the significance level with simultaneous market supply in comparative terms. This approach allows for better, more market-efficient management of both the directions and education processes in the region as well as the budgetary resources allocation in the training area and qualification improvement.

**Originality/value:** The development of a significance and difficulties perception map in acquiring employee qualifications on the market should be treated as an original and authorial concept. However, the authors' use of the issue of supply and demand for employees' qualifications in the process of market segmentation is an innovative approach that has not been seen in the literature so far. Moreover, the results developed significantly expand the available knowledge on the regional labour market.

**Keywords:** Employees' competencies, perception map, segmentation.

**JEL codes:** C83, J08, J23, J24.

**Paper Type:** Research paper.

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## 1. Introduction

Human learning outcomes are referred to as competencies. Competencies determine a person's suitability for a certain profession, decides about tasks and functions allocation, and designate career advancement. From a market perspective, the education process should focus on developing competencies corresponding to market needs. This will ensure that people coming to work are the effective competencies providers desired by the organisation. From the organisation's perspective, this is crucial for building its long-term market position, as competencies are the significant source of the organisation's market value.

## 2. Literature Review

### 2.1 Competencies

There is no one universal approach to defining competencies. Meanwhile, two approaches are dominant in the management literature: 1) employee-oriented and 2) work-oriented (requirements).

The first approach, pioneered by White (1959), developed by McClelland (1973) and popularised by Boyatzis (1982) views competency as the underlying attributes of a person, the personality traits, motives for action, experience and behavioural characteristics that influence whether a person is more or less successful at work. The second approach focuses on describing the tasks or expected outcomes of activities associated with a particular job or occupation (Woodruffe, 1991; Motowidlo, Borman, and Schmit, 1997). In this concept, competencies are not seen in terms of differences between individuals, but in terms of expected behaviour. Success requires the skilful use of multiple competencies at the same time, adequately to the requirements of the situation (Jurek, 2019). Collaterally there are two main schools of thought that define the concept of competency: (1) the American approach referring to Boyatzis's concept and (2) the British approach that views competency as a set of performances and standards, concerning the performance of designated tasks and activities, expressed in a way that allows them to be observed and evaluated (Woodruffe, 1992; Hoffman, 1999).

The concept of competency then can be classified into two major categories, namely: (1) personal competencies (differentiating employees) constituting a set of knowledge, skills and attitudes manifested by individuals, which enable the ongoing functioning of the company, shape its important competence such as organisational memory and show a significant positive effect on employee commitment and performance (Ida Ayu Oka *et. al.*, 2020) and (2) task or job-based competencies (Hoffman, 1999), in which the starting point is to identify the activities necessary to perform a specific job in a given organisation, and then determine the competencies that an employee should display. The indicated division relates to employee competencies. However, it should be noted, that the

subject literatures also include the category of organisational competencies, on which the authors of this article will focus their attention.

## **2.2 Organizational Competencies**

The concept of organisational competencies derives from the work of Selznicka (1957) and Penrose (1959), in which organizations are perceived as a set of differentiated resources, on the basis of which it is possible to identify differences between the competitive positions occupied in practice by individual companies. The organisation's competencies consist primarily of the owner's managerial competencies and the employees and collaborators competencies who create the company's human resources. Other competencies, such as collective knowledge and memory, competencies acquired externally (in the form of licences, patents), product and technological competencies and social competencies (generated through cooperation with the external and internal environment) are derived from the competencies possessed by human resources, considered in relation to individual, specific skills.

Importantly, organisational competencies do not refer to the knowledge, skills and attitudes of individual employees, but are a combination of the complementary knowledge and skills of employee groups and teams. The organisation's competencies are shaped by the synergy effect of the company's tangible, intangible and, above all, human resources (Oleksyn, 2006). Analysing competencies at the organisational level, we may notice that each area of company operation is characterised by certain variables determining success. These factors correspond to the core competencies that a company should possess in order to be successful in a particular field (Athey and Orth, 1999).

## **2.3 Core Competencies**

Identifying organisational competencies is crucial to the success of organisations (Bryson *et al.*, 2007; Garman and Johnson, 2006). Core competence is an important source of sustained competitive advantage and greater is its economic return. The organizational learning, strategic flexibility, effective technology management, and people provide the important sources of core competence (Kak, 2002; 2008).

The creators of the core competencies for organisations concept, Hamel and Prahalad (Lindgren *et al.*, 2004), describe core competencies as “...*the collective knowledge and capabilities that are embedded in the organisation, they are central determinants of the organisation's competitiveness due to their centrality to customer value, their resistance to imitation and their ability to extend to new business applications*”. Hill and Johnes (1992) highlighted the company's distinctive skills, which consist of unique and value-creating resources. Resources are valuable to a company if they help create strong demand for the company's

products. The company's management capability is the ability to coordinate and organise the effective application of resources. As Woodruffe (1992) notices, a set of crucial competencies or "core competencies" need to be established and identified regardless of roles, positions and levels that exist in the organisations. These core competencies are essential in order to perform the job well.

Moreover, a core competency must be essential to corporate survival, invisible to competitors, difficult to imitate, unique to the corporation, a mix of skills, resources and processes, sustainable over time, greater than the competence of an individual, essential to the development of the core products, essential to the strategic vision and decision of the organization, marketable and commercially valuable, and few in number (Tampoe, 1994). Core competencies should also create new opportunities, constitute a gateway to the "tomorrow's markets" (Chan, 2005). The organisation's competitive advantage then comes from competencies that provide the possibility to adapt, integrate but also reconfigure internal and external organisational capabilities, resources and functional competencies (Tecce, Pisano, and Shuen, 1997).

Therefore, the essence of the organisation's competencies management process, in the context of the company's strategy implementation, is the ability to identify core competencies for the organisation and their supplementation within the organisation (e.g. through training or as a result of the recruitment process for new employees).

However, as emphasised by Filipowicz (2016) the process of identifying core competencies should result in the selection of those competencies on which the performed tasks' efficiency and quality depend to the highest extent. These competencies in particular should be developed and acquired. Unfortunately, there is often a significant discrepancy between the requirements of employers regarding the desired competencies and the actual resource and level of their possession by current and potential employees. Therefore, it is important to identify the organisation's needs in terms of different types of competencies and the difficulties faced by employers in the labour market in this area.

### **3. Research Methodology**

#### **2.1 Research Aim**

The discussed research was designed to achieve two main goals:

- a) To examine the significance level and difficulties in obtaining particular types of employee competencies in the opinion of the interviewed managers and, on this basis, to build a two-dimensional perception map;
- b) To conduct segmentation and analysis of the surveyed entities due to their profile of demand for critical competencies, characterized by high significance and difficulty of obtaining.

### **3.2 Research Tool**

While creating the research tool, the authors in the process of determining the categories and measurement criteria decided to use both the works of Eicker, Kochbeck, and Schuler (2008), Zaim, Yaşar, and Ünal (2013,) Grzybowska and Łupicka (2017), as well as the Universal Competence Model framework developed by Filipowicz (2016), in which 4 categories of competencies have been identified:

1. Social competencies – influence the quality of the performed tasks related to contacts with other people from inside and outside the organisation who influence the organisation's operation, determine the effectiveness of cooperation, communication and affecting others. The following competencies were distinguished within this group, teamwork, communicativeness, identification with the company, customer focus, intra-company cooperation, solving the conflicts, social influence, sharing knowledge and building relationships.
2. Personal competencies – related to the tasks performed by the employee and achieving a certain level of their quality, speed and reliability. The group of personal competencies includes, scrupulousness, kindness, oneself and time management, professional/work development, problem solving, self-reliance, decision making, the pursuit of results, analytical thinking and innovativeness.
3. Managerial competencies – related to employee management. This group of competencies includes, motivating others, planning, strategic thinking, team building, company organizing, delegating, project management, leadership and team management.
4. Professional competencies – related to specialized tasks for a given group of positions, they relate to specific scopes of knowledge or skills. The group of discussed competencies includes, knowledge and application of hygiene and health and safety rules, professional knowledge, knowledge and application of procedures, technical skills, knowledge and application of the principles of ecology and sustainable development, business orientation, administration/record keeping, negotiating, foreign languages, process management and IT skills.

In the case of competence assessments, the research tool included a 1-5 scale, where 1 corresponded to the lowest level of the examined issue and 5 to the highest. The significance and difficulty of obtaining particular competencies were analysed.

### **3.3 Research Sample**

The research was conducted in 14 districts included in 2 regions of Eastern Poland. The data on the number and structure of educational institutions' representatives and the enterprise structure for 2018 presented in the publications of the Polish Central Statistical Office were used to determine the sample and its layers. The target sample size was determined using sample size binding formulas (Tortoa, 1978; Mynarski, 2000; Kaczmarczyk, 2003):

- a) for estimating the mean value of the population parameter - with the acceptable error rate of the parameter estimate, the population standard deviation of the parameter and the confidence level used;
- b) for estimating the proportion of fractions in the population – with the acceptable error rate of the proportion estimate, the proportion ratio of this characteristic in the population under survey and the assumed confidence level, corrected by the coefficient for multivariate populations (containing more than two fractions)<sup>4</sup>.

The minimum sample size was determined due to the questions that were used to calculate the central tendency measures (ordinal and higher scales) and the questions leading to the determination of the responses proportion in the sample (nominal scales). The higher of these two values was taken as the target number (which eventually amounted to 381 entities).

The following assumptions were made to determine the sample size:

- a) the confidence level indicating how certain the estimated parameter or proportion of the population is that it lies within the interval defined by the sampling result +/- the acceptable error rate - set at 95%;
- b) the acceptable error rate for the mean value estimation is set at 0.15 - assuming five-point scales are used, this means an acceptable error rate of 3%;
- c) the acceptable estimation error of the fractional proportions is set at 7.5%.

The standard deviation values were determined by a pilot survey - the standard deviation for each variable from the questionnaire was calculated and the highest value was taken. A value of 0.5 was used as a feature aspect ratio for the population under analysis, i.e. the highest value that could be obtained, thus maximising the minimum sample size.

A similar procedure was conducted for the criterion deciding on the layers' structure, i.e. the size of the entity expressed by the employee number. Unfortunately, in this structural system, it is noted that enterprises with up to 9 employees account for as much as 96.3% of all enterprises in the regions under consideration, which would make up almost the entire sample (367 out of 381 cases), making it impossible to analyse representatives of other groups of entities. Therefore, the stratified disproportionate sampling procedure was again applied using a weighting mechanism - in this procedure:

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<sup>4</sup>*It should be noted at the same time that these relationships are appropriate for variables assuming normal distribution, while, due to the lack of other methods, they are also adopted for studies based on ordinal data, including those derived from declarative measurement - see e.g., Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. Advances in health sciences education, 15(5), 625-632 or Park, J.W., & Jung, M.S. (2009). A note on determination of sample size for a Likert scale. Communications for Statistical Applications and Methods, 16(4), 669-673.*

- a) Entities with the lowest number of employees received a weighting of 0.05, so that only 5% of their number resulting from the structure was included in the sample estimation,
- b) the least represented districts received a weighting of 1.5, resulting in 50% more entities being included in the sample than would result from this structure.

The remaining sampling spots were distributed among the other companies according to the corresponding proportion. This sample weighting procedure made it possible to reduce the share of enterprises with up to 9 employees to around 55%. In the further part of the procedure, in each region, the number of enterprises whose representatives were asked to participate in the survey was selected based on publicly available lists. In case of refusal, subsequent entities were sampled until the target number of strata was filled. The survey was carried out in the period from May 11, 2020 to June 28, 2020 by means of an online survey among representatives of the management staff of the assumed number of 381 enterprises registered in 14 districts of Eastern Poland.

The final analysis of the sample structure allows us to note that micro entities, which employ from 1 to 9 employees (55.6% of the sample), clearly prevail among the respondents. Medium-sized organizations with 10 to 49 employees (35.9%) constitute the second largest representation. Large entities employing over 250 employees, which constitute less than 1% of the surveyed sample, are definitely the least numerous. These results confirm the conclusions from the wealth analysis (both in terms of enterprises and employed persons number, as well as gross monthly remuneration per 1 employed person) of the Polish inhabitants that the examined area is the least developed region of the country.

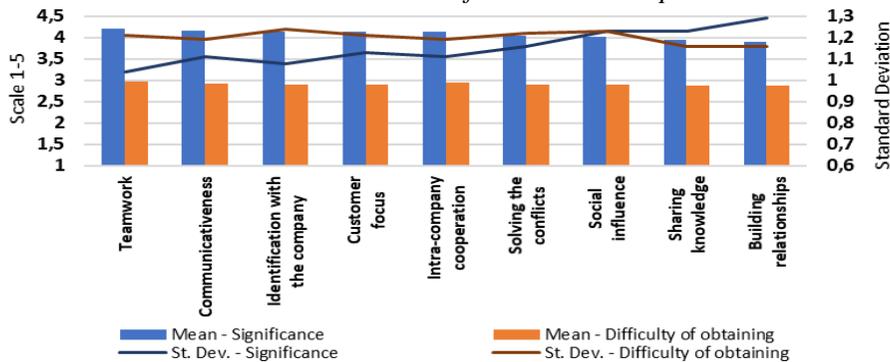
#### **4. Research Results**

The main area of the authors' scientific considerations was the analysis of entrepreneurs' opinions on the significance level of particular competencies among the workforce and the scale of difficulties in obtaining them. The most important step of the employers' expectations survey became the assessment and evaluation of the competencies they were looking for, which could be assigned to four areas: social, personal, managerial and professional competencies. The companies' representatives were asked to estimate the significance of each, and whether it was easy to obtain in the labour market (on a scale from 1 to 5).

As regards social competencies (Figure 1), all analysed competencies achieved an average score above the middle of the scale, which means that the representatives of the entities considered them to be relatively important. The highest importance was ascribed in this case to teamwork (mean score of 4.20, the lowest standard deviation also indicates agreement between the responses regarding this competence), while slightly lower importance was ascribed to communicativeness (4.17), customer focus (4.15) and identification with the company (4.15).

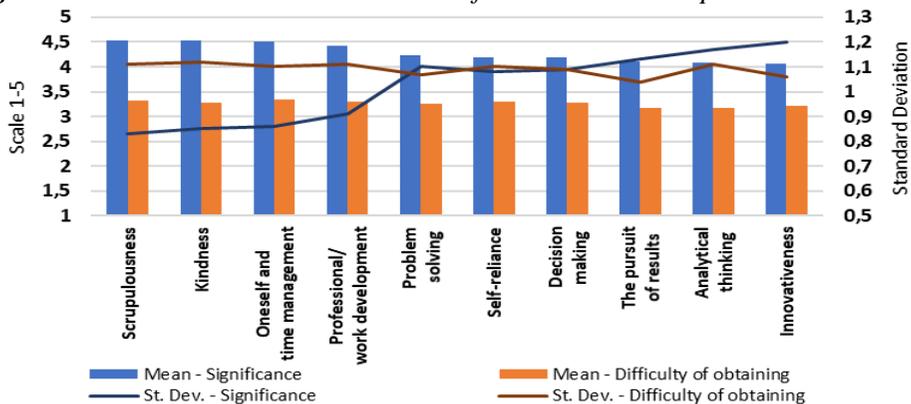
The lowest in this group, although still high significance was indicated for building relationship (3.90). On the other hand, when considering the difficulty of acquisition, it is worth noting that it was very similar in most of the competencies in this group, ranging from 2.87 to 2.97, which is about half of the adopted measurement scale. This suggests that companies have no major problems in recruiting people with the competencies in question.

**Figure 1.** Means and standard deviations of the Social Components



Source: Own creation.

**Figure 2.** Means and standard deviations of the Personal Components



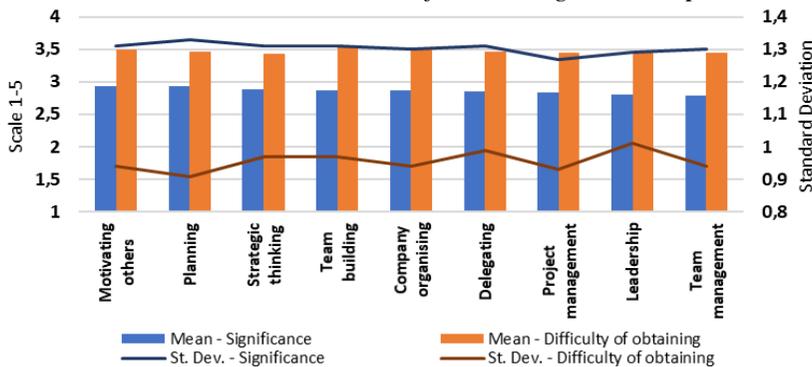
Source: Own creation.

In the area of personal competencies (Figure 2), the highest mean values of their significance ratings were observed among all the surveyed groups. The highest was assigned to scrupulousness (4.54) and courtesy and kindness (4.50) and, very significantly, oneself and time management skills (4.50). These values are approaching the end of the scale, indicating very high importance for the surveyed entities. The lowest, although still very high values were observed for innovativeness (4.06) and analytical thinking (4.08). In assessing the difficulty of obtaining the aforementioned features, it is important to note again that all of these features received relatively similar ratings - the highest was for oneself and time

management (3.34) and scrupulousness (3.33), all exceeding half of the scale used, suggesting that while they are not highly problematic, there is some difficulty in acquiring them.

Another area of competence analysed was managerial competencies (Figure 3). Interestingly, all competencies in this area obtained quite similar values, ranging from 2.79 (team management) to 2.93 (planning), which suggests their relative importance, although not decisive. Similar evaluation values may suggest that these competencies are difficult to differentiate for companies, while the evaluation values of the difficulty of obtaining them, also similar to each other, exceed half of the scale, suggesting some problems with their availability. However, it should be additionally noted that the respondents were much more unanimous in assessing the difficulty level of obtaining employees with the given competencies than in assessing their significance (as evidenced by noticeably lower levels of standard deviation).

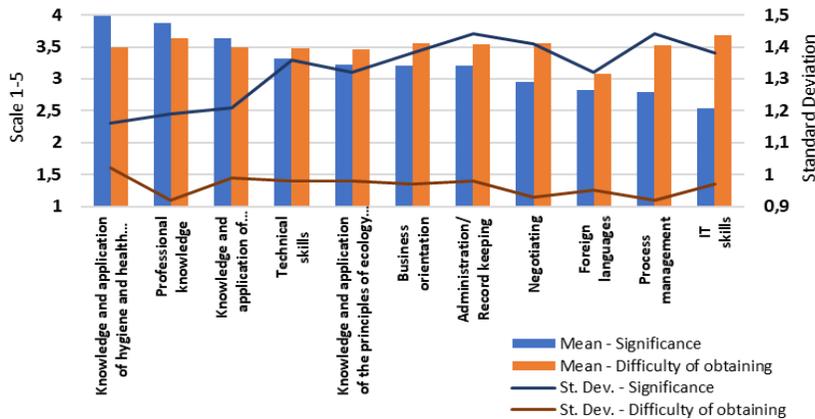
**Figure 3.** Means and standard deviations of the Managerial Components



*Source:* Own creation.

The last set of competences to be evaluated was professional competencies (Figure 4). It is interesting to note that knowledge and application of the hygiene and health and safety rules was the most important (mean score of 3.99), while professional knowledge (3.87) and knowledge and application of procedures (3.63) were slightly lower. The lowest significance was assigned to IT skills (2.54), which may also come as quite a surprise, followed by process management (2.80) and foreign languages (2.83).

All the competences analysed were assessed as relatively difficult to obtain, the most difficult appearing to be professional knowledge (3.63), which is also very important, and IT skills (3.68). Similarly to managerial competencies, professional competencies were also characterised by a higher level of respondents' agreement in the assessment of their difficulty level to obtain on the labour market compared to the assessment of significance.

**Figure 4.** Means and standard deviations of the Professional Components

*Source:* Own creation.

The last stage of assessing the significance and difficulty of obtaining further competencies was the preparation of a perception map visualizing their distribution in the space defined by these two dimensions (Figure 5). Using the perception map, four categories of features can be easily identified:

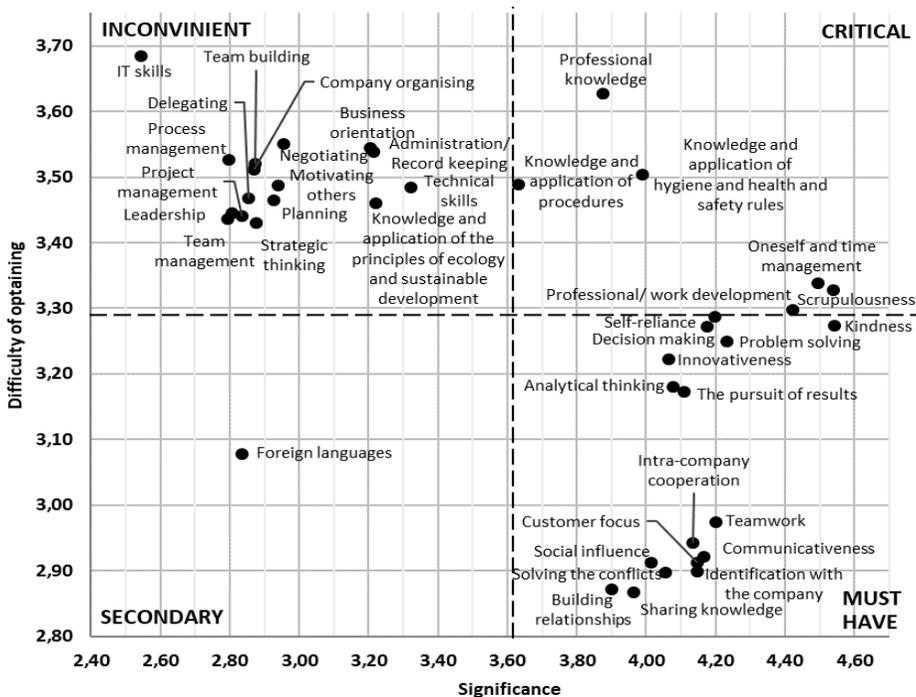
- competencies more important than others and simultaneously more difficult to acquire, called "critical" by the authors - gathered in the upper right part of the figure;
- competencies less important than the rest, but also difficult to acquire, called "inconvenient" - gathered in the upper left part of the figure;
- competencies that are more important than others and easier to obtain, called "must have", constituting a kind of market standard due to their high level of availability - gathered in the lower right part of the figure;
- competencies less important than others and easier to acquire, called "secondary" - gathered in the lower left part of the figure.

Discussing the presented map, it should be remembered that "assigning" particular competencies to the designated groups is relative, it concerns comparing competencies among themselves, and not the absolute significance and difficulty of obtaining - in order to assess them, it is necessary to relate competencies to the applied measurement scale. In this analysis, the reference lines separating the categories on the perception map were established as the distributions means of the responses obtained.

When analysing the map prepared for all the companies that responded to the question concerning competencies, four groups of factors can be observed. Firstly, a group of factors that are clearly important, but relatively possible to obtain on the labour market ("must have"), identical to the set of social competencies. Secondly - a group of factors that are important and relatively difficult to obtain ("critical") -

covering personal and professional competencies (it should be noted here that these competencies are the most difficult to obtain in the educational process). Thirdly - a group of factors difficult to obtain, but of average or low importance ("inconvenient") - managerial competencies and selected professional competencies, e.g. IT skills, process management. And fourthly - a group of competencies that are relatively easy to obtain, of moderate importance ("secondary") - this is where knowledge of foreign languages was qualified.

**Figure 5.** Perception map of the significance and difficulty of obtaining employee competencies

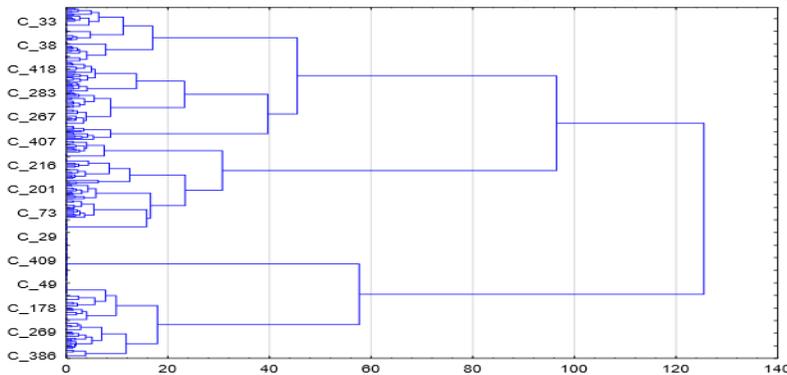


Source: Own creation.

The second of the research objectives was to divide the respondents into separate groups (clusters) characterized with the different levels of interests assigned to distinguished “critical” competencies. As presented in the Figure 5 the “critical” variables, which were used in the cluster analysis, are the questionnaire items concerning the personal (oneself and time management; scrupulousness the pursuit of results) and professional competencies (professional knowledge; knowledge and application of hygiene and health and safety rules, and knowledge and application of procedures). As already mentioned before the questions included a scale of 1-5, where 1 corresponded to the low and 5 to the high level in the evaluated attitude raised.

Primarily, the case classification validity was established using a hierarchical clustering - an agglomerate approach with the Ward method and the Euclidean distance measurement. The main result of the conducted clustering analysis is the dendrogram presented in Figure 6, which evaluation led to the conclusion that it was justified to distinguish three separate groups of analysed companies. The calculated number of clusters was later confirmed using other well-established indices applied in estimating the optimal number of clusters: silhouette index and the Calinski-Harabasz index (Tibshirani, Walther, and Hastie, 2001).

**Figure 6.** Results of the hierarchical clustering analysis - agglomerative approach



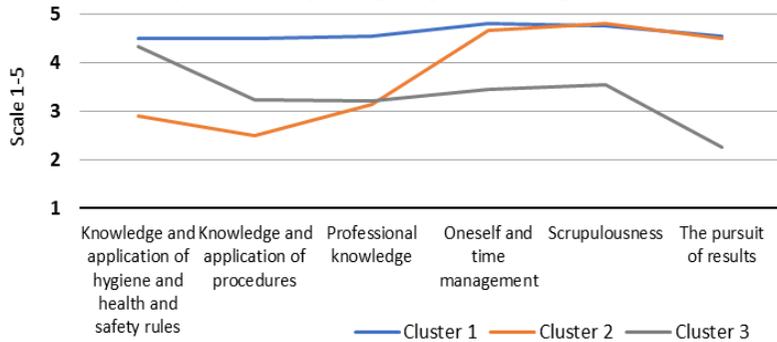
*Source:* Own creation.

The final cluster analysis was carried out using the expectation-maximization (EM) algorithm (Dempster, Laird, and Rubin, 1977), whereas the optimal number of clusters was determined using the v-fold cross-validation (Kawamoto, Kabashima, 2017). Both analysis also indicated three sets of cases as the most reasonable statistical outcome. Graphical presentation of estimated clusters profiles, being the result of cluster analysis using the EM algorithm, is presented in Figure 7.

As can be seen in the presented comparison (Figure 7), each of the selected clusters is characterised by a different set of significance levels of the "critical" employee competencies selected in the study in the perspective of the answers provided by the surveyed managers. Cluster 1 should be treated as "the most demanding", as it groups enterprises in which managers assessed all "critical" competencies as very important. In the case of the cluster 2 representatives, it can be observed that among the designated critical competencies, they pay much more attention to personal competences of their employees in comparison with professional competencies.

Cluster 3 respondents, on the other hand, said that knowledge and application of hygiene and health and safety rules were important to them, while the pursuit of results was considered relatively unimportant (in the case of this group of respondents, the other critical competences identified in the survey were rated as moderately important).

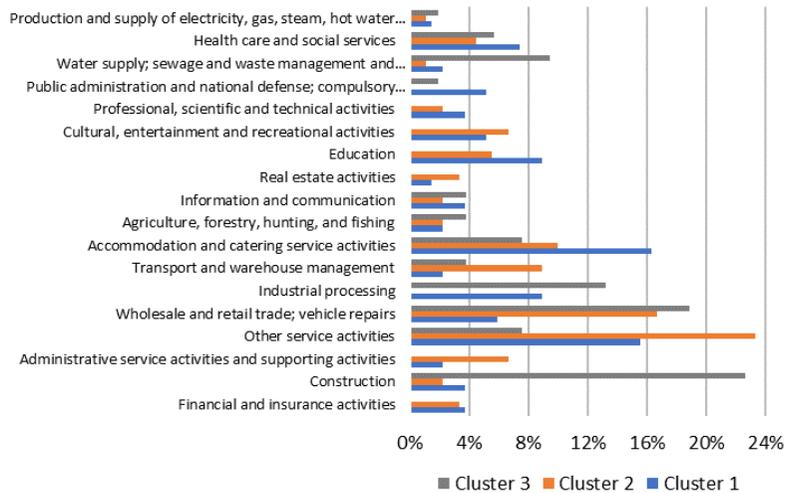
**Figure 7.** Cluster analysis results for 3 groups – EM algorithm



**Source:** Own creation.

When analysing the profiles of the three clusters, the industries in which their representatives operate were surveyed first (Figure 8).

**Figure 8.** Industries in which representatives of designated clusters operate



**Source:** Own creation.

The analysis of the presented data shows that among the entities assigned to cluster 1, companies conducting service activities and related to accommodation and catering services, as well as (although in a smaller representation) companies related to industrial processing, education, health care and social assistance, dominate. In case of cluster 2 the dominating industries appeared to be: other service activities; wholesale and retail trade, vehicle repairs as well as activities related to accommodation and catering services and to a lesser (though still statistically significant) degree transport and warehouse management, administration, culture, entertainment, recreation and education. Cluster 3, on the other hand, groups mainly companies representing the areas of construction; wholesale and retail trade, vehicle repair and industrial processing.

**Table 1.** Clusters profile regarding company's operating time on the market and employees number

|   |                  | Cluster 1 |       | Cluster 2 |       | Cluster 3 |       |
|---|------------------|-----------|-------|-----------|-------|-----------|-------|
|   |                  | number    | %     | number    | %     | number    | %     |
| Employee<br>nt<br>employee<br>numbers               | 0 – 9            | 63        | 46,7% | 57        | 63,3% | 23        | 43,4% |
|   | 10 – 49          | 53        | 39,3% | 31        | 34,4% | 24        | 45,3% |
|   | 50 – 249         | 18        | 13,3% | 2         | 2,2%  | 4         | 7,5%  |
|   | 250+             | 1         | 0,7%  | 0         | 0,0%  | 2         | 3,8%  |
| The<br>company's<br>operating time<br>on the market | Over 10 years    | 76        | 56,3% | 46        | 51,1% | 17        | 32,1% |
|   | 5 – 10 years     | 25        | 18,5% | 12        | 13,3% | 13        | 24,5% |
|   | 3 – 5 years      | 27        | 20,0% | 20        | 22,2% | 18        | 34,0% |
|   | 1 – 3 years      | 6         | 4,4%  | 12        | 13,3% | 5         | 9,4%  |
|   | Less than a year | 1         | 0,7%  | 0         | 0,0%  | 0         | 0,0%  |

*Source:* Own creation.

In addition, for the designated clusters, additional characteristics of enterprises included in each group were carried out, based on the employees number and operating time (Table 1). In all selected clusters, the majority of surveyed enterprises were entities employing up to 9 employees, with their highest share among the representatives of cluster 2. In the case of cluster 1 the relatively biggest (in comparison to other clusters) share of medium-sized companies employing from 50 to 249 employees can be noticed. Large companies with 250 or more employees were relatively most frequently present among the entities in cluster 3 (although they still made up a small percentage of the surveyed).

Considering the time of entities' functioning on the market it is possible to notice a big similarity among the representatives of clusters 1 and 2, who in most cases declared that their companies have been operating on the market for more than 10 years (each time more than 50% of representatives of these groups). In contrast, in the cluster 3 case we see a relatively greater diversity of responses with three main ranges: over 10 years; 5-10 years and 3-5 years.

## 5. Conclusions and Research Limitations

The main conclusions from the conducted research focus on valuing the significance and difficulty of obtaining employee competencies in the allocation to four designated groups of competencies: social, personal, managerial and professional. As a result of the conducted research, the authors developed a two-dimensional perception map of supply and relevance of individual competencies included in the analyses, due to which four categories were determined, namely competencies: "critical" (comprising three personal and professional competences each); "must have" (mainly grouping social competencies and some personal competencies); "secondary" competencies (this group includes language skills) and competencies of moderate importance and at the same time difficult to obtain, labelled by the authors as "inconvenient" (this group consists of the remaining

competencies mainly belonging to the set of managerial competences and some professional competences).

It is necessary to emphasize at this point that the classification of particular competencies into four areas of the created perception map presented by the authors (Figure 5) is only appropriate for the surveyed geographical area, as it should be remembered that especially the level of people's availability of the given competencies on the labour market is strongly dependent on the specificity of the regional labour market covered by the survey (it is a derivative of e.g., population's socio-demographic structure, the operation of the education system in a given region and the nature of the industries operating there).

The segmentation results of the surveyed companies according to assessing the significance of the set of selected critical competencies are also interesting. As already mentioned, cluster 1 groups companies in which managers rated all "critical" competencies as very important. The explanation for such a high assessment of the particular significance of "critical" competencies may be the structure of industries in which entities belonging to this group operate (dominated by companies providing services and connected with accommodation and catering as well as companies connected with education and health care and social services), for which a designated set of "critical" competencies constitutes a real area of building competitive advantage on the market. Cluster 2 is mainly composed of companies conducting other service activities: wholesale and retail trade, vehicle repairs as well as activities related to accommodation and catering services and dealing with transport and warehouse management, administration, culture, entertainment, recreation and education.

The range of conducted activities, largely based on direct contacts at the level of company employee - customer, explains the respondents' opinion on the supremacy of the employees' significance assessment of "critical" personal competencies compared to the significance assessment of "critical" professional competences.

However, persons belonging to cluster 3 answered that in their opinion the core "critical" competencies of employees are knowledge and application of hygiene and health and safety rules, whereas they treat the pursuit of results as relatively unimportant, which explains relatively well the character of activity conducted by representatives of this group of enterprises, that is: construction; wholesale and retail trade, vehicle repair and industrial processing. Moreover, as the results of the research show, enterprises belonging to cluster 3 are significantly different from other clusters also regarding the size of companies (predominance of medium-sized companies employing from 10 to 49 employees) and more diverse time of their functioning on the market.

Finally, one should once again indicate that the research results obtained by the authors are up-to-date and reliable only for the region of Poland covered by the

research. The specificity of the labour market, both in its demand and supply side, imposes great caution in trying to relate these results to other geographical regions or cultures. Nevertheless, the obtained results may be used in the surveyed geographical area to introduce changes in the training process so that the scope of particular employee competencies training is adjusted to real expectations of entrepreneurs local groups.

However, it should be noted that the methodology presented by the authors in this article to build maps of employee competence perception, regarding their relevance and difficulty of acquisition, can be successfully applied in other markets and geographical areas, as both the research method and the research tool are utilitarian in nature and do not need additional adaptation to the specifics of the particular region covered by the research.

### References:

- Bryson, J.M., Ackermann, F., Eden, C. 2007. Putting the resource-based view of strategy and distinctive competencies to work in public organizations. *Public administration review*, 67(4), 702-717.
- Athey, T.R., Orth, M.S. 1999. Emerging competency methods for the future. *Human Resource Management*, 38(3), 215-226.
- Boyatzis, R.E. 1982. *The Competent manager. A Model form Effective Performance*. New York: John Wiley & Sons.
- Bryson, J.M., Ackermann, F. and Eden, C. 2007. Putting the resource-based view of strategy. *Public Administration Review*, 67(4), 702-717.
- Chan, K.W. 2005. *Blue Ocean Strategy*, Mauborgne, Boston, Mass., Harvard Business School Press.
- Dempster, A.P., Laird, N.M., Rubin, D.B. 1977. Maximum likelihood from incomplete data via the EM algorithm. *Journal of the Royal Statistical Society: Series B (Methodological)*, 39(1), 1-22.
- Eicker, S., Kochbeck, J., Schuler, P.M. 2008. Employee competencies for business process management. In: *International Conference on Business Information Systems*. Berlin, Heidelberg: Springer.
- Filipowicz, G. 2016. *Zarządzanie kompetencjami. Perspektywa firmowa i osobista*. Warszawa: Wolters Kluwer.
- Garman, A.N., Johnson, M.P. 2006. Leadership competencies: an introduction. *Journal of Healthcare Management*, 51(1), 13-17.
- Grzybowska, K., Łupicka, A. 2017. Key competencies for Industry 4.0. *Economics & Management Innovations*, 1(1), 250-253.
- Hill, Ch., Johnes, G. 1992. *Strategic Management*. Boston: Houghton Mifflin Company.
- Hoffman, T. 1999. The meanings of competency. *Journal of European Industrial Training*, 23(6), 275-285.
- Ida Ayu Oka, M., Supriyadinata, E., Sutrisni, K.E., Sarmawa, I.W.G. 2020. The dimensions of competency on worker performance mediated by work commitment. *Cogent Business & Management*, 7(1), 1-12.
- Jurek, P. 2019. *Diagnoza kompetencji pracowników*, Gdańsk: Wydawnictwo UG.
- Kaczmarczyk, S. 2003. *Badania marketingowe. Metody i techniki*. Warszawa, PWE.

- Kak, A. 2002. Sustainable Competitive Advantage with Core Competence. *International of Global Journal of Flexibility Systems Management*, 3(4), 23-38.
- Kak, A. 2008. Testing the Relationships Between Core Competence, Competitive Advantage and Competitiveness: A Study of Medium Size Firms in India. *International Journal of Global Business and Competitiveness*, 3(1), 31-47.
- Kawamoto, T., Kabashima, Y. 2017. Cross-validation estimate of the number of clusters in a network. *Scientific Reports*, 7(1), 1.
- Lindgren, R., Henfridsson, O., Schultze, U. 2004. Design principles for competence management systems: a synthesis of an action research study. *MIS Quarterly*, 28(3), 435-472.
- McClelland, D.C. 1973. Testing for Competence Rather Than For Intelligence. *American Psychologist*, 28(1), 1-14. <https://doi.org/10.1037/h0034092>.
- Motowidlo, S.J., Borman, W.C., Schmit, M.J. 1997. A theory of individual differences in task and contextual performance. *Human Performance*, 10(2), 71-83.
- Mynarski, S. 2000. *Praktyczne metody analizy danych rynkowych i marketingowych*. Kraków: Kantor Wydawniczy Zakamycze.
- Oleksyn, T. 2006. *Zarządzanie kompetencjami, teoria i praktyka*. Kraków: Oficyna Ekonomiczna.
- Penrose, E.T. 1959. *The Theory of the Growth of the Firm*. Oxford: Basil Blackwell.
- Selznick, P. 1957. *Leadership in Administration*. New York: Harper and Row.
- Tampoe, M. 1994. Exploiting the Core Competences of Your Organization. *Long Range Planning*, 27(4), 66-77.
- Teece, D.J., Pisano Shuen G.A. 1997. Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18(7), 509-533.
- Tibshirani, R., Walther, G., Hastie, T. 2001. Estimating the number of clusters in a data set via the gap statistic. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, 63(2), 411-423.
- Tortora, E.D. 1978. A note on sample size estimation for multinomial populations. *The American Statistician*, 32(3), 100-102.
- White, R.W. 1959. Motivation reconsidered: The concept of competence. *Psychological Review*, 66(5), 297-333.
- Woodruffe, Ch. 1991. Competent by any other name. *Personnel Management*, 23(9), 30-33.
- Woodruffe, Ch. 1992. What is meant by a competency? In: Boam, R. and Sparrow, P. (Eds.). *Designing and Achieving Competency: A Competency-Based Approach to Developing People and Organisations*. Berkshire, England: McGraw-Hill.
- Zaim, H., Yaşar, M.F., Ünal, Ö.F. 2013. Analyzing the effects of individual competencies on performance: A field study in services industries in Turkey. *Journal of Global Strategic Management*, 7(2), 67-77.